

THE CHANGING RETAIL PAYMENTS LANDSCAPE:

WHAT ROLE FOR CENTRAL BANKS?

An International Payments Policy Conference
Sponsored by the Federal Reserve Bank of Kansas City

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GWENN BÉZARD, *Co-Founder and Research Director,
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Foreword


Retail payment systems around the world have entered a period of dramatic change. The shift from paper to electronics, the emergence of new instruments and payments channels, the rise in nonbank participation, the change in risk profiles—all are elements of this new landscape. What role should central banks play in this new environment?

The shift toward electronic payments has been striking. In the United States, for example, a recent Federal Reserve study indicates that electronic payments are now more than two-thirds of all noncash payments. Accompanying—and in large part driving—these developments have been dramatic technological advances in computing power and telecommunications that have created economies of scale. Technology has also led to a growing complexity and interrelatedness in technical and business relationships, increasing vulnerability to “single points of failure.” Risk profiles accordingly have shifted, with new sources of systemic risk, operational risk, and fraud risk emerging. In addition, industry structures in retail payments are also evolving. One example is the increased concentration of credit, debit, and ATM markets. Another is the increased prominence of nonbanks in the payments system.

Central banks traditionally serve three roles in retail payment systems: operator, facilitator, and overseer. The level and type of involvement in these three roles varies widely across central banks, reflecting different histories, institutional structures, and legislative authorities. Almost all central banks play at least a minimal operational role by providing settlement services, and a majority also act in some capacity as facilitator or catalyst. A number of central banks also have explicit oversight responsibilities. Recognizing the significant changes under way in the payments industry, central banks around the world have been reevaluating their roles in their respective payment systems, and many have recently adopted or are considering new policies.

To explore the changing retail payments landscape and to assess implications for central bank payments policies, the Federal Reserve Bank of Kansas City sponsored an international payments conference titled, “The Changing Retail Payments Landscape: What Role for Central Banks?” on November 9 and 10, 2009. The conference brought together a distinguished group of industry executives, central bankers, and academics for an exchange of views and ideas. The first day of the conference presented an overview of the evolving retail payments landscape and examined the underlying economic forces driving change. How are various countries’ payments systems evolving over time? In what ways do consumer preferences affect industry outcomes? How do payments markets differ from other markets? The second day of the conference explored policy implications, with a focus on efficiency, integrity, and the role of central banks. Are payments markets sufficiently competitive and safe? If not, what private and public policies would be beneficial? What role should central banks play in the retail payments system of the future?

Though questions remain, we believe the conference contributed significantly to our understanding of retail payments developments and implications. This volume includes all of the presentations and papers from the conference as well as all commentary and general discussion. The exceptional knowledge and insight of participants are evident throughout the volume. We at the Federal Reserve Bank of Kansas City sincerely thank them all for their contributions to this very important topic.

A handwritten signature in black ink, reading "Thomas M. Hoenig". The signature is fluid and cursive, with a long horizontal line extending from the start of the name.

Thomas M. Hoenig
President and Chief Executive Officer
Federal Reserve Bank of Kansas City

Contributors

Catherine A. Allen, *Chairman and Chief Executive Officer,
The Santa Fe Group*

Ms. Allen serves as chairman, chief executive officer and founder of The Santa Fe Group, a strategic consulting company serving financial institutions and other critical infrastructure companies focused on risk management, payments evolution, innovation and public policy. She also serves on a number of public and private boards, including the boards of Stewart Title Guaranty Company; Singlepoint, LLC; and Hudson Partners, LLP, and she serves as chair of the Advisory Council for the National Foundation for Credit Counseling. She is the recipient of *U.S. Banker* magazine's Marion O. Sandler Lifetime Achievement Award.

Matthew Bennett, *Director of Economics,
Office of Fair Trading*

Mr. Bennett is director of economics in the Office of Fair Trading (OFT). He is responsible for economic analysis of OFT cases and developing OFT economic policy. He joined the OFT in 2008 from LECG, where he was a principal directing competition cases. Some of the larger cases he worked on during this time include the Aer Lingus/Ryan Air merger and the recent European Union Bananas Information Exchange case. Prior to that, he worked within the Chief Economists team at the UK communications regulator, Office of Communications.

Ron J. Berndsen, *Head of Oversight Department,
De Nederlandsche Bank*

Mr. Berndsen is head of the Oversight Department of De Nederlandsche Bank. He is a member of the cooperative oversight committees for Continuous Linked Settlement, Euroclear SA, LCH.Clearnet SA, LCH.Clearnet Group Ltd. and Society for Worldwide Interbank Financial Telecommunication. He is a member of the Eurosystem's Payment and Settlement Systems Committee and vice chairman of the Dutch Escalation Committee on Payments and Securities. He joined the central bank in 1992 and has held several management positions on the monetary and economic policy side of the Bank.

Gwenn Bézard, *Co-Founder and Research Director,
Aite Group*

Mr. Bézard is a co-founder and research director at Aite Group, LLC, managing the firm's banking and payments practice. His recent coverage has focused on the transformation of the payment industry, emerging products such as prepaid and decoupled debit cards, competition among card networks, the evolution of loyalty marketing, and the optimization of the online banking channel. He has more than a decade of experience in assisting financial institutions, payment companies and technology vendors with advisory services and strategy consulting. Prior to founding Aite Group, he was a senior analyst within Celent's banking group, where he helped build an industry-leading payments practice. Before that, he was with BNP Paribas, where he headed the research team of L'Atelier, the bank's technology and Internet intelligence division. He also served as an analyst at Plénitudes, a management consulting firm that specializes in change management. He has been published extensively.

Bouke H. J. Buitenkamp, *Overseer Retail Payments, Oversight Department,
De Nederlandsche Bank*

Mr. Buitenkamp is overseer on interbank and retail payment systems and products at De Nederlandsche Bank. From 2006 to 2008, he worked at the European Commission, Directorate General for Economic and Financial Affairs, where he produced economic forecasts for the Dutch economy and assessed compliance with the Stability and Growth Pact. He started working as a policy official at De Nederlandsche Bank in 1998. There, he advised the board of directors about international cyclical and price developments and monetary policy decisions.

Dennis W. Carlton, *Professor,
University of Chicago*

Mr. Carlton is the Katherine Dusak Miller professor of economics at the Booth Graduate School of Business at the University of Chicago. His teaching and research center on microeconomics, industrial organization and antitrust. He recently served as the deputy assistant attorney general in the Antitrust Division of the Department of Justice. He also served as the sole economist on the recent Antitrust Modernization Commission, a congressional commission that published its findings in 2007. He is associated with the economic consulting firm Compass Lexecon and has served as an expert in numerous domestic and foreign cases involving issues in antitrust, regulation and intellectual property in a range of industries. He has also served as a consultant for the Department of Justice and Federal Trade Commission, and as a special consultant to the Department of Justice in the revision of the 1992 Merger Guidelines and to the Federal Trade Commission on antitrust policy.

Sujit Chakravorti, *Senior Economist,
Federal Reserve Bank of Chicago*

Mr. Chakravorti is a senior economist in the financial markets group at the Federal Reserve Bank of Chicago. His research focuses on the economics of payments and the evolving structure of global financial markets. Previously, he served in a similar capacity in the Economic Research Department. Before joining the Federal Reserve Bank of Chicago, he worked at the Federal Reserve Bank of Dallas. Prior to joining the Federal Reserve System, he worked at KPMG as an international economist, advising foreign governments on financial market policy. In addition, he has been a visiting scholar at De Nederlandsche Bank, European University Institute, the International Monetary Fund and the University of Granada. He has published research in the *Antitrust Bulletin*, the *Journal of Money, Credit and Banking*, the *International Journal of Industrial Organization* and the *Review of Network Economics*.

Dickson Chu, *Vice President of Global Product and Experience,
PayPal*

Mr. Chu is vice president of global product and experience for PayPal. In this role, he leads product strategy, development and user experience design. Before joining PayPal, he was general manager for Yahoo! PayDirect, where he transformed the domestic peer-to-peer payments business into an international money transfer service in partnership with MoneyGram. Prior to Yahoo!, he was senior vice president of business innovation at innoVentry, a consumer financial services network of self-service kiosks that delivered check cashing, money transfer, money order and ATM functionality. He has held various senior management roles at companies such as I-Impact, Wells Fargo and CSC Index, where he ran the Hong Kong office.

Daniel Eckert, *Senior Vice President,
HSBC Card and Retail Services*

Mr. Eckert is senior vice president at HSBC Card and Retail Services. He founded and presently leads HSBC's Payment Products group, which includes HSBC's OptiPay decoupled debit and multifunction product offerings. He is also HSBC's head of Business Development, New Ventures and Market Intelligence for the North American Card organization. In addition, he leads HSBC's network management organization. Prior to HSBC, he led JPMorgan's Large Corporate Market Development and Strategy practice for consumer-related payments. Prior to JPMorgan, he was president and CEO of Vestient Capital Services, an early-stage investment banking concern focused on delivering a new line of financial products and services to the capital markets.

Mark Greene, *Chief Executive Officer,
FICO*

Mr. Greene was named chief executive officer of FICO, formerly known as Fair Isaac Corporation, in February 2007. He previously spent 12 years with IBM, where he was a leader in the company's financial services industry segment and software business groups. He served as vice president of sales for Financial Services. He also served as general manager of the Banking unit. Earlier, he focused on IBM's software strategy, co-founding the e-commerce initiative now known as WebSphere. Prior to IBM, he served in leadership roles with financial technology firms Technology Solutions Company, Berkeley Investment Technologies and Citi-corp. He began his career in 1982 at the Federal Reserve Board, where he served as economist and assistant director of research.

Tony Hayes, *Partner,
Oliver Wyman Financial Services*

Mr. Hayes is a partner in the Retail and Business Banking practice of Oliver Wyman Financial Services. Based in the firm's Boston office, he focuses on strategic initiatives related to payments and retail banking. He has worked with leading global organizations to develop payment strategies, enhance card programs, select networks and payment processors, and improve self-service banking. Additionally, he led the 2008 Debit Issuer Study, the definitive benchmarking study of the U.S. debit card market, and supported Oliver Wyman's recent report on European Advanced Payments. Prior to joining Oliver Wyman, he was the head of the Financial Services practice at Dove Consulting.

Dan Hesse, *Chief Executive Officer,
Sprint Nextel Corporation*

Mr. Hesse was named president and chief executive officer of Sprint Nextel Corporation in 2007. Prior to this appointment, he was the chairman and CEO of Embarq Corporation. From 2000 to 2004, he served as chairman, president and CEO of Terabeam Corporation. Previously, he spent 23 years at AT&T, where he served as president and CEO of AT&T Wireless Services. Prior AT&T assignments included leading the Online Services Group and president and CEO of AT&T Network Systems International. He has been named Wireless Industry "Person of the Year" by *RCR* magazine, "Executive of the Year" by *Wireless Business and Technology* magazine, "Most Influential Person in Mobile Technology" by *LAPTOP Magazine*, and he received *Wireless Week* magazine's Leadership Award. He is a recipient of the Ellis Island Medal of Honor, and he also serves on the board of directors of Clearwire Corporation, in which Sprint is the largest shareholder.

Thomas M. Hoenig, *President and Chief Executive Officer,
Federal Reserve Bank of Kansas City*

Mr. Hoenig is president and chief executive officer of the Federal Reserve Bank of Kansas City. The Bank is one of 12 regional Banks in the Federal Reserve System, with responsibilities that include participating in setting national monetary

policy, supervising and regulating commercial banks and bank holding companies, serving as the bank for the U.S. Government and for commercial banks, and providing other payments services to depository institutions. Mr. Hoenig directs Federal Reserve activities in the Tenth Federal Reserve District—an area that includes Colorado, Kansas, Nebraska, Oklahoma, Wyoming, the northern half of New Mexico, and the western third of Missouri. He is also a member of the Federal Reserve System's Open Market Committee, the key body with authority over monetary policy. He joined the Federal Reserve Bank in 1973 as an economist and was a senior officer in banking supervision during the banking crisis of the 1980s. He assumed the role of president on October 1, 1991.

Harry Leinonen, *Advisor to the Board, Financial Markets and Statistics,
Bank of Finland*

Mr. Leinonen is advisor to the board of the Bank of Finland and is in charge of payment and settlement system policy issues in the central bank. He is the Finnish representative on the payment and settlement system committee (PSSC) within the Eurosystem. He joined the Bank of Finland in 1996 as head of the payment system division and was appointed advisor to the board in 1999. Before that, he worked in the banking industry for 20 years with managerial positions connected to payment system activities, within both the savings banks' and cooperative banks' groups in Finland. For most of the past 30 years, he has been active in developing interbank payment systems and standards within the Finnish banking community. Mr. Leinonen has also been active on international payment system forums throughout his career and has published several articles and books on payment system issues.

Adam Levitin, *Professor,
Georgetown University Law Center*

Mr. Levitin is a professor specializing in bankruptcy and commercial law at Georgetown University. Before joining the Georgetown faculty, he practiced in the Business Finance and Restructuring Department of Weil, Gotshal & Manges, LLP, in New York. He also served as special counsel for mortgage affairs for the Congressional Oversight Panel and as law clerk to the Honorable Jane Richards Roth on the U.S. Court of Appeals for the Third Circuit. His research focuses on financial institutions and their role in the consumer and business credit economy, including credit card regulation, mortgage lending, identity theft, DIP financing and bankruptcy claims trading.

Paola Masi, *Head of Payments Division,
Bank of Italy*

Ms. Masi is the head of the Market Infrastructures and Retail Payment System Division in the Market and Payment System Oversight Department of the Bank of Italy. She has international working experiences with the European Commission, International Monetary Fund and Center for Central Banking Studies. She is one of the Italian members of the permanent Work Group on Oversight of the European

System of Central Banks, where she is directly involved in the risk analysis of payment infrastructures and in the development of the institutional framework for the oversight function. Presently, she is working on financial stability issues, such as systemic relevance of payment infrastructures, operational risk management and business continuity. For the Bank for International Settlements Committee on Payment Settlement Systems, she contributed to the Report on Payment System Interdependencies.

Richard Oliver, *Executive Vice President and Retail Payments Product Manager, Federal Reserve Bank of Atlanta*

Mr. Oliver is an executive vice president with the Federal Reserve Bank of Atlanta, serving as retail payments product manager for the Federal Reserve System. In this capacity, he has responsibility for managing the Fed's check and automated clearinghouse (ACH) businesses nationwide. Previously, he served as an administrator of the ACH and chair of the Federal Reserve's electronic payments implementation task force. Recently, he has held lead roles in the System's software development, automation services, electronic payments services, and business development and check software. He has also served as staff director for the Federal Reserve System's policy committee for financial services, where he was responsible for coordinating integrated financial management, project management and strategic planning for all of the Federal Reserve's payments services nationwide.

Joshua Peirez, *Group Executive, Innovative Platforms, Global Products and Solutions, MasterCard Worldwide*

Mr. Peirez is group executive of innovative platforms for MasterCard Worldwide. He leads the development and commercialization of payment product platforms that create a sustainable competitive advantage for MasterCard and its customers. Prior to assuming this new role, he was the chief payment system integrity officer for MasterCard. He previously served as group executive of global public policy and the associate general counsel for MasterCard. Before joining MasterCard in 2000, he was an associate at Clifford Chance Rogers and Wells focusing on anti-trust litigation. He is an active member of the American Corporate Counsel Association. He has served on the Federal Reserve Board's Consumer Advisory Council and the Board of Directors for the Westchester County Association.

Wiebe Ruttenberg, *Head of Market Integration Division, DG Payments and Market Infrastructure, European Central Bank*

Mr. Ruttenberg is head of the Market Integration Division, DG Payments and Market Infrastructure at the European Central Bank, a position he has held since 2006. He also chairs the Payment Systems Policy Working Group of the European System of Central Banks. He started his career in 1994 as a policy advisor to the Minister of Finance of the Netherlands on energy, telecom and infrastructure issues. In 1999, he joined De Nederlandsche Bank to become project secretary for the National 2002 Euro Changeover Project. After finalization of the euro changeover, he became head of the Payments Policy Department at De Nederlandsche Bank.

Marc Rysman, *Associate Professor of Economics,
Boston University*

Mr. Rysman is an associate professor in the Economics Department at Boston University. He teaches industrial organization, econometrics, antitrust and regulation. In addition to his teaching, he is currently an associate editor of the *International Journal of Industrial Organization* and the *RAND Journal*. He also is co-editor at the *Journal of Economics and Management Strategy*. His research focuses on industrial organization and competition, and the related issues of antitrust and regulation. He has won three grants from the Networks, Electronic Commerce, and Telecommunications Institute for his research, as well as four grants from the National Science Foundation.

Kylie Smith, *Manager, Payments Policy Department,
Reserve Bank of Australia*

Ms. Smith is a manager in the Payments Policy Department at the Reserve Bank of Australia. In this role, she contributes to the Bank's policy work on reform of the Australian retail payments system, particularly in relation to enhancing efficiency and competition. She also undertakes research on payment patterns and behavior. Prior to joining the Payments Policy Department, she worked in both the Economic Analysis and Economic Research Departments. She has co-authored a number of papers in the bank's Research Discussion Paper series, including on price incentives, consumer payment behavior, household wealth and business cycle volatility.

Bruce J. Summers, *Former Director,
Federal Reserve Information Technology*

Mr. Summers was a career official with the Federal Reserve until his retirement in 2007. He served as an economist, banking supervisor and chief financial officer, then most recently as director of the national organization responsible for the Fed's IT architecture and technology operations. He was also national product manager for Fedwire and the Fed's automated clearinghouse and deputy director at the Board of Governors for payment system policy and oversight of the banking services and IT activities of the 12 Federal Reserve Banks. He has contributed to the international initiatives of central banks through the Bank for International Settlements, and to the work of the International Monetary Fund and World Bank. His publications on banking and payment systems include the 1994 book, *The Payment System: Design, Management, and Supervision*, which remains in wide use. He now consults on payments systems and technology management.

James Van Dyke, *President,
Javelin Strategy and Research*

Mr. Van Dyke is founder and president of Javelin Strategy and Research, a provider of independent, quantitative research-based and industry-specific strategic direction for payments, financial services and risk/fraud initiatives. Previously, he worked

in the areas of financial services, payments, encryption and transactional commerce systems at companies ranging from startups to Hewlett-Packard. He has presented before the U.S. House of Representatives and at numerous industry events.

Stuart E. Weiner, *Vice President and Director of Payments System Research, Federal Reserve Bank of Kansas City*

In his position as the vice president and director of payments system research at the Federal Reserve Bank of Kansas City, Mr. Weiner advises Federal Reserve policymakers on payments system issues and monitors and evaluates industry trends. He served as technical expert for the International Monetary Fund and has participated in numerous domestic and international joint research projects. His areas of study include analyzing interchange issues in credit and debit card markets and exploring the role of nonbanks in the payments system. He has published articles and books in several subject areas, including payments systems, monetary policy and financial markets. His research has been cited in such publications as *The Wall Street Journal*, *The Economist*, *Newsweek*, *The New York Times* and *American Banker*.

Jonathan Williams, *Director of Strategic Development, Experian Payments*

Mr. Williams is director of strategic development for Experian Payments, the payment specialist division of the global information services company Experian. He joined Experian Payments after promoting strategies for growth as European business development manager for Fujitsu Telecom. He has held engineering and IT roles at British Aerospace (now BAE Systems), University of Cambridge and Advanced Telecommunications Modules Ltd., as well as senior marketing roles at Virata Corporation and Content Technologies (now Clearswift). He speaks at conferences worldwide and has addressed audiences at Sibos, EBA Day, International Payments, Association of Corporate Treasurers, and Payment Strategies and has recently contributed to the book *Future of Finance after SEPA*. He also contributes articles to publications, including the *Journal of Payments Strategy and Systems*, *Banking Technology*, and *SPEED*.

Conference Summary

Bruce J. Summers

I. INTRODUCTION

The Federal Reserve Bank of Kansas City held an international payments policy conference November 9-10, 2009, to address the role of the central bank in the retail payments system. Public policy authorities in many countries are taking up questions related to the effectiveness, safety and efficiency of their retail payments systems, and more often than not the central bank plays a prominent role in addressing these questions. Central banks around the world are establishing public policy goals for the retail payments system to promote the attainment of these goals, and they are coordinating and cooperating with other public authorities concerned with achievement of these goals. How central banks go about this is of interest and concern to all the major stakeholders in the retail payments system, including individual and business users of retail payments services, the companies that supply these services, and other governmental authorities that share this public policy interest, including legislative bodies.

Strong public policy interest in the retail payments system is explained by dramatic changes in methods of payment and by prominence of the consumer sector in the overall functioning of a modern economy. In developed economies, electronic payments are quickly displacing more traditional instruments such as checks and cash. In developing economies where personal income is rising rapidly and larger segments of the population are joining the ranks of middle-class consumers, electronic payments are often the initial substitute for cash. In both developed and developing economies, the rapid advances in methods of payment are enabled by non-financial institutions that have not traditionally fallen under financial sector regulation. While end users of payments services are deriving many benefits from the advances taking place in retail payments, a number of issues abound, particularly surrounding charges levied for payments services, the security

of funds used for payment, and the privacy of consumer information (the so-called “transactional identity”).

It is against this background that the Kansas City Fed selected a conference theme that probes the key public policy issues, including the appropriate role for the central bank. The conference took up five broad issues: the seemingly uneven development of retail payments systems worldwide; factors determining the consumer’s choice of method of payment, with an emphasis on pricing; efficiency; safety and integrity; and alternative ways the central bank might play its public policy role, either as an operator or overseer in retail payments. These issues were probed by researchers and practitioners with deep and broad experience in retail payments, who represented both user and service provider perspectives. Their thinking was examined, challenged, and supplemented by approximately 100 participants who engaged actively in the discussions. Five main insights with public policy implications emerged at the conference.

1. *Public policy authorities should give prominent attention to retail payments systems.* The scale and complexity of retail payments system operations, combined with the importance of consumers in modern-day economies, create an imperative that these systems perform well. While efficiency is important, safety and fairness are crucial. Efficient systems that conserve real resources, minimize time demands on consumers and merchants, and increase convenience can contribute billions of dollars in savings. Systems that are safe to use and protect against fraud and identity theft increase confidence and minimize the potential of big economic disruptions that a general loss of confidence could present. Similarly, systems that treat their participants fairly will encourage adoption and use of modern payment methods. Widespread attention in the news to shortcomings in efficiency, safety, and fairness are warning signs that retail payments are not receiving appropriate public policy scrutiny.

2. *Retail payments system stakeholders with market power tend to use the power to their advantage.* Conversations involving stakeholders in retail payments networks reflect diverse concerns, and a lack of transparency in and shared understanding of how networks are managed and priced. These conversations often reveal a general lack of trust that all participants are being treated fairly, and evidence that network operators allocate costs and restrict merchant behaviors in ways that maximize operators’ revenues. These perceptions are increasingly validated by regulatory interventions in countries which seek to cap network fees, loosen restrictions on merchant pass through of network charges, and contemplate cost-based limits on merchants’ ability to pass along network charges. There is no clear self-regulatory model that adequately represents the diverse stakeholder interests in payment network rule making. Moreover, there is concern that the ultimate beneficiaries of payments system services, the end consumers, are not adequately represented.

3. *Government oversight and regulation of retail payments systems is on the rise, and central banks generally play a leading, but not necessarily exclusive, role.* Many central banks worldwide have undertaken, or are in the process of undertaking, formal oversight of retail payments systems. They are increasingly active in regulating pricing of payment network services, ensuring that access rules allow entry by new service providers (including nonbank service providers), requiring that minimum security standards be followed, and collecting and publishing data that allow the general public to understand how retail payments systems function. Central bank overseers are joined by competition authorities concerned about fair trade, financial institution supervisors concerned about safety and soundness and money laundering, and consumer protection agencies concerned about the rights of consumers. Accordingly, a necessary condition for successful central bank oversight is cooperation with the many public policy institutions having an interest in retail payments system issues. Because retail markets and payments systems operate across borders, this cooperation must be present at national and international levels.

4. *Central bank oversight may be an effective way to achieve public policy goals for the retail payments system.* The public policy issues in the retail payments system concern a broad spectrum of participants, from back-end suppliers of infrastructure services to individual and business consumers of payment services offered by banks and nonbank institutions. These issues can be extremely complex, and their resolution may require combinations of behavioral adaptations, some of which can be motivated by market incentives and others by regulated prescriptive, or proscribed, actions. Effective public policy depends on oversight flexibility, directness, and agility, ideally supported by legal mandates and powers. In exercising oversight, central banks do not and are not likely to have conclusive and unambiguous guidance from economic theory and empirical research. Accordingly, central banks would be prudent to tread carefully when they intervene to influence retail payments markets; and their interventions, at least for now, should focus on removing the barriers that prevent retail payments system participants from discovering and passing on the costs they bear. Public support among stakeholders for an active oversight role by the central bank is broad-based, although agreement with public policy actions is nonetheless likely to vary depending on a particular participant's position as a "winner" or "loser."

5. *The Federal Reserve Board does not currently play an active oversight role in retail payments.* Among central banks in major market economies, the Federal Reserve is an outlier in playing only a minimal role in overseeing the retail payments system. And while historically the Federal Reserve has influenced retail payments system policy through the active participation of the Federal Reserve Banks in check and ACH operations, and oversight of this operational participation by the Federal Reserve Board, these forms of payment are becoming relatively less important in the U.S. economy. As a consequence, the Federal Reserve's influence

over public policy is diminishing, especially as modern payment methods come to predominate and as the number and type of suppliers of retail payments services increases. Although there is some desire among certain retail payments system stakeholders for the Federal Reserve to play a proactive oversight role, these stakeholders will need to make a compelling case for the Federal Reserve to become actively engaged as an overseer.

The following sections of the summary attempt to capture the principal themes presented at the conference and to show how these themes were interpreted and modified in the discussions. The discussions were energetic, thoughtful, and practical, and the conference outcomes provide a number of insights that are likely to influence the thinking of policy makers and market participants.

II. KEYNOTE ADDRESS

The conference began with a luncheon at which Federal Reserve Bank of Kansas City President Tom Hoenig introduced the guest speaker, Sprint Nextel Corporation CEO Dan Hesse. In his introductory remarks, Hoenig highlighted the significant change that has taken place in retail payments in the two years since the Kansas City Fed's last payments conference. Advances in telecommunications and how they enable new retail payments services are at the forefront of this change.

In his prepared remarks, Hesse indicated that "telephone companies" are now in the business of moving data and providing data-intensive services. The data services aspect of the business extends to all customer needs (including financial and banking services) with the exception of voice communications. The prominent role of telecommunications firms in data services is a natural consequence of the cultural change accompanying acceptance and growth of the Internet. Practically speaking, the Internet culture creates demand for "anywhere, anytime" access to data and data-intensive services. Cell phones, now evolved into smart phones, are at the core of modern consumers' life styles, and "Americans and their mobile devices are becoming inseparable."

The cycle of technology-driven change in data services and consumer habits is a consequence of upgrades in wireless capabilities. Third generation (3G) and emerging 4G wireless, together with Wi-Fi, are enabling mobile banking as a result of improved capacity, reliability, and security. In this connection, Hesse said that mobile banking, if properly managed, represents a big improvement in security over traditional payment technologies such as plastic cards: People recognize virtually immediately if their mobile device goes missing; telecommunications companies only develop applications that provide customers complete confidence that their information is highly secure; the highest level of advanced encryption is used; and user and device authentication is much more sophisticated than that used with plastic cards. As a result of these improvements over current technologies, the cell phone is positioned to replace cards using Near Field Communications (NFC). In short, he said that the mobile banking is a logical service to add to the package of services provided on consumers' "Swiss Army knife" cell phones.

Hesse said that while only 4 percent of banks and credit unions in the United States offer mobile banking services today, the proportion is expected to expand to 50 percent within a couple of years. He projected that 53 million U.S. consumers would use mobile banking services by 2013. Hesse also said that 25 percent of those using mobile banking today access their financial accounts while running errands, 9 percent do so while on vacation, and 8 percent do so while on business travel. There is an extended supply chain for mobile banking consisting of telecommunications carriers, smart phone manufacturers, suppliers of and merchants using readers and terminals, banks, and card companies. Widespread propagation of mobile banking will require significant up-front investment, and a strong business case that provides an attractive return on investment (ROI) for each element of the supply chain is a necessary condition for success.

Questions following Hesse's prepared remarks reflected interest in better understanding the technical and business limitations to hosting multiple banking applications on cell phones. Hesse indicated that there are no technical impediments, although technical standards are essential especially for point of sale (POS) terminals, as retailers are not going to support multiple different terminals at the point of sale. In response to a concern that the telecommunication and banking industry business models for mobile banking do not yet appear to be converging, Hesse indicated that this is indeed a hard question and reiterated that every player needs a sufficient ROI if mobile banking is to succeed. Another questioner observed that telecommunications providers accept limited or no liability for losses resulting from fraud or service interruption related to dropped calls, commented that this standard of service is not compatible with the much higher banking standard, and then asked how the telecommunications industry will engage in a public/private partnership that allocates responsibilities for securing financial transactions and bearing the cost of fraud. Hesse's response emphasized the strong security used in the telecommunications industry, and he added that he is not aware of any failure on the part of the telecommunications industry to "sit at the table" where these matters are discussed.

III. THE CHANGING RETAIL PAYMENTS LANDSCAPE: AN OVERVIEW

In his paper "The Changing Retail Payments Landscape: An Overview," Harry Leinonen of the Bank of Finland provided not only a broad perspective on change, but also concrete and specific details to help with a practical understanding of retail payments system trends. His main thesis is that retail payments now becoming available are lower in cost, more secure, and offer delivery approaching real-time. Moreover, new types of payments are easier to use, in part because they are delivered through devices on which consumers already rely for a variety of information services, notably, the cell phone.

At the same time, however, Leinonen indicated the improvements in retail payments services are unevenly distributed around the world. He presented data for a group of about 17 European and North American countries that suggest a

bell curve distribution of electronic payment sophistication and use, with about four countries that he called “eRun-aways” and another similar-sized group of laggard outliers. While the eRun-aways are far along in the transition from reliance on ATMs to intensive use of POS, the outliers are still making the transition from branch to ATM banking. The reason for this uneven development is an open question, especially as telecommunications services are developing more rapidly than payment services, and Leinonen attempted to explain the uneven development.

In Leinonen’s reasoning, retail payments system development is promoted by increases in efficiency that enable and/or force services providers to create and pass on tangible benefits to consumers. He posits six “efficiency dimensions”: cost efficiency; integration efficiency; competition efficiency; development efficiency; security efficiency; and regulatory efficiency. These efficiency dimensions are loosely associated and range from real improvements in how retail payments services are produced (cost efficiency) to regulatory interventions that require payment service suppliers to follow less monopolistic pricing practices (regulatory efficiency). He explained each efficiency in detail.

Cost efficiency was in the first instance driven by the continued increases in computer processing power and telecommunications capacity that also drive improvements in other data-intensive services. But the extent to which the public adopts and keeps up with these improved capabilities (which as Rysman later indicated can be a somewhat complex matter affected by country demographics and other factors) is also relevant. Widespread use of technology and the presence of messaging standards were highlighted as necessary conditions for true system-wide efficiency gains, as they support straight-through processing of payments without manual intervention, and provide customer convenience in the form of instantaneous processing of payments at any time. Leinonen attached special importance to the ISO 20022 standard for payments and noted that it is the basis for SEPA payments in the Eurozone. He also mentioned outsourcing and consolidation as natural outcomes of a business in which scale economies dominate, and these developments should not be resisted. Overall, though, Leinonen suggested that there is a good deal lacking with respect to cost efficiency: Industry is slower than it needs to be in taking up opportunities that exist, and an external motivating force may be necessary to drive further cost efficiency. He also cautioned that the benefits to individuals and the economy as a whole require more than cost efficiency, which needs to be balanced against service levels.

Integration efficiency was explained in terms of deep penetration of digital information standards into the payment applications used by businesses and individuals across all providers of payments services. Examples included bank account numbers, reference numbers for tracking invoices, message formats for credit and debit transfers, and card payments. Leinonen indicated that the costs incurred by users of payment services are much greater than the resource costs incurred by the providers themselves; this is especially true with respect to time- and process-specific investments attributable to payers and payees who need to

interpret the payment-related information they exchange. Pushing standards down into the actual business processes used by consumers will allow them to shed the integration costs they currently bear. Moreover, easy integration of payments and payment-related information across providers implies it is easier for consumers to move their service provider relationships, as conversion to different business process standards is no longer necessary. A chief example is the bank account number. If all bank account numbers followed the same technical formats and rules (for example, the International Bank Account Number, or IBAN), then customers would not face the expense of converting numbers when switching service providers. It was noted that there are important parallels to telephone number portability.

Competition efficiency, or the lack thereof, was cited by Leinonen as the main factor creating barriers to payments system development. Scale and network economies lead to natural monopolies whose governance, if not motivated by public policy goals, leads to the establishment of barriers to entry and limitations on consumer choice. The primary barriers that arise in payments networks are the use of proprietary (as opposed to open) standards, and hidden pricing that shields consumers from the real costs of the services they select. Leinonen argued for control over the monopolies and for public policies that foster the use of open standards and explicit, cost-based pricing of services. One of the most pro-competitive standards that could be implemented is one for bank account numbers which would let the consumer switch banking relationships at minimum cost (just as portability in telephone numbers does so for communications services). In addition, Leinonen argued that price theory which justifies two-sided markets and internalization of costs by producers and merchant-users, using internal pricing schemes such as interchange fees for cards, is inherently protectionist and shields the producers of payment services from the discipline of the market.

Leinonen described the “zero-sum cannibalization” dilemma that underlies his notion of development efficiency. The dilemma arises because payments volumes are essentially fixed, growing only with underlying economic activity and thereby creating incentives for legacy producers of payment services to avoid investments in improved payments that add to costs but not to revenues. He indicated that intervention by public authorities to change incentives can be a strong development driver. Such incentives might include requirements that pricing be more transparent, with limitations on float and value-days.

Security efficiency was described as the balance represented by electronic payment security that gives consumers confidence that their transactions are protected, set against the cost of achieving this protection. Again, lack of standardization is an issue in that it results in proprietary solutions limiting the ability of consumers to switch providers. In addition, however, globally increased reliance on the Internet opens electronic payments to criminality worldwide and affords relatively good protection against being caught. Leinonen presented his view of the baseline security needed for electronic payments: multifactor authentication and a common “eID” useable across networks; his security vision was based on the technology

capabilities used by telecommunications providers and functions through the SIM card in mobile phones. He said that universal security solutions are slow to develop and represent a public policy problem that warrants attention by authorities.

Regulatory efficiency was described as the result of active interventions by public policy authorities that increase understanding of issues through research, leadership by example in best practice management of government payments, recommendations to the private sector, and if necessary regulations that prescribe specific behaviors and outcomes. But, Leinonen noted that activism by regulatory authorities can be a double-edged sword, inhibiting payments system development if not done right. Specific examples of positive interventions include government use of e-invoicing in the Nordic countries, regulatory requirements governing processing speed in Europe and Norway, and regulation of interchange fees in Europe and Australia. Leinonen also postulated that national central banks contribute to the slow adoption of electronic payments because they continue to supply cash in a manner which protects the public from the real cost of using this means of payment. While politically difficult, he said that making cash costs transparent is an effective policy for promoting more efficient payments.

In his discussion of the paper, Tony Hayes of Oliver Wyman summarized the efficiency arguments and provided recent examples to illustrate some points of difference with Leinonen. Hayes basically agreed with Leinonen on the cost and security efficiency propositions. He provided somewhat different views, however, on the other efficiency categories.

Hayes stated that there is now widespread integration of new payment services and core banking functions, ranging from information services that help customers keep track of their current account balances, to security alerts that help protect funds on account from fraudulent access. Moreover, banks are increasingly making it easier to access their current account balances using a variety of electronic payment methods, with recent breakthroughs involving access through smart phones. He cautioned, however, that there are still significant barriers to widespread use of mobile payments using smart phones, specifically smart phones that provide “tap-and-go” functionality based on NFC technology. The issues include a chicken-and-egg problem represented by consumers who want numerous merchants, and merchants who want numerous customers, before either will make the move; a sustainable business model that generates enough returns to compensate additional links in the supply chain such as carriers; and a compelling service that moves consumers away from traditional card payment methods. Raising another point of difference with Leinonen, Hayes held out the possibility that innovation does stimulate new demand and growth in electronic payments on a per capita basis, which means that successful innovation can lead to a sustainable business model.

Acknowledging the uneven development of electronic payment alternatives, especially mobile payments, Hayes focused, as did Leinonen, on technical barriers and costs that make switching difficult. Like Leinonen, Hayes pointed to

regulation of the communications industry, where the Federal Communications Commission facilitates consumer movement among providers by requiring mobile operators to support portability in telephone numbers, and where customers can easily transfer their telephone numbers and address books to a new provider. In addition, he added that a long-standing and popular Giro payment method (“credit push”) used in Europe and elsewhere faces the difficulty that payees need to disclose their bank account numbers as a condition to receiving “good funds” credit transfers.

Perhaps his greatest point of disagreement with Leinonen was on the extent of competition. Hayes suggested that competition should be evaluated not only on the back-end network operator level, but on the front-end payment product level. He presented data to illustrate intense competition at the product level. In addition, he cited examples to illustrate that innovation has resulted in both winners and losers, suggesting a very competitive setting. With regard to the back-end networks, and especially telecommunications networks that support mobile payments, Hayes indicated that natural monopoly is a fact of life and that there may be a role for regulation to prevent cross-subsidization. This is especially so inasmuch as it is very difficult for innovators on the front-end to recreate the capital-intensive network platforms, and that back-end providers are therefore in a position to determine just how readily entry can be gained.

Like Leinonen, Hayes said that active regulation can either speed up the rate of development in electronic payments, or slow it down if poorly conceived and implemented. Overall, however, he was more circumspect about the potential beneficial outcomes of regulatory interventions. His principal example of successful regulatory intervention was the Federal Reserve’s Check 21 initiative. He said that the Fed’s card regulations of late have also been positive, especially relaxation of requirements to provide receipts for small payments. But these successful regulatory interventions addressed relatively straightforward problems with well established and well understood payment instruments. He expressed concern about unintended consequences in more complex areas including interchange fees and card-related overdraft service fees.

The general discussion revolved in part around the respective importance of back-end infrastructure and front-end services as determinants of payments system efficiency. It was noted that new front-end services like PayPal add value to existing network infrastructures through attractive consumer services, but also that all of the infrastructures are interconnected in terms of the movement of money that consumers initiate through their bank and commercial transactions. In responding to a request that they identify the most innovative markets for payment services, Leinonen and Hayes took very different positions. Hayes emphasized that a variety of choice is a good indicator of an efficient and responsive market and that the United States and Asia are among the most innovative markets. He noted that government intervention to encourage if not direct innovation away from cash to electronic payments, as in Singapore, may be one of the most direct paths for

innovation. In contrast, Leinonen said that it is most important to achieve efficiency in the infrastructure, especially by avoiding unnecessary duplication, and that payment instruments can only offer consumers a limited number of alternative forms of payment.

Participants asked about and gave some alternative views on the importance of price transparency as a factor behind innovation and change. For example, it was noted that merchants do not break out categories of production expense (such as rent or overhead) other than payments which might be surcharged and suggested that payments should perhaps be treated no differently. The alternative view presented was that payment methods are special in part because of the implicit subsidies that exist for cash versus electronic payments, Leinonen arguing that the most important incentive is one which makes the high cost of cash more transparent. In this connection, however, participants noted that surcharging can have the effect of discouraging electronic payments compared to cash payments. A participant pointed to the Interac payment network in Canada, which appears to represent a good balance of cost sharing among all parties, including merchants, with no interchange fee charged. The discussion highlighted factors that have made this payment network successful in Canada, including the concentrated banking structure, the not-for-profit nature of the network, the form of explicit price regulation, and direct involvement by the competition authority which has given a waiver allowing the banks to coordinate their participation.

Finally, the participants amplified two specific topics covered in the presentations. With regard to the size and growth in the number of payments, it was noted that volume of payments is correlated with gross domestic product growth, so that the “size of the pie” is getting bigger thereby providing a basis for revenue growth in the payments industry. In addition, it was noted that the ANSI X9 standards group is working on adoption of IBAN as the standard for the U.S. market, with adoption possible in 2010. In connection with this discussion, Leinonen re-emphasized the importance of governmental intervention to make such standards binding in the marketplace.

IV. DETERMINANTS OF CONSUMER PAYMENTS USAGE

Marc Rysman of Boston University provided highlights of his paper “Consumer Payment Choice: Measurement Topics,” which summarizes the theoretical and especially empirical work attempting to explain choice of payment method, principally for U.S. consumers. He described two types of theoretical approaches to explain choice of payment: “classical” explanations, following traditional economics, and “behavioral” or “bounded rationality” explanations that offer additional and harder to measure motives. The determinants of payment choice posited by traditional economics include demographics of the customer base, explicit or pecuniary costs and benefits, and implicit or non-pecuniary costs including convenience of use. Less obvious but potentially powerful behavioral explanations

account for consumers' mental calculations in making payment decisions which involve hard to measure factors such as the satisfaction resulting from immediate versus deferred payment. But, these behavioral explanations have, to date, been validated only in a laboratory setting, and Rysman suggested that there is little near-term prospect for useful field evidence to be forthcoming.

Rysman described the academic and private sector research into payment choice as "a small cottage industry" which has resulted in numerous but not systematically related empirical results. Moreover, these results are often not available for public scrutiny or use, thus making it hard to access the information which would help in devising business strategy and public policy. Almost all of the empirical studies are cross-sectional, or "point-in-time." Rysman lamented the general absence of time-series data that would systemically trace changes in patterns of choice. He also noted that measuring behavioral factors is much more difficult than measuring traditional factors.

The cross-sectional studies of general payment choice are based on consumer surveys, conducted by Internet, telephone, or mail, and sometimes through panels of consumers. The most valuable data is that which is collected on actual transactions that people conduct, and these data can be obtained either through panels (Visa) or by relying on passive collection of electronic data for people who allow access to their financial transaction records (LightSpeed Research). Rysman pointed to a few case studies that attempt to explain the reasons consumers decide to make and/or change the method of payment, an example being changes from cash to electronic payments at the toll both on the Illinois highway system. While Rysman was concerned primarily with studies of the U.S. payment system, he did refer to data collection efforts outside the United States, including in Germany, France, and other European nations.

Rysman indicated that statistical data patterns point to a strong influence of convenience and transaction size in explaining choice of payment method. His summary of the available data noted that consumers find electronic payments of various types and cash "easy to use" compared to checks. Contrary to what is generally thought to be true, the data do not indicate that consumers who choose to use debit payment instruments do so because of a desire for more "control" over financial resources. Also somewhat unexpected are empirical results showing that consumers do not see much difference in the relative security of signature versus PIN debit, challenging general notions that security is a chief criterion explaining consumer choice. The data also indicate that cash is the overwhelming payment choice for transactions under \$10, and that use of cash drops off dramatically for transactions above about \$25. As the preference for cash declines as transaction value increases, electronic debits become the payment method of choice for mid-range transaction values of about \$25-50, above which credit use rises significantly. The principal reason for use of debit cards is convenience, while inability to track use of the cards is the principal reason they are not preferred.

In interpreting the data results that focus on use of credit and debit cards, Rysman indicated that they are strong substitutes for cash. He also indicated that consumers who carry large and therefore costly credit card balances will tend to use lower-cost debit cards more. Regarding credit cards, while reward programs are important in providing pecuniary benefits, the data show that removing reward incentives does not induce a large shift of consumers to other credit cards or payment types. Rysman indicated that his own research using Visa data shows that consumers tend to hold multiple credit cards but use only one of these cards at a time for their transactions—so-called single-homing. This practice may be explained by a desire to take advantage of the features of the card program that provide the greatest benefits, while preserving the flexibility to switch cards if necessary. Rysman's research also shows a significant statistical correlation between the cards that consumers use and the number of merchants that accept those cards.

In reviewing the regression results of the various studies, Rysman indicated that only age and income level give strong results explaining adoption of electronic payments. Age as a strong predictor of electronic payment usage should be interpreted as a function of overall adaptation to technology. Education is not a strong predictor of payment choice.

Rysman's final comments focused on the factors that might explain why consumers would switch from one payment type to another. Here he emphasized the drawbacks of cross-sectional studies. One of the challenges in empirical assessments of switching is that households rarely switch. He said that case studies can overcome this problem and pointed to the results of a study by Amromin, Jankowski and Porter of toll payments when the Illinois Toll Highway Authority doubled the toll at most locations from 40 to 80 cents for cash users but left the toll at 40 cents for users of the new I-PASS payment method, which uses RFID technology to allow payments to be made "on the fly." Rysman interpreted this study as supporting the idea that even a small surcharge that is clearly, immediately and explicitly tied to method of payment will cause people to switch quickly. Accordingly, explicit transaction cost is a powerful influence.

Kylie Smith of the Reserve Bank of Australia (RBA) furthered the discussion of measurement by describing the detailed results of a 2007 study of consumer patterns of payment behavior. In doing so, she illustrated the potential research contribution that a central bank can make in exercising its payment system oversight responsibilities. The RBA captured information over a two week period relating to value and type of merchant for actual transactions across a range of payment types for a sample of 662 consumers, amounting to 17,000 transactions. These data could be analyzed in relation to demographic factors such as age and income level, and variables potentially explaining patterns of use including convenience, cost and loyalty programs. These data results are especially interesting in the case of Australia, where the RBA exercised its oversight authority in 2003 to force reductions in card interchange fees and allow merchants to levy surcharges.

Smith showed data on patterns of payment use that are similar to those reviewed by Rysman for the United States. In particular, cash is strongly preferred for small payments, and its use falls off dramatically for transactions over about \$50. Also, a large proportion of small businesses in Australia accept credit cards and EFTPOS payments, while a smaller yet still significant proportion also accept Internet payments and debit cards. She also presented RBA survey results showing the time consumed (in seconds per transactions) by making credit card, EFTPOS, cash, and check payments at the point of sale, with check being the most time-consuming, followed by credit card payments.

As background, Smith indicated that merchants, particularly larger merchants, have begun to levy surcharges on the use of credit cards following the RBA's actions. Other related increases in explicit fees have been instituted in response to the reduction in interchange revenue, including higher fees for use of "foreign" ATMs. Consumer behavior has shifted accordingly, as reflected in material declines in foreign ATM use, offset by increased reliance on "own" ATM networks. In general, more-explicit costs faced by consumers have led to observable changes in choice of payment method.

The general discussion underscored some of the unexpected results of the research on U.S. payment patterns Rysman discussed, in particular the apparent lack of significance of security as an important factor motivating consumer choice. One factor mentioned in explanation was the influence of consumer protection laws that shield consumers from most of the direct monetary losses when fraud takes place. Similarly, the insignificance of education as an explanatory variable was questioned. In response to another question about the empirical findings, Rysman explained that electronic debit might be reported by respondents as a less convenient form of payment than credit cards because of the mental calculations consumers make to determine whether their account balances are sufficient to cover a payment when a debit card is used.

With regard to the Australian experience, caution was urged in interpreting the surcharge data, because whereas 20 to 30 percent of merchants are surcharging, their surcharged transactions account for only about 5 percent of total transactions. Asked whether the RBA has any evidence whether variation in surcharges have led to consumer sorting across merchants, Smith indicated that this is not yet known, but that some evidence is available for the Dutch market. The discussion revealed that in the Dutch market only debit cards and cash are accepted at the point of sale, and that one out of five merchants surcharge for debit card payments, often charging up to four times the actual amount of the merchant service fee; Smith noted that Australian merchants who are surcharging seem to be charging the merchant service fee. The experience in the Netherlands has raised concerns that surcharging is incenting consumers to use cash rather than electronic payments, and that as a consequence the Dutch central bank has begun a campaign to encourage merchants not to surcharge and consumers to use electronic payments, with positive initial

results. A participant noted that surcharges are not levied for debit card payments in the United States and that this form of payment is growing rapidly.

The discussion also led to questions about the actual benefits to consumers from the RBA's interventions in the payments system, in that consumers evidently are now paying a variety of explicit fees which has increased their cost of making payments. Participants seemed to agree that overall explicit and transparent fees for consumer payment services have the potential to increase competition and provide incentives for improvements in efficiency. But the conversations also revealed concerns that if left to themselves as currently structured, the markets could shift cost burdens too heavily toward consumers and inadvertently provide incentives for using cash rather than electronic payments, especially for smaller-value payments at the point of sale.

V. ECONOMICS OF PAYMENTS MARKETS

Sujit Chakravorti presented findings of his paper "Externalities in Payment Card Networks: Theory and Evidence." Like Rysman, he summarized and assessed an extensive literature. He also assessed the practical experiences of several countries where the public authorities have intervened to change pricing practices for payment cards. The public policy issues Chakravorti addressed included no-surcharge rules, interchange fees and honor-all-card rules.

Chakravorti posed three main questions that confront public policy makers in the payment card markets: What is the socially optimal structure of fees; will competition improve outcomes; and what form should regulation take? These are high-profile questions because of the visibly contentious arguments among the merchants, banks, and card networks about the rules governing their participation, and also because of the card networks' high profitability and market valuation as evidenced by recent IPOs. He noted that the academic literature addressed the questions principally from the standpoint of pricing theory pertaining to "two-sided markets," ignoring user fees which prevail in more traditional markets for goods and services. A two-sided market is one in which there are two types of distinct end users who share benefits (in this case consumers and merchants), the success of the market depends on participation by each, and they must share the price of the payment service.

Chakravorti's remarks underscored that the price structure issues and theory are extremely complicated for two-sided markets. Not surprisingly as a consequence, there is no academic or policy consensus as to what constitutes an efficient fee structure. Moreover, there is conflicting theoretical information as to whether more competition in these types of markets is likely to result in an allocation of costs that improves public benefits, especially if merchants compete for customers based on the attractiveness of the payment options they provide. The evidence from Australia, where the RBA mandated reductions in interchange fees for Visa and MasterCard, shows that consumers end up facing more explicit price signals: Card fees increased and rewards decreased. While the RBA sees this as a positive

development, some argue that consumers are on net worse off as a result. The Bank of Mexico used moral suasion to force a reduction in interchange fees in order to encourage merchant participation and thereby boost use of cards. At the same time, the Mexican government subsidized the installation of POS terminals. Together, these two initiatives have achieved the intended result of increasing the use of cards for payments. Finally, Chakravorti cited the experience of Spain, where starting in 1999 the antitrust authority required a reduction in interchange fees to the level of actual network operating and fraud costs. Early analysis suggests a positive public policy result.

Actual public policy experiences were discussed that shed considerable light on the practicality of the theoretical literature. With respect to no-surcharge policies, Chakravorti pointed to the RBA's 2002 removal of no-surcharge restrictions, which was motivated by concerns that improper price incentives were dampening consumer use of debit cards. In this case, and as noted by Smith in the previous session, a significant portion of merchants instituted surcharges. The RBA observed that if one network's card is surcharged more than another network's, then consumers dramatically reduce their use of the card with the higher surcharge. In addition, the RBA discovered that so-called convenience users of credit cards did not shift to use of debit cards. Also, the RBA is contending with the unexpected result that merchants are adding surcharges that significantly exceed their costs of accepting payment cards, leading to consideration of further regulations to cap the amount of surcharges. High merchant surcharges of up to four times the cost of accepting card payments is also evident in the Netherlands. Moreover, the experience in the Netherlands is that debit card surcharges are widely assessed for purchases below 10 Euro, suggesting that merchants are unwilling to pay the fixed cost of accepting debit payments for small purchases.

With regard to honor-all-cards, a lawsuit in the United States resulted in the decoupling of acceptance of credit and debit cards over the MasterCard and Visa networks. In this case, even though few merchants have declined one type of card and accepted the other, Chakravorti indicated that merchants may have gained bargaining power for negotiating fees.

In his comments, Dennis Carlton of the University of Chicago reinforced some of the main points made by Chakravorti. In particular, the economic theory of pricing in two-sided markets is complex and moreover provides no clear answers (notwithstanding that the analysis has a history reaching back almost two decades). He indicated, however, that it is possible to adopt some reasonable assumptions concerning the effects of active public policies relating to interchange fees and no-surcharge rules. In particular, Carlton asserted that even if surcharges are allowed but not used, interchange fees will automatically be constrained. Moreover, any possible harm resulting from failure to actually levy surcharges would be limited to cash customers. He also indicated that allowing surcharges mitigates public policy concerns about interchange fees because of third-party effects.

Carlton offered concrete advice to those developing public policy in the payment card markets. He stated that one should be wary of complicated models and should rely more heavily on empirical evidence to understand consumer behavior and reactions to policy interventions. Especially in light of the imperfections in theory and the limited formal empirical studies available, Carlton said that the development of public policy should rely most heavily on the growing body of regulatory experience from around the world.

The general discussion began with a question as to whether three- or four-party arrangements are theoretically superior card network models. The literature does not provide a direct answer to this question, and experience shows that four-party arrangements have “staying power,” notwithstanding the emergence of alternative constructs. Another question sought a logical explanation for surcharges that are clearly higher than merchant costs when no-surcharge rules are removed, referencing the experience in the UK Chakravorti indicated that such outcomes are not expected under conditions of perfect competition, and Carlton said that there is no general answer and that regulation of surcharges should be avoided to the maximum extent possible, giving the market the opportunity to achieve the right competitive balance. In this connection, a participant referred to experience in New Zealand, where recent legislation allows surcharges but also permits negotiation of surcharge and interchange trade-offs between merchants and card companies in four-party networks. The early experience is that fees are collapsing rapidly, following negotiations.

The concern was also expressed from an European Central Bank (ECB) perspective that the theoretical and empirical research may be getting in the way of a more down-to-earth approach to making public policy, motivated by more straightforward goals. The principal goal is to get payments done in a manner that reduces reliance on cash. In this general connection, high interchange fees and schemes that encourage costly expenditures on rewards programs tend to work against encouragement of efficient outcomes by masking real costs from consumers. Carlton noted that extreme positions for or against interchange fees are problematic, and that arguments that such fees are necessary to provide incentives for the rapid adoption of noncash payments are likely to be too strong in light of evidence from Europe, where the absence of interchange fees has not held back the adoption of noncash payments.

VI. IMPLICATIONS OF THE CHANGING PAYMENTS LANDSCAPE FOR COMPETITION AND EFFICIENCY OF RETAIL PAYMENTS SYSTEMS

Issues of competition and efficiency were taken up by a panel chaired by Wiebe Ruttenberg of the ECB; participants included Matthew Bennett of the UK Office of Fair Trading (OFT), Gwenn Bézard of the Aite Group, Dickson Chu of PayPal, and Adam Levitin of the Georgetown University Law Center. Ruttenberg

began the discussion by noting that while efficiency is generally thought of as an outcome of competition, because payments are a network industry, cooperation is also a necessary ingredient and public policy must seek the right balance between competition and cooperation.

Bennett spoke to the practical considerations that the OFT has faced as a result of surcharging in the card system in the United Kingdom. The regulatory authorities have encouraged merchant surcharging because of its potential to increase competition. In reality, merchant competition has limited the application of surcharges, although surcharges are used extensively in industries where low up-front fees predominate (the airline industry being a prime example). In the latter case, surcharges take the form of “drip fees” that cumulatively add considerably to total price. In fact, payment card surcharges sometimes exceed the cost they are designed to recover by a considerable amount, with the unintended consequence of subsidizing users of cash. This is a difficult problem to which the OFT has not yet devised a solution, and it reflects the complexities and risks of competition in payments markets.

Adding to the description of the realities of payments markets, Bézard began his remarks by noting that these markets are far from perfect, the competitive balance being highly skewed toward the card issuers, who have the strongest link to the customers. In light of this market reality, Bézard exhorted the merchant sector to become more engaged by becoming proactive competitors. In particular, he said that merchants should shift from their traditional reliance on litigation and legislation to redress the imbalance, and invest more of their energy in new payment schemes that offer alternatives to the schemes provided by banks and the card companies. He provided examples of schemes tried in the United States that promised reduced merchant acceptance fees but that floundered because of lack of acceptance by merchants. In contrast, he also described ELV in Germany, which is a low cost debit card scheme that now accounts for over half of all debit card transactions in that country. In his view, decoupled debit in the United States offers an avenue for merchants that could be leveraged in a pro-competitive manner, leading to greater efficiency and improved competitive balance.

After highlighting the PayPal value proposition as an example of successful innovation and pro-competitive market entry, Chu stated four practical criteria to define an efficient retail payments system. These are 1) low cost, 2) real-time speed, 3) convenient access, and 4) a standards-based foundation. A truly efficient retail payments system, which does not yet exist, would provide the ubiquity of cards, wire transfer speed, and ACH-type costs. Chu said that performance and cost advances in technology combined with strong risk controls are the key factors allowing for retail payments system efficiency, both of which in his view are well advanced and should allow for a more efficient system than we see today. He said that interchange fees in the card systems have been flat or increasing, bucking the trends in technology and risk control, suggesting that these markets are not perfectly competitive. Herein lies the challenge for public policy.

Levitin described a balanced competitive and cooperative market as a “delicate ecosystem” that can be destabilized by external shocks. He stated that the profitability and distribution of profits that characterize the current balance of the retail payments markets in the United States is about to change dramatically due to five influences. These include 1) interchange litigation and legislation, 2) activist governmental intervention to contain or lower consumer fees, 3) banking industry consolidation, 4) mobile payment breakthroughs in established markets, especially in the United States, and 5) an inexorable shift in demand from credit card to debit card or “pay now” products. The consequences of these influences will likely include the establishment of new payment networks by the three largest U.S. banks acting individually or collectively. Levitin specifically referred to new contactless card services offered by Chase under its own brand as an example of such a development. As the large banks withdraw their support for the existing networks, new issues will arise because of the loss of the subsidy they provide for small-bank participation in the networks. Public policy authorities will face a dramatically changed market structure within 5 years time, and this is yet another issue that needs to be anticipated.

Leading off a discussion among the panelists, Ruttenberg expressed skepticism about how well a restructured retail payments market would support broad public policy objectives. By way of example, he noted that while surcharging is now permitted in Europe, the opportunity this freer behavior presents has not yet been taken up. He asked rhetorically why one should expect large banks that establish their own networks to avoid the problems and tendencies that the current networks demonstrate. Further, he wondered whether there is a natural monopoly element to network operation that poses difficult choices for public policy authorities, in terms of picking winners and losers.

The ensuing discussion among the panelists highlighted the potential for non-bank innovators to enter the market, leading to a new, more competitive balance. But concerns were also expressed about the need for continued, if not intensified, cooperation especially in environments like Europe, where highly segmented, nation-oriented payment markets need to catch up to the already unified Euro market for goods and services—this will call for more cooperation, and cooperation will be complicated as nonbanks enter the payments business. The panelists took up the role of public authorities in encouraging if not requiring such cooperation, which all agreed must be inclusive across providers, consumers, and merchants if it is to be truly effective. The Faster Payments initiative in the UK was offered as a model whereby government authorities tap the market to devise the operational approach, using moral suasion and the threat of government regulation to ensure a timely and responsive outcome consistent with public policy objectives. Direct government involvement as an operator, the “public option” to private services, was also identified as a possibility. On net, the panelists appeared to agree that national and regional culture will determine what type of outcome will be most effective in reflecting the “political will” for improvement in payments. Also, on net, the panelists appeared to share concern for the risks posed by a strong government intervention, including

regulation that might lead to unintended consequences and consumers who are no better, or even worse off in terms of the choice and efficiency they face.

Principal themes surfaced in the open discussion concerning the appropriate role for the central bank and/or other governmental authorities in ensuring that retail payments markets are sufficiently competitive to lead to efficient payments. Two participants expressed concern about industry collusion and the consequences of self-regulation by a “cartel of banks.” An as-of-yet unattained measure of efficiency illustrated by these concerns was said to be the failure to achieve par clearing in card payment systems, analogous to par clearing in the check and cash systems. Panel participants responded to this concern by saying that par clearing is a desirable efficiency objective, and public policy should not be paralyzed by concerns about possible unintended consequences. Some said that central banks and other authorities have a number of options for promoting efficiency, only one of which is regulation. It was noted that moral suasion is relied on by the Eurosystem, and that one result is the serious consideration now being given by the private sector to the establishment of a third card network to compete with Visa and MasterCard.

A further example of cooperation between governmental authorities to promote competition in the Netherlands is that between the competition authority and central bank relating to switching. The Dutch central bank persuaded banks to make switching easy and operationally smooth. Now that banks have implemented the new practice, which includes portability of account numbers, the actual incidence of changing bank relationships has been very low. Nonetheless, non-observance is not interpreted to mean that the new policy is not meaningful, but rather that the ability of consumers to be able to switch freely is in and of itself a powerful competitive force.

A participant also indicated that overseers should be vigilant to ensure that payments system enhancements which are stimulated by public policy not be diluted by offsetting practices that substitute one type of inefficiency for another. The example given was the introduction of chip and PIN security for payment cards, followed by new bank rules that deny reimbursement of fraud losses to consumers in cases where the PIN is used to commit fraud. This participant asked whether the panel viewed the general problem as legitimate and received an affirmative response.

Finally, another participant spoke to public policy in Australia that has allowed surcharging. Repeating a theme heard earlier, this participant said that the low incidence of surcharging should not be interpreted to mean that the policy is not meaningful, saying that surcharging is now a negotiating tool that merchants can use in agreeing to interchange fees. Moreover, the benefits resulting from specific public policy initiatives should not be evaluated in isolation but rather in the context of the authorities’ overall program for promoting efficiency. In the case of Australia, for example, the policy allowing surcharges should be evaluated together with the Reserve Bank’s “suite” of initiatives, including the one resulting in broad access to the self-regulatory process and membership in Visa and MasterCard by

nonbanks. Supporting the comments made earlier concerning the importance of active merchant involvement in new payment innovations, some Australian merchants are becoming self-acquirers.

VII. IMPLICATIONS OF THE CHANGING PAYMENTS LANDSCAPE FOR INTEGRITY OF RETAIL PAYMENTS SYSTEMS

The implications of the changing payments system landscape for the integrity of the retail payments system were taken up by a panel chaired by Mark Greene of FICO and comprising Cathy Allen of the Santa Fe Group, Daniel Eckert of HSBC Card and Retail Services, Paola Masi of the Bank of Italy, and James Van Dyke of Javelin Strategy and Research. Setting the stage for the panel discussion, Greene indicated that the stakeholder panelists would respectively represent four stakeholder perspectives: advocate for consumers, bridge between the consumer and the bank, bankers, and regulators. Highlighting some of the stresses that have arisen in the retail payments system, Greene said that the Know Thy Customer and trust-based relationships between banks and retail clients is being severed by new forms of payment (for example, decoupled debit). When there is no established trust relationship underlying a new payment service relationship, there are gaps in the “security continuum” and new opportunities for fraud. Greene said the key strategic question in this new world is how to protect against and detect fraud and security breaches.

According to Greene, many traditional forms of payment fraud are now well controlled, but there is growing concern about new forms of attack. He described the new tools being used to mitigate fraud, including intelligent profiles, neural networks, and adaptive analysis, collectively referred to as “systematic art forms” which are deployed in a leapfrog game against those who are attempting to compromise the integrity of retail payments systems.

Allen referred to this being a transformational time in the financial services industry and identified her theme as the need for transformational leadership. There has been an erosion of trust between financial institutions (FIs), FIs and their customers, and between the public and their regulatory agencies, resulting in trouble for banks with their customers and a legislative backlash against both banks and regulators like the Federal Reserve. She also referred to a recent study showing that over two-thirds of consumers plan on moving their banking relationship with an improvement in the economy. The media “is on this” situation and we are facing “the equivalent of our industry’s oil spill.” In addition, fraud risks are materializing in new ways now including ACH takeovers of corporate accounts; consequently, the trust relationship issues go beyond the individual consumer and extend to small businesses and even the corporate elite.

Payments systems are at the center of consumer angst, due to a convergence of trust relationship problems. These include increased fees such as NSF charges, credit lines severed with little or no notice, and a higher incidence of data breaches.

According to Allen, these problems explain the forces behind establishment of a new stand-alone consumer financial protection agency. They also increase opportunities which nonbank providers of technologically advanced information services can exploit by substituting themselves in the traditional consumer-bank trust relationship in payments. She pointed to mobile banking and social networks (Google, Twitter, and Facebook) as the technology service domains that pose the greatest threat and yet opportunity.

In his opening remarks, Van Dyke took advantage of the conference venue to make the point that some of the core issues addressed by the conference are not new. He noted that the first credit card was introduced 110 years ago in Kansas City just across the street from the Fed, issued by a provider of horse-drawn buggy service to passengers using Union Station. Then, like now, freedom of choice became an issue, and antitrust actions ensued.

Van Dyke referred to recent Javelin research to make two principal points. First, according to Javelin, merchants and banks, respectively, absorb 90 and 10 percent of commercial fraud costs, including mitigation costs and the costs of goods, across multiple types of payments systems. Second, security against ID fraud is consistently the most highly ranked factor explaining consumer choice of a credit card. Further, with regard to consumer concern about security, Van Dyke pointed to data showing that consumer costs of ID theft rise in proportion to the length of time it takes for the consumer to discover and report the ID theft, leading to the conclusion that empowerment of consumers is an important element in the campaign against fraud risks. According to Van Dyke, there is opportunity for banks to strengthen the trust relationship by being proactive with security; in his words, “security is a relationship and marketing play,” and a focus on the security dimension of the relationship with consumers represents “the way ahead” for banks.

Strong customer need for protecting both their money and identity notwithstanding, banks will need to transform themselves to serve the customer and simultaneously take advantage of the opportunity to strengthen the trust relationship. This is because, according to Javelin research into the customer control capabilities of banks and credit unions, many FIs direct their energies to the “clean up” following the incidence of fraud, not to prevention and detection. He said that empowerment of and cooperation with customers is a lower priority than is resolution of fraud once it occurs. Finally, Van Dyke pointed to mobile technologies as the basis for customer-centric strategies to prevent and detect fraud.

From a bank perspective, Eckert said that this is a challenging time, including for a large card issuer like HSBC. Not only are alternative forms of payment challenging traditional franchises, but a combination of regulatory initiatives (including Regulation AA in the United States and Basel II internationally) will remove \$1.3 trillion of revenue from the credit card system. The core challenge is to preserve the safety and soundness of the payments system in this environment,

especially since much of the innovation is in services to consumers that rely on the legacy infrastructure, which is slow to adapt to change.

In contrast to Van Dyke, Eckert said that banks are good at preventing and detecting fraud. He provided the insight that the large majority of fraud, fully 94.6 percent according to HSBC's experience, is so-called first-party fraud that is the equivalent in the electronic world of check kiting in the paper check world. He cited problems in ACH to illustrate the nature of the problem with electronic payment fraud: banks act as guarantors of payments that clear through the ACH, yet must wait up to eight days for these transactions to clear, and gaps in the ACH rules allow consumers to declare that payments are unauthorized, resulting in bank losses that amount to 13 percent of total payment losses.

With regard to new, alternative payments, Eckert said that the disassociation of the payments system with the bank account used for settlement of the payment is representative of the risk now being faced. In the case of decoupled debit, for example, the customer relationship is with the payment service provider, whereas the account is with the bank. Eckert provided data from a case study to illustrate how banks innovate in detecting and combating fraud. His example showed how learning technologies, including neural networks, detected patterns of fraudulently initiated ACH debits and applied this learning to operating rules that rejected such payments.

Central bank concerns about and responses to the retail payments system risks posed by nonbank services providers were discussed by Masi. She cited original research published by the ECB and Federal Reserve Bank of Kansas City that establishes a basis for understanding and analyzing the role of nonbanks in the payment chain. This research shows the growing importance of IT services providers in retail payments systems, the ongoing consolidation within this industry, and the limitations of the national and international regulatory and oversight frameworks that are relied on to address these developments. This research provided the basis for a major survey of nonbank involvement in the retail payments system undertaken by the Bank of Italy and was scheduled for completion by the end of 2009.

The Bank of Italy has conducted a survey into nonbank involvement in retail payments covering all large Italian banks and other major financial institutions, including two providers of electronic money services, totaling over 170 institutions. The survey follows the analytical framework of the ECB and Federal Reserve Bank of Kansas City study by measuring nonbank involvement in 15 distinct steps in the payment process. The results show that each provider has, on average, three technical service providers for card payments, and two for credit transfer and direct debit payments. While a substantial proportion of the nonbank providers are actually owned by banks, ownership is not a determining factor in bank choice of a payment services provider; rather, the profitability of the relationship and the reliability of the provider are the basis for choice. In ranking the risks to be managed in these relationships, banks give fraud and its reputational consequences a very high ranking, as they do operational failures.

Masi noted that the survey results show that the technologies used in large-value and retail payments systems are very similar. Not surprisingly, then, many of the nonbank services providers are active in both the large-value and retail systems. Moreover, consolidation is on the rise, with large providers tending to dominate the market, and the market for operational services is increasingly a global market, with the main providers active in many countries. Masi concluded that central bank payments system overseers face a number of challenges as a result of what has been learned from the survey. Chief among these challenges is ensuring that the regulatory framework adequately covers payments system activities of nonbank providers, especially insofar as systemic implications are concerned, and that the strengthening of cooperative oversight arrangements reflects the global nature of the outsourcing business.

Discussion among the panelists focused first on the mobile transacting and social networking technologies identified as playing a prominent role in changing the payments landscape. These technologies, when applied to payments, pose serious risks in part because of the weak, password-based authentication they have traditionally supported, the strong interest that organized crime is evidencing, and the threat of insider involvement in breaches of integrity. A point reemphasized was that banks should take a less paternalistic approach to protecting their customers and instead empower customers with more capabilities and tools to protect their money and information, especially as new technologies are deployed for payments.

Greene asked whether the time has come for a generationally new retail payments system, not unlike the shift the wholesale payments industry undertook when it embraced SWIFT as its standard platform for international payments. This idea resonated with the panel, although it was noted that payback on such a huge capital investment is a major hurdle, which explains continued reliance on legacy infrastructures (some of which are a half-century old and only now beginning to yield adequate returns on investment). While capital efficiency is a key requirement, there are examples of potential successes, including the merchant-centric Tempo network and adoption of chip and PIN, which has dramatically lowered fraud losses since introduction into the UK about a year ago. It was also noted that standards are a necessary condition for universal acceptance of new payment forms.

Finally, the panelists were asked whether the establishment of a consumer finance protection agency in the United States is a good idea in terms of its implications for retail payments system integrity. The panelists were silent on the specific question but in general stressed that there is a strong need for some authority to fill what they take to be a regulatory void.

The general discussion began with a comment by a participant who explained why the Tempo service was not supported broadly by the merchant community. In short, the issue is not in the first instance about technology, but rather about capital efficiency when measured across the network of merchants, and the way the

capital cost would be borne. This participant emphasized that the market is two-sided, with merchants requiring a critical mass of consumers using the new card, and that the brand-building expense of developing the critical mass of merchant acceptance topped \$1 billion. Another participant reflected a merchant view that the allocation of interchange fees and actual distribution of the burden of fraud losses may stifle innovation. This participant reported that small acquiring banks use their interchange revenue to offset the 10 percent of fraud costs they bear, according to data that was presented in the panel discussion, whereas merchants are left to bear 90 percent of the fraud costs. Yet banks and merchants evenly share the fraud mitigation costs related to technology that is used to prevent fraud.

The chairman posed the question whether there is a role for the Fed in affecting the 90/10 cost allocation, prompting an initial resounding “yes” response from the audience. The discussion that ensued reflected a set of complex and sometimes conflicting views, however, extending beyond allocation of burden per se to the absolute cost of improving the security situation. It was noted, for example, that compliance with PCI on the part of small merchants whose pre-tax income is about \$40,000 could amount to \$20,000 per location. At a minimum, however, there is a need for an accepted baseline security standard to protect the integrity of what was referred to as the “next generation of currency,” namely, e-money that is replacing cash at the point of sale. Part of the costs networks are attempting to manage is due to the security standards “Tower of Babel.” Participants referred to a market failure to sufficiently coordinate network approaches to protecting the retail payments system, which are currently backward looking, and a desire for the Fed to become actively involved in the establishment of security standards. But, it was also observed that the Fed would best start by identifying what the actual sharing of the fraud cost burden is (this was in connection with a challenge to the 90/10 split mentioned earlier). The concluding observation cited three areas in which the Fed could help: by taking a stronger position on consumer protection; by playing a stronger role in cyber security; and by regulating the activities of nonbanks.

VIII. THE ROLE OF CENTRAL BANKS IN RETAIL PAYMENTS: THE CENTRAL BANK AS OPERATOR

Richard Oliver and Stuart Weiner of the Federal Reserve Banks of Atlanta and Kansas City, respectively, presented a paper outlining the reasons for operational interventions by central banks as retail payments system operators, summarizing worldwide operational interventions and assessing the experience of the Federal Reserve Banks. They indicated that central banks might play three distinct roles: that of operator, facilitator, and overseer. The four types of operational activities are all services-related and involve settlement, clearing of payments, payments services to government agencies, and maintenance of security-related data bases. Like Chakravorti and Rysman, they pointed to externalities, noncontestable monopolies, and asymmetric information conditions as issues that deserve central bank attention, possibly to include operational involvement.

Oliver and Weiner also identified certain issues that could accompany a central bank's decision to become involved as a retail payments system operator. In particular, providing services that substitute for and compete with similar services provided by private firms is likely to result in challenges to such a role for the central bank, thereby placing a premium on an exceedingly well thought out and well articulated position for the central bank's intervention. In addition to a strong rationale for an operational role, the central bank needs to ensure that its services compete on a level playing field with those of the private sector, full cost recovery being a baseline condition for such involvement. Altogether, the way a central bank manages its operational role will affect the reputational and financial risk that it assumes. Oliver and Weiner cited the World Bank's 2008 survey to demonstrate a substantial operational presence by central banks in check clearing (59 banks from Albania to Zimbabwe) and ACH (34 central banks from Afghanistan to Venezuela).

The Federal Reserve Banks' operational involvement was presented in an historical context with roots in the 1913 Federal Reserve Act. Essentially, they indicated that conditions in the U.S. payments system, when the check was the primary means of noncash payment, presented the need for a strong, national banking presence and that the Federal Reserve Banks were established in part to add efficiency and certainty to check clearing and settlement. They also noted that once a strong operational presence such as this is established, withdrawal is difficult without causing disruptions to payments, thus leading to an historical inertia resulting in a permanent central bank role. Over the years, the U.S. Congress has legislated improvements in check clearing, including expedited availability of funds to depositors and improved efficiency and service through the introduction of check truncation and electronic clearing of payments, and this regulation has actually increased the dependency on the Federal Reserve Banks. Similarly, the private sector's request that the Federal Reserve Banks support the fledgling ACH in the 1970s expanded the central bank's operational role.

Looking at the historical record of payments system development in the United States, Oliver and Weiner said that the Federal Reserve Banks' operational involvement has been a positive catalyst for change. The domestic payment system was unified across a large and diverse nation, standardized processes and procedures contributed to efficiency, and safety was enhanced as a result of the priority given to the integrity of payments. With this sanguine backdrop, they said that accelerating change in the technology underlying payments, shifts in consumer preferences leading to greater demand for "anywhere and anytime" payments, and the emergence of nonbank providers have all led the Federal Reserve to reassess its traditional operational role. The basic strategic question is whether the changing landscape and the growth in electronic payments in particular call for a "retreat or expansion" of the Federal Reserve's operational role.

In discussing the paper by Oliver and Weiner, Joshua Peirez of MasterCard began with the observation that when the central bank becomes involved in

businesses where scale economies predominate, one ends up with a quasi-governmental monopoly. He asked rhetorically how a private company can then compete with the entity that is the monopoly provider and rule maker. Referring to Leinonen's remarks, Peirez said that if one believes consumer choice does not matter, then it is easy to conceive of a government-run payments system, but this is not so if one believes in consumer choice because then innovation in new payment instruments matters a lot. He said that it is not "just the payment" that matters but all that goes with the payment, including customer satisfaction.

Peirez indicated that he agreed with the large majority of the reasoning brought forward by Oliver and Weiner, noting especially the complexity of the Uniform Commercial Code and the substantial justification needed for government involvement as a payment system operator. Taking a less sanguine view about the evolution of the check and ACH systems in the United States, he said that the paper check clearing system has been very slow to evolve and has held up the transition to electronic payments. He said a private operator would have evolved the check system into a debit-card-type system and that even though back-end check processing has been converted to electronic processing, the fact that checks still need to be written presents a massive problem. Similarly, he said that the ACH does not provide for true real-time authorization and that timing issues in ACH payments present significant fraud risks. Referring to the strong Fed response to maintaining payments system integrity during national crises, including 9/11, Peirez indicated that privately operated systems have the same track record and did not fail to process a single transaction during such emergencies.

Finally, Peirez suggested that the efficiency goal of a government payments system operator is motivated principally by low cost, whereas that of a private payments system operation is motivated principally by value creation. He said that low cost does not necessarily define a good payments system, but rather that the value delivered to consumers is the appropriate measure of a strong efficiency outcome.

The ensuing general discussion elicited a number of comments and stimulated several exchanges about the efficiency and fairness of private credit card networks insofar as interchange fees are concerned. Consumer choice, merchant choice and cost efficiency were debated. Also, some participants expressed the view that the U.S. check collection system has been a model of progressive change. Clarifying his position on consumer choice, Leinonen distinguished between choice at the payment service level and at the "trunk line" level, indicating that the latter should be standards based and uniformly provided; he cited telecommunications services and e-mail as examples. Finally, a participant addressed a question raised earlier in the conference regarding the apparent failure of merchants to compete proactively by supporting new payment products. This participant stated the view that private operators that also set rules have discouraged such competition.

**IX. THE ROLE OF CENTRAL BANKS IN RETAIL PAYMENTS:
THE CENTRAL BANK AS OVERSEER**

Ron Berndsen presented the paper “Central Bank Oversight and the Changing Retail Payments Landscape,” written with his colleague Bouke Buitenkamp of De Nederlandsche Bank. His perspective contrasted with that of Oliver and Weiner, in that the Dutch central bank does not provide retail payments services, except for final settlement of interbank obligations. While speaking from the perspective of a small country, Berndsen’s remarks also provided insight into the larger, cooperative oversight arrangements among the members of the European System of Central Banks.

Berndsen embraced the definition of oversight that has been promulgated by the Bank for International Settlements. According to this definition, central bank oversight is concerned with retail payments system safety and efficiency, and its objectives are achieved by monitoring and assessing both existing and planned payments systems, and by inducing change where it deems it necessary. Transparency is a hallmark of oversight, and De Nederlandsche Bank explicitly identifies the payment system “objects” of oversight, of which there are currently 22, 11 being retail in nature. Berndsen said that care is taken to exercise oversight in an efficient manner and that accordingly his department establishes priorities. Large-value systems that are systemically important are first priority, and these are formally assessed annually and whenever major changes are introduced. Among retail payments systems, priority is established following criteria set by the ECB, which include the value of retail payments handled in relation to the real-time gross settlement system, average value handled daily, the concentration of retail payments within the system, and the degree of netting compression leading to final settlement. Payment products and instruments are assessed at least every three years, and more often if there are major developments affecting the system, including incidences of fraud and unusual media attention. Berndsen emphasized the flexibility exercised in allocating scarce oversight resources and in particular the event-driven nature of oversight.

The cross-border reach of some retail payments systems has led to a protocol for conducting oversight, and Berndsen described the role of lead overseer within the European System of Central Banks. The lead overseer takes primary responsibility for oversight on behalf of other national central banks, which have a formal memorandum of understanding with the lead overseer that establishes their expectations, and which also provide cooperative support as called upon. This model is likely to be relied upon even more in the future as the Single Euro Payment Area (SEPA) takes hold.

The objectives Berndsen cited for conducting oversight of retail payments systems in the Eurozone were similar to those cited by Oliver and Weiner for central bank operations. Berndsen elaborated on the safety objective in particular, saying that the failure of a widely used payment instrument may have broad implications for the economy with some systemic risk attributes. These systemic implications and public good attributes notwithstanding, Berndsen said that a profit-maximizing firm will only take measures to ensure safety and integrity that reflect its individual potential losses. Accordingly, safety may be “produced” at a level below that needed by society at large. He made similar arguments regarding the efficiency objective.

Berndsen said that the changing payments landscape poses a number of challenges for central bank overseers. First, new payment system entrants include non-banks, and the payment activities of these entities need to be brought under oversight. It is sometimes hard to identify who these entrants are, and while the natural tendency is for them not to want to be bothered with official oversight, experience is beginning to show that the application of oversight can add legitimacy to and increase public confidence in the services of nonbank players. Second, innovation and the entry of new players is increasing competition that tends to boost efficiency, lower profit margins, and result in suboptimal production of safety. This has caused overseers to focus on minimum standards of safety that all providers must meet. Finally, the introduction of new services is resulting in more interconnections between systems as the operational platforms supporting new services are linked to existing back-end infrastructures. Operational and security complexities can result, and the potential exists for non-competitive restrictions on entry by firms that need infrastructure support in order to succeed. As a consequence, Berndsen said that overseers are increasingly reaching out to and cooperating with competition authorities, and shifting their attention somewhat from the scheme owners to the infrastructure providers. An underlying response to all of these challenges is proactive oversight and heightened awareness of change in the retail payments system.

Discussant Jonathan Williams of Experian Payments began his remarks by expressing broad sympathy with the Dutch central bank’s approach to payments system oversight, which he described as very pragmatic. He expressed strong support for an approach that is based on standards and methods that are clear and well understood by all stakeholders. The biggest oversight challenge, according to Williams, is “where to draw the line” in terms of scope.

Williams stressed the importance of involving and getting input from users of payment services about service problems. He cast this advice in an international context, noting that many services are now supported by international providers, such as the SWIFT cooperative. Williams also saw a need to prioritize oversight attention and said payment systems could be divided into two groups for this purpose, 1) legacy systems and 2) “to be” systems in the planning stage. A further differentiator that overseers should consider in prioritizing their work is that between scheme owners and operators, taking care to ensure appropriate separation

between the two. He noted earlier references to the Federal Reserve's Chinese wall as an example of the kind of awareness that needs to be in place for payment systems to operate well.

According to Williams, security is the chief payment system attribute with which overseers should be concerned, inasmuch as public confidence depends on actual and perceived security. Security needs to be thought of holistically, however, to include not only defenses against fraud but also rules providing assurance that payments are final; Williams cited an issue in the UK regarding the indefinite finality accorded direct debit payments, which can in principle be returned at any time, to illustrate the way rules can undermine the certainty and perceived security of payment. With regard to efficiency, Williams referred to the importance of standards and again cited an example of the UK, where bank account numbering schemes are highly disparate and work against an efficient system.

Williams concluded by saying that innovation, which is often a product of new entrants into the payments system, will frequently pose challenges to existing assumptions about how payments can best be made. He said that it is important for overseers to be open minded and willing to challenge their assumptions so that innovation is not inhibited. In brief comments following Williams, Berndsen strongly agreed with the importance of engaging end users of the payments system as part of the oversight methodology. He said that the current practice of the Dutch central bank is to post its proposed standards on the central bank web site for three months, with the specific goal of getting user input.

The general discussion began with a question about network access and whether access pricing is a legitimate oversight concern. In reply, Berndsen said that access is a critically important issue to overseers and that fair and open access, with non-discriminatory pricing, is fundamental to an efficient system. He also indicated that the risk posed by prospective new entrants is the only differentiator that networks should follow in making access decisions. A further question was raised about the international scope of payments system oversight, specifically with reference to Anti-Money Laundering (AML) oversight. It was said that market participants face inconsistent oversight of AML rules in different jurisdictions today. Berndsen responded that central banks highly coordinate their oversight of designated systems such as SWIFT and CLS, but that currently AML is not within the ambit of payments system oversight, to the extent that it falls outside the domains of the international systems that have been designated as objects of oversight.

General discussion also concerned coordination of data collection practices by overseers. A participant noted that the need for payments system data is increasing for both official and private sector use and, as evidence, at the time of the conference many different overseers noted they are undertaking data collection initiatives. These initiatives, while intrinsically useful, do not appear to be coordinated and make it difficult for participants in different national payments systems to respond. Berndsen acknowledged the problem and the difficulty in solving it,

noting that payments system data is only one subset of the data that central banks collect, which runs the gambit from system data to balance of payments data. He indicated that the Eurosystem recognizes the issue and is attempting to increase coordination in the area. Williams stated that it is very difficult to get a coherent world view of payments systems today and that the problem is not just efficiency but effectiveness. He said that central banks are in an excellent position as overseers to provide the needed leadership to solve this problem.

X. CONFERENCE WRAP-UP

In his closing remarks, Bruce Summers offered some personal perspectives that reinforced the public policy importance attached to retail payments systems by the speakers. He indicated that the retail payments system is a component of the critical infrastructure in a modern economy where upwards of 70 percent of GDP is attributable to consumers; that system efficiency depends on public confidence and trust; that public confidence is being undermined by unfavorable attention given to retail payments in the press; and that change in how payments are made is occurring at “Internet speed.” Summers also indicated that quality public dialogue on the issues will depend on more clarity and precision about the roles being discussed, with three roles in particular needing to be distinguished: scheme owners who set rules and standards, front-end service providers who market payment instruments to the public, and back-end operators who provide the clearing and settlement services. Whereas oversight covers all three roles, a central bank’s operational involvement is likely to be more specialized and it needs to be very clear about which role it intends to play.

He also said that the main public policy problems tend to arise in the front-end marketplace for consumer payment services, and that nonbank entrants are at least for now the principal innovators in this marketplace. Summers said that among the nonbanks, telecommunications companies are especially important players; these companies are often vertically integrated service providers and operators, adding special complexity to public policy. Because the public policy issues tend to be concentrated in the market for payment instruments, and with the increased complexity of the composition and structure of the market, oversight is on the rise as the more direct and flexible approach to achieving public policy goals. Summers also expressed surprise that none of the conference participants had identified what appears to be a major public policy question in the United States, namely, the minimal interest of the Federal Reserve in retail payments system issues and the default oversight role taken up by the Congress.

Summers suggested that five questions captured much of the focus of the conference.

- *What needs are unmet, what markets are underserved, and how can public policy help?* The Internet generation needs anytime, anywhere banking and payment services. Broadly speaking, real-time account maintenance is needed if electronic payment services are to meet customer needs. Unfortunately, “our deliberations” appear to have forgotten the consumers.

- *What actions are necessary to tilt incentives toward good integrity and efficiency outcomes?* The economic theory of two-sided markets, as applied to payments, is complex and does not provide clear answers; it is prudent to be wary. Theory needs to be validated empirically, but systematic data are not yet available, and probably will not be available for a long time. For whatever reasons, price and cost incentives in payments appear to be largely hidden from consumers and to distort behavior. In principle, cost transparency is good. A relatively safe public policy program would be to remove barriers to transparency (for example, by allowing merchant pass-through of costs).

- *Is clearing and settlement appropriately structured, managed, and overseen?* Back-end concentration gives rise to monopoly protection of market franchises, sometimes in subtle ways (for example, slow adoption of data standards and resistance to portability in bank account numbers). Looking ahead, innovation and new entry call for a broad and inclusive process for stimulating pro-competitive cooperation, especially across types of institutions, because “it’s not just about banks anymore.”

- *How serious is system-wide or systemic risk and how should it be mitigated?* A case can be made that we are facing the banking industry equivalent of an oil spill. Mainstream central bank attention to the issue is focused on concentration of operational risk through outsourcing to nonbank providers. Networks are capital intensive, and consequently security improvements will be focused on adaptation of existing systems.

- *Is central bank operations or oversight more effective, and is the choice either/or?* The “public will” driving competition and innovation may well include a “public option,” and there are antecedents in the United States. The nature of the role—whether light or heavy handed—depends enormously on culture and tradition. There are concerns about the Fed’s “invisible hand” in the United States; there needs to be a national conversation, with a lead role for the Fed, about what the baseline security standard should be; there is a shared problem with “clear market failure”; the Fed needs to play a much stronger role in consumer protection, establishment of security standards and enforcement, and oversight of nonbank actors that are taking on bank-like roles. While it can be argued that there is a synergy between central bank operations and public policy, there is a strongly held contrarian view that the private sector can and does do a superior job when measured against cost, value and integrity criteria. In actuality, oversight is not a utopian undertaking but rather a practical, gritty, and hands-on discipline. Moreover, oversight increasingly has an international dimension to match the global nature of the retail payments business.

The general discussion that followed Summers’ remarks led off with a participant suggesting that there is need for the Federal Reserve Banks to become more engaged in retail payments system issues beyond the narrow operating role, not unlike their involvement in the development of monetary policy through the Federal Open Market Committee. In response, Masi expressed a word of caution saying that central banks might best leave consumer protection to a different

governmental agency: This because central bank payments system overseers need to be concerned with safety and efficiency broadly, and responsibility to defend and represent only one stakeholder, namely, the consumer, could undermine the broader mission.

Participants also took up the question of payments system risk. One suggested that while perhaps not posing systemic risk, retail payments systems attract headlines that influence public opinion about the integrity of their payments. Actual and reported risks could shake confidence in retail payments systems. To that, Berndsen noted that in the Netherlands and Europe more broadly the central bank view of payments system risk recognizes the presence of both systemic risk that has financial stability implications, and system-wide risk that, while not systemic in the usual use of the term, can create big economic disruptions. Both types of risk are of concern to central bank payments system overseers. In relation to that dialogue, another participant called on the Federal Reserve to extend its role in the retail payments system by collecting and publishing comprehensive data on the incidence of retail payments system fraud and data breaches. The participant suggested that doing so would add needed transparency and suppress media speculation about threats to the retail payments system that are stimulated by what some see as attempts to hide the true extent of such problems. In responding to these thoughts, Summers noted that currently the Federal Reserve Board does not include any retail payments systems among its list of objects of payments system oversight as published on its web site, and is different from the Dutch and other central banks in how it defines the scope of its oversight responsibilities. He urged retail payments system stakeholders to enter into dialogue with the Fed as a means of reasoning through an appropriate oversight role in the context of international norms.

Keynote Address

Dan Hesse

Unlike interest rates, the wireless industry is growing. In fact, it is amazing how the industry has grown. It has basically gone from a standing start 26 years ago. That is when the very first wireless call was made in the city of Chicago—it started here in the United States—to today with almost 4 billion users on a planet of just under 7 billion people. As a matter of fact, there are more cell phones in service being used than the total of televisions, PCs, and cars in the world.

To give you a feeling for the facts, mobile is clearly the most rapidly adopted technology from basically not even being around 26 years ago. Its lead on other industries is growing. There are 10 cell phones produced each day for every baby born. So, cell phones are catching up. Now obviously, people get new phones and what have you, so it's not all going into wireless penetration, but wireless penetration is growing at a very, very rapid rate. Seventy-three percent of people who have cell phones use their cell phone as their primary source of time, rather than a watch.

I carry a Samsung Moment, which is an Android-based device. It has an 800-megahertz processor, which is basically a PC. But the typical smart phone is more powerful, in terms of processing power, than what was labeled the supercomputer 20 years ago.

It's a huge industry. It has grown to be an industry in excess of \$800 billion, and very soon it will be one of five trillion-dollar industries in the world. That is hard for me to say. It is not hard for congressmen to say that, but it is hard for me to say "trillion." Those other trillion-dollar industries are military, auto, tourism, food, and soon wireless.

All revenue growth in the U.S. wireless market going forward will come from what we call data. There are voice and data. And we use a broad term for data. Data are everything that is not voice, so it could be text, surfing, GPS, watching

television, and downloading music—all those things. Voice minutes will continue to grow, but voice revenues will be flat. So revenue growth in this industry will all come from these additional applications beyond just voice, which was the initial great application for wireless.

I'll talk about 26 years ago when wireless started, up to today, when you are watching television and see this G effect—3G and 4G and then what have you. So what does it stand for? 1G is first generation, and that was analog. The killer app in analog wireless was the car phone—this big thing that was so heavy you had to put it in the trunk of your car, and it usually weighed about 25 pounds. Basically, individuals didn't have them. Your company paid for them if you had one. They were pretty darn expensive, big devices.

Then digital came along in the early 1990s. That was 2G. With digital, you had improved economics and roughly a half-order magnitude improvement in terms of efficiency. Prices got much lower, as well. You could offer, if you were a wireless carrier, roughly five times as many minutes in a bucket for the same price. That is when you began to see not only text and digital forms of communications, but in Europe, things like Short Message Service (SMS) started to take off. The main thing you saw was larger buckets of minutes come along in the wireless world. Wireless, up to that point, had been growing organically. Then, cross-elasticity with landline became important.

All of a sudden the second-generation people started thinking, "This might be my only phone." It is inexpensive enough in terms of its packets of minutes that it can be that only device, particularly for travel-related applications.

When I was CEO at AT&T Wireless back in 1988, we launched something called Digital One Rate. With that, you began also to see wireless beginning to take money away from other industries to fuel its growth. It really began to take over landline travel communications.

So think about a decade ago, when you went to an airport. There were pay phones as far as the eye could see and lines behind each one. Good luck even finding a pay phone today. And calling cards were used from your hotel room. If you went to that hotel room, you used that calling card. People really don't bother anymore; they make cell phone calls. You are beginning to see the tangential effect on other industries.

Now, of course, you have 3G coming, which is another half-order of magnitude of improvement in efficiency. By the way, other industries are being affected; there are lots of them—there's GPS and there are cameras. There are more cell phones produced with cameras than all stand-alone cameras ever manufactured in history—digital and film. To put it in perspective, Nokia is by far the largest camera maker in the world. It is beginning to impact other industries as well.

So you see a lot of ads for 3G, and 3G basically means faster data speeds. More gigabytes of data usage per user were given out per month than 2G could provide.

With 3G you are beginning to see music downloads, videos, mobile banking, and what have you—lots of new apps.

But the true desktop experience, as good as 3G is, is really not there yet. That is why 4G is so important. And 4G is not tomorrow, but 4G is today. It is operating right now for us at Sprint, and about 13 million people in the United States have 4G service. We will have about 25 million users by the end of this year, and about 120 million, including Kansas City, by the end of next year. There again, you have that half-order magnitude of improvement in cost and efficiency. So it is not only five times faster. It's like cable modem speeds on a mobile device. But from a price and cost point of view, this gets to substitution. I can get five times as many gigabytes per month on my monthly data plan as I can with 3G because it is much less expensive to produce it. In the same way that 2G accelerated landline voice replacement, 4G will accelerate the cutting of the data cord, because with 4G, you get those same kinds of speeds and get lots of capacity. A lot of people will want both, but you will see a lot more substitution going forward with 4G.

In terms of major markets that are up already in 4G this year, you have Las Vegas, Atlanta, and Philadelphia. And next year, you will have a lot of big major markets, including Kansas City.

What slows the adoption of each generation of wireless technology as it comes forward are the devices. So it doesn't do much good to have a 3G network if you only have a 2G phone. You can't take advantage of it. It will take awhile for 4G devices to be out there, and people have a lot of 3G devices.

What will really speed up the adoption of 4G is the wireless standard we all know very well, which is WiFi. There are about 450 million WiFi devices that are active right now. They can all become mobile devices today. I carry around a MiFi card. It is a WiFi router, so I can have as many as five WiFi devices. I can put it in the car, put it in my briefcase, or what have you, and be connected to the Internet all the time—anything from my laptop to my netbook to an MP3 player to a gaming device to a phone. Let's say you have an iPhone and you don't like AT&T's network and you want to use a good one, you can use WiFi, and a lot of people do. A lot of people use it for a better 3G experience, as well.

What is coming is the 4G/3G version of this. So you have this device. It will be a little bit bigger, not a whole lot, but a little bit bigger. So I can get 4G speeds connecting all of my WiFi devices, so that my mobile hotspot in terms of true WiFi speeds, multi-megabyte speeds, is no longer the size of my apartment or my home or my office. It is the size of a city; everything is taken with you.

So we believe the world is ready for 4G now, because you have all these WiFi devices that are 4G devices, as long as you just carry one of these around. It is for you, the whole family, your friends, your colleagues, or what have you. It will make a big difference again, because of the ubiquity of the WiFi standard. It is in cameras. A lot of people have great multi-megapixel cameras. They have WiFi chips built

in, but they don't take pictures and upload them right away, because even at 3G, working with WiFi is pretty slow unless you are in a location with a high-capacity WiFi network. With 4G, you can upload those pictures to whomever you want to share them with very, very quickly, as well. So there are a lot of great apps with 4G.

Faster networks, more powerful phones, simple pricing plans—they will all be very important elements of rolling out mobile banking. The Internet has created, if you will, the *anytime* culture, and wireless is creating the *anywhere* expectation and culture out there in terms of doing business. Twenty-five percent of the people who use mobile banking access their financial accounts while running errands, hopefully when they are either parked or in the passenger seat. Nine percent do so while on vacation, and 8 percent do so on business travel. So it is a great extension to their financial and banking capabilities. At the moment, though, only 4 percent of banks and credit unions in the United States offer mobile banking. This is expected to grow to 50 percent in the next couple years.

Bank of America, for example, has about 2 million users, which is 10 percent of their online banking customers. Mobile banking is currently the most advanced in the Far East, but it is also being trialed and we are moving things forward in North America and in Europe. In the United States, it is estimated that mobile banking usage will grow from 10 million active users today to 53 million in 2013, about a 51 percent compounded annual growth rate. In China, they are using mobile devices to pay for bus rides, subway tickets, tickets to amusement parks, and payments for restaurants. The technology they are using is what we call NFC, or near field communication. It is a short-range wireless technology that goes about four inches. What it allows you to do is if you will swipe with the reader—not a physical swipe—as long as you are within four inches, it can read a wireless chip that is embedded in your phone. That is how the transactions occur.

Europe is trialing NFC, and Sprint in the United States has recently conducted a trial with the San Francisco Bay Area Rapid Transit System for the subways, so it is like a virtual ticket. You take your phone with you and you swipe it at a little station near the turnstile and it lets you in. It's like a debit card. You can use the same NFC capabilities there in San Francisco, for example, at Jack-in-the-Box.

The trials so far have yielded positive results, but more work is needed, and particularly, like anything else, what is really needed is a business case. That will take awhile to work its way through. We have a lot of players here—you have carriers, you have costs that go into these phones, you have costs with respect to the readers or the terminals, you have the banks, you have the credit card companies. There are sophisticated models, if you will, that need to be implemented, because there is a lot of investment required to bring these capabilities to market.

At Sprint today, our customers conduct mobile banking similarly to online banking by using the phone's browser to download a specific capability the bank might provide their customers at their bank's website. But they can also check their

PayPal accounts and send peer-to-peer payments to other registered PayPal users, which is now on the agenda.

Sprint customers can also download standalone apps for their individual banks, as I mentioned, pretty much to their smart phones. Smart devices are now accounting for roughly half the phones we sell. So they are becoming much more ubiquitous.

Sprint customers have been involved in mobile transactions for a long time. They have been downloading ringtones, buying music, buying other kinds of content via their mobile phones, and using websites to make purchases with their mobile device.

If managed properly, mobile commerce can improve customer protection, as well. Think about when you lose your mobile device or you don't have your mobile phone, most customers know about it in minutes. Where sometimes if they don't have their wallet, it could take a day. So, from a security point of view, people really do know where that mobile phone is. We are very focused on security at Sprint. We will only develop applications and capabilities that provide customers with complete confidence that all their personal information will remain secure. We also offer the highest levels of advanced encryption.

In fact, mobile networks today offer enhanced security in mobile devices and can offer user and device authentication that is much more sophisticated than what is available on plastic cards. For example, now for some card transactions you need to have that code on the back. Well, you can look at the back of the card if you have it and you can see what that is, versus a PIN, which is something you have to know. So there are other kinds of authentication on mobile devices.

The combination of power-on passwords and mobile safeguards from the banks can make cell phone banking just as safe as it is convenient. Business customers, one of the nation's largest banks, this organization, and a number of very top government agencies use the Sprint wireline and wireless networks for very secure transactions.

In addition to providing enhanced security, mobile commerce can also impact the environment, because by its very nature it is paperless. It is environmentally friendly. *Newsweek*, as you may have seen, did the most extensive survey of green companies ever. There is a huge detailed survey on what they call the top-500 greenest companies in America. Sprint came in at No. 15, and we are the only telecom or wireless carrier in the top 100, so we are very proud of that.

Mobile applications have to be very simple to use, priced affordably, and priced very simply if they are going to take off and really be ubiquitous. The No. 1 returned electronic device typically after each Christmas season is the smart phone, or the PDA. That is because they are too complicated for a lot of users. "Just give me that phone with 10 digits on the front—zero through nine—and that is good enough for me."

So about a year ago we implemented something called ReadyNow, where with each customer we will provide individualized training on every device—one on one. You don't have to come in to go to a class or whatever. We will set it up for you. We'll put the applications you want on the first screen. If you don't know how to pair your Bluetooth earbud to the phone, we'll do that for you. That, I believe, will make a difference for a lot of these new applications, teaching people how to use them for the very first time. We are not doing it because we are altruistic. We see a much lower return rate and a much lower churn rate of customers who have been through this particular program.

In conclusion, Americans and their mobile devices are becoming inseparable. Adding mobile banking to these Swiss Army Knives, which really do everything—take pictures, provide GPS, serve as your communicator, ring during presentations—they are capable of lots of things. But mobile banking, we believe, is just a very natural part of the evolution of these devices. They will be secure. They are highly personal; customers can take them with them everywhere. We think it's going to be a terrific business opportunity for a lot of us in the room going forward.

And so we are very committed to mobile banking and all sorts of electronic and mobile commerce. It is a very important part of our planning process going forward.

General Discussion

Keynote Address

Mr. Frankel: Are there any technical impediments to creating a digital wallet hosted on one of your phones so that all of a consumer's card accounts could be accessed from a single device?

Mr. Hesse: There are no technical obstacles at all. The real key is having the standards that make that possible. There is nothing technically that would keep the phone from becoming that digital wallet. Standards are going to be important. Having open standards is going to be crucial, not only for the phone device, but very much for the terminals. Retailers are not going to want multiple terminals.

That is why, in terms of these applications, we are approaching standards via the CTIA, which is the wireless industry association that we all belong to—Verizon, AT&T, T-Mobile, Sprint, everybody—so that we in essence solve the issue of standards one way. These devices are supercomputers. They can do just about anything. The technical limitations are almost zilch.

Mr. Van Dyke: My question is about the importance of business models between telecommunications companies and financial providers, whether those are banks, payments processors, networks, or whatever. What we hear often is there isn't a lot of coming together at the table, so to speak, between banks, telcos, and payments firms. I wonder what your thoughts are about potential viable business models for making mobile payments, specifically, come to reality.

Mr. Hesse: I don't have all the answers, but the net of it is that you have a lot of vested interests that are already involved in this industry. The chips to put in phones with those capabilities cost money; new terminals for retailers and merchants cost money; so there has to be some way of figuring out if there is enough money to pay for new infrastructure to make that happen.

I think there definitely will be solutions that are created, because the potential is so great. And most importantly, end users would want to do it this way. You do what customers want. There will be some interesting discussions and negotiations on how pies are divided to make sure there is a return on the investment for every player, because the investment to do this up front is fairly significant.

Ms. Allen: Playing off that same question, one of the issues is liability and the legal framework. Right now, telcos do not carry any liability or responsibility if there is a dropped transmission, if a transaction didn't take place, or if it is a fraudulent transaction. That is one of the areas where there needs to be dialog between the telcos, regulators, and the financial industry. We have been working with the fraud group within the telecommunications world, trying to look at common areas of fraud. As you well know, it is crime organized on the Internet. Do you have any thoughts on this?

Mr. Hesse: Usually it's a good clue when the customer's name is Mickey Mouse, which we see every once in awhile. With some other creative ones we go, "Hmmm."

Ms. Allen: And I think there's going to need to be this really public-private coalition between the regulators, the financial institutions, the telcos, the device manufacturers, and law enforcement to go after organized crime. What is going to get the players to the table on that? What specifically will get the telcos to the table on that?

Mr. Hesse: I am not aware that the telcos haven't been at the table with all these discussions. It is a fairly complex issue and, of course, fraud affects all of our industries. There is a lot of fraud in the wireless industry, the telecom industry, and on the Internet. One of the issues we are working on with the Federal Communications Commission (FCC) in Washington is that of net neutrality. In net neutrality, the intentions are very good around, "Let's just make sure."

The Internet is very open today. New technologies have the potential of making it less open. Things like deep-packet inspection and things that are good for cyber security in preventing fraud, where you can find out early on who it is, where they are, where they came from, all this information has privacy issues associated with it. Again, it would give an awful lot of information to the wireless and telecom carriers about users, but it is very important if you want to truly have a bulletproof system. So how do you work your way through that? Those discussions are ongoing right now in Washington.

I am not aware of any table that exists in dealing with any of these issues at which the telecom industry is not a full participant. We're very open with respect to both the pluses and the minuses from a security perspective, as well as anything else using our networks. So that is why we work with the military and lots of government agencies on providing their communications in a very secure way.

Now, what do we need to do to provide that same level of security, if it's required, when we get to mobile commerce? Today there is a tremendous amount of security. I buy many things on a mobile phone today. On a bank's website, I can do my banking, I can transfer between accounts, or what have you. But there is still an opportunity to take this to the next level.

There clearly are security issues and security concerns. People here may know something that I don't, but I'm not aware of anybody in our industry not participating in any discussion on these issues. They are issues we recognize to be both strengths and weaknesses of our technology and also what the government, for a very good reason, is willing to or not willing to let us use and exercise, because of the balance between openness and security with respect to information usage. What is possible and would make things more secure also has some privacy concerns.

The Changing Retail Payments Landscape: An Overview

Harry Leinonen

I. INTRODUCTION

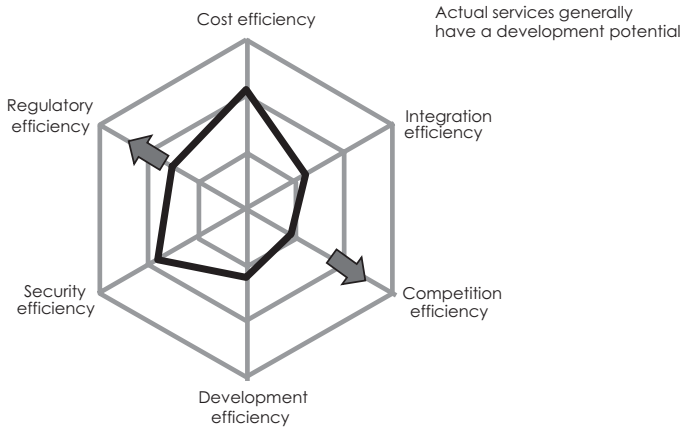
Retail payment services have been developing over recent years, based on customer needs and technology developments. The latest developments have been the introduction of electronic and mobile payments, more secure chip-based contact or contactless cards and expansion of remittance information. As some of these new forms of payments catch market shares, some older forms retreat, such as the use of paper-based instruments like cash and checks. The trends are quite clear in retail payments:

- the costs of payment processing will decrease;
- the speed of payment transfers will increase until we reach complete real-time;
- security features will improve in order to limit losses arising from criminality; and
- ease of use and integration possibilities will improve.

Although the direction of developments seems quite clear, the speed of the developments seems blurred. Payment developments have generally been slow: It seems to take almost ten years before the latecomers are ready to start employing services that early adopters have already used for years. In fact, the payment service providers are also slow in introducing innovations compared to other industries. For example, the current difference in the speed of development between the telecommunication and the payment industries is staggering.

The retail payment landscape changes and factors affecting change will be analyzed in this article by using the hexagon template described in Figure 1. The focus is on improving efficiency, as sufficient security and stability is imperative for payment instrument acceptance in all situations. The current developments can also be seen mostly in the area of efficiency. Although the examples of service developments and their barriers are mainly taken from the Nordic countries and Europe, the same kind of examples can also be found in other regions.

Figure 1
The Efficiency Dimensions in Retail Payments¹



Development requires improvement along at least one efficiency dimension

Generally, the changes and developments seen in retail payments originate in one or several of these dimensions:

- new innovations affect the cost efficiency of payments processing;
- customer integration is improved, resulting in lower costs and higher efficiency when processing payments within customers' systems;
- changes in the market competition setup can result both in pro- and anti-efficiency directions;
- the market and system design itself can promote or hamper developments;
- payments must be sufficiently secure at affordable costs; and
- the regulatory requirements can support developments but also maintain old conventions.

In practice, most markets show development potential, as indicated by the irregular hexagon inside Figure 1. There is a gap between the possible achievable level (the outer rim) and the actual level. The customer implementation lag always results in some kind of gap, but the service providers' reluctance to develop also increases the lag.

The structure of this article follows the issues in the hexagon by presenting them in clockwise order, in relation to Figure 1. In each section, the probable developments are presented together with the drivers for and barriers to change. This article aims to give an overview of retail payment developments. Therefore, it deliberately covers a large area of topics and trends on a general level, and references are given for those interested in more detailed information.²

II. COST EFFICIENCY DEVELOPMENTS

Cost efficiency of payments is defined in this article as the internal payment system and service provider processing efficiency. (Customers' cost efficiency is discussed in the next section under the title "integration efficiency.") Today, banks' payments processing is almost completely automated. Most paper-based processes have evolved to straight-through-processing automation.

There is a general long-term trend resulting in lower information and communication technology (ICT) costs, in accordance with Moore's law, meaning that transistor board capacity is doubled every 18-24 months at same-cost level, translating to a yearly cost reduction of about 25-33 percent. In addition to storage capacity, the trend also seems to cover general computing power and telecommunication costs. Electronic processing costs for payments will therefore soon go down to some fraction of a cent per transaction, which is comparable to the costs of sending and receiving e-mails or mobile phone short message service (SMS) messages.

Standardization has reduced costs in many areas such as container shipping, e-mailing, digital photography, etc. Common standards will have the same effect on payments. All banks and clearing centers could use common open software modules for payment processing. Lately, there have been good developments towards common payment standards within the ISO 20022 XML framework.³ There are also separate card standard developments for contact chip cards (EMV) and contactless cards (EMV+RFID).⁴

Electronic payment standardization will provide the possibility for straight-through-processing via direct computer-to-computer processing in real-time mode where the files are updated immediately and corrections can be made instantaneously. There will be no "check's in the mail" situations as accounts are updated immediately. E-mails and SMS messages would not become cheaper, if they were delayed to the following day or longer. In fact, delayed payment processing in legacy batch systems increases the current overall payment costs compared to modern real-time systems. Society at large is heading towards a real-time economy.⁵

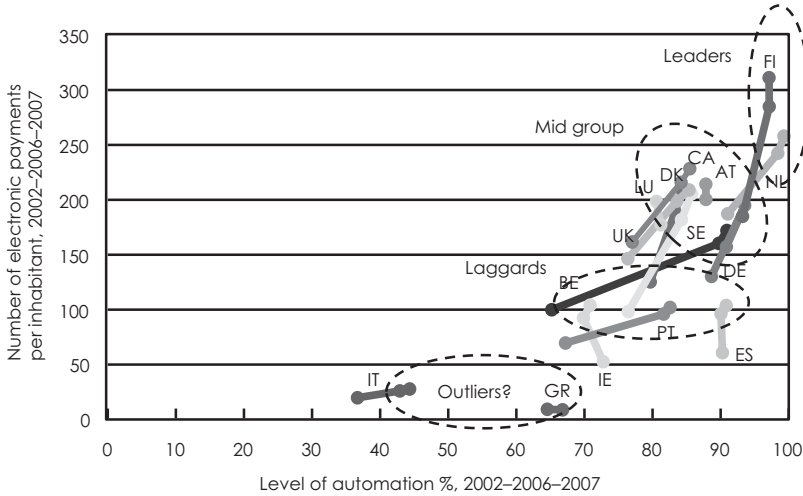
General purpose accounting, invoicing and payroll applications can communicate directly with banks' payment systems based on common standards. E-banking will become the norm for payment customer services, thereby considerably reducing payment initiation costs within banks.

The general business trends towards consolidation and outsourcing will also provide scale benefits and lower cost levels. SEPA (Single Euro Payment Area) is an undertaking which can create large payment system consolidation savings in the European region.⁶

However, although the cost benefits of using modern technology should be the same in all countries, the differences illustrated in Charts 1 and 2 are very large. Chart 1 shows on the vertical axis the number of e-payments per inhabitant and on the horizontal axis the customer automation levels (which is equal to the

Chart 1

Electronic Payment and Automation Level Developments in Selected Countries, 2002, 2006 and 2007



Sources: ECB, Blue Book publications, Statistical Data Warehouse and Bank of Finland.

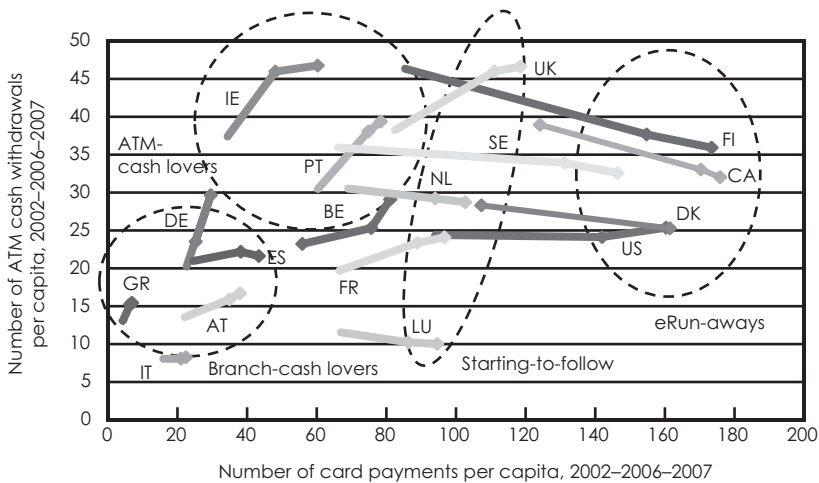
share of electronically presented customer payments of total customer payments). The leading countries are Finland and the Netherlands, with a nearby mid-group closely behind. There are also some clear laggards and outliers, where the e-developments are very slow. (U.S. data is not available for this graph.)

Chart 2 shows the ATM usage compared to card payments at point-of-sale. The share of cash usage should decline when card usage increases. The United States, Canada and the Nordic countries in Europe are clearly running away from the rest. There are some countries following but their growth is slower than that of the eRun-aways. There are countries in Europe that could be called ATM-cash lovers, in that their customers use their cards more eagerly at ATMs than directly in shops. Lastly, there is a group of countries where customers still go to bank branches to get their cash, which is the main means of making purchases in shops, as card usage is very low.

The conclusion to be drawn from these statistics is that payment markets still are local, and the emphasis on cost savings can vary greatly between countries. The reasons for the low interest in costs savings are most probably the low transparency of payment costs and limited competition, which will be discussed in sections 4 and 5.

One issue, which deserves special attention in the area of payment costs is the establishment of common standards. Payments are part of a network-based information transportation industry. Service providers have to follow common

Chart 2
Cash Withdrawals and Card Payment Developments
in Selected Countries, 2002, 2006 and 2007



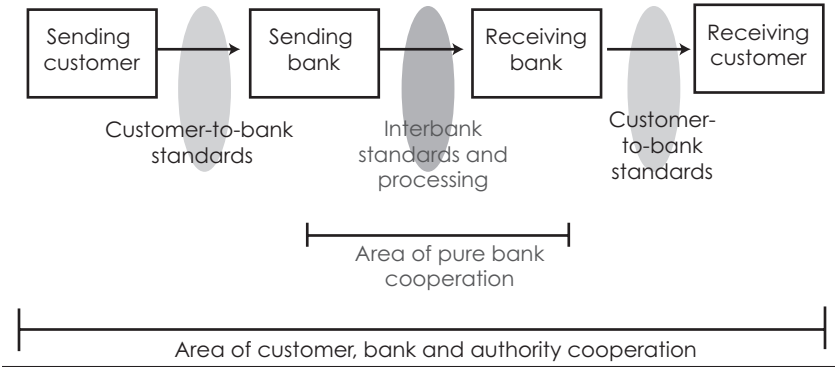
Sources: ECB, Blue Book publications, Statistical Data Warehouse and author's estimate of ATM withdrawals in Denmark.

interbank standards in order to provide services, and these standards will determine the service level that can be provided to customers (Figure 2). The interbank data content will limit the data presented to customers. In order to support straight-through-processing (STP) at the customer level, the common standards should have sufficient remittance and database key information for automatic access and reconciliation of accounts and transactions.

The payment standardization issue has been discussed for years in different international payments forums, but currently it seems that the ISO 20022 XML payment standard developments will result in a comprehensive modern set of payment standards. The implementation barrier also seems to have been crossed, as it is set to become the basic SEPA payment standard.⁷ Because there are legacy forces trying to limit the content of the applied ISO 20022 in line with their legacy limitations, it would be important to ensure that the new interbank standards are comprehensive and can support customers' needs for improved payment services and standards. In fact, the best way to build interbank standards would be to first develop the customer-to-bank standards, in order to get a firm customer-driven basis for interbank standards.

The conclusions to be drawn are that technology changes are so large that payment systems will need to be redesigned based on modern technology in order to improve cost efficiency. Enhanced international interbank standards will be developed and implemented, also at the national level, in the same way as e-mails

Figure 2
The Two Levels of Payment Standards
Requiring Coordination



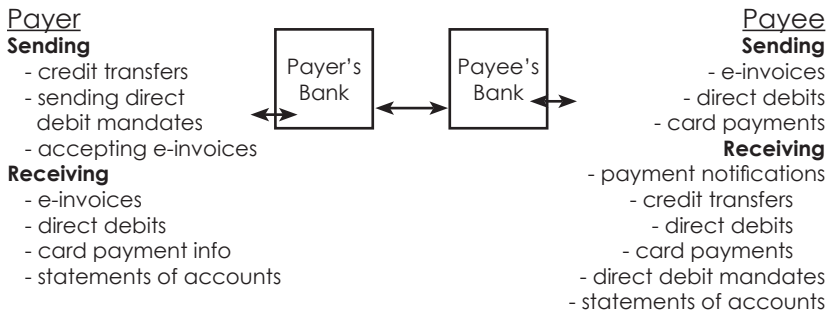
use common global standards. Interbank clearing and settlement systems and networks will move to real-time processing and network administration instead of legacy batch operations. It is currently difficult to predict other kinds of developments, but there could, for example, be unexpected developments due to rapid consolidation developments seen in other network industries. The only important open issues seem to be when this development will happen and by whom the development will be driven: by banks, nonbanks, big customers, authorities or somebody else? There is also the danger of too much focus on service providers' costs, as the main costs of payment processing can be found at the customer level. Increased bank costs due to improved services can therefore be outweighed by benefits received in customers' processes.

III. INTEGRATION EFFICIENCY

Integration efficiency determines the payment cost efficiency within the customers' payment processing. Electronic interfaces to banks' payment systems give customers the possibility for direct electronic reuse of banks' payment data. It will also provide banks with electronic input data. This will require banks to provide common customer-to-bank standards. These standards should support integration by containing sufficient information for customers' internal processes as well as customer-to-customer processing. One very beneficial development in this area is the merging of payment and invoicing information into an e-invoicing service. Card payments are increasingly popular, and customer efficiency can be increased by integrating standardized card payment modules into merchant terminals. On the drawing board, in pilots or in early production versions, we can also see mobile payment services integrating handsets with payment services.⁸

The e-readiness of all kinds of customers is increasing rapidly. The largest companies have all automated their accounting and payment systems and many small to medium enterprises (SMEs) are also employing PC-based systems or using

Figure 3
Necessary Customer-to-Bank Payment Standards



outsourced shared facilities. Smaller and smaller merchants have PC-based teller machines. A portable PC is a necessity for the young generation as well as being of great interest to most others. The mobile handsets used by everyone are emerging into full-fledged mini PCs. The pressure for providing enhanced customer-to-bank integration is growing rapidly.

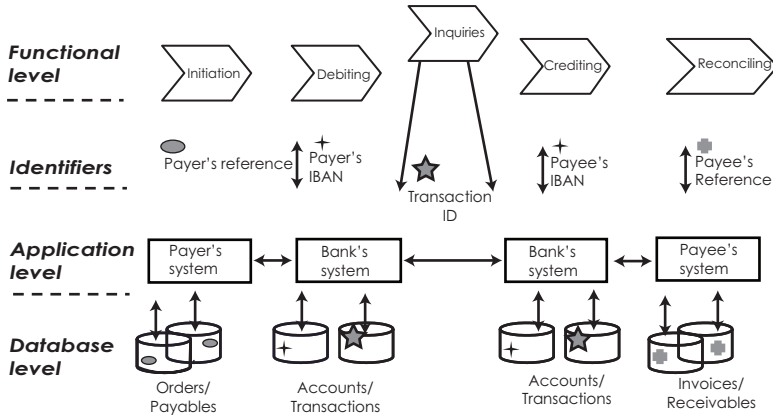
The basis for all kinds of customer integration are the common standards for bank-to-customer communication for the most common payment services as described in Figure 3. Common standards will create the interest among software and system vendors to start to provide “plug-and-play” interfaces to banks.

When customers act as payers, they should be able to send all their payment initiation messages to their bank and receive information on all debits and debit proposals made to their accounts. In the same way, when acting as payees, customers should be able to receive information on all credit transactions made to their accounts and also be able to send out debit proposals (card payments, direct debits and e-invoices), which will then be debited from payers’ accounts. An electronic statement of account can be a major automatic accounting “device” as is the case, for example, in Finland. Most general ledger systems marketed in Finland can directly use electronic bank account statements, based on a common Finnish standard, as an input.⁹

Electronic integration can only be efficient when the necessary automatic addresses and references are available. The electronic payment data is stored in several databases along the processing route. The database keys for accessing the data need to be specified and standardized as described in Figure 4.

Payers generally have their orders and payables in databases, and the information can be accessed using the correct payer’s reference. In order to initiate the payment, the payer has to provide the account information regarding both his own account and that of the receiver. Currently the national account number schemes vary considerably. However, the international account number standard called IBAN

Figure 4
Necessary Addresses and References in Efficient STP
Payment Processing¹⁰



(ISO 13616) has gathered momentum. It will be the account number standard used in Europe in the so-called SEPA region and will replace all old domestic account number systems. There is a clear interest in the IBAN solution outside Europe also. Without a harmonized account number standard, STP in payments will be impossible. It is as important to payments as the international phone number standard was to telephone automation. When the payments reach the payees, they will need a key for reconciling automatically their receivables. There is a new ISO reference code proposal called RF, which should fill this gap in the international standards.

When the payee sends out any kind of invoice or payment request, he states a reference code to the payer, who then attaches it to the corresponding payment. Banks transport the RF reference together with the payment throughout the payment route, so the payee can automatically reconcile the payment upon arrival. There is an inconvenient gap in the necessary reference data, as there is no international transaction ID available (only national code conventions in some countries). This would be a code defining uniquely each transferred payment, in the same way as parcel mail companies number every package they handle and which makes it possible to follow the actual route and progress of each individual parcel in real-time. In the same way, payments should be traceable throughout the entire system via a clear identity code.

There is also a very rewarding payment development called e-invoicing. Under this service, the payment remittance information is expanded to contain all common invoice information. Electronic invoices can be processed, accessed and

stored in different environments. The simplest form is to send a PDF attachment with an e-mail, but then it is difficult to reuse the unstructured data efficiently. However, sending the information using a common e-invoice standard makes it possible for all parties to reuse the information directly in their IT systems. Merging it with payment data makes it possible to reuse the information for synergies within payment systems. Banks are therefore in a unique position to provide value-added services to customers. Today, most customers in the Nordic countries—both corporate and consumers—employ e-banking. When e-invoice data is attached to a company's payments, the bank's statement of accounts transforms automatically into an electronic invoice archive that the customers can access and browse whenever they have a need for invoicing data. Instead of archiving paper receipts from shops, customers can find the information from their bank statement archives using a browsing application already familiar to them from e-mail archives. Where necessary, invoices could also be sent in electronic form directly to tax or other authorities, which would increase the efficiency in these authorities' processes. In this model, e-invoices are routed to customers using IBANs and presented to customers via the e-banking interface for simple acceptance by clicking. E-invoicing has gotten off the ground well in the Nordic countries, and there is increasing interest in the rest of Europe.¹¹ The European Commission has established various kinds of working parties to promote the e-invoice concept.¹²

The mobile handset is the most rapidly implemented device ever. Almost everybody has at least one mobile telephone. The services and features of mobile telephones are increasing rapidly, because modern phones are basically miniature PCs with very advanced communication capabilities. Because these phones can be connected to the Internet, they can also be used as e-banking terminals. However, they also provide more advanced integration capabilities when their security, storage and processing capacities are employed. The simplest way to picture the new possibilities is by visualising your normal plastic payment cards changing into digital cards stored in the phone. You will be able to see the cards on the screen and select which one to use. The card information can be updated immediately over the air. If the phone is lost, it is easy to reload the information to a new phone from a centralized back-up center. The phone can save the data of accepted payments for automated reconciling, abolishing this tedious work. Mobile payments will also need both technical and business standards in order to evolve. There is clearly a large group of younger customers who are eager to move to digital m-payments.

The conclusions to be drawn from the integration developments are that this area contains the largest development benefits. The costs connected to customers' internal payment processes are much larger than the costs of the banking industry processes. Customers have a large interest in increasing the efficiency of the overall payment process. Remittance information will increase in payment messages and especially in formatted information such as references (e.g., RF) and addresses (e.g., IBAN). Re-engineering payments with e-invoicing and m-payments will

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provide completely new synergy effects based on modern technology. The benefits of these are so significant to customers that banks might lose the markets to newcomers if they are slow to provide sufficient e-integration to customers.

IV. COMPETITION EFFICIENCY

Sufficient competition is important for efficient developments. However, in the payment industry, several factors limit competition. In most countries, inter-bank payments are processed via a clearing house monopoly, which in most cases decides upon payment standards. Customers are often locked in by proprietary standards and fixed account numbers, which make changing service providers difficult and costly. Payments services are to a large extent priced non-transparently, which reduces price competition and increases the barriers for new entrants. The current business model and competition setup in payments is probably the largest barrier to development. However, there are developments occurring that will most probably change the current business model.

Over history, centralized clearing centers—jointly controlled by service providers—have evolved in almost all countries in the form of automated clearinghouses (ACHs). These are normally in a monopolized position for interbank transfers and sometimes for company-to-bank interfaces. It is only in a few, mainly smaller, countries that decentralized network-based clearing and settlement facilities have emerged. The ACH determines the regional interbank payment standards and service level, which becomes the general norm. The network force of the ACH network is strong, and it is difficult to bring new services to market outside the interoperable services among banks. Each bank (or other service provider) is generally so small that providing internal extra payment services only among its customers does not catch sufficient customer interest.

New entrants have to face this network barrier, and in most cases they have failed. Creating completely new networks for e-money, new card schemes, mobile payments, etc., is difficult. Currently, there are three potential new card schemes¹³ under discussion in Europe for the SEPA environment, and it will be interesting to follow their development and competition with the established card schemes. There are several mobile payment initiatives facing the same problem.

In order to reduce the network power of these central institutions, the authorities have required openness and fair participation rules. End-user participation in the governance of these entities can also help to ensure developments in the interest of consumers and companies. One trend, followed in some regions, has been to separate the clearing and settlement operations from payment scheme governance, including setting of standards. The governance structures can then be different, and there could be more competition in clearing and settlement when there are parallel infrastructures.

Efficient payment processing requires standards for bank-to-customer communication. When banks use proprietary standards, customers become locked by the services of a specific bank. Increasing the barrier for changing service

providers is in the interest of service providers, while the public interest is the opposite. Competition in payments is enhanced by common standards, and we can therefore see, at least in Europe, a growing interest among authorities in payment standardization issues.

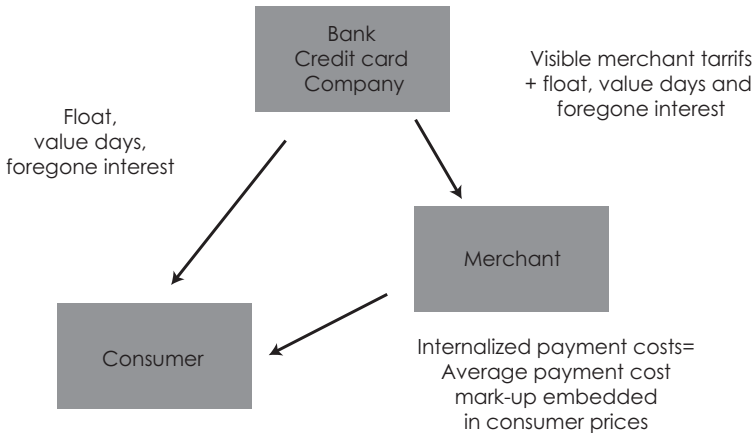
Another issue currently under debate in Europe is bank account number portability. In Europe, portability for telephone numbers was already required in 2002.¹⁴ This triggered strong competition, especially among mobile telephone service providers, as customers could rapidly change service providers and still maintain their old telephone number. Changing account numbers is a barrier, especially for company customers, as well as private customers with a lot of incoming payments such as e-invoicing proposals. This is also connected to the rights of customers to transfer payment data to a new service provider or download it to their own computer. The basic question is who owns the customer data. There is a trend towards increased portability in the network industries that will probably also affect the payment industry.

The largest barrier against change is probably the current business model based on hidden and embedded pricing. Most of the banks' revenue from payment services stems from charges hidden from the consumers. There are seldom visible transaction-based consumer charges; instead there are float and value-days-based foregone interest. Merchants are often charged in a visible way for card and cash services by banks, but the no-surcharge rules¹⁵ and cash payment conventions result in merchants adding their payment costs as an average mark-up on consumer prices (and not as visible surcharges). Therefore, merchants generally regard banks' payment charges in the same manner as a value-added tax (VAT), they just have to "internalize" it as such in their prices. Although the merchants pay VAT and the banks' merchant charges in the first phase, in the end the consumers pay all the payment costs without being given a choice with proper cost information (as highlighted in Figure 5).

Customers' payment habits are then based on other criteria than prices. For example, perceived free credits attract customers to use given types of credit cards instead of using cards with explicit charges for deferred debit or asking for direct consumer credits from their banks. The different merchant charges and service levels among instruments result in cross-subsidising instruments at the merchant level and thereby hide the benefits of the most cost-efficient alternatives. There is a vast amount of literature on two-sided payment markets, taking as the starting point merchant payment mark-up internalization, where the main fallacy is in assuming that consumers would be better off with non-transparent pricing.¹⁷ As long as consumers see biased or limited price signals, price competition will be limited and banks' charges higher than in a competitive environment.

In the case of payment instruments, consumers generally have a palette to select from in shops: different debit cards, cash and different credit cards. For the merchant, each accepted instrument type generally has different pricing, and the merchant

Figure 5
The Non-Transparent Pricing Model of Point-of-Sale Payments¹⁶



calculates an average mark-up to cover the payment costs. Table 1 contains an example of an average calculation for Finnish merchants. Each payment instrument has its merchant fees, and based on the actual volumes, the merchant has to calculate the necessary mark-up in his case. The average mark-up in Finland was about 0.53 percent in 2007. The same kind of calculation would give different results in other countries as the merchant fees vary considerably from country to country.¹⁸

In the Finnish case, the average internalization at the merchant level results in a situation where debit cards provide cross-subsidization to all other means of payments due to the large debit card volumes and their relative efficiency. In Finland, merchants pay rather high cash service fees to the banks, and if these were changed to visible cash withdrawal tariffs, it would result in an EUR 0.80 charge per current average withdrawal. The embedded credit interest for the average 35-45 days of deferred debit for credit cards in Finland translates to visible interest of 10-14 percent for low cost cards and 35-45 percent for high cost cards. As customers in Finland are fairly price sensitive, visible charges in the range of the embedded charges would probably provoke considerable changes in payment habits.

The current business model based on hidden charges promotes inefficiency because:

- cost differences among payment instruments and service providers remain unseen;
- end-users lack incentives to economize (compare with the discussion on disposable plastic bags);
- price competition is limited;
- new efficient entrants have difficulties in entering the market when their

Table 1
Finnish Merchant Payment Mark-ups in 2007 and Their
Corresponding Visible Alternatives¹⁹

Card Type	Banks' merchant fees	Cross subsidization %	Average subsidy per trans. (€)	Corresponding ATM withdrawal fee (€)	Corresponding interest rate p.a.
Dom. debit card	0.11%	-0.38%	-0.13		
Int. debit card	0.33%	-0.15%	-0.03		
Cash	0.80%	0.17%	+0.02	0.80	
Visa/Mastercard	1.00%	0.52%	+0.32		10-14%
Other credit cards	3.50%	2.72%	+1.71		35-45%
Average mark-up	0.53%				

cost-efficiency cannot be noted; and

- slow development pace due to lack of price/cost incentives.

The current pricing model was efficient when cash was the dominant and the most efficient payment instrument in use. In the current situation, with more efficient payment instruments available,²⁰ maintaining the old business model supports the over-use of cash and provides service providers with extra benefits by being able to over-charge for credit card services. Changing pricing conventions is politically difficult as the majority of consumers do not realize the level of hidden payment charges and assume that visible charges would be some extra, new additions. Customers receiving subsidization are also reluctant to lose their extra benefits. However, there seems to be an increasing comprehension among authorities that opening the payments up to transparent pricing would benefit society.

There are different ways to introduce more visible tariffs; one way would be to forbid service providers' no-surcharge rules, thereby giving merchants a new alternative to choose from.²¹ The possibility of surcharging would in itself already pose a threat, which would introduce a controlling element for excessively high merchant fees. It would probably also be reasonably efficient if some important groups of low margin merchant sectors were to apply surcharging, for example, within the transportation services, supermarkets and the public sector. It is also linked to the issue of interchange fees, because if interchange fees are limited for the so-called four-party schemes, the three-party schemes²² will experience a regulatory benefit as they could still "inflate" merchant fees due to the non-transparency of their internal revenue-sharing between issuing and acquiring services.

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Another alternative to increase transparency is to limit interchange fees and thereby merchant fees, as interchange fees inflate the merchant fees. In the two-sided market literature one can find arguments for interchange fees, which are somewhat removed from reality and payment service competition efficiency. If we first compare cash and debit cards, the efficient withdrawal of cash from the customer account will require a plastic card and ATM services. However, the same plastic card can also be used directly in the merchant store. As debit card transactions carry lower cost than cash withdrawals and the average cash and debit card transactions are above the calculated break-even point²³ for cash versus cards, the issuing bank will profit for each additional debit card transaction above this break-even point. There is therefore no public interest in a positive interchange fee for the issuing bank, which would increase its profits, but at the same time decrease the merchant interest for debit cards. In fact, one could even find arguments along this train of thought supporting a negative interchange fee that would increase the merchants' interest to invest in EFTPOS terminals at the start up of debit card schemes. However, in the long run, when debit cards dominate over cash, a zero-interchange fee will support neutrality among different payment instrument alternatives. Typical for many of the countries where cards and especially debit cards are popular (see Figure 1), there are no debit card interchange fees among banks, but transactions are accepted at par between banks.

As debit cards dominate over cash from the issuer's point of view, the focus of the analysis on a possible credit card interchange fee should be between these two card types. Providing credit to the customer implies a decision about a credit or overdraft limit. This can be provided as an overdraft facility on the normal bank account or a separate credit account. When the card customer pays the interest on the credit as an overdraft or separate account interest, there would clearly be no reason for introducing an interchange fee for credit cards as the issuing bank would have the same cost benefit over cash as with debit cards. The costs for the credit would in this case be covered by the separate visible credit charge to the credit customer. There can therefore only be an argument for an interchange fee when the (deferred or overdraft) credit is provided without or at a low subsidized interest charge. This would also imply that the interchange fee ceiling for credit cards would, at least analytically, have to be in line with consumer credit interest rates and vary according to the general interest level fluctuations. However, it is difficult to find convincing arguments why it would be in the public interest to support the uptake of one type of consumer credit by subsidizing it through merchant mark-ups on other paying customers. Prohibiting interchange fees for credit cards would therefore support price transparency and competition as the card customers could negotiate the best interest directly with their credit providers, and the customers' restraining credit usage would avoid subsidizing credit customers.

When it comes to the use of checks in the United States there is an at par acceptance requirement by the issuing bank. This was introduced to increase competition and efficiency in the issuing, acquiring and processing of checks.²⁴ This would probably have the same effect on the issuing and acquiring of cards.

Converting this policy to the modern card environment would imply that the Federal Reserve Bank (FRB) would require all card payments to be accepted at par by the issuers and it would function as a card transaction switch, providing acquiring services at par but charging a flat processing cost fee. FRB would also state the electronic standards for the required card transaction messages. FRB would thereby provide a public card transaction switch operating under the same conditions as the private alternatives. This would be the ultimate operational intervention to increase competition, efficiency and transparency in the market. Such an intervention would require thorough impact analysis and clear evidence of a market failure.

New entrants have difficulties in entering the payment markets partly due to licensing requirements and infrastructure participation rules. However, the biggest hurdle is probably the business model based on embedded pricing and cross-subsidies. Because of this, the new entrant cannot show its benefits directly to the end users. In order to be successful, it has either to be able to thrive on synergies from other business lines giving cross-subsidisation power (e.g., could be the case of telcos) or it can provide sufficiently high customer cost-savings, for example, via improved integration and value-added services, which make customers interested in paying sufficiently for the new advanced services (locating a good example case would probably provide the finder with ample royalties!). Authorities, for example in Europe, have tried in various ways to open up the payment market to new entrants by providing a separate e-money institution²⁵ and a payment institution²⁶ license, but the results will continue to be poor if the non-transparent business model is not changed.

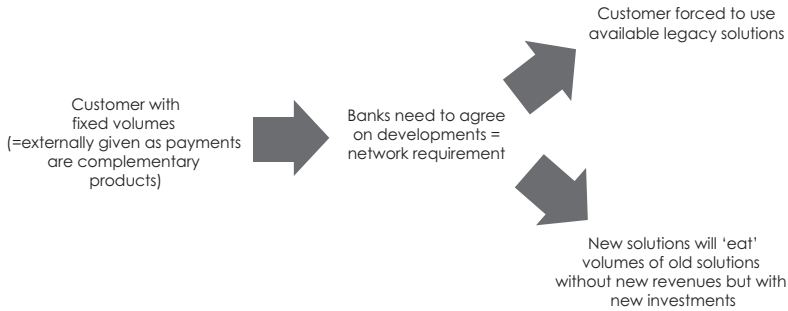
Following competition efficiency, conclusions can be drawn: There is a general interest among competition authorities to increase competition within the payment industry by better controlling monopolies, requiring more openness, promoting portability and limiting interchange fees. The current business model based on hidden pricing is the major barrier to competition, development and new entrants. Increased competition is the best guarantor of improved efficiency and lower costs/tariffs.

V. DEVELOPMENT EFFICIENCY ISSUES

Payment service developments are caught by what could be called a zero-sum cannibalism dilemma, which is difficult to solve. Modern standards support developments better than legacy standards. Implemented new governance structures promote better development than older structures. The area of development incentives also shows some improvements. However, payment systems and services generally show a slower development pace than comparable industries.

The zero-sum cannibalism (Figure 6) is due to customers' externally provided volumes, non-transparent charges and banks needing to agree on common developments. Payments are completely complementary products. Nobody makes a payment just for the sake of payment. There is always an agreement on an economic transaction behind every payment. The number and amount of payments

Figure 6
The Zero-Sum Cannibalism Dilemma of Payment Service Developments



are generally determined by consumers' and companies' budgets and other external factors without any relationship to payment service developments. In most cases, payment costs are so small that they do not affect the overall payment volumes; in other words, users do not reflect on the payment charges when making the decision to buy or sell something resulting in a payment transaction. With a fixed overall volume for any time period, payment developments can only affect which instruments will be used by customers. An increase in one instrument will result in a similar decrease in the use of another instrument. In order to bring interoperable improvements to the market, these have to be agreed on among the banks, and all banks must make the necessary investments. However, this seldom increases banks' revenue as most of the current revenues are based on hidden charges independent of the selected payment instrument. For example, agreeing on faster payment services would reduce hidden float revenues. It is difficult to visibly charge for new products above the mostly zero-level visible tariffs of old alternatives. However, banks will have investment costs for each development. Generally, the status quo serves banks well; as there are no investments involved and customers have no other option than to use the available services. Therefore, banks have generally weak interests in investing in developments serving cost reductions by customers but somewhat stronger interests in cost reductions by banks. However, achieving cost reductions among banks requires coordination and cooperation, and the cost inefficiency is generally distributed "neutrally" among banks.

ICT developments in general and in other network industries have progressed toward open standards, which are easy to develop and have a governance structure supporting their development. This creates the basis for building "plug and play" types of software, which we find in communication, digital music, and digital photography, etc., environments. XML (eXtensible Markup Language) is a new data description syntax, which is contained in the data itself and has comprehensive features for developing data content and version management. XML is used in the new ISO 20022 payment standard²⁷ and is expected to ease the development

management process. There is currently a better understanding of the importance of modern e-payment standards and the need for their efficient governance. The change to ISO 20022 XML-standards will be a big step toward open and common standards in payments and will facilitate faster developments.

Customers, and large customers in particular, have become increasingly interested in payment service developments as inefficient payment systems increase their cost burden. In some cases, large merchant chains have started their own banking service focusing basically on consumer/customer deposits, credits and payment services.²⁸ Merchants have also taken the initiative of building their own card brands and networks.²⁹ Large companies initiate and receive more than 80 percent of all payments. They have, therefore, a significant interest in common and efficient customer-to-bank standards, especially when in most cases they use the services of several banks in parallel. Even a small number of large multinationals have, therefore, the possibility to press for these kinds of developments or even start to define the required common standards.³⁰ My personal observation is that the customer-to-bank e-standards are more developed in small economies in Europe than in the large ones. One explanation for this could be that the end-user impact is larger in small countries, where all organizations are smaller, and that there are more direct contacts on all levels between banks and company management—increasing the overall level of awareness of the potential benefits.

The regulators have also recognized the current development disincentives in the payment market. One way regulators have reacted is by forbidding float and value days and requesting more pricing transparency in general.³¹ Changing the incentive structure can be a strong development driver as it changes the business model features that currently hinder development.

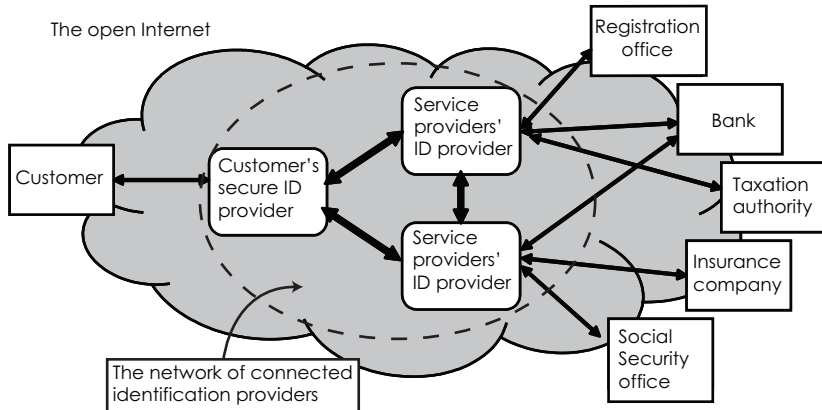
The development efficiency conclusions are that the current business model and complementary status of payment services are the strongest development barriers, and changing the underlying incentives could be the best driver for increased and improved retail payment developments. Flexible and open standards are important for efficient change as well as sufficient end-user involvement. There is clear pressure in this direction in the market.

VI. SECURITY EFFICIENCY DEVELOPMENTS

Sufficient e-security is essential for modern electronic payments. Customers have to be identified properly and, therefore, secure e-identification based on common standards has to be the long-term goal. This will require secure encryption and security key (PIN) storage devices for customers. The Internet is the backbone of the electronic society of today, but there is a clear need to improve its overall security. Security levels can always be improved, but the investments must be in a cost-efficiency balance.

All kinds of important individual customer e-services, such as e-banking, e-commerce, e-insurance and e-government (i.e., e-taxation returns, e-registration,

Figure 7
The Long-Term Goal of an Open Common
E-identification Network



etc.), require reliable and strong identification of the customer (see Figure 7). E-identification has to be done remotely, over the open Internet, which poses major challenges. Currently, most e-service providers use their proprietary solutions. For some countries there are national solutions mutually used by several service providers, but there are no true international schemes used by a large user community, yet.³² The non-standardized situation is difficult for customers using several service providers. The costs are also higher and the security level is lower when different kinds of e-identification solutions are used in parallel. For example, a low-security level solution increases the likelihood for e-identity thefts. A secure solution requires a combination of secure PIN, biometric ID and physical digital device technologies. A standardized global solution would need agreement on a common trusted security administration entity. This kind of network solution will require cooperation among telcos, e-service providers and public authorities alike. In the same way, as official paper-based identification services are provided by public authorities, there will probably be the need for significant involvement by public authorities in establishing a long-term e-identification solution.

Any kind of e-identification solution will be tightly connected to the encryption of payment and other information flows between the customers and e-service providers. This will require secure tamper-resistant devices connected to the communication lines and the customer computers handling payments. The current PC offerings are generally too open, and there is a need for an additional security device. When GSM mobile telephone handsets were designed, the secure identification of the handset was important and so the chip-based SIM (Subscriber Identity Module) was constructed. Mobile phones could provide the basis for e-identification based on the SIM card or an additional security module in the phone. Banks

have moved to the more secure chip-card world by developing the EMV standard³³ for chip-cards and have started to roll out EMV-based cards, instead of the easy-to-copy magnetic stripe cards. However, EMV cards can only be used with secure terminals. The mobile payment developments may provide a solution for this as m-payments and e-banking could use the same identification and encryption solutions available in future mobile handsets. In the long-run, customers' identification "papers" could be copied from the wallet into the mobile handset for more efficient and secure identification. However, even though this development seems plausible, it will require several years of technical developments, and there will certainly be lengthy political debates over e-privacy issues.

Our modern society is increasingly dependent on the open Internet. Because of the very openness of the Internet, it has also become a playground for viruses, malware, spyware, phishing attacks, identity thefts, etc. The current openness of the Internet provides good hideaways for e-criminals, and the probability of being caught is very low. These problems will negatively affect law-abiding citizens' interest in using the Internet for their important transactions. The interest of criminals in e-criminality and the Internet will increase as the monetary values transferred and stored in the Internet increase, as criminals are always interested in places where money is easily available. Because of the increased dependence on Internet-based services, Internet security will need more public attention, although this is also an area that easily results in protracted policy discussions about e-privacy. However, good audit trails and good customer identification are the very basis for secure e/m-payments.

The security efficiency conclusions are that the payment industry needs to move from the current proprietary security solutions toward more standardized and common solutions, in cooperation with other e-service providers. The lack of secure and standardized solutions will, at some point, hamper e-developments regarding services requiring high security and strong identification. Tamper-resistant security devices need to be integrated into PCs and mobile phones. Increased Internet security will be required in order to increase the use of services requiring high security, as otherwise the growth of e-criminality will hinder law-abiding usage.

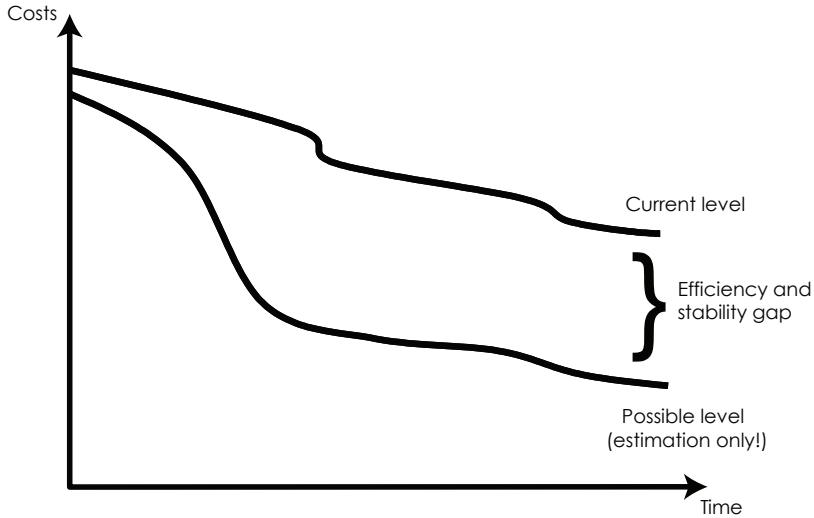
VII. REGULATORY EFFICIENCY

Regulators and other public authorities are in key positions regarding payment service developments. They can either promote developments or hinder them. There are several tools available to authorities. Various issues can be brought to the attention of the general public via basic research and information. Recommendations and leading by example when it comes to the employment of efficient solutions have a positive impact on the rest of the economy. Public entities can also provide efficient operational services, traditionally provided within central banks. This is currently placing central banks in some kind of dilemma regarding the possible overuse of cash. The strongest instruments in the tool box available to authorities are various kinds of regulations—direct rule-type or incentives-affecting regulations.

There seems to be an overall increased interest among authorities in retail payments. Central banks publish increasing numbers of studies on retail payment costs, pricing and other issues.³⁴ Completely new kinds of central banks' recommendations for retail payments have been established³⁵, and there is an increasing level of interest by government-users in e-banking and, for example, requiring e-invoices has become a norm in Nordic countries.³⁶ Legislators have started to introduce detailed rules for retail payment processing in order to speed up developments.³⁷ Especially, competition authorities have become active in retail payment competition issues, for example, by limiting interchange fees.³⁸ The increased public authority involvement seems to have a positive effect on payment developments, for example, the SEPA developments in Europe would not be advancing even at the current speed if it were not for a strong authority-initiated push.³⁹

The efficiency of cash is under discussion in Europe. Cash seems to put central banks in some kind of dilemma.⁴⁰ Cash, and especially high-value notes, which are seldom used for normal payments but mainly for hoarding and criminal-type of transfers, provide central banks with ample seignorage revenue. However, from the social cost point of view, cash is currently only efficient for very low-value, coin-sized, payments.⁴¹ The popularity of cash is in part due to tradition and its status as legal tender, but particularly due to cross-subsidization and hidden pricing conventions. Today, customers only see a small part of the total cash costs. Cash also induces various kinds of criminality. All over Europe we have had an epidemic-like wave of cash transport robberies. With less physical cash in circulation, there would be reduced interest in committing all kinds of robberies and cash thefts. The anonymity of cash compared to other payment instruments increases interest in it being used for a wide selection of grey and black market transactions, tax-evasion, etc.⁴² Moving towards a larger use of modern noncash payments would reduce costs to society. There are currently big national differences in this area as can be concluded from Chart 3. However, it seems politically difficult to introduce visible charges on cash as the average citizen perceives visible tariffs as tariff increases as they cannot see any reduction in the invisible embedded tariffs. However, the relative cost difference between cash and efficient noncash payment instruments increases continuously as the physical handling costs of cash increase and the e-processing costs decrease. There will therefore be a general benefit in getting the use of cash somehow "nudged" to lower levels. Perhaps the potential ease-of-use of mobile payments will at some point in time trigger a rapid change, at least among younger citizens.

Figure 8
The Increasing Efficiency Gap in Retail Payments Due to the Status Quo⁴³

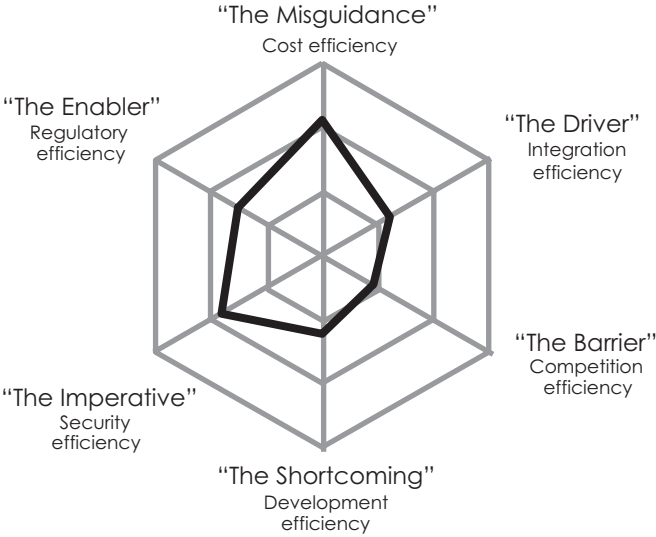


Regulatory efficiency conclusions are that the efficiency gap in retail payments increases due to the status quo (see Figure 8). Technology and innovations would provide more efficient solutions, but the industry and customers are quite strongly locked-in by legacy solutions. An active authority push seems to have positive effects in a time of change, and regulatory tools seem to be required. Their implementation must be cautious as regulations can also have the opposite effect. However, old regulations—supporting legacy payment instruments—need to be abolished at the very least.

VIII. CLOSING REMARKS

We seem to be heading toward a “worldpay” solution with common globally standardized payment solutions. In such an environment, everybody will easily be able to send payments to anybody all over the world in the same way as we can send SMS messages and e-mails all over the world in any language using common standardized solutions. The technology for this is already available; it is only a matter of the right incentives for development. The main question is, What are the most efficient steps we can take to reach this vision?

Figure 9
The Roles of the Different Efficiency Dimensions



Coming back to the revised version of the initial figure (Figure 9), the cost efficiency of service providers could be misleading the developments toward minimizing costs of service provision, while the real driver for change can be found in customers' integration efficiency. The current business model and competition setup is probably the largest barrier, which together with the shortcomings in development efficiency, strongly maintain the current inefficient status quo. Security efficiency must be protected in all cases at a cost-efficient level. In the times of change, public regulation seems to be the enabler when the industry is locked by an inefficient business model.

ENDNOTES

¹Adopted from Leinonen (2009).

²One general reference to payment developments is Leinonen (2008), which has been used as a background document for several of the presented topics.

³See www.iso20022.org.

⁴See www.emvco.org, www.etsi.org/website/technologies/rfid.aspx, and Heinrich (2005).

⁵See more at www.realtimeeconomy.net.

⁶See www.sepa.eu.

⁷See for example www.europeanpaymentscouncil.com.

⁸These kinds of undertakings can be found in almost all countries and, out of neutrality, no references are provided. It is difficult to see which of these will survive. In some developing countries, mobile payments have rapidly become a main payment instrument; see for example Vodaphone (2007).

⁹Details can be found on the website www.fkl.fi.

¹⁰Adapted from Leinonen (2008), p. 179.

¹¹See e.g., www.fkl.fi, www.bbs.no, www.bgc.se, www.ebaclearing.eu, www.europeanpaymentscouncil.com.

¹²See European Commission (2008), European Electronic Invoicing, Final Report and Mid-term Report of the European Commission Expert Group on e-invoicing (2009).

¹³EPS European Alliance of Payment Systems, see www.card-alliance.eu (EAPS); PayFair, see www.PayFair.eu; and the MONNET project established by a group of French and German banks.

¹⁴See the Universal Services Directive (2002/22/EU).

¹⁵Card transaction acquiring agreements require merchants to accept cards without adding a visible charge.

¹⁶Adopted from Leinonen (2009).

¹⁷Rochet and Tirole (2004) and Evans and Schmalensee (2005).

¹⁸See, for example, European Commission's Interim report on payment cards from 2006.

¹⁹See for detailed calculations Leinonen (2009) pp. 187-222.

²⁰The cost of payment instruments have been studied in several European countries, and the general findings are that cash is only a cost-efficient instrument for very low-value, coin-size, transactions. For larger payments, cards are a more-efficient means of payments. See, for example, Banco de Portugal (2007); Bergman et al. (2007) for Sweden; Brits and Winder (2005) for Netherlands; Gresvik and Haare; (2009) for Norway; and National Bank of Belgium (2006).

²¹For example, the Payment Service Directive (2007/64/EC) will introduce prohibition of no-surcharge rules in Europe in 2009.

²²Schemes with separate issuing and acquiring service providers and with a payment network connecting the different interoperable service providers in comparison to three-party schemes where the issuing and acquiring services are provided by the same service provider.

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²³See the cost studies referred to in endnote 20. The basic idea is that the hidden charges (e.g., float, etc.) remain unchanged in the alternative and there are no visible charges (e.g., ATM or EFTPOS transaction charges), so the only differences will be found in the cost factors. Each EFTPOS and ATM transaction will be booked separately, but the ATM withdrawal can be used for many smaller payments, so the differences in transaction cost levels and the splitting of ATM withdrawals in smaller transactions will determine the efficient breakeven point.

²⁴Connolly and Eisenmenger (2000).

²⁵See the European E-money Directive (2000/46/EC).

²⁶See the European Payment Service Directive (2007/64/EC).

²⁷See www.iso20022.org.

²⁸TESCO in the UK and the S-retail chain's S-bank in Finland are typical examples in Europe.

²⁹See, for example, www.PayFair.eu for Europe.

³⁰One initiative in this direction is TWIST; see www.twiststandards.org.

³¹See, for example, the Payment Service Directive in EU (2007/64/EC) and the Norwegian payments legislation.

³²The so-called "Porvoo group" (see www.porvoo12.net) has been one initiative for establishing interoperability between mainly public PKI certification authorities, but there are still no actual implementations.

³³See www.emvco.com.

³⁴Several central bank reports in this area can be found in the references in the end of the article.

³⁵BIS (2001, 2005 and 2006), ECB (2009c and 2009d).

³⁶In Denmark, since 2005, there has been a legal requirement on invoicing electronically the public sector (Lov nr 1203 af 27/12 2003). In Sweden, there was a government decision, taken December 14, 2006, which required implementation of e-invoicing within government agencies by July 1, 2008. In Finland, the Ubiquitous Information Society Advisory Board established by the Minister of Communication requires that government agencies should receive only e-invoices from January 1, 2010, onward and promote consumer acceptance of sent government invoices (see www.arjentietyhteiskunta.fi).

³⁷See, for example, Payment Service Directive and Norway's payment legislation.

³⁸European Commission (2007c), Macfarlane, I J (2005), Office of competition and consumer protection in Poland (2007), Weiner & Wright (2005)

³⁹ECB (2008, 2009a and 2009b) and ECB and European Commission (2009).

⁴⁰van Hove (2007).

⁴¹Banco de Portugal (2007), Bergman et al. (2007), Brits and Winder (2005), Gresvik and Haare (2009a), and National Bank of Belgium (2006).

⁴²Andersson and Guibourg (2001), Humphrey et al. (2000), and Paunonen and Jyrkonen (2002).

⁴³Adapted from Leinonen (2008).

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INTERNET SITES

Bankers' associations, service providers and banking business forums

www.europeanpaymentscouncil.com

www.fkl.fi

www.mobeyforum.org

Central banks or central banks related

www.bis.org

www.bof.fi

www.ecb.int

www.rba.gov.au

Government or government related

www.arjentietoyhteiskunta.fi

Clearing houses

www.bbs.no

www.bgc.se

www.ebaclearing.eu

www.luottokunta.fi

www.theclearinghouse.org

www.voca.com

Customer organizations

www.eact-group.com

Card payment networks

www.mastercard.com

www.visa.com

Standardization organizations

www.ecbs.org

www.efaktura.no

www.e-lasku.info

www.emvco.com

www.fineid.fi

www.finvoice.fi

www.iso20022.org

www.nacha.org

www.porvoo12.net

www.svefaktura.se

www.swift.com

www.twiststandards.org

The Changing Retail Payments Landscape: An Overview

Commentary

Tony Hayes

I would like to respond to some of Harry's positions and arguments.

In Table 1, I've summarized as best as I could a number of the points that were made. The left-hand column lists the six major components of his paper—all under the heading of efficiency themes. The categories include 1) cost, 2) integration, 3) competition, 4) development, 5) security, and 6) regulation. I would like to take each one of these in turn and give you a few thoughts of my own.

The first comment is in terms of the cost theme—that is, Harry asserts that payments systems will achieve, or be redesigned using modern tools to achieve, cost benefits. Harry references some of the standards that have been employed using analogs in other industries. The evidence would suggest that certainly is the case. The cost per transaction in every country around the world is coming down, in terms of the actual processing costs. We are getting efficiencies. We are seeing new tools being used. We are seeing advances in the telecommunication methods at play. It seems indisputable.

Second, in terms of integration, I culled out two main subthemes here. Harry's first argument is that payments will become much more integrated within the core banking proposition. I certainly would agree, and I am going to comment on this and give a few examples of things we see here in the United States. A second was touched on by Dan Hesse over lunch and again in this paper around the potential for mobile payments—the prospect of essentially moving the leather wallet you have in your pocket into the mobile wallet and even the multiaccount mobile wallet, and the potential that mobile payments can offer. There is tremendous potential for what mobile could bring. We can almost point to the end state and see the vision. And the vision is very appealing, clearly what was referenced. What is tricky is the part from here to there, and we will touch on that.

Table 1
Summary of Leinonen’s Argument and My Comments (U.S. Focus)

Efficiency theme	Leinonen argument	Response/ comments
1 Cost	<ul style="list-style-type: none">• Payment systems will be redesigned using modern tools to achieve cost benefits	<ul style="list-style-type: none">• N/A
2 Integration	<ul style="list-style-type: none">• Payments will integrate with core banking services• Leather wallet will transition to the mobile wallet	<ul style="list-style-type: none">• Yes, several examples in the marketplace today; more can be done• Mobile payments have tremendous potential, but key barriers remain
3 Competition	<ul style="list-style-type: none">• Payment networks are inefficient and should be regulated• Retail prices should be pre-payment costs, and allow for discounting or surcharging	<ul style="list-style-type: none">• There is intense competition across payment network providers; may be helpful to regulate against cross-subsidization• Cost/benefit of price regulation is very complex
4 Development	<ul style="list-style-type: none">• New products cannibalize existing products, lower volume means lower margins; hence, banks are motivated to stick with legacy solutions	<ul style="list-style-type: none">• The payments "pie" is not fixed; electronic payments have been growing on a per-capita basis• Innovation is largely creating new "front-ends"; very difficult to build a new network• Key challenge is how to make all participants better off
5 Security	<ul style="list-style-type: none">• Growing interest in a common, standardized authentication solution	<ul style="list-style-type: none">• N/A
6 Regulation	<ul style="list-style-type: none">• Regulators can speed up and delay the rate of development	<ul style="list-style-type: none">• Some very positive regulations, e.g., Check 21 and rules to expand card use• Impact of CARD Act and Reg E changes unclear; interchange is a wild card

Third, and one of the things that is going to be maybe the most controversial aspect of Harry's paper, is around competition. He asserts payment networks are monopolies. They are inefficient and ought to be regulated. Certainly, my belief is the opposite. The fact is competition between payment networks could not be any more intense. I see this on a daily basis as the networks compete against each other for share. It has only gotten more intense over the years. I'll just touch on this.

Then the other point that was made is around payment pricing not being transparent. It is embedded. It is passed on to retailers or other merchants and then embedded in the cost of goods and services. That is certainly true. But the question is, should it change and become more transparent? So, you have pricing of goods; should that be before the cost of payments? I only touch on it, as clearly it is a very complex topic. As far as I can tell, there may be benefits but also there could be clear downsides to trying to regulate this market. I would just urge caution here.

Fourth, in terms of development, another interesting question is, is the size of the payments pie fixed? Harry claims that payments are complementary goods. A consumer can make only so many payments. Therefore, if you grow in one area, you by definition are reducing elsewhere. If you reduce volume in a business that has largely fixed costs, then you are going to reduce its margins. Therefore, banks inherently will not be motivated to try to change in order to maintain the status quo and keep their legacy payments systems.

The data from the Federal Reserve's own studies on the payments market would suggest the size of the payments market is not fixed. The pie is growing. It could be that the payments that are growing are doing so at the expense of cash. But also I think we are seeing an increase in the velocity of payments. There is lots of innovation and development going in the payments space, albeit most of that is with what I characterize as payment front ends, that then subsequently utilize the ACH mechanism or the existing card networks for the underlying payment products.

I will touch on regulation later. For now, I would like to return to the topic of integration and the suggestion that payments will more closely integrate with core banking services. I think that will absolutely be the case. Just to pick four examples here, and there are many more examples we could use to illustrate some of the things that have occurred recently or over the last couple of years, where we are seeing banking services and payments services become much more intertwined.

Wells Fargo, one of the biggest and most-advanced retail banks, has a number of very neat tools to allow their customers and cardholders to track and analyze their payment activity, set budgets, and basically be more intelligent financial users. Similarly, you see other banks offering integration with other personal financial management tools to track spending and budgeting.

USAA, one of the pioneers in mobile banking, recently came out with an application for the iPhone, whereby their members can take a photograph of the front and back of a check and then e-mail that image to USAA for processing. We

are now combining the payment or deposit functionality in with the bank through a new device (the phone).

We will see integration between banking, payment, and mobile through what Chase and others are doing with mobile alerts. So while you're paying for a good or service with your Chase credit or debit card, the transaction is routed through Visa in real time, and you get a message on your phone confirming the payment while you are still at the register. It is a great reassurance for the customer. It is also a great fraud mitigation technique, and it has been quite effective indeed.

These things are happening. There certainly is a lot more discussion about other things to come. The trend we are seeing would suggest the integration is there, and there is potential for even more.

However, there may be some systemic things that could be done that are potentially worth the involvement of the regulatory authorities. First, as was referenced, there are not common account numbers or account numbering structures here in the United States, which makes it quite difficult to move funds, to have a common scheme for paying bills, or other core simple plumbing when it comes to the payments structure. When you compare this with what happens throughout Europe with GIRO payments or with the Australian BPAY system where you get a common universal inbox for all your payments, there is a lot more that could be done.

Similarly, a lot of banks use payments as a hook. If you get the customer hooked for direct deposit and bill payment and various other transactions, that customer is much less likely to change banks in the future. Banks have been quite ineffective at creating switch kits to get you unhooked from bank A and move you over to bank B, unlike in the cell phone business where you have number portability and you can very easily leave your current carrier and go to a new carrier and keep the same telephone number, move your address book and so forth. So, one of the things that could be worth exploring is, would a change along those lines be helpful for competition and vibrancy in banking?

The other theme within integration deals with mobile payments. If you go to any banking or payments conference today, you will see lots of vendors talking a big game about the potential for mobile banking or mobile payments. In mobile banking, I think the facts are clear. We see very strong and growing adoption numbers. We see dramatic adoption by financial institutions offering mobile banking and consumers using mobile banking.

In terms of mobile payments, though, it is an entirely different story. There are three fundamental issues that need to be resolved for it to take off. The first is the chicken-and-egg problem that all new payment mechanisms face. It evidences itself here whereby, as a consumer, I am only going to be interested in using my phone to make payments if lots of merchants are willing to take the phone as a payment method; and similarly merchants only want to roll out mobile-Near Field

Communications (NFC) accepting capabilities if lots of people want to use that as a payment method. So far, there has been little success in really moving the needle here in terms of getting one side or the other to move.

Second, and this was referenced over lunch, it is very difficult to create a business model that works for all parties. If you are a merchant, one of the points you make is how much you pay for payments today. There is little to no desire to pay more for a new payment method, which is really just changing the form factor from a card to a phone. On the other hand, if you are an issuer, you receive revenue today from card payments. You certainly are not going to receive any less in order to fund the mobile networks or the handset manufacturers, or the trusted security managers, or any of the other parties that need to be involved in mobile payments. So it is very tricky to find a pricing mechanism that works for all.

Third, even if we solved the first two issues, why switch to mobile payments? The cards in your wallet work pretty well already. For mobile payments to take off, there needs to be more than just a core application. It needs to offer something else of incremental value over and above what you can do today. There are lots of things it could be, but people are still struggling to find that really killer app.

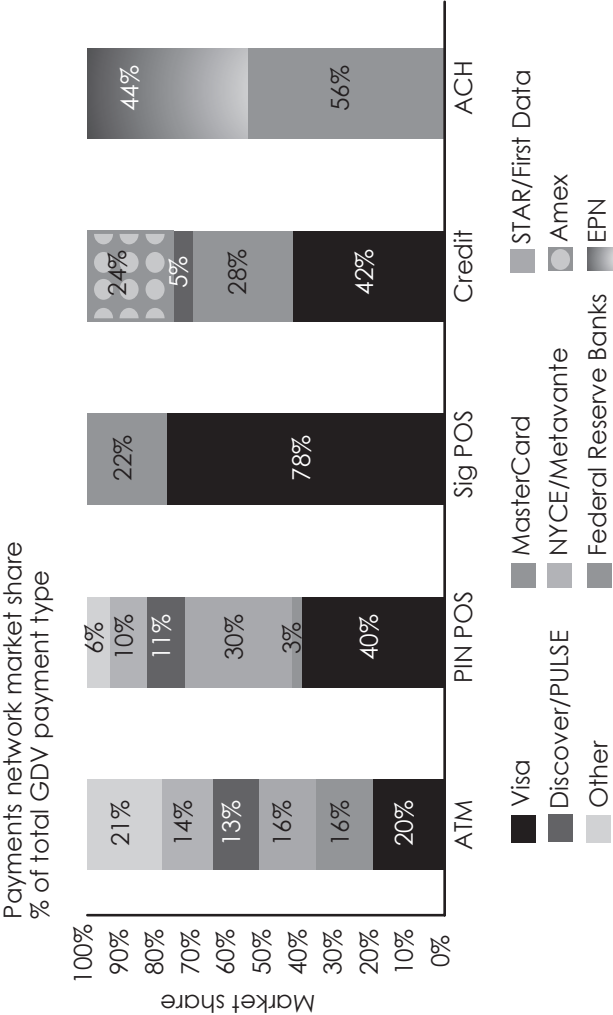
The next theme within Harry's comments that I want to talk about is competition and the assertion that payments networks themselves are not necessarily efficient and are barriers to innovation and competition.

Chart 1 estimates the market shares for the major payment networks by category in the United States including ATM networks, PIN point-of-sale networks, signature debit networks, credit card networks, and ACH networks. The chart shows in many of the categories, it is still a quite fragmented market. Across the board, these networks go head to head, toe to toe every day trying to win business. And, yes, the financial incentives being offered and the marketing support being offered only grow in every deal being struck. In addition to competing on the merits, there may be value in assuring that companies do not use their market power in one category to try to gain market or pricing power in another. This is the essence of the Wal-Mart and all other merchants' lawsuit, where market power is used in one category to try to get pricing power in another. The same remains true going forward here in the United States.

However, one can look at the competition and market structure and draw different conclusions. One conclusion is that the government, regulators or other bodies ought to intervene to ensure there is a level playing field, and maybe even regulate pricing.

Clearly, this is a very hotly debated topic. In Australia, there has been intervention. The interchange rates on credit cards were reduced and the outcome, as far as I've been able to ascertain, is not clear cut by any stretch of the imagination. It is unclear whether retail prices came down. But it does appear as though the cost for cardholders—explicit costs for using cards—went up. Now the debate is

Chart 1
Competition Between Payment Network Providers by Product



Source: Federal Reserve, Nilson, 2009 EFT Handbook, Oliver Wyman analysis
Note: ACH share is by volume of transactions, not gross dollar volume.

shifting away from credit cards toward debit cards, where in the Australian market, scheme debit has positive interchange to the issuer and Electronic Funds Transfer at Point of Sale (EFTPOS) has negative interchange to the issuer.

All of us in this room, I am sure, will be holding our breath next Thursday when the Government Accountability Office (GAO) comes out with its study on interchange and the efficacy of this pricing mechanism here in the United States.

Next, I would like to provide evidence that the U.S. electronic payments pie is not fixed. Chart 2 is taken from the payments study the Fed does every three years. It shows the number of noncash payments in the United States, by trying to use a census-type approach. In the year 2000, there were 72 billion transactions conducted, 81 billion in 2003, and then 93 billion in 2006. The chart shows checks are declining, while all other payment methods are growing.

What is most noteworthy about this chart is from 2003 to 2006, the number of checks declined by 6.7 billion transactions, but the number of other payments increased by 18 billion. Presumably the decline in checks moved to cards, but where did the other 12 billion transactions come from? Maybe it was cash that moved to cards or maybe it was simply greater transaction volume in the system.

We have this notion that it is a fixed pie and there is only so much to go around. This does not seem to hold up when we look at the numbers that are being tracked by the Federal Reserve.

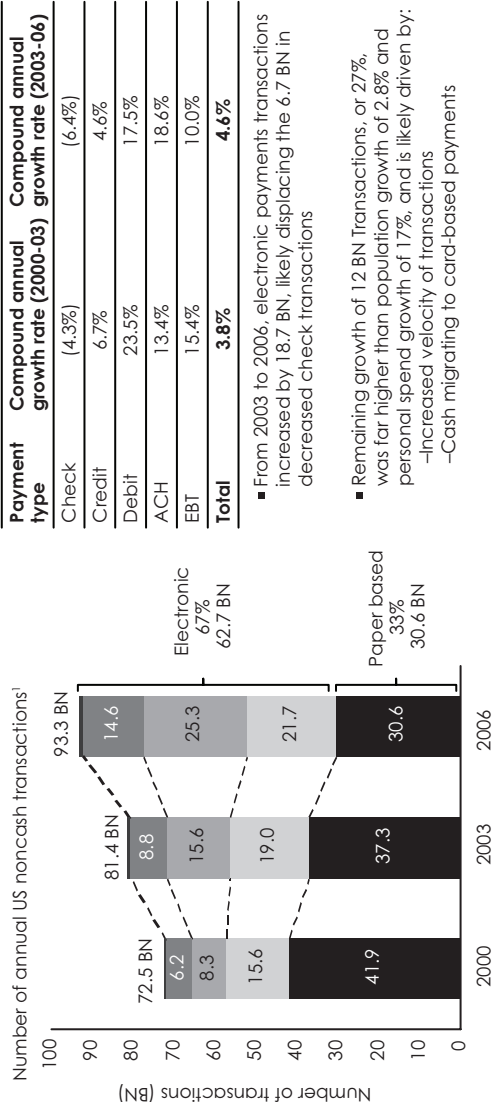
This leads to my next point: What kind of innovations are we seeing in the United States? There are a number of examples we can point to of companies out there trying to innovate. Most of them fail, which is the nature of start-ups, but some succeed. PayPal, a clear success story, has about 15 percent market share of online payments. It continues to grow, but it is really a front end to existing payment networks. Prepaid cards are a very fast-growing category, but also leveraged in existing payment networks.

Next is Secure Vault Payments which is a “failure” or maybe a “success to be.” Secure Vault Payments has clearly struggled to get much adoption so far in terms of building a two-sided network for both banks and merchants.

It has been much harder to build a new network. In fact, Green Dot Network has done this. They have built a reload network from scratch and have done very well. Many of the other companies out there—Pay-By-Touch, Revolution Money, or contactless payments in general—have all had a hard time building both sides of the market in parallel, at scale, to reach escape velocity.

I will conclude by discussing some regulation issues. Regulation can be very good. The Check 21 regulation is a clear success story. Regulations to change card acceptance have been very effective—getting rid of the signature requirement and getting rid of the receipt requirement. Both of these have been very positive developments. Some of the more recent changes—like the Credit CARD (Card

Chart 2
The U.S. Electronic Payments “Pie” is not Fixed; Evidence from the Federal Reserve’s Payment Studies Shows Strong Growth



1. 2000, 2003, and 2006 data are presented as these are the most recent data available from the Federal Reserve, the definitive source of payments information. Studies are conducted every three years.

2. Check transactions represent number of checks paid (the number of checks written declined less rapidly than the number paid).

3. Debit transactions include both signature- and PIN-based debit.

4. ACH stands for automated clearing house, an electronic network for financial transactions.

5. EBT stands for Electronic Benefit Transfer; U.S. federal and state governments use EBT to provide benefits via plastic debit card (in lieu of paper checks).

Accountability, Responsibility and Disclosure) Act—are still in their early days and it's too soon to see how that is all going to play out.

There is a lot of discussion right now around potential changes to Regulation E and restrictions on overdraft protections that banks can offer to their customers. We need to make sure that, though there is the first-order effect that could be quite helpful with a small minority of customers paying the vast majority of fees, there could well be second-order effects that could be less helpful if, in turn, many of these customers get forced out of the banking mainstream. So again, there are both pros and cons of potential intervention in any marketplace.

General Discussion

Session 1

Mr. Weiner: Thank you, Harry, and thank you, Tony. This session was rather daunting, I am sure. There is so much going on obviously in the retail payments landscape. Both of you have done a marvelous job in a comprehensive, succinct way of capturing the essence of so many of the important questions.

I should probably give Harry a chance to respond somewhat briefly to Tony's comments before we open this up for general Q&A.

Mr. Leinonen: Regarding the number of payments, we don't have really good statistics on cash payments. Cash payments are also one type of payment, so that part should also be included in the "cannibalism" total.

You could think the number of payments would increase if the overall sum to be paid were to be split into smaller individual payments. The question is, Would we do it and why? The other possibility is to recirculate payments faster, so there would be more frequent turns or there would be a larger number of companies making payments to each other on the road before the end product/service reaches the end customers, and then there would be a larger number of payments for each end-service unit. But for those kinds of structural changes (e.g., increases or decreases in external payments due to outsourcing or industry consolidation), we do not have information. I would say that when we all have limited budgets to make payments from, we fill that budget somehow and use different payment instruments for those payments.

Then, on the competition in payments, I would say that still, even though it looks like the card service providers would be forcefully competing, they are not doing it. If you compare to other industries, for instance, e-mailing, you could put up an e-mail service anywhere in the open network. Everybody can do it. You have much more competition there because of the general openness. The same is also true for mobile operators. There are not different trunk networks for

different mobile telephone brands; every service provider uses the same trunk network behind it.

Now, in payments again, we have different trunk networks. We have the separate Visa, MasterCard, and others networks, which limits competition.

Then, the last question was the chicken-and-egg problem for mobile payments. There does not necessarily have to be such a big chicken-and-egg problem there because you can put the information of the normal Visa card and MasterCard in parallel in the mobile phone. You use the plastic or the mobile version of the card depending on what kind of interfaces the merchant offers. Chip-based cards use basically the same interfaces in both cases. The question is, When you go to mobile, will the cost go down? For example, at least in Finland, we are taking down the old telephone lines due to the same reason. There are almost no copper lines anymore in the country side, so when the telcos take down the copper lines, they will save so much that they can even give away the mobile handsets for free instead. We have a little bit of the same situation in payments when we go to mobile payments: The costs will go down so drastically that it is really worth investing when you do it for a longer period of time.

Mr. Grover: Tony, this question is for you. You characterized PayPal as a front-end, not a network. Isn't it actually a front-end, but it is also a proprietary network and—now with the STAR partnership, an open network—a payment network in its own right that has critical mass at least in the e-commerce space?

Mr. Hayes: Yes. I characterize it as a front end, and it clearly too is an existing payment network. In terms of the ability to fund your PayPal account in the first place, the funding is going to occur via some existing payment method.

Then separately, once the funds are in the account, it can also be a network in its own right. So, as a PayPal user, I can pay you as a PayPal user, and the money can stay within the system. Obviously PayPal started as an eBay payment mechanism. Now it's expanding, and most of its growth is off eBay. So it has its own acceptance brand. It has its own pricing. It has its own rules within the mechanism. So, by that definition, it has now become its own payment network. But, I think it could not have gotten to that point were it not for the existing payment networks. Were it not for the existing payment networks, it would not be where it is today.

Mr. Grover: But in the same regard, the traditional retail card payment networks—the open networks—rely upon existing networks and originally did fund themselves, that is, with money from outside the system coming in. Just as PayPal relies upon existing networks to fund its accounts, everything we consider a network today is reliant upon what is coming in from another network.

Mr. Hayes: Sure. I would agree.

Mr. Bolt: One comment and one question for Harry about the zero-sum cannibalism. I think the number of payments would correlate with real gross domestic product growth. So, if you have a growing economy, the number of payments would also grow with that. For example, 20 years ago, I went only once a day to the ATM. Now, sometimes I go two times or three times. For other people, the same would hold, I guess. In a growing economy, probably the number of transactions would also grow.

The second point is, suppose cash is more expensive than card payments for society as a whole, but for merchants it is actually more expensive to accept a card payment than a cash payment. How then would discounting or surcharging help get a more efficient outcome? I do not see that.

Mr. Leinonen: Regarding the growth, it is clear when the economy is growing, then the number of payments grow with that. But the question is, Do you have a stable relationship between the different instruments, or do the markets start to grow more rapidly due to internal payment service factors or just to external factors?

Mr. Bolt: The pie gets bigger.

Mr. Leinonen: That is clear. When you compare, for instance, to the telephone industry, you use your mobile phone much more than you used your traditional phones before. There you can see the difference in economies, but payments developments will not affect volumes. In mobile phone, you have a real growth worth investing in.

Regarding transparent pricing, the real question is, Which way are we going to establish it? It could be done so that merchants are surcharging more. You can have open surcharging and can take the cash price as the basic price visible on price tags and then customers would get discounts when using debit cards and pay an extra surcharge when they want to use credit services. That would be one way of increasing transparency.

The other would be a more neutral way for merchants where they are credited in full for all different payments instruments, that is at par, and the service provider has to charge the customer directly. That would be the most efficient way because then the consumer would see all the prices in one place and there would be more competition between the service providers because the price was directed to the consumer. But in any case, it is obvious that if the different instruments were priced visibly according to cost, there will be a big change. We have made recent studies of that in Finland. In Scandinavia, when a check fee of 10 cents per empty check delivered by the bank was introduced in the late 1980s, checks disappeared almost completely in two years. Everybody went to debit cards. So, even small price changes can make a big difference in payments.

Mr. de Armas: This question is actually for Tony. Harry talked a lot about transparency and making sure the costs are transparent for customers, but I noticed you didn't discuss that in your response. How important is price transparency for consumers? What are your thoughts on that?

Mr. Hayes: I alluded to the complexity of regulating pricing in my remarks, but there is an adjacent question, Should it be transparent?

Clearly, as you well know, at Home Depot and others there is a big argument around pricing. You don't say, Here is the cost of the good, here is the cost of rent, here is the cost of labor, here is the cost of payment. These aren't broken out. You simply say, here is the cost, which includes all of your costs of delivery. In today's environment, you have the ability to discount for cash. What you don't have is the ability to surcharge for certain products. And what you don't have is the ability to differentially surcharge for certain payment products versus others.

Quite honestly, it is unclear to me whether the added ability to have differential pricing would be helpful or harmful in the marketplace. It certainly would change consumer behavior, there is no doubt. And when you look at countries that have granted the ability to have differential pricing to the end user, you do see consumers clearly change their behavior. That is evidenced in Australia, whereby you now see surcharges on credit card transactions in certain locations. You see surcharges just for American Express or Diners Club in other locations. It is a judgment call, I guess, in terms of whether there is a net positive or not.

There is a lot to be said for you as a retailer having the ability to charge as you see fit and accept the payment products you see fit. But whether or not, on balance, it will be beneficial to have a pre-payment cost price and a post-payment cost price is debatable. You would almost have a menu to say, "If STAR, then this much. If MasterCard, then this much. If American Express, then this much." It may be beneficial, but the complexity of this and the change in behavior potentially would offset the benefits. I guess I'm hedging my bets a little bit.

Mr. de Armas: Harry, do you have thoughts on if it is a toss-up? What are your thoughts on transparency?

Mr. Leinonen: In Finland, we have the situation that almost all customers are multihoming. They are using cash and both debit cards and credit cards. We normally have our debit and credit card on the same plastics. So, you have just one plastic card with both account services available. Almost all merchants take almost all cards. I made a small calculation that if the cash usage would be reduced by 30 percent—we are very low in Finland already with 60 percent of volumes and about 30 percent of value—then the costs would go down by about €200 million a year, which is quite a good savings already in Finland. Cash costs are high, but you don't see them.

You don't know and see the ATM or transportation costs to ATMs, etc. Of course, with credit cards, the question is, Into whose pocket are the benefits of

credits going? With cash, it is a little bit of whose pocket, but much more what could be done with all wasted cash transportation, and all other cash service costs instead of just spending them on putting money from one ATM to the merchant and back from the merchant into the ATM again. There are more efficient uses of those resources.

There was another question I would like to comment on—the PayPal question. What these new entrants are doing is building on the old payments systems. That is the only way they can do it because the merchants have to get the money to the old systems to make their payments. Consumers also get their salaries via the old system. The basic money is in the legacy systems. PayPal has to take the money out of legacy systems to get it to circulate in the new system. This is really just because of the disinterest for development among banks and the inefficiency of the old systems that these new entrants can do it. Because if the banks would have the same services, then there would not be a market for new entrants. So, this is just, you could say, a temporary solution. I hope the banks are getting things together.

In Europe, we have bank-based e-payment systems, for example, iDEAL in Holland and Solo in Finland, where you can make real-time Internet payments on bank accounts. For the merchants, these systems credit the money directly, immediately when the transaction is made. In countries where you have these kinds of bank services, PayPal has a smaller market share. Therefore, it is more a question of when the banks are going to put up these kinds of competitive services.

Mr. Cook: This question is for Tony. Tony, your comment was—I apologize if I am paraphrasing here—“It’s very difficult to make a business model or pricing mechanism that works for all.”

I guess I would ask you to reflect on Interac in Canada as a great example of what was a pricing mechanism that worked for all, in that it was beneficial for the merchant, the consumer, and the financial institutions in that case. And everyone did benefit from it. As we see now with MasterCard and Visa and their efforts to enter that market in Canada and perpetuate the fraud-prone product of signature debit, do you see that as being the pie will get bigger or that there will be a tender shift, or do you just see higher costs of debit coming for merchants in Canada?

Mr. Hayes: Interac in Canada is a great case study of debit and debit transactions per capita, clearly one of the big success stories, and it is done with zero interchange. I don’t pretend to have all the facts here but certainly the Canadian banking system is clearly very different than the U.S. banking system. It is highly concentrated.

Interac came into being largely through getting a waiver from the competition authorities for the banks to cooperate and with explicit price regulation around the fees. It has been run as a not-for-profit since that time. The account structure model in the Canadian system is most consumers pay a monthly fee of, let’s say, \$10 a month, which gets them a package that includes a certain number of debit card transactions. Or you can have an a la carte, pay-as-you-go model whereby the consumers then pay something like 50 cents per transaction.

At the end of the day, somebody is going to pay. In the Canadian model, the consumer is paying explicitly to their bank, either on a per-transaction basis or bundled within the account structure. In the U.S. system, consumers are paying, and it is embedded within the fees the retailer charges. If the Canadian model changes and does adopt an interchange pricing model, then assuming there is healthy competition among the banks in Canada, then one would expect to see the account structures being changed to reflect that they'll now get income on the card side, which therefore means there will be less pressure to get revenue through explicit consumer charges.

The whole debate is around who is going to pay the freight. There it is paid through direct consumer charges, either with an a la carte where you can be charged a fixed fee per transaction or all you can eat. It hasn't served as a barrier to debit card use. Debit card use is very high.

Here in the United States, there is no explicit charge to the consumer for almost all cardholders; instead that is embedded within the cost structure of retail pricing. One of the great challenges here in the United States is with competition. In many markets, as you have competition, price comes down. Though here in the United States there is very, very strong competition, we haven't seen prices come down in terms of interchange rates. In fact, in some cases, the opposite has been true.

Mr. Cook: Harry, did you want to comment on that?

Mr. Leinonen: Yes, the interchange debate is a very interesting one. The true story from Finland is that I was once in a group, because I was in private banking then, and the director was asking us what would happen if an interchange fee were introduced. At that time, all banks were both acquirers and issuers; it was quite balanced. That meant that we would have had a difference of about \$10,000 a year for the bank getting the largest benefit with a quite big interchange fee because everyone was so balanced. Banks would have paid as much out as they would have received back. The gross sum was very big, but the net sum was very small. That is when you are in a balanced situation.

When you are in an imbalanced situation, the question is, What is the difference between acquiring and issuing? Basically, the customers will see the service charges better if the acquirers just covered the acquiring costs and the issuers take the issuer costs. Then you have a good balanced situation and will get competition between acquirers, and you will get also more competition between issuers. Sufficient competition is the main issue. I don't really believe a high interchange fee would increase the number of card transactions. If you look at the European scheme (I have tried to get the information), based on everything you can already see, in those countries where there is a higher interchange fee, there is a lower number of card transactions.

In all the Scandinavian countries, where we have no interchange fee on debit card transactions, you can see very high volumes of debit card transactions. Those countries in the south of Europe, where they have high interchange fees, they

have almost no card transactions at all. How much is due to other reasons like tax evasion and so on is difficult to say, but at least you can clearly see there is at least something saying that a low interchange fee on debit card transactions really served to get high volumes of debit card transactions, and then the share of cash and credit card transactions will be lower.

Mr. Peirez: If for no other reason than to ask a question to get off interchange fees, can you both comment on which market around the world you believe has had the greatest innovation over the last few years? And which markets have the greatest consumer choice? Then we can go back to the conversation as to what does and does not work.

Mr. Hayes: Good question. In terms of consumer choice, I do not claim to know all the markets around the world, but I think the United States has to be near the top of the list around consumer choice because certainly we have cash; we have checks—many countries have moved away from checks; we have two forms of debit in terms of PIN-based and signature-based—both very healthy. We have credit. We have prepaid. We have new products to serve the low-end, unbanked customers; products to serve bank customers; and products to serve very affluent customers. So, in terms of choice and access, as well as a whole variety of online payment methods, I would have to point to the United States as being—if not the most choice-filled—near the top of the list.

In terms of being advanced, I would have to point to a number of the Asian countries. I spent some time in Singapore recently, and the government mandate was to move toward the cashless society. It is very advanced in terms of use of card-based payments and the use of mobile payments. Basically all the toll roads now automatically charge the cars as you drive, that is going to the parking system, that is going to the bill-payment system, and that is going to the transit system. So I guess Singapore and other markets like that where there has been a very concerted effort by only a few banks that dominate the marketplace, and where the government and regulator are very involved, ratcheted up to move quite quickly and leapfrogged some of the legacy systems we have.

Mr. Leinonen: I have some problems with the question because consumer choice is perhaps not so interesting in this area because we talk about infrastructures. Infrastructures should work as efficient as possible. Then you somehow have to limit consumer choice also. You can't have as many highways in all directions from every point. Somehow you are limited because of cost issues. Any payment is just a debit from one account and a credit to another. The question is, How many highways do we have to put in parallel to do exactly the same thing? The merchant will get money, and I will pay the merchant. Nothing more will happen. Is there really a need for so many different alternatives when the end result is the same? It is really in the interface where you have a difference. There should be different kinds of interfaces, but, as in the mobile phones, there can be different kinds of mobile phones but you speak through all of them. You need to get the speaking

infrastructure to work well. If you would have a lot of different mobile infrastructures, I think it would be a mess.

Mr. Hayes: I have clearly lived in the United States too long. I think choice is good. Yes, payment is moving money from account A to account B. But we have the credit card business, which is a pay-later model; we have debit that did very well, which is pay-now; we have prepaid that also is doing very well, which is a pay-before mechanism. All of these products are designed to meet different needs. They have all found their own niches and segments of the marketplace for them to do well.

There are still check writers, and people value either the security that comes with a check, the idea of writing the check on a Friday, knowing they are getting paid on a Monday or whatever the case may be. There is value in cash, and there are certain segments that like the cash for reasons beyond tax evasion: for example, the idea of knowing how much money is in your wallet and spending as you go. People are self-selecting what the right payment mechanism is for them based upon the attributes of each method.

Even within debit, Why is there PIN and why is there signature? There is a long argument that can be had about this. But the fact is, we do consumer surveys and you ask consumers which one they prefer. Half of you will say signature and half of you will say PIN. You ask the people the second question—Why?—and no matter which answer you chose, the number 1 reason in both categories is *security*. So the people who sign say, “I sign because it is more secure,” and those who enter their PIN say, “I use my PIN because it is more secure.”

So “beauty is in the eye of the beholder” here. By creating choice, you can select payment methods that offer the right proposition for the end user. It is hard for me or for any central body to determine what is right or what is appropriate in the absence of that person’s mindset.

Mr. Leinonen: Would you want to have a talk-before or talk-later telephone or a talk-just-now telephone?

Mr. Hester: One country where there are no consumer options currently available is Canada. Right now, as an individual, you cannot use a debit card over the Internet in Canada. With Visa debit, consumers will have that choice.

Mr. DeCicco: I have a comment and then a quick question. Harry, you talked about the account number in the United States being messy. I am part of the standards-setting organization X9 here in the United States that does all the American National Standards Institute standards for the community. And we are working on an International Bank Account Number initiative for the market. Hopefully that comes to fruition in 2010.

I also want to go to another efficiency you talked about—the transaction ID—and being able to track payments. A great idea! You know the FedEx model. It

was brought up about five years ago at a SWIFT-Sibos conference about why the payments market can't develop this level of efficiency. Clearly, there are differences between a closed-end model that the packaging companies have and the payments system we will participate in. Nevertheless, our customers ask for it frequently and there have been some market infrastructures in the past five years or so that have looked at it, tried to get some traction around it, and alas just haven't been able to get that traction to develop a good compelling business case to pursue.

What are your thoughts in terms of how we get that from concept to reality?

Mr. Leinonen: One of the main issues in the payment industry that we have to get corrected is the business model and the business incentives. In the package handling and most other industries, they have good development incentives. Therefore, they make these kinds of developments based on customer needs. We don't have the right incentives to do that within payments. The slow development of standards and services is due to the fact that banks don't make revenue by putting those kinds of service developments into the market.

Banks don't have that business interest or case because of the non-transparent pricing, the low competition level we have today, and the closeness of the industry networks. Developments can always be stopped by saying that the ACH doesn't support this. This is really what is inherited in the current way we operate. We need to change that. In Europe, when these topics were discussed, many banks were saying to the authorities, "Please, Authorities, do something because it is very difficult to agree among ourselves on the level of punishment." How much self-punishment would be sufficient was the problem they took up. In this kind of situation, there must be an outsider giving the operational service requirements. For instance, the Payment Services Directive, in force since November 1 in Europe, determines now the deadline of one day for processing interbank credit transfers with credit in full value in "share" mode—that is, with no interchange fees. Important processing requirements are now defined in regulations. Unfortunately, you will probably say that I'm in favor of regulation here, but what I would want to say is that we have to get regulations that put in correct incentives, then the market competition will work. Now we have regulations and business models that have biased incentives, and that is the problem behind all these issues.

Consumer Payment Choice: Measurement Topics

Marc Rysman

I. INTRODUCTION

What are the determinants of consumer choice over payment mechanisms? The answer to this question is important for a variety of reasons. Every government has the responsibility of supporting an efficient and effective payment system. Doing so is an explicit mandate of the Federal Reserve Bank in the United States. In addition, nothing is more central to private sector commerce than collecting payment. D'Silva (2009) claims the U.S. payment system collects \$280 billion, about 2 percent of U.S. GDP. Thus, it is crucially important to know *how* consumers choose to pay.

This issue is complex because consumers come from a very heterogeneous set of financial situations, cultural values and individual prior beliefs, and these interact with payment choice in a number of ways. This question is particularly challenging because consumers now have a very wide set of options for making payments. Current research has focused on standard options at the retail cashier—cash, check, credit and debit—and I will do so as well. However, the true breadth of choices is remarkable. Contactless technology can be embedded not only in a traditional card, but also in a key chain, a mobile telephone or an automobile. New services allow person-to-person transfers via the cell phone network. Some retailers accept such transfers as payment too. On the Internet, cash use is practically nonexistent and instead we find specialized Internet systems such as PayPal. Outside of the retail context, consumers may pay bills via recurring automated clearinghouse (ACH) payments or other electronic means. New systems are not unusual, for instance, based on text messaging or even biometric data (fingerprints). As these systems typically make use of existing debit or credit networks, we can even debate whether they constitute separate payment options in the first place.

As a result, research in this area must address a complicated set of issues. That has certainly not kept researchers from trying though. Research about how consumers make payment choices has formed a small cottage industry in itself, both in academia and the private sector.

The goal of this paper is to review the output from this research. I start by discussing some existing theories of how consumers make payment choices. The main focus of the paper is on empirics. I review existing data sets, both those that are publicly and privately available. These naturally form the backbone of the existing empirical results on payment choice. Then I describe some results about consumer attitudes towards payment choices drawn from survey data. In the next section, I review existing regression analyses of these issues that try to estimate causal effects. These tend to be academic studies, and I focus on providing an overview of existing methods and common results across the studies, so-called “meta-results.” Finally, I review what I see as some of the limitations of these existing studies, and to some extent, limitations in the questions that we have tried to ask so far.

Overall, I find strong evidence for demographic characteristics, such as age, in determining payment choice, which is probably best thought of in the context of general technology adoption rather than as something special to payments. More specific to the payments world, consumers respond to pecuniary charges, such as interest payments and rewards programs. They regard convenience and time issues as very important in choice although it is hard to verify that in a regression framework. Security is perhaps of only limited importance among the established payment mechanisms, although it probably plays a big role in the acceptance of new technologies. Consumers use only a single credit card at a time but may simultaneously use debit and credit. I conclude that it is hard to find evidence for behavioral theories, and it will be difficult to do so in the future. Although they may be important, we must find examples where they make different predictions from what traditional incentives do, and I am not optimistic for this, in part because of data issues.

II. THEORY OF CONSUMER MOTIVATIONS

In this section, I discuss various incentives that might play a role in consumer payment choice. I do not try to provide any measurement in this section, but rather lay out the issues that we will look for in empirical work. I begin by discussing explicit costs that might affect these choices. These can be thought of as “classical” incentives, that is, a fully rational consumer should take these into account. However, as we will see, these issues seem to only go so far in explaining observed consumer behavior. Researchers have put forward a number of proposals for ideas based on how “behavioral” or “bounded rationality” theory might explain decision making. I give an overview of some of these proposals next.

First, using a new payments mechanism is akin to a form of technology adoption. We have a great deal of research on the types of people who adopt new technologies, for instance in consumer electronics. They tend to be young, wealthy and educated, and we will see similar patterns in payments.

The explicit determinants of payment choice begin with pecuniary costs. Cash and check typically bear no explicit costs at payment time, although withdrawing money from an ATM machine often bears a cost and banks typically charge for checks as well. Also, consumers who overdraw their account can face relatively large fees. Credit cards allow consumers to delay payment on their product for up to 30 days, and collect interest during that time (sometimes referred to as the “float”).¹ Also, many credit cards come with rewards programs that allow consumers to capture some benefits from card usage. However, many credit cards require annual fees. More importantly, consumers who are not paying off their balance in full every month face high interest rate charges that begin at the time of purchase, and so they bear costs even if they plan on contributing the full cost of the item towards their credit card bill. Fees for late or missed payments are also common. Debit cards typically bear no explicit costs at the time of usage, although again, overdraft bears fees. Recently, debit cards have begun rewards programs as well. One estimate places the value of debit rewards at about 0.25 cents per dollar, whereas credit card rewards are close to 1 cent per dollar. In contrast, prepaid debit cards do not earn rewards but do charge fees, both an initiation fee and a per-use fee. Recurring ACH payments are typically free. Individual electronic payments can sometimes face fees, either from the consumer’s bank or the payee. Obopay is a software application that allows person-to-person transfers using the cellular telephone network or the Internet. Obopay charges the sender a fee.

Even with this dizzying array of fees, pecuniary incentives to pick one payment type over another are often not very large. Even a full year of credit card rewards may not add up to very much for the average consumer, and if the consumer rationally expects to get one late fee in a year, the benefits of a rewards program can look very small. In practice, consumers consider a suite of issues with no direct pecuniary impact as well. Clearly, consumers consider convenience and speed highly. Cash is perceived as quick for some transactions (usually small ones) and slow for other (large) ones. Check is the slowest option at a cash register but is often considered the easiest for paying a bill. Credit and debit are fast, and authentication times have fallen over time. Signature-based systems (credit, check and some debit) require the consumer to use a pen, which some people find burdensome (such as those with children). Personal Identification Number (PIN) debit requires the consumer to recall a PIN. In addition to speed, many consumers express concerns about security. It is not clear that their concerns are warranted, but it is nonetheless an important issue. Portability is high for plastic cards, although is perhaps even higher for some contactless devices. But contactless devices fare the worst in terms of merchant acceptance. Many retailers accept plastic payment methods, although cash and checks are often the only options for in-home contractors and service people.

Even with these concerns, the difference between payment types is not striking. Timing issues are measured in matters of seconds and the security differences are not overwhelming. Hence, there is scope for consumers to weight a number of issues that fall outside the scope of traditional economics. For these reasons, payment choice has been fertile ground for the burgeoning field of behavior economics and the economics of bounded rationality. Here, I briefly review some of these ideas, although I do not aim to be comprehensive.

The issue most commonly associated with credit cards is that they promote overspending because consumers cannot limit their current spending even though they will eventually have to pay back the sums. Hence, debit offers a method of self-restraint. Moreover, consumers bring preconceived notions about payment devices for reasons that fall outside of economics. For instance, they may attach a negative stigma (or even a religious objection) to using credit, which leads them to avoid credit cards. Similarly, many consumers feel that credit should only be used for certain types of items, such as large, luxury items that are infrequently purchased. Hence, they may prefer to pay for grocery bills out of current holdings (using debit for instance) but access consumer credit for a trip or new television. This may also contribute to their approach to record-keeping, as standard payments show up on one account statement and special expenditures show up on another.

Prelec (2009) provides a potential explanation for this behavior. He argues that the act of payment exacts a cost on the utility of consumption beyond the pecuniary cost. For instance, a consumer may report enjoying a free meal more than the identical meal for a cost. Hence, debit (or more generally pre-payment) is preferable to credit for perishable goods since it gets the payment out of the way. There is also disutility associated with payment. In particular, consumers want payment to feel like an investment in future benefits. A consumer who must pay for a meal a month after a meal gets disutility, and anticipates this disutility in advance. In contrast, a durable good which provides continuing flow utility is more naturally associated with installment payments, where it feels to the consumer as if payment is “covered” by future utility flows.

A complementary but alternative theory relies on mental accounting. For one discussion of this idea, see Thaler (1999). This theory argues that consumers place payments in different “mental accounts” and they value payments based on which account the payments fit into. Thus, explicit payment costs that the consumer feels are easily avoidable may confer very negative utility. Thus, a consumer is willing to go to great lengths to avoid a dollar fee for withdrawing cash from an ATM. Small payments that feel “decoupled” from the expenditure may not be tracked at all and thus the consumer does not respond to them. For instance, consumers may not account for the cost of purchasing check books in deciding on payment choice. As suggested above, mental accounting may correlate with financial accounts, so that a consumer prefers to place expenditures in debit and credit accounts based on the expenditure’s associated mental account. These sorts of issues are highly complicated to test for empirically, but we will see a few results that speak to them in some sense.

III. DATA SETS

In this section, I discuss some of the data sets that have been constructed for studying consumer payment choice. These are all surveys of individual households. I do not try to be comprehensive, although I mention a large number of research options. I focus on U.S. data sets almost exclusively. Only a few are publicly available.

Data sets can be usefully divided up by the way in which they are collected.

A. Cross-Sectional Surveys

The most common type of data in this field are cross-sectional surveys completed by phone, Internet or mail, or by a visit from an enumerator. Surely, the most important data set up to now has been the Survey of Consumer Finance (SCF). Administered by the Federal Reserve, the SCF is a triennial survey of the financial situation of U.S. families. It asks several questions about how many cards the household has, whether the household uses debit or credit cards, and whether the household pays off its credit bill each month or revolves credit. For the SCF, an enumerator visits the household and completes the survey during a lengthy interview, and this takes place for more than 4,000 families. Active since 1983, the SCF is viewed as very reliable, but is limited in its usefulness for these purposes because it aims to cover a wide variety of financial topics and therefore has only a limited coverage of payment-choice issues. The SCF data is freely available.

Thus, the SCF still leaves room for a series of proprietary data collection companies to provide useful survey data on payment choice. Ohio State University administers the *Consumer Finance Monthly*, which is ongoing since 2005. This data set uses random-digit dialing and computer-assisted telephone interviewing to survey a nationally representative sample on household financial issues, particularly on credit card adoption and use. Dove Consulting, a division of Hitachi Consulting, has administered five payment surveys by Internet since 1999. The surveys focus on preferred payment choice in different situations, for instance by type of store and purchase size. The last survey, in 2008, had 3,308 respondents. Global Concepts has administered a series of surveys titled Consumer Payment Strategies, for instance separate surveys on bill pay and point-of-sale choices in 2005 and 2006. The two years together generate about 3,500 respondents for each topic, who complete the survey over the telephone. For more than 10 years, Phoenix Marking International has administered annual surveys called the Consumer Payments and Usage Preference Study, first by mail and more recently by Internet, generating about 5,000 respondents over the last several years. Synergistics Research conducted two Payments Habits surveys, in 2004 and 2007, which covered general payment issues. The firm has also conducted a number of specialized surveys. For instance, since 2001, it has produced separate surveys on debit card use, credit card use, prepaid card use, online banking, mobile banking and micropayments. Administered by telephone, mail and Internet, the survey sizes range from about 1,000 respondents to almost 5,000 in one case. First Data also administers a similar survey.

B. Panel Surveys

All of the studies mentioned so far face the drawback that survey respondents change entirely from one study to the next, even for repeated surveys such as the SCF. Many of the questions that we are interested in require us to observe a household over time if, for instance, we want to track when a household first adopts a new payment instrument and increases usage, or how changing financial circumstances cause a household to change from one payment instrument to another. Thus, panel studies are particularly valuable.

A new entrant into this area promises to be an important participant in the future. The Consumer Payments Research Center at the Federal Reserve Bank of Boston has begun administering the Survey of Consumer Payment Choice (SCPC), joint with the RAND Corporation. The SCPC uses the RAND American Life Panel, a set of 1,500 households that are frequently surveyed on a variety of topics. The respondents complete Internet surveys, with special provisions for households without Internet access. RAND has response rates that are typically around 80 percent of panelists. Several preliminary surveys have been administered, but the first installment of what will be an annual survey was administered in 2008, and, in fact, the results have not been made public as of the time of this writing. Summary tables should be released shortly, and the underlying data are meant to become publicly available in the spring of 2010. The SCPC focuses on adoption and usage of different payment instruments in retail and billing environments, as well as cash holdings and online banking.

C. Panel Surveys of Transactions

One drawback common to all of the data sets discussed so far is that they are annual surveys at best, and usually ask consumers to evaluate their “usual” or “preferred” behavior. If consumers have trouble in recalling their behavior, the results will be biased. Also, we might be interested in behavior that is difficult to capture in this sort of survey, such as details on which situations a consumer chooses credit or debit. For these purposes, it would be preferable to have data at the level of the transaction. Naturally, such data is very costly to collect and maintain. However, I know of two sources for this type of data.

One source is the Payment System Panel Survey, collected by Visa. In this survey, households fill out a monthly diary for one out of every three months (once per quarter) of every retail transaction that they make. They record the type of merchant and, in particular, exactly which payment instrument they used, for instance, distinguishing which card they used if they hold multiple payment cards. The diaries are supplemented with an annual survey of demographics, attitudes, and payment options (for instance, which cards the consumer holds and the cards’ features). The survey tracks about 3,000 households at any one time. Although turnover is reasonably high (the median length in the survey is less than one year), a number of households have been in the study for a very long time. The survey has been ongoing since 1994.

With the Visa panel, one might worry that consumers who are not sufficiently diligent about their diary might introduce bias. An alternative approach relies on passive collection of electronic data. Lightspeed Research maintains a large panel of consumers that participate in a variety of studies. In their payments survey, consumers provide Lightspeed with financial account information and in particular, information necessary to log into the account over the Internet. Lightspeed then “scrapes” information on consumer behavior on a daily basis, including transactions, account standings and the terms of the account. The data is supplemented with annual surveys on card holdings, attitudes and other issues. This data set has been collected since 2006. Stango and Zinman (2009) report that 917 households register all of their financial accounts (savings, checking and credit cards). Surely, such data provides a remarkably complete overview of household financial behavior. One important drawback however, relative to the Visa panel, is that we cannot observe cash transactions beyond the ATM withdrawals.

D. Other Sources

While my previous discussion covers a number of data sets that have been specifically designed to cover general payment choice, a number of other data sets have been utilized in approaching this topic. I discuss results below, but a brief list is helpful. Amromin, Jankowski and Porter (2007) obtain data on electronic versus cash payment at tollbooths from the Illinois highway authority. Klee (2008) uses data from a grocery chain’s loyalty card program to learn about payment choice. Similarly, Fusaro (2008) obtains data on a bank’s checking accounts. These “passive collection” strategies are attractive, but each brings limitations on what we can learn. They do bring up another interesting possibility: the use of scanner data. Currently, a number of large-scale “scanner” data sets are in use to study retail purchasing behavior, particularly at grocery stores. For example, see Bronnenberg, Kruger and Mela (2008). Relative to loyalty-program data, these data sets cover multiple retailers and, perhaps more importantly, are supplemented with household survey data so that the research learns demographics and, potentially, card holdings. To my knowledge, such data sets do not currently collect payment usage, but it certainly appears to be an interesting avenue to explore.

There is also useful data being collected outside of the United States. Just as an example, Deutsche Bundesbank performed a survey with 2,272 respondents in the spring of 2008, which included a computer-assisted personal interview and a payments diary (Deutsche Bundesbank, 2009). Payment instrument choice in some foreign countries involves not only the options we have discussed so far but also the choice of currency. The OeNB Euro Survey addresses this issue in European countries outside of the Euro-zone (Dvorsky, Scheiber and Stix, 2008). Interestingly, academics in France appear to have conducted their own diary of survey payment choice over an 8-day period for 1,392 people (David and François, 2009). Guseva (2008) studies the creation of the credit market in post-Soviet Russia.

IV. ATTITUDES

Even if we observe an empirical regularity, like consumers switching from cash to credit for large purchases, it will always be difficult to know why they made this choice. Perhaps there is something about the costliness of carrying large amounts of cash, or perhaps this is part of a mental accounting scheme where the consumer prefers all large payments to appear on a distinct bill. One way to get at this issue is to simply ask consumers. Many of the surveys mentioned above include a component that asks consumers their views on payment choice. In this section, I mention a few interesting results, which give us a frame of reference before we turn to the regression results.

I have access to a few of the data sets mentioned above, and so my results are based on them. The Dove survey asks consumers to agree or disagree with the statement that a payment option is “easy to use.” Among respondents, 90 percent agree for credit cards, 84 percent for cash, 77 percent for PIN debit, 76 percent for signature debit, and less than 35 percent agree for checks. Interestingly, 90 percent of respondents call credit cards “convenient,” whereas 74 percent and 78 percent agree with this for signature and PIN debit, and 72 percent for cash. Therefore, there is a set of people who regard credit cards as more convenient than debit and it is not just because they don’t like entering their PIN. Perhaps they regard credit as more convenient because they don’t have to consider their bank account balance with every use.

The most strongly agreed-upon statements for checks are “control,” 56 percent, and “helps budget,” 46 percent. Getting only half the population to agree to the statement is obviously not very strong. This must play a role in the decline of check use. Just as interestingly, these issues are not the top reasons given for debit or cash use. Hence, a theory of debit card usage based on personal restraint might be of limited importance. Similarly, it is hard to see clear evidence in favor of mental accounting theories. However, statements like “easy to use” or “convenient” might be related to behavioral or restraint issues.

First Data asks consumers who indicate they prefer a payment choice why they do so. For instance, among debit users, they ask PIN debit users why they prefer PIN, and signature debit users why they prefer signature debit. I list the top three reasons in Table 1. Strikingly, both users believe that their choice is more secure. It is hard to distinguish the difference between “Convenient,” “Easier” and “Faster,” but while PIN debit clearly scores higher in this category, it appears that a sizeable set of households disagree on this issue as well. A perhaps disturbingly sizeable group picks signature debit because they don’t know their PIN number.

Payment size is an important determinant of payment choice. First Data asks consumers their preferred payment choice by size of payment, and Table 2 reveals striking differences.

Table 1
Why Do You Prefer Your Chosen Type of Debit Card?

	Why Signature?		Why PIN?	
1	Security	39%	Security	44%
2	Don't know PIN	12%	Easier	28%
3	Convenient	11%	Faster	25%

Source: First Data

Table 2
For a Given Size of Expenditure, What is Your Preferred Payment Choice?

	Cash	Debit	Credit Card
Under \$10	71%	18%	7%
\$10–25	45%	36%	13%
\$25–50	21%	47%	20%
>\$50	10%	43%	30%

Source: First Data

Table 3
For a Given Retail Type, What is Your Preferred Payment Choice?

	Cash	Credit Card	PIN debit	Signature debit
Department Store	15%	41%	22%	17%
Grocery Store	21%	24%	32%	16%
Gas	24%	37%	18%	19%
Fast Food	66%	11%	7%	16%

Source: Dove Consulting

The decrease in the use of cash is striking, and is presumably related to security, costs of ATM withdrawals and holding cash, convenience costs of handling large sums at a register, and perhaps issues of mental accounting. David and François (2009) use diary data from France to show that the average size for cash transactions is €10.8, whereas for debit transactions, it is €51.3 (credit card penetration is extremely low in France).

Dove data gets at a similar issue by asking consumers their preferred payment choice by type of retailer. A few results appear in Table 3. Again, the change for cash is striking but may have multiple explanations. The outsized importance of PIN debit at grocery stores is also interesting.

Table 4
Explanations for Debit Use Among Users, and Non-Use Among Non-Users

	Debit use	Debit non-use
Time	14.1	5.5
Convenience	88.1	8.3
Money	11.7	21.1
Restraint	5.8	5.5
Tracking	10.2	40.4
Security	3.9	7.3
Other	3.0	35.8

Source: Borzekowski, Kiser and Ahmed (2008)

Borzekowski, Kiser and Ahmed (2008) take a very interesting approach to this topic. The special module of the Michigan Survey of Consumers asks an open-ended question: Consumers who use debit are asked why they do so. Consumers who do not are asked why not. The authors then coded the answers themselves according to sets of keywords associated with issues like “convenience” and “security.” They report in Table 4 (non-exclusive) explanations for why consumers do or do not favor debit.

Again, we see, at best, very limited support for behavioral explanations for debit use. The overwhelming majority of debit users cite convenience, not restraint or tracking. In fact, “Tracking” is the most highly cited explanation for *non-use*, substantially higher than the “Money” category (40.4 percent to 21.1 percent), which includes rewards. The authors note that convenience may incorporate some sentiment that would be classified as behavioral.

Interestingly, merchant acceptance is never cited as an explanation for non-use. This is striking because Ching and Hayashi (2008) report in Dove data that consumers (wrongly) believe that many stores that accept credit cards do not accept debit cards. An extreme example appears for department stores: They show that 90 percent of respondents believe that department stores accept credit cards but only 65 percent believe that department stores accept debit cards.

Overall, up to this point, we see a strong role for convenience and transaction size in determining payment choice.

V. EMPIRICAL RESULTS

In this section, I focus on results from regression analysis in existing studies. Regression analysis allows the researcher to control for multiple explanatory variables simultaneously. For instance, if we observe that credit card use is correlated with both income and education, but we know that income and gender are themselves correlated with each other, regression analysis allows us to separate

the effects of income and education on choice. To the extent that we correctly control for all relevant explanatory variables and we do not believe that choice itself affects the variable we are considering, we can even interpret the regression analysis as revealing the *causal* effect of the variable on the choice.

A. Age

The result that demographic variables predict payment choice is robust across many studies. These results are only tangentially related to the issues of payment choice that I raised above. Instead, they have a great deal in common with results we have about technology adoption in other contexts, such as consumer electronics. For instance, age is an important determinant of payment choice. Schuh and Stavins (2009) use an early version of the SPCP to find that someone over 65 is 18 percent more likely to use a credit card and 35 percent less likely to use a debit card than someone who is age 35-44. Note that this calculation controls for other observable features, such as income. Borzekowski, Kiser and Ahmed (2008) find a similar result in the special module of the Michigan Survey of Consumers, and Stavins (2001) finds this result in the SCF.²

B. Education

Interestingly, results on education are much less robust, with some studies finding a relationship between education and credit use, and others not. There is often a stronger relationship in simple correlations than in more comprehensive regression analysis. Schuh and Stavins (2009) find no effect of education overall and a hump-shaped effect for men, but Stavins (2001) finds a strong positive effect of education on all plastic payment types in the SCF, and Borzekowski, Kiser and Ahmed (2008) do so as well in the Michigan Survey.

C. Income

Income is a strong predictor. For instance, Schuh and Stavins (2009) find that higher income people are more likely to use credit and debit, although the effect is bigger for debit in the SCPC. Stavins (2001) finds the same result in the SCF, as do Borzekowski, Kiser and Ahmed (2008) in the Michigan Survey. In a somewhat similar result, Hayashi and Klee (2003) use the Dove data set to show that consumers who use the Internet are more likely to use debit and online bill payment, further suggesting the similarities between payment choice and technology adoption.

D. Costs

More germane to our discussion is the role of pecuniary costs in determining choice. Here, we have fairly strong and consistent evidence in favor of a strong consumer response. In particular, Zinman (2009) uses the SCF to show that consumers who are revolving credit (that is, carrying a balance from month to month) are more likely to use debit. Because revolvers bear a substantially larger cost of credit card use, that suggests that pecuniary incentives play a large role. This is particularly striking because one would expect revolvers to be particularly cash

constrained, and hence more in need of their line of consumer credit. Sprenger and Stavins (2008) extend this result in the SCF to show that while debit use increases, revolvers do not also increase check and cash usage. Hence, we see that debit and credit use are very close substitutes.

Fusaro (2008) has data on checking accounts from a bank. Thus, he cannot see credit card expenditures. However, he can see checks written to credit card companies, and he uses clever rules to label people as credit card revolvers, such as people who pay the same amount towards their credit card for several months in a row. With this sort of technique, he also shows that revolvers are more likely to use debit than non-revolvers.

E. Rewards

More difficult to verify is consumers' response to reward behavior. Ching and Hayashi (2008) study this issue in the Dove survey. They find a strong correlation between the respondent's favorite payment choice (as indicated on the survey) and whether the payment has a rewards program. This relationship holds up even after controlling for consumer attitudes towards the payment type; for instance, whether they believe the instrument is convenient, safe, widely accepted, etc. These extra controls mitigate possible endogeneity problems. For example, we might worry that high spenders both choose credit and get rewards and so the statistical relationship does not indicate a causal effect. However, we can control for whether a person is a high spender (at least in part) by controlling for respondent attitudes, which also appear in the survey. In simulations based on their empirical results, the authors find that removing awards on credit cards only causes about 3 percent of consumers to switch away from credit card use (which is a substantially larger percentage of credit card users) and those consumers substitute evenly towards debit and credit. Interestingly, they find that removing rewards on both credit and debit still leads to an overall increase in debit use since many marginal credit users would switch to debit.

F. Payment Size

Payment size is an important determinant of payment choice. Using scanner data from a grocery chain's loyalty program, Klee (2008) finds that a \$10 increase is associated with an 8 percent decrease in the probability of using cash. Interestingly, she finds a U-shaped relationship between debit and credit, where credit dominates debit for low- and high-dollar amounts. Klee speculates that low-payment sizes indicate low-income households that need their credit line, whereas high amounts indicate high-income people who are sensitive to the time cost of holding money. David and François (2009) also find an important role for payment size. Neither study uses household fixed effects, so their results may be partly explained by households that both use plastic and buy large amounts, but they do control for demographic variables in several ways.

G. Time at the Checkout

The effect of time at the checkout is very difficult to parse out empirically. Even if one had transaction-level data, time essentially does not vary across transactions. Borzekowski and Kiser (2006) use average times at the checkout for different payment types (based on scanner data used in Klee, 2008) and then regress consumers' favorite payment type (as reported in the Michigan Survey) with transaction times. They find that checkout time is important. Klee (2006) confirms this result using scanner data from grocery stores. David and François (2009) find a similar result in France. However, these results must be regarded with caution because transaction times are constant for each payment type. With so little variation in the variable of interest, standard errors should be very large. See Donald and Lang (2007) for an interpretation of the clustering issues here. But although I am skeptical of the regression results we have on this issue, the surveys of consumers' attitudes (that I discussed in Section 4) are overwhelmingly supportive of the important role for time at the checkout. Note that time at the checkout is measured in seconds. Evans and Schmalensee (2009) speculate that time at the checkout for plastic payments are so low now that new technologies are unlikely to succeed just by reducing this time.

H. Single-Homing

One issue of particular interest is the concept of "single-homing," that is, whether consumers hold or use a single card, or whether they hold and use multiple cards of different types (called multihoming). This issue is particularly important because if consumers are single-homing, it implies that payment card providers have market power over merchants because the payment card provider effectively has a monopoly over access to those consumers. The merchant must either come to an agreement with the card provider or forgo sales to those consumers. For more on these topics, see Armstrong (2006) and Rochet and Tirole (2006).

In Rysman (2007), I use Visa's PSPs to study the extent of single-homing among credit and charge card networks, that is, the extent to which households held or used cards from one network or multiple networks, where networks are Visa, MasterCard, American Express and Discover.³ The results turned out to be somewhat complex. In terms of card holdings, most households hold cards from multiple networks. Only 36 percent of the households say they hold cards from just one of the networks (almost always Visa or MasterCard). Hence, holdings can be characterized by multihoming.

However, the results are very different when we look at usage. I found that in 75 percent of household-months, the households put 88 percent or more of their spending on a single card (again, this was just among credit cards). The median household put all of their spending on a single card. The results are even stronger at the level of the network, with 75 percent of household-months putting more than 97 percent of their spending on a single network. Overall, there appears to be strong single-homing for usage, although most consumers maintain the ability

to switch networks if they have to. Exactly what sort of price difference would be required to induce that switch remains a topic for further study.

These results are in part supported, and in some ways contradicted, in Snyder and Zinman (2007). They use the SCF, which has some questions that touch on these issues although they do not address them as directly as we might like. Their results are similar to mine on the issue of ownership: They find that most households hold multiple credit cards, although they cannot tell whether the cards are from multiple networks. More interestingly, Snyder and Zinman show that more than 50 percent of households own both a debit card and charge/credit card. However, Snyder and Zinman differ from me on multihoming with usage, although to be clear, they look at multihoming across credit and debit, not among card networks. They find that among households that use plastic payments regularly, perhaps 70 percent or more use both credit and debit. Interestingly, Hyytinen and Takalo (2008) show little evidence of consumers multihoming across debit and credit in Finnish survey data.

I. Merchant Acceptance

Merchant acceptance must be important to consumers at some level. If no merchants accepted a payment mechanism, surely no consumers would want to adopt it. However, how important are observed levels of merchant acceptance for existing payment mechanisms in determining payment choice? This is difficult to say because data on merchant acceptance is hard to come by. In Rysman (2007), I obtained records by zip code of which merchants transacted over the Visa network. A relatively small number of non-Visa transactions (MasterCard, American Express, Discover) also appear on the Visa network, and so I could infer zip codes where there were relatively more or less merchants transacting in each network. I found a statistically significant correlation between the networks that consumers use and the number of merchants accepting the network (i.e., the number appearing in a month), suggesting that acceptance was important for network choice. This result is consistent with the existence of a positive feedback loop in the payment market, which is important for theories of network effects and two-sided markets. See Armstrong (2006), Rochet and Tirole (2006), and Rysman (2009).

J. Security

There is almost no regression evidence on issues of security. Ching and Hayashi (2008) include whether consumers believe that a payment type is safe as an explanatory variable, and it turns out to be insignificant. They speculate that consumers perceive all payment types in their analysis as equivalently safe. They also recognize the potential endogeneity in this regression—in fact, they include safety in part to control for this endogeneity in other variables rather than to study the role of safety directly.

K. Behavioral Explanations

Given the list of results above, especially the strong evidence on pecuniary

effects, what is the scope for behavioral issues in explaining payments? I believe that it is unlikely that we will find strong evidence in favor of behavioral theories in explaining observed payment choices. To be clear, there is strong evidence that behavioral explanations matter in laboratory settings. For instance, Prelec (2009) reports that when asked whether to pay in installments before or after receiving a good, the same consumers differ based on the type of product. For example, they prefer to pay for a vacation ahead of time and a washing machine after receiving it, even when the expenditure size is exactly the same. It seems likely that consumers carry these sorts of preferences “into the field” and hence, behavioral theories play a role in explaining choices. Furthermore, it seems unlikely that we can find evidence that definitively rejects behavioral theory. In part, this reflects that such theory is very flexible.

Even if we cannot reject behavioral theory, can we find evidence in its favor in the kind of regression analysis that I describe here? The strongest evidence would be if we can find predictions from behavioral analysis that contradict predictions from traditional incentives and verify them in data. I can see three dimensions on which to search, all of which I believe are unlikely to turn up such evidence.

First, we can look at households that put some transactions on credit and some on debit. We might be able to use one of the transaction data sets to observe the same household (or similar households) facing the same price for goods of different types. If they were to pay for one type with credit and one type with debit, we would have strong evidence for behavioral theory. But note that even in a very large panel data set with a great deal of transaction data, we may have relatively few observations of the kind of large expenditures that would identify this issue. Furthermore, if we believe that consumers largely single-home on one plastic payment type (recall that Rysman, 2007, and Zinman, 2009, present potentially conflicting evidence on this), it is even more unlikely that we will see much evidence of this behavior.

Second, if single-homing within plastic choices is prevalent, we might turn to behavioral theories to explain when consumers choose cash or plastic. However, the dominant empirical fact here seems to be payment size. There might well be a behavioral element to this phenomenon, but separating it from the traditional explanations (the security, costs and record-keeping issues in transacting in cash all the time) suggests that this will be hard to identify.

Third, it might be more fruitful to look for a role for behavioral theories in broader choices rather than transaction-by-transaction. For instance, if we believe that households single-home, we might ask why they ever choose to do so on debit. Behavioral explanations are often invoked to explain the popularity of debit, as several pecuniary issues point in favor of credit. However, not all do so. Zinman (2009) reports in the SCF that only 28 percent of debit users lack any observable reason to pick debit—that is, they own a credit card and have no outstanding balance. Even among those people, Zinman suggests that explicit time costs play

a role—a consumer may want to get cash back at the same time as purchasing a product, or may not want to deal with paying a credit card bill (which a consumer may rationally predict can lead to fees). Surveys of attitudes cite “convenience” much more than “tracking” or “budgeting” to explain debit use (which again, does not necessarily reject behavior theory, but neither does it support it).

L. Switching

Finally, I wish to point out one drawback that plagues almost the entire literature up to now. All of the papers focus on cross-sectional relationships and, as such, focus on the current set of choices that consumers make. While papers try to control for various characteristics in a cross-sectional approach, we still worry about further heterogeneity causing these results. For many of the issues of interest, it would be more interesting to look at why households switch payment choice. It would be particularly compelling if a paper could use household fixed effects, which focuses our attention on households that switch payment types. Such a focus would be useful for parsing out both traditional and behavioral explanations for choice. However, this approach is particularly difficult as households rarely switch their favored payment mechanism. I can personally attest to this; even in the long and rich Visa panel, I found that including household fixed effects eliminated most of my results, although they were robust to household random effects (as discussed in Rysman, 2007).

With this thought in mind, I bring up my last paper to discuss, which presents striking evidence of households switching in response to pecuniary incentives. Amromin, Jankowski and Porter (2007) study toll payments when the Illinois State Toll Highway Authority doubled the toll at most locations from 40 cents to 80 cents for cash users, but left it at 40 cents for I-PASS users, a program that uses RFID transponders to allow cars to deduct payment electronically “on the fly.” The price change was announced in August 2004, and went into effect on January 1, 2005, and they observe the total number of accounts by zip code just before the announcement and a month after implementation. The effect of the program was dramatic. Up to the announcement, the program had been in place for 6 years and had attracted 1.2 million users. Over the next four months, the program jumped to 1.75 million users, a 45 percent increase. The share of toll paid via I-PASS practically doubled, from 40 percent to 70 percent. The authors guess that by the end, practically every regular user of the tollway adopted the I-PASS. The paper uses careful evaluation of commuting costs and demographic data on different zip codes, along with the timing of adoptions, to argue that high-income areas responded strongly to the associated advertising surge, whereas lower-income areas responded primarily to the price change. However, it is difficult to separate because the advertising mentioned the price change.

What can we learn from this example? Perhaps we should not extrapolate from this example to other payment situations at which larger stakes are present. However, it seems striking that for 40 cents a payment, consumers switched. I suspect this

point is broadly applicable. Put a small surcharge that is clearly, immediately and explicitly tied to a payment mechanism, and people will quickly switch away. Other incentives, including behavioral ones, are unlikely to mitigate this effect very much.

VI. CONCLUSION

This paper reviews the literature on the determinants of payment choice, with an emphasis on the empirics. I briefly discussed these determinants in theory, moving from explicit pecuniary issues to more subtle behavioral ones. I reviewed several existing data sets that have been used to study these issues. I presented some interesting results on consumer attitudes, focusing on the important role of convenience in the survey data. Then I reviewed existing results from regression data.

I find strong support for age and income in determining payment types, but mixed evidence on education. Explicit pecuniary costs also matter, and there is evidence that consumers respond to rewards programs. Survey questions suggest that time at the checkout matters, but this is difficult to identify econometrically. Similarly, there is no evidence that security matters, but this is also hard to look for empirically. Among credit cards, consumers focus their spending on a single card or network, but may use both credit and debit cards simultaneously. Merchant acceptance plays an important role, even in current market conditions. Behavioral theories of payment choice are clearly important in laboratory settings, but their role in real world settings is unclear. Although it is very hard to reject behavioral explanations, we have little evidence strongly in their favor.

ENDNOTES

¹Results from Stango and Zinman (2009) suggest that the float is very small for most consumers. However, Fusaro (2008) points out that if floating a bill allows a consumer to avoid overdraft or a payday loan, the benefit is much higher than indicated by the interest rate on a savings account.

²This result is not uniform. David and François (2009) do not find a significant coefficient on age in their French data set.

³For the purposes of this literature review, it might be more interesting to have studied single-homing between debit and credit. However, I was particularly interested in single-homing within credit cards because, theoretically, the extent of single-homing affects the interchange fee, and interchange fees are especially controversial for credit cards.

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Consumer Payment Choice: Measurement Topics Commentary

Kylie Smith

I feel very privileged to be able to discuss this detailed review that Marc Rysman has just given us.

In my comments today, I want to draw on some Australian data to hopefully illustrate some of the points Marc has talked about in his paper. And I also want to use these data to give you some insight into where there currently has not been much data available elsewhere. I then want to turn my attention to the role of costs and prices. As Marc has just shown with the tollway example, these can be very important in consumer payment choice.

The general sense I get from reading Marc's paper is that the current literature seems to be going down a path of focusing on behavioral-type factors. It is saying we cannot get a good handle on consumer payment choice because these behavioral factors are important, but they are difficult to measure. But I still think there is a lot to be done on cost and prices, which are also difficult to measure because they do not tend to vary much over time or across consumers or payment instruments. Hence, what I want to do in this discussion is build upon the toll example Marc gave by giving you some Australian examples to show significant price changes do matter.

I will start off with a few brief comments on data to give you some insight into the type of data we have collected in Australia.

In 2007, the Reserve Bank of Australia (RBA) conducted two extensive studies. One was on consumer payment use and the other was on costs.

For the consumer payment use study, the approach we took was to do a diary study of individuals. Sample diary pages are shown in Figure 1. For this study, consumers reported details of each transaction they made over a two-week period. We have found this to be a neat way to capture consumer behavior.

Figure 1
Example Diary Page

MERCHANT CATEGORY

A – Supermarket
B – Liquor Store
C – Small food store (e.g. butcher, greengrocer, deli)
D – Other Retailer (e.g. department store, clothes store, book store, electrical, hardware store, other)
E – Petrol/fuel for motor vehicles
F – Transport (e.g. tolls, train, bus, ferry, car mechanic, car registration)
G – Take-away food/fast-food
I – Pub/bar
H – Restaurant/formal dining
J – Sporting and entertainment
K – Holiday travel, hotel accommodation
L – Insurance (motor vehicle, home, health)
M – Health/Medical care (doctor, dentist, chemist)
N – Housing/Utilities (e.g. phone, gas, electricity, internet, pay TV, rent, council rates)
O – Education, childcare
P – Professional service/Home repair or home improvements (accountant, lawyer, electrician, plumber)
Q – Other

PAYMENT METHOD

1 – Cash
2 – Debit card using a PIN
3 – Visa/MasterCard debit card
4 – Visa/MasterCard credit card
5 – American Express/Diners Club card
6 – Store card/Petrol card
7 – Personal Check
8 – BPAY
9 – Other

DATE: 15 / 05 / 07

Mon ☐ Tue ☒ Wed ☐ Thu ☐ Fri ☐ Sat ☐ Sun ☐

	Transaction Amount	Merchant Category	Payment Method	Channel In person Phone Internet Mail				Surcharge Paid?
1	\$ 82.00	A	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	\$.00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	\$.00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	\$.00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

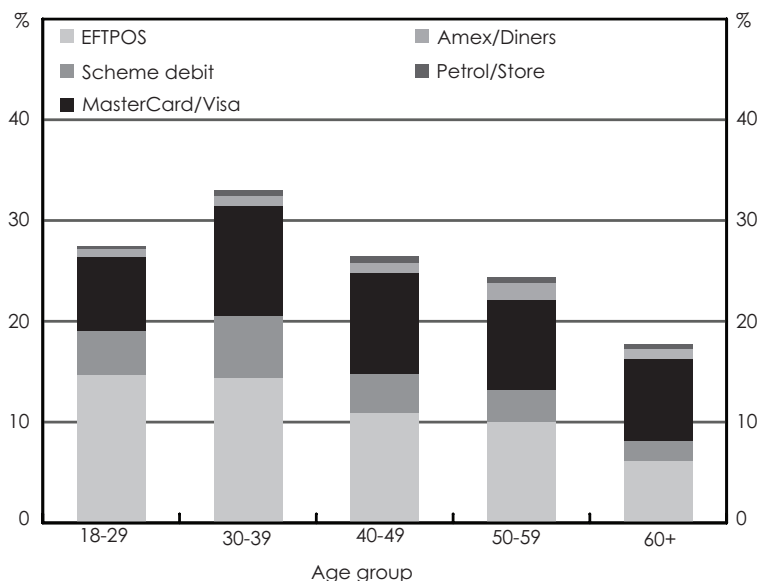
As Marc mentioned, most other studies tend to use surveys that ask consumers questions like “What is your most frequently used payment method?” But, we have found that with transaction-level data, you can use information on, for example, the transaction size or the merchant category to give insight into why consumers might choose different payment instruments in different payment situations. Hence, you do not need to rely on more general behavioral-type variables, such as whether a consumer *typically* used a particular payment instrument because they *perceived* it to be quick or convenient.¹ Yet these are the types of variables a lot of the literature now is trying to incorporate into empirical work.

Just a brief remark on cost studies. Collecting data on costs is a lot more difficult than collecting data on consumer payment use. The reason for this is, if you want to get a detailed picture of costs, you need to ask each participant in the payments system what those costs are. The importance of obtaining cost data though is that it can also tell you important information about consumer behavior. For example, in our cost study we collected data on tender time from merchants. This can probably provide more specific information on consumer behavior than asking the consumer the more general question, “Do you value this payment instrument because of the speed of the transaction?”

That is all I wanted to say on data. Now I will walk through a couple of charts which provide an overview of payment behavior in Australia.

Chart 1 is the use of cards by age. We find age does play a role in explaining consumer payment choice. In Australia, consistent with other studies, we find debit cards are used most by the youngest age groups with use tending to decline with age.

Chart 1
Use of Cards by Age Group



Source: Roy Morgan Research

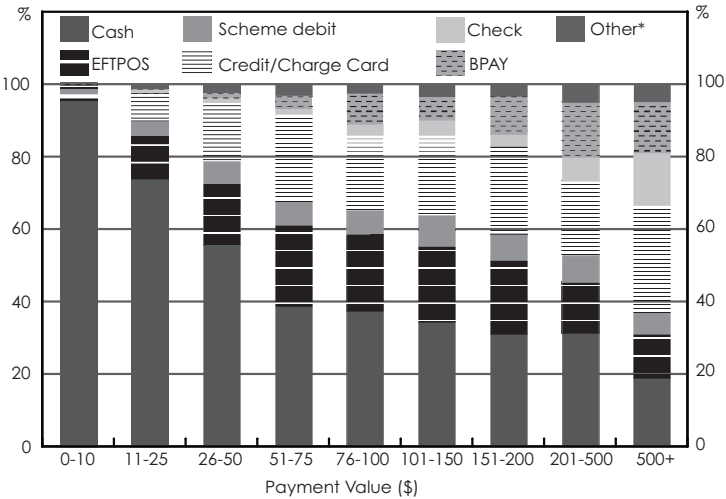
Chart 2 is the share of payments by transaction value. We also find transaction value to have a strong effect on payment instrument use. For example, cash is by far the most commonly used payment method for low-value payments, accounting for almost all transactions under \$10. Card payments are used extensively across all but very low payments, and checks are mostly reserved for high-value payments.

So, the main purpose of showing these two graphs is to point out that payment behavior in Australia is not too different from the results being found overseas.

I want to hopefully add to Marc's discussion by giving you some examples of variables that have not received much attention in the literature, yet can give some useful insights into consumer payment behavior.

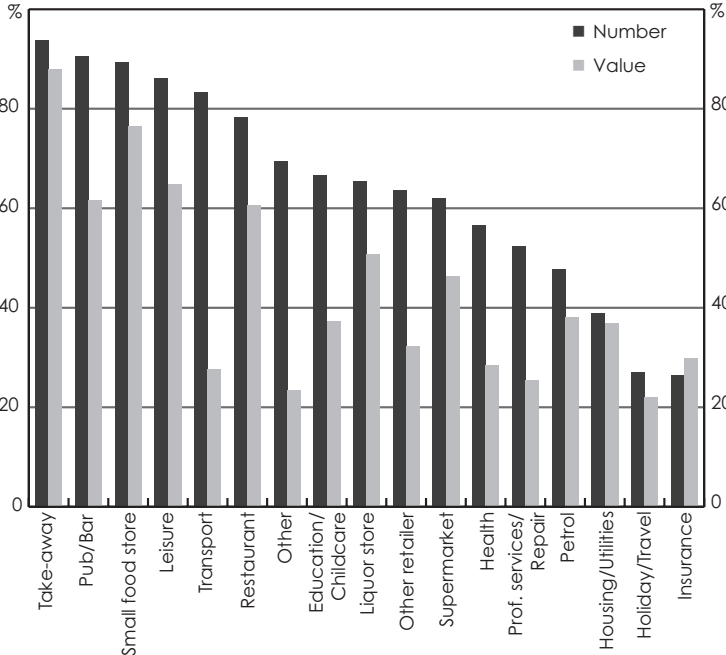
The first is merchant category. Chart 3 shows cash is more likely to be used than other payment instruments in merchants such as take-away stores or pubs and bars. Although the graph only shows raw data, even in our empirical analysis—controlling for factors such as transaction size—we still find a high probability of cash use for these merchants. And, here we are likely to be picking up some behavioral effects: the effect of consumers' desire for quick transaction times at these quite busy merchants. You cannot imagine someone typically waiting around in a take-away store or a pub to sign for their credit card when they have a queue of customers behind them.

Chart 2
Share of Payments
Percent of number of payments



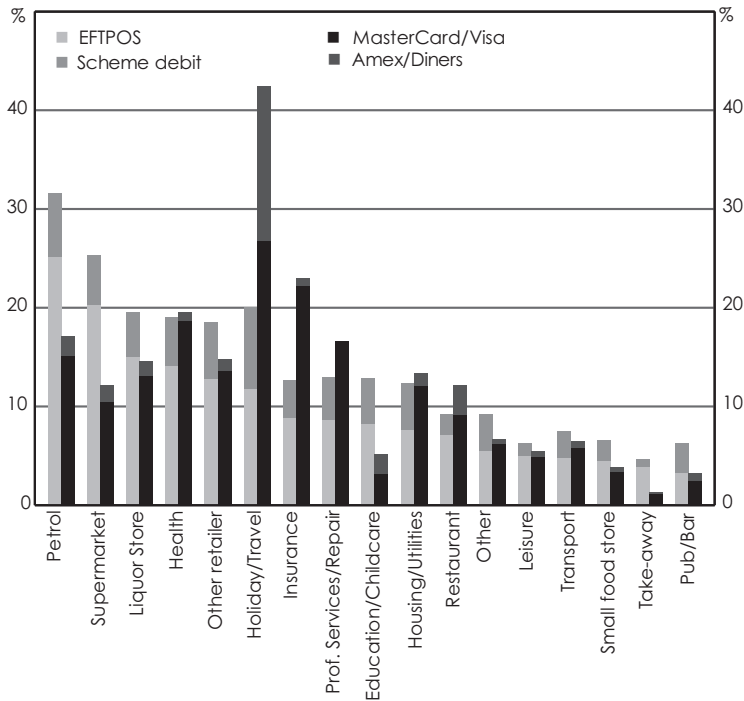
*Includes petrol/store cards and "other" payment methods
Source: Roy Morgan Research

Chart 3
Cash Use Across Merchant Categories
Percent of payments



Source: Roy Morgan Research

Chart 4
Card Use Across Merchant Categories
 Percent of number of payments



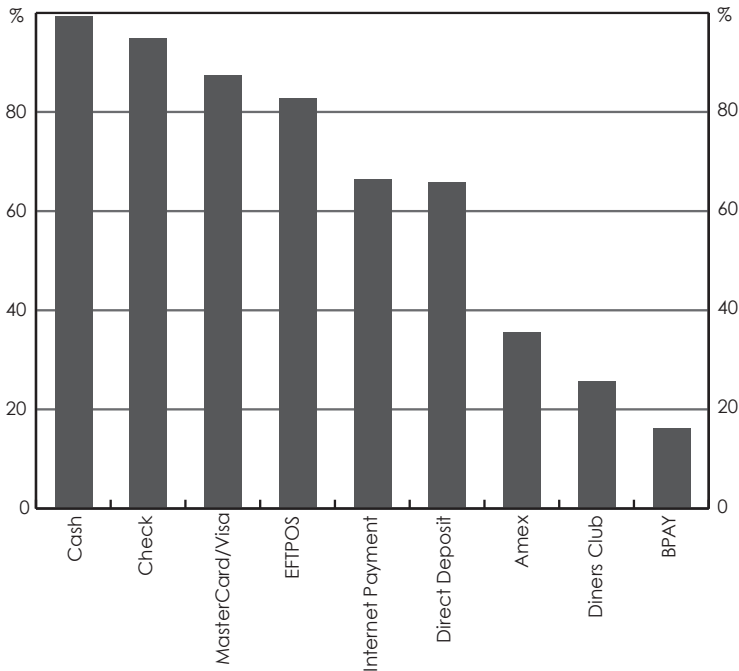
Source: Roy Morgan Research

Chart 4 shows a different type of behavioral effect. We find debit cards are more likely to be used than other payment instruments in merchants like petrol stations and supermarkets. Marc talked about some of the mental accounting theories: consumers might have a desire to consume or purchase certain items out of current income. But we also know in Australia that some petrol stations and supermarkets tend to offer cash-out facilities. So, the behavioral effect we are likely to be picking up here is that consumers value the fact that debit cards save time; they do not need to make a special trip to the ATM to make a cash withdrawal.

Another variable that does not receive that much attention in the literature is merchant acceptance. Admittedly, data on this are quite difficult to obtain. We collected some data on merchant acceptance from small businesses as part of our use study. And from this we find the reason cash is probably used most extensively for small-value transactions in Australia is because it is accepted almost universally. As Chart 5 shows, cash is accepted by almost all small businesses, but not as many accept credit cards or EFTPOS (our domestic debit card system).

Having talked about consumer behavior and some alternatives to subjective preference-type variables, I now want to talk about consumer costs. Marc

Chart 5
Payment Methods Accepted by Small Businesses
Percent of respondents



Source: RBA Small Business Survey

mentioned costs briefly, but I want to highlight their importance because we have observed some interesting consumer responses to costs in Australia. Again, information on costs can also be used to demonstrate some of the behavioral theories Marc has talked about.

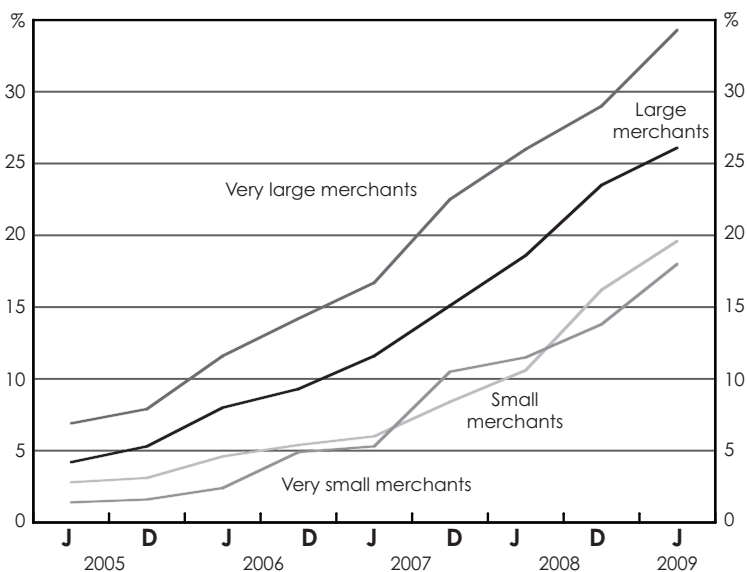
I'll start by looking at time costs. In Table 1, I've included data from our cost study showing the various time costs to a consumer of making a payment. Tender time is a particularly important consideration because it makes up such a large component of these costs. And, we can use these data to observe consumer behavior, though we would also need to consider interactions with merchant categories. For example, tender time might matter to consumers for purchases made at supermarkets, but maybe not at other merchants such as the corner store because they can catch up with the local small-business operator.

Moving on to explicit costs: the fees and charges consumers might face. I mentioned at the start there is some difficulty in capturing price effects empirically because prices do not tend to vary. But in Australia there have been some changes to the price structure—either pricing or the pricing regime—of various payments instruments, and the evidence suggests that these changes do seem to matter for consumer payment behavior.

Table 1
Consumer Time—Point-of-Sale Payments
 Seconds per transaction

	Credit card	EFTPOS	Cash	Check
Tender time	45	35	20	90
ATM withdrawal time	—	—	9-16	—
Statement reconciliation	5	5	1	5
Bill payment	13	—	—	—
Total	63	40	30-37	95

Chart 6
Merchants Surcharging Credit Cards*
 Percent of surveyed merchants

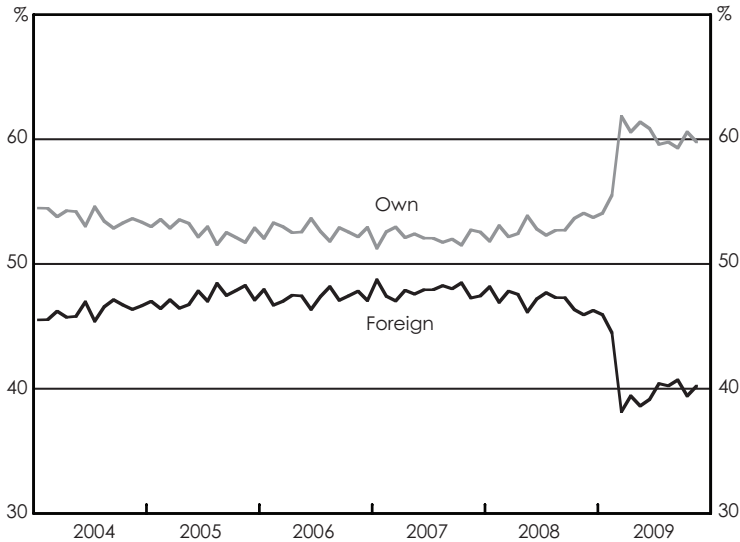


* Very large merchants are those with annual turnover greater than \$340 million, large merchants \$20 million to \$340 million, small merchants \$5 million to \$20 million, and very small merchants \$1 million to \$5 million.

Source: East & Partners Pty Ltd.

The first example is merchant surcharging. At the start of 2003, the RBA introduced a standard requiring the removal of scheme rules that prevented merchants from surcharging for credit card transactions. Chart 6 shows that while there was a slow uptake of surcharging by merchants, currently around a third of very large merchants impose a surcharge. In terms of the consumer response, we received some confidential data from one of the schemes that showed when a surcharge is imposed on one particular type of card, or if it is higher on a particular type of card, use of that card declines dramatically.

Chart 7
Composition of ATM Withdrawals
Percent of total withdrawals



Source: RBA

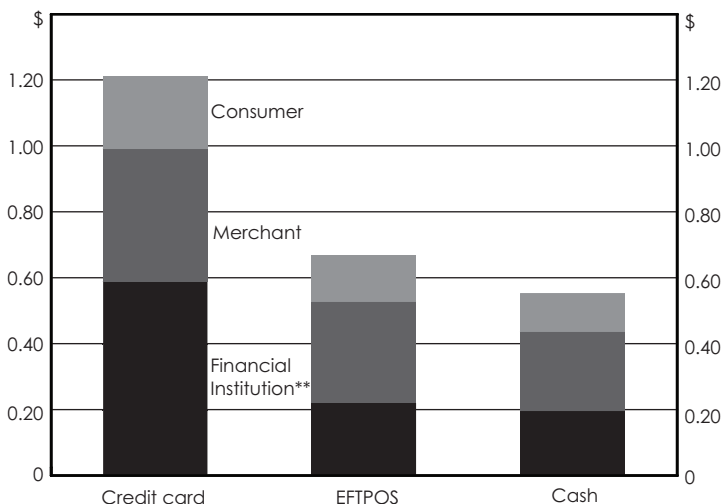
Chart 7 shows a second example of costs where noticeable effect on payment behavior was observed with the recent reforms to the ATM system in Australia. In March 2009, we introduced reforms that increased the transparency of prices to consumers. Prior to the reforms, consumers were charged what was called a foreign fee from their bank if they made a transaction at a foreign ATM—that is, an ATM owned by another bank. This fee was not transparent; it appeared on the customer’s account statement at the end of the month.

In contrast, since the reforms, the ATM owner now charges the consumer directly—in place of the foreign fee—with the charge showing up on the ATM screen at the time the withdrawal is made.

The interesting thing about this change in the regime, though, is that prices to consumers have remained virtually unchanged. Before the reforms, the foreign fee was about \$2, and now the direct charge is also generally around \$2. The only thing that has changed is the transparency of the price. However, changing the way the price was displayed to consumers changed their behavior immediately. The graph shows that the share of foreign transactions consumers make—that is, transactions at ATMs not owned by their own bank—fell immediately in March when the reforms were introduced. And it has remained virtually unchanged at this lower share since.

To sum up on costs, the purpose of showing these examples was to demonstrate that costs do play a big role in explaining consumer payment behavior and can also give some insight into behavioral/preference effects.

Chart 8
Total Payment Costs*
 Percent average transaction for each payment method



* Resource costs excluding account overhead costs

**Including costs of currency production for cash

I will finish now by making a brief comment on a point Marc made during the introduction of his paper. He stated that understanding the determinants of consumer choice is important because every government has a responsibility for an efficient and effective payments system. I do agree with this statement, but consumer choices are only one part of efficiency. Another important part is the costs of those payment instruments to society as a whole. Chart 8 demonstrates the extent to which costs can vary across various payment instruments. And what we found to be important when we looked at efficiency during our reforms over the past seven years was whether or not these costs were broadly reflected in the relative prices that consumers face.

To wrap up, I agree that further research on behavioral theories and consumer payment choice is an interesting topic, but I still think there is more work to be done on examining the role of costs in explaining payment choice. There have been a few studies, as Marc pointed out, but there are also difficulties in finding effects of costs empirically because there is often little variation in prices.

Hopefully, by showing a couple of examples from Australia (and building upon the toll example that Marc pointed out), we can see that price changes can result in some interesting consumer payment behavior, and importantly, we can even use these kinds of responses to inform us about those behavioral/preference effects that might otherwise be difficult to measure.

ENDNOTE

¹To define, I group all qualitative-type variables into the category of behavioral or preference variables.

General Discussion

Session 2

Mr. Weiner: Thank you, Marc and Kylie. Marc, I will give you a chance to react to comments Kylie made.

Mr. Rysman: I agree with everything she said. I certainly think costs are important too, although I left it out of my paper.

Mr. Hunt: I was intrigued by Kylie's chart on the surcharging. Have you done any research on whether this variation in surcharging has led to consumer-sorting across merchants?

Ms. Smith: I am sorry. Could you clarify consumer-sorting?

Mr. Hunt: Once you change the price structure, you may change the kinds of customers you attract. So, is there any way you can measure that effect?

Ms. Smith: Unfortunately we are trying to get a lot more detailed information on surcharging in Australia at the moment because it has become an important issue. We haven't been able to look at that in too much detail. There was a study done by the Netherlands Bank. One of the coauthors is here—Wilko Bolt. They found consumers may, when faced with a surcharge, go to a different store. Their number was about 5 percent. They indicated if they faced a surcharge, they might actually go to a different merchant. But that is all the evidence I know of.

Mr. Gove: Just a comment on the surcharging in the Australian environment in addition to Kylie's chart there. It shows between 20 and 30 percent of merchants surcharging. That should not be confused with the percent of transactions that are being surcharged, which is about 5 percent according to Reserve Bank estimates.

The other thing that is important to realize about surcharging—I am just saying this because there seems to be a lot of misinformation about surcharging in Australia—is they may only be surcharging on one card type. It may only be

American Express. It is not surcharging on all cards necessarily. Those sorts of issues need to be kept in mind when evaluating the impact of surcharging in Australia.

Mr. Weiner: I think the surcharging issue obviously is very important and very timely right now. I don't want to put anyone on the spot, but the Dutch have some studies on this, as does the Bank of Mexico. I know Jose is with us. Any comments from either the Dutch or the Mexicans on your experience?

Mr. Bolt: In Holland, we use only cash or debit cards at the point of sale. We don't use credit cards. One in five merchants in the Netherlands—predominantly small merchants—surcharge debit cards. They do that in a specific way. They do it only for payments below €10. So below €10, if you want to use your debit card, you pay sometimes four times the fee the merchant pays. So, if the merchant pays a 5-cent flat fee for every debit card transaction, he charges 23 cents, on average, for a payment below €10. That was actually a normal situation.

The Dutch then say, "Well, I am not going to pay that if I buy something for €9.90 and then you have to pay a 23-cent extra fee."

So, what they do is use cash or they go to another merchant that doesn't surcharge. In the end what happens with regard to all this is, if you would stop surcharging, the debit card volume for those small payments would rise enormously. Then you can realize economies of scale. Promising in some sense lower debit card fees ultimately, so actually what we are now advocating at the central bank is that we have a public campaign that merchants should in some sense stop surcharging and say to consumers on a national channel on television, "You should use your debit card also for small payments."

What we have now seen in 2009 is the number of transactions by debit cards for under €10 has increased by 20 percent. Dutch people are using the debit card also for small payments, and merchants are reacting by stopping surcharging. In the end, they actually expect and banks somehow also agree to that. Of course, this is a difficult area to discuss. Yet to come are lower payment fees over time, actually decreasing the 5 cents to even lower, because the volume gets bigger and bigger and you can realize economies of scale there. That is what happens in Holland.

I have a question for Kylie on the surcharging. Do you know what types of merchants surcharge and the different rates, how much or to what extent they surcharge? Do they extend the full payment fee they face, or do they absorb some of those costs and pass on some of those costs to the consumers? Does that differ across types of merchants?

Ms. Smith: We do have some data on this. We obtain data from a consulting firm that surveys a group of merchants, and we also collect our own quarterly data from acquirers on merchant service fee income. It does seem roughly that the surcharge is in line with the merchant service fee.

Mr. Hayes: A comment on the comment, and then I also have a question for Kylie, if I can.

The comment is, in the United States clearly there is no surcharging on debit card payments. You are prohibited from saying you can't take a card for a transaction of less than x amount. We see small-value payments are the fastest growing category of debit payments in the United States. Fully 25 percent of all debit card transactions are for less than \$10 here, and it is growing very, very quickly, even without this idea of lower pricing. So, it seems the value proposition has been quite strong, and it represents a big part of the market.

My question concerns your last chart. I want to try to understand the basis for the numbers. The three colored bars are meant to be financial institution cost, merchant cost, and consumer cost in each of the three payment forms. What is somewhat puzzling is when I look at the EFTPOS number, the merchant cost appears to be a bit higher than the cash cost, for example. My understanding is that with EFTPOS, the merchants are receiving typically 4 or 5 cents per transaction in revenue by the issuer and typically have fairly low processing costs. So, I am just puzzled by why that cost would be higher than what you show here for cash. So, maybe I am misreading this or there are other things embedded within these numbers.

Ms. Smith: Yes, you're right. Those three bars are the costs broken down into financial institution, merchant, and consumer. On the EFTPOS versus cash, the component there for the merchant will be the "tender times": merchants with high turnover provided data on tender times from time-and-motion studies. Cash is about 20 to 25 seconds to make a transaction, whereas EFTPOS is about 35 to 40 seconds. That is the main driver there. All the other costs are actually lower than for cash.

Mr. Negrin: On the Mexican experience of merchant surcharging, there is not really actual surcharging. What you can do is have discounts if you pay with cash, let's say. What has been happening since the interchange fees have gone down and the discount rates have come down somewhat is more merchants that used to take cards used to charge more if you paid with credit cards. That has changed quite a bit. On the other hand, larger merchants are distinguishing between paying with debit or with credit.

I have a question for Marc about education not being relevant on your regressions. Do you have an explanation for that? It seems very strange because it is highly correlated with income, and if you have high income, you would have expected that. On the PIN use for which you had strange results, can it be related to the fact of having several debit cards or several credit cards?

Mr. Rysman: The education one is tricky. I guess I don't have a good answer for you about that. People who run regressions on the *Survey of Consumer Finances* that the Fed runs, seem to find that education matters. But, for instance, we have

early results from the *Survey of Consumer Payment Choice*, the new survey the Boston Fed is running that is really focused on payments. And there the result is ambiguous for education. Scott, would you agree with that? There, the result depends on how you run the regression. I don't have a great explanation, but I think, as the new versions of this dataset come out, maybe we can resolve what is going on.

The surprising result on PIN debit is the one questioning which one is easy to use. There "credit card" is ranked ahead of "signature" and "PIN" debit. I am not sure either. The difference of about 15 points means 15 percent of the people are saying credit cards are easy to use, but they are not saying that debit cards are easy to use. It is not that they can't remember their PIN number because they are saying it for both signature and PIN debit. It is not that many people, so I am not sure how big it is if we take it in terms of statistical significance.

One of the things that jumps to my mind is that with debit, you have to know how much money is in your account, and with credit, you are not running up against your limit, at least you don't have to think about how much money is in the account today. Especially if someone is maintaining separate checking and savings accounts, Are they going to move money from the savings account to cover payments as they come in? They don't have to think about that when they are using their credit card. They just have to move it in on the day they send off their credit card payment. So, that is my best guess for what is happening there.

That is the issue with these sorts of studies. You never get enough information. You always want to know why. That is one of the reasons I like that essay format, where you read the essays and see what you can learn from them.

Ms. Smith: If I may add a comment on the education and income-type variables from our empirical analysis, we find these kinds of variables might have strong explanatory power in terms of whether a consumer holds a credit card or not, but then it drops out of the use regressions once you control for credit card holding. You get very few demographics that end up left in your use regressions.

Mr. Weiner: If I can ask a quick question that is kind of related as far as determinants, I find one of the biggest puzzles—and you highlighted it, Marc—is the lack of concern over security. It doesn't seem like consumers rank it that high. Any more insight on that or thoughts on what's happening there?

Mr. Rysman: People trust the Fed to protect them, I guess.

Mr. Eckert: Perhaps it's because the consumer protection laws, either private or public, effectively push that cost away from the consumer to the issuer and/or the merchant. Therefore, the embedded cost of worrying about security is nonexistent to the consumer, so why should they care?

Then, the second thing as a follow-up on the debit side, our own observational research on why signature debit is seen as less convenient or less easy to use

than PIN is because it still runs on credit rails, so the customer has to know either to hit “credit” when they are making a debit payment (which is kind of confusing) or opt out by hitting “cancel.” So, it actually is less convenient for them. What is counteracted often by issuers is they offer rewards on a signature debit as opposed to PIN.

Mr. Cook: Josh, you know I couldn’t let this one go. Whenever we talk about PIN, I am pretty shocked by this. I personally don’t think it is an issue of consumers thinking the Fed is going to protect them; I think it is a misconception they have been told. It is kind of a George Costanza scenario, “it is not a lie if you believe it.”

Here is my debit card, for example. I will trade it with anybody in this room. I have used this example before. You heard me in Chicago use this example. If you took my PIN debit card, you cannot use it. But anyone who has a scheme bug on their card, I can use your card (United States only; it is unique in Europe). The fact is that fraud is associated with it.

So, think about this for a second. Even if your fraudulent charges are waived and you are reimbursed for those, what about when your mortgage payment bounced? Who covered that late payment? Who covered that late payment for your utility bill, for example? All those other fees that go along with it, did the Fed step in and protect you there? Did your bank reimburse you for those? I don’t think so. Did Visa stand in or did MasterCard give you all the reimbursement for all your late fees? No, they didn’t.

When you talk about less convenience for signature-based cards, think about coming into one of our stores. If you return a piece of merchandise that you bought with a signature debit card, what is the timing of you getting reimbursed for that? It is three to four to five days later before we can get credit back to your account. You use a PIN debit card, I’ll give you cash back. Those are the kind of things that make it a less-efficient product. It is fraud-prone. I’ll leave it at that.

Mr. Taylor: Debit holds are a big issue within our industry because when you buy gasoline, the bank is going to put a hold against your DDA up to \$75, \$100, \$150. It is really up to the bank. To Wal-Mart’s point, that debit hold is not cleared in real time. What happens, if you are close to your DDA limit, you are down to balance \$0, if you have checks presented over the next three or four days, even though the retailer has issued a finalization within five minutes of holding up that handle, that \$150 is still being held. Then the whole cascade of fees comes down. Consumers are generally scared to death of the \$37 overdraft fees and all the fees that come down. That is why you are seeing Congress act on overdraft fees in this case

Mr. Duncan: I wanted to comment on Marc’s questioning of the Illinois toll situation, where there was a change of 40 cents. If you have pricing transparency, you can make massive changes in consumer behavior, as that example showed.

Until relatively recently, a number of banks were surcharging 50 cents to a consumer who entered a PIN. That might explain some of the same kind of behavior we saw with consumers shifting to a signature debit card.

Mr. Rysman: I think that's right. Transparency and the saliency of the charge in that case were really striking in a way that not all fees are. It's one of the reasons why the result that people with revolving credit switch away from credit cards to debit is so striking. That is not salient. I am surprised that many people get that it is going to cost them money. But it is a strong result in a couple of different studies. I agree with your point. The saliency and the immediacy of the fee and the transparency play a role in people responding to it.

Externalities in Payment Card Networks: Theory and Evidence

Sujit Chakravorti

The proliferation of payment cards has dramatically changed the ways we shop and merchants sell goods and services. Today, payment cards are indispensable in most advanced economies. Amromin and Chakravorti (2009) find that greater usage of debit cards has resulted in lower demand for small-denomination bank notes and coins that are used to make change in 13 advanced economies.¹ Recent payment surveys also indicate that consumers are using payment cards instead of checks.

Some merchants have started to accept only card payments for safety and convenience reasons. For example, American Airlines began accepting only payment cards for in-flight purchases on all its domestic routes on June 1, 2009. Also, many quick service restaurants and coffee shops now accept payment cards to capture greater sales and increase transaction speed. Wider acceptance and usage of payment cards suggest that a growing number of consumers and merchants prefer payment cards to cash and checks. In addition, payment cards may allow access to credit that can be used to attract consumers without funds.

Debit, credit, and prepaid cards are three forms of payment cards. Debit cards allow consumers to access funds at their banks (defined broadly as depository institutions) to pay merchants; these are sometimes referred to as “pay now” cards because funds are generally debited from the cardholder’s account within a day or two of a purchase.² Credit cards allow consumers to access lines of credit at their banks when making payments and can be thought of as “pay later” cards because consumers pay the balance at a future date. Prepaid cards can be referred to as “pay before” cards because they allow users to pay merchants with funds transferred in advance to a prepaid account.³

Greater usage of cards has increased the value of payment network operators, such as Visa, Inc., MasterCard Worldwide, Discover Financial Services, and

others. In 2008, Visa had the largest initial public offering (IPO) of equity, valued at close to \$18 billion, in U.S. history (Benner, 2008). The sheer magnitude of the IPO suggests that financial market participants value Visa's current and future profitability as a payment network. One potential reason for Visa to change its corporate structure from a card association to a publicly traded company is to reduce antitrust scrutiny by regulators and to lower the threat of lawsuits filed by certain payment system participants (Enrich, 2006). In 2006, MasterCard Worldwide became a publicly traded company. Also, in 2007, Discover Financial Services was spun off by Morgan Stanley.

Some industry observers have suggested that the high profitability of payment card providers has increased scrutiny by public authorities in many jurisdictions.⁴ Several U.S. merchants have filed lawsuits against MasterCard and Visa regarding the setting of interchange fees. These fees are paid by the merchant's bank to the cardholder's bank and are set by the network operator.⁵ In April 2009, MasterCard reached an interim understanding with the European Commission on interchange fees for cross-border consumer payments in the European Union. Effective July 1, 2009, MasterCard Europe established cross-border interchange fees for consumer card transactions that, on average, do not exceed 30 basis points for credit cards or 20 basis points for debit cards.

To date, there is still little consensus—either among policymakers or economic theorists—on what constitutes an efficient fee structure for card-based payments. In this article, I discuss several types of externalities that are present in payment networks.⁶ The first, and perhaps, the most researched, externalities are adoption and usage externalities. In addition to these externalities, underlying fee structures may affect the welfare of individuals or firms participating (or not participating) in the payment network. Finally, I will discuss the limited evidence that exists regarding the effectiveness of some policy interventions.

There are several conclusions that I draw from the academic models, recent interventions in payment card markets, and discussions about potential policy interventions. First, many economic models suggest that the socially optimal interchange fee structure may not be systematically lower than the network profit-maximizing fee. Second, removing merchant pricing restrictions generally improves market price signals. Third, merchant, card issuer, or network competition may result in lower social welfare contrary to generally accepted economic principles. Fourth, if warranted, fees set by the authorities should not only consider costs but also benefits received by consumers and merchants, such as convenience, security, and access to credit that may result in greater sales.

Finally, the motivation for why public authorities intervene differs across jurisdictions. The type of public institution that regulates payment cards also differs. The institution may be an antitrust authority, a central bank, or a court. Often public authorities intervene because the interchange fee is set by a group of competitors and the level of the fee is deemed to be excessive. In other cases, by

mandating fee ceilings, authorities expect a greater number of merchants to adopt payment cards instead of cash.⁷ Alternatively, some policymakers argue that lowering card issuers' interchange revenue may reduce incentives to cardholders to use more costly payment cards (for example, credit cards instead of debit cards).

The rest of the article is structured as follows. In the next section, I discuss externalities in payment card markets in the context of theoretical models. I also explore two externalities that have been less researched. In the following section, I investigate market interventions, along with the motivation of the authorities for such interventions and whether they met their objectives. Finally, I offer some concluding remarks.

I. EXTERNALITIES

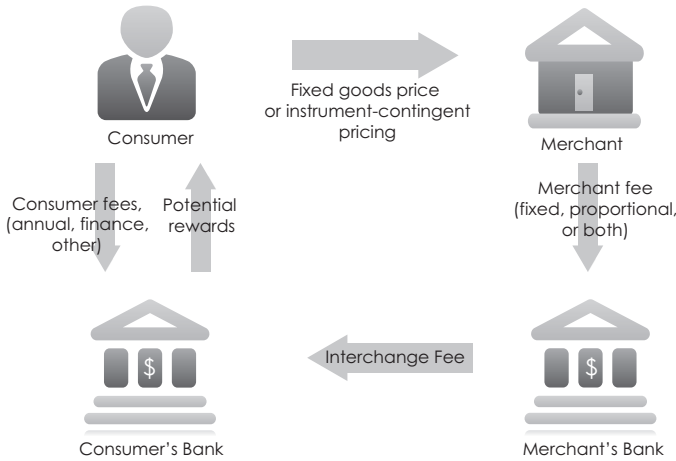
Before discussing the externalities present in payment card networks, let us review the key participants and the monetary transfers among them. Payment networks comprise consumers (more generally, buyers) and their banks (known as issuers), as well as merchants (more generally, sellers) and their banks (known as acquirers), along with the network operator and other participants that facilitate these transactions. Payment card transactions involve a set of interrelated bilateral transactions. First, a consumer establishes a relationship with an issuer and receives a payment card.⁸ Second, a consumer makes a purchase from a merchant. Third, if a merchant has established a relationship with an acquirer, the merchant is able to accept payment card transactions. Fourth, the acquirer receives payment from the issuer. A network operator facilitates these bilateral relationships.

In Figure 1, the four key participants and their monetary transfers are diagrammed. When the consumer establishes a relationship with a bank, she agrees to pay an annual fee if one is charged, finance charges if she borrows long term, and other fees. In addition, she may receive per transaction rewards to promote greater usage of the card. When the consumer uses her card to make a purchase, the merchant may impose an additional fee for card acceptance or pass on the cost to all consumers in the form of higher prices. To convert the payment card receipt into a bank deposit, the merchant pays a fee to its bank. In addition to per transaction fees that may be fixed or proportional to the amount of the purchase, the merchant may also pay fixed fees. The merchant's bank pays interchange fees to the cardholder's bank. In this section, I study the effect of a bilateral payment transfer on other bilateral relationships in the network and potential externalities that might arise.

A. Adoption and usage externalities

The two-sided market literature has been used to analyze the structure of fees paid by consumers and merchants. Payment networks are one type of two-sided market.⁹ Other types of two-sided market platforms include computer game platforms, newspapers, and online dating sites. These platforms provide goods and services to two or more distinct sets of end-users and must convince all sides to

Figure 1
Payment Card Fees



participate. The price structure or balance is the share that each type of end-user pays of the total price of the payment service.

This literature combines the multiproduct firm literature, which studies how firms set prices on more than one product, with the network economics literature, which studies how consumers benefit from increased participation in networks by other consumers.¹⁰ Rochet and Tirole (2006b) define a two-sided market as a market where end-users are unable to negotiate prices based on costs to participate on a platform and the price structure affects the total volume of transactions.

A key externality examined in the payment card literature is the ability of the network to convince both consumers and merchants to participate in a network. Initially, the literature focused on per transaction fees and ignored fixed costs. In such an environment, there is no distinction between adoption and usage. Baxter (1983) argues that the equilibrium quantity of payment card transactions occurs when the total transactional demand for payment card services, which are determined by consumer and merchant demands jointly, is equal to the total transactional cost for payment card services, including both issuer and acquirer costs, or:¹¹

$$f + m = c_I + c_A,$$

where f is the willingness to pay for a consumer, m is the willingness to pay for a merchant when demand for payment services equals the supply of payment services and c_I and c_A are the issuer's marginal cost and the acquirer's marginal cost, respectively. A consumer's willingness to pay is based on her net benefits received. The consumer will participate when her net benefit is greater than or equal to the fee in equilibrium.¹² Similarly, if the merchants' fee, m , is less than or equal to the

net benefits it receives, merchants will accept cards. Pricing each side of the market based on marginal cost—as would be suggested by economic theory for one-sided competitive markets—need not yield the socially optimal allocation. To arrive at the socially optimal equilibrium, a side payment may be required between the issuer and acquirer.

Schmalensee (2002) extends Baxter's (1983) analysis by considering issuers and acquirers that have market power, but still assumes that merchants operate in competitive markets. His results support Baxter's conclusions that the interchange fee balances the demands for payment services by each end-user type and the cost to banks to provide them. Schmalensee finds that the profit-maximizing interchange fee of issuers and acquirers may also be socially optimal.¹³

Given the simultaneous consumption of payment services by consumers and merchants, a side payment may be necessary to get both sides on board if there are asymmetries of demand between consumers and merchants and/or of costs to service consumers and merchants. This result is critically dependent on the inability of merchants to price discriminate between card users and those who do not use cards or among different types of card users. While most economists and antitrust authorities agree that an interchange fee may be necessary, the level of the fee remains a subject of debate.

B. Merchant competition

A common reason given by merchants when asked why they do not reject cards instead of paying high fees to the card networks for accepting them is that they would lose business to their competitors. Some merchants argue that merchants as a whole would be better off by not accepting certain types of payment cards. Some economic models have predicted that merchant competition may increase the ability of networks to set higher interchange fees.

Unlike Baxter (1983) and Schmalensee (2002), Rochet and Tirole (2002) consider strategic interactions of consumers and merchants.¹⁴ They have two main results. First, the interchange fee that maximizes profit for the issuers may be more than or equal to the socially optimal interchange fee, depending on the issuers' margins and the cardholders' surplus. Second, merchants are willing to pay more than the socially optimal fee if they can steal customers from their competitors. However, overall social welfare does not improve when merchants steal customers from their competitors by accepting payment cards.

Wright (2004) extends Rochet and Tirole (2002) by considering a continuum of industries where merchants in different industries receive different benefits from accepting cards. His model is better able to capture the trade-off between consumer benefits and merchant acceptance when the interchange fee is increased because some merchants will not accept cards.¹⁵ Wright concludes that the interchange fee that maximizes overall social welfare may be higher or lower than the interchange fee that maximizes the number of transactions.

These models suggest that merchant competition may actually lead to a greater ability by network operators to extract surplus from them. Furthermore, there is no systematic bias in the social-welfare-maximizing and profit-maximizing interchange fee. In the next section, I explore the ability of merchants to steer consumers to the merchant's preferred payment instrument by using price incentives.

C. Instrument-contingent pricing

The two-sided market literature assumes that end-users are not allowed to negotiate prices of platform services. In many jurisdictions, merchants are not allowed to add a surcharge for payment card transactions because of legal or contractual restrictions.¹⁶ If consumers and merchants were able to negotiate prices based on differences in costs that merchants face and the benefits that both consumers and merchants receive, the interchange fee would be neutral, assuming full pass-through. The interchange fee is said to be neutral if a change in the interchange fee does not change the quantity of consumer purchases and the profit level of merchants and banks. Generally, the merchant charges the same price regardless of the type of payment instrument used to make the purchase. Frankel (1998) refers to merchants' reluctance to set different prices even when they are allowed to do so as price cohesion.

Even if price differentiation based on the payment instrument used is not common, the possibility to do so may enhance the merchants' bargaining power in negotiating their fees. Merchants can exert downward pressure on fees by having the possibility to set instrument-contingent pricing. Payment networks may prefer non-instrument-contingent pricing because some consumers may not choose payment cards if they had to explicitly pay for using them at the point of sale (POS).

Carlton and Frankel (1995) extend Baxter (1983) by considering when merchants are able to fully pass on payment processing costs via higher consumption goods prices. They find that an interchange fee is not necessary to internalize the externality if merchants set pricing for consumption goods based on the type of payment instrument used. Furthermore, they argue that cash users are harmed when merchants set one price because they subsidize card usage.

Schwartz and Vincent (2006) study the distributional effects among cash and card users with and without no-surcharge restrictions. They find that the absence of pricing based on the payment instrument used increases network profit and harms cash users and merchants.¹⁷ The payment network prefers to limit the merchant's ability to separate card and cash users by forcing merchants to charge a uniform price to all of its customers. When feasible, the payment network prefers rebates (negative per transaction fees) given to card users.¹⁸ Granting such rebates to card users boosts their demand for cards while simultaneously forcing merchants to absorb part of the corresponding rise in the merchant fee, because any resulting increase in the uniform good's price must apply equally to cash users. In this way, the network uses rebates to indirectly extract surplus from cash-paying customers in the form of higher prices.

Gans and King (2003) argue that, as long as there is “payment separation,” the interchange fee is neutral regardless of the market power of merchants, issuers, and acquirers. When surcharging is costless, merchants will implement pricing based on the payment instrument used, taking away the potential for cross-subsidization across payment instruments and removing the interchange fee’s role in balancing the demands of consumers and merchants. In effect, the cost pass-through is such that lower consumer card fees (due to higher interchange fees) are exactly offset by higher goods prices from merchants. Payment separation can occur if one of the following is satisfied: There are competitive merchants, and they separate into cash-accepting or card-accepting categories, in which each merchant only serves one type of customer and is prevented from charging different prices; or merchants are able to fully separate customers who use cash from those who use cards by charging different prices.

Wright (2003) finds that no-surcharge rules generate higher welfare than when monopolist merchants are allowed to set prices based on the payment instrument used. He argues that merchants are able to extract consumers’ surplus *ex post* from payment card users, while cash users are unaffected. Wright only considers equilibria where merchants will continue to sell the same quantity of goods to cash users at the same price. When merchants are allowed to surcharge, they extract “too much” surplus *ex post* from customers who use payment cards because merchants set higher prices for card purchases.

Economic theory generally suggests that if merchants were able to recover their payment costs, the impact of the interchange fee would be severely dampened. However, the potential for merchants to charge more than their processing costs exists and consumer welfare could be harmed by such practices. The most interesting puzzle may be why merchants choose not to price differentiate even when they are allowed to do so. Some observers suggest that merchant competition may prevent price differentiation.

D. Network competition

Economic theory suggests that competition generally reduces prices, increases output, and improves welfare. However, with two-sided markets, network competition may yield an inefficient price structure. A key aspect of network competition is the ability of end-users to participate in more than one network. When end-users participate in more than one network, they are said to be “multihoming.” If they connect only to one network, they are said to be “singlehoming.” As a general finding, competing networks try to attract end-users who tend to singlehome, since attracting them determines which network has the greater volume of business. Accordingly, the price structure is tilted in favor of end-users who singlehome.¹⁹ Even if consumers adopt more than one payment card, Rysman (2007) finds that consumers may have strong preferences to use only one of them.

Some models of network competition assume that the sum of consumer and merchant fees is constant and focus on the price structure.²⁰ Rochet and Tirole

(2003) find that the price structures for a monopoly network and competing platforms may be the same, and if the sellers' demand is linear, this price structure in the two environments generates the highest welfare under a balanced budget condition. Guthrie and Wright (2007) extend Rochet and Tirole (2003) by assuming that consumers are able to hold one or both payment cards and that merchants are motivated by "business stealing" when deciding to accept payment cards. They find that network competition can result in higher interchange fees than those that would be socially optimal.

Chakravorti and Roson (2006) consider the effects of network competition on total price and on price structure where networks offer differentiated products.²¹ Like Rochet and Tirole (2003) and Guthrie and Wright (2007), they find that competition does not necessarily improve or worsen the balance of consumer and merchant fees from the socially optimal one. However, they find that the welfare gain from the drop in the sum of the fees from competition is generally larger than the potential decrease in welfare from less efficient fee structures.

Unlike one-sided markets, competition does not necessarily improve the balance of prices for two-sided markets. Furthermore, if competition for cardholders is more intense because consumers ultimately choose the payment instrument, issuers may provide greater incentives to attract them. If issuers have greater bargaining power to raise interchange fees, they can use this power to partially offset the cost of consumer incentives. I will discuss later the funding of rewards to entice more consumers in the context of the Reserve Bank of Australia's interchange fee regulation.

E. Surplus from revolvers

So far, among the models that I have discussed, the benefits of consumer credit are not considered.²² Given the high level of antitrust scrutiny targeted toward credit card fees, including interchange fees, this omission in most of the academic literature is rather surprising. In the long run, aggregate consumption over consumers' lives may not differ because of access to credit, but such access may enable consumption smoothing that increases consumers' utility. In addition to extracting surplus from all consumers and merchants, banks may extract surplus from liquidity-constrained consumers.²³ How much surplus can be extracted depends on how much liquidity-constrained consumers discount tomorrow's consumption.

Chakravorti and Emmons (2003) consider the costs and benefits of consumer credit where consumers are subject to income shocks after making their credit card purchases and some are unable to pay their credit card debt.²⁴ To my knowledge, they are the first to link the insurance aspect of credit cards to their payment component. Observing that over 75 percent of U.S. card issuer revenue is derived from cash-constrained consumers, they consider the viability of the credit card system if it were completely funded by these types of consumers.²⁵ They find that if consumers sufficiently discount future consumption, liquidity-constrained consumers who do not default would be willing to pay all credit card network costs *ex ante*, resulting in all consumers being better off than a world with no credit cards.

However, they also find that the inability of merchants to impose instrument-contingent prices results in a lower level of social welfare because costly credit card infrastructure is used for transactions that do not require credit extensions.

Most of the payment card literature ignores consumer finance charges and other types of consumer fees, such as annual, over-the-limit, and cash advance fees. In the United States, the regulation of consumer fees on credit cards has increased and new restrictions have been implemented. Perhaps, with reduced revenue from these sources coupled with greater usage of debit cards, interchange fee revenue may become more critical. Of course, as mentioned previously, these fees continue to face regulatory pressure as well.

F. Merchant fees and consumer credit

Chakravorti and To (2007) consider a scenario with monopolist merchants and a monopolist bank that serves both consumers and merchants where the merchants absorb all credit and payment costs in a two-period dynamic model.²⁶ Their model yields the following results. First, the merchants' willingness to pay bank fees increases as the number of credit card consumers without income increases. Note that up to a point, merchants are willing to subsidize credit losses in exchange for additional sales. Second, a prisoner's dilemma situation may arise: Each merchant chooses to accept credit cards, but by doing so, each merchant's discounted two-period profit is lower. **Unlike the merchants in the previous models, the merchants in this one do not sell the same type of goods and may enjoy significant market power.** However, business stealing may occur across merchants that sell different goods across consumption periods.

G. Competition among payment instruments

Most of the payment card literature ignores competition between payment instruments.²⁷ Furthermore, much of the payment literature focuses on the intensive margin—how fees influence usage—instead of the extensive margin—how fees affect adoption—or does not distinguish the two.²⁸ Much of the policy debate is about market forces behind consumer choice and merchant acceptance among multiple types of payment instruments.

If consumers carry multiple types of payment instruments, merchants may be able to steer them away from more costly payment instruments. Rochet and Tirole (2007) argue that merchants may choose to decline cards after they have agreed to accept them. They define the “tourist test” as when the merchant accepts cards even when it can “effectively steer” the consumer to use another payment instrument. Rochet has often given the example of an experience that he had in southern Italy, where after having a meal, the restaurant claimed that its payment card terminal was broken and payment had to be made in cash.²⁹ After visiting a nearby ATM, Rochet paid the bill with cash. In this example, the merchant did not pass the tourist test. The restaurant figured out that being a gentleman, Rochet would not leave the bill unpaid. However, if the consumer is unable to access cash or another form of payment, the merchant would lose the sale.

Merchants may steer consumers through price incentives, if allowed to do so. Bolt and Chakravorti (2008a) study the ability of banks and merchants to influence the consumers' choice of payment instrument when they have access to three payment forms—cash, debit card, and credit card.³⁰ Unlike most two-sided market models, where benefits are exogenous, they explicitly consider how consumers' utility and merchants' profits increase from additional sales resulting from greater security and access to credit.

Bolt and Chakravorti's (2008a) key results can be summarized as follows. With sufficiently low processing costs relative to theft and default risk, the social planner sets the merchant fee to zero, completely internalizing the card acceptance externality.³¹ The bank may also set the merchant fees to zero, but only if merchants are able to sufficiently pass on their payment fees to their consumers or if their payment fees are zero. If the real resource cost of payment cards is sufficiently high, the social planner sets a higher merchant fee than the bank does, resulting in lower card acceptance and higher cash usage. Bolt and Chakravorti (2008a) find that bank profit is higher when merchants are unable to pass on payment costs to consumers because the bank is better able to extract merchant surplus. The relative costs of providing debit and credit cards determine whether the bank will provide both or only one type of payment card.

H. Payment fraud and liability

An aspect of payment networks that has received little attention in the payment network literature is the incentive that each participant has in maintaining the integrity and safety of the system as a whole. An externality arises if one participant on account of negligence and lack of incentives allows a fraudster to gain access to information that may be used to make fraudulent purchases.³²

For example, consumers often face no liability for fraudulent transactions if proper procedures are followed for payment card transactions. While such a liability waiver encourages greater usage of cards vis-à-vis other payment instruments with less protection, it may also have the unintended consequence of consumers not maintaining appropriate antifraud precautions.³³ Primarily because of this liability shift, the card networks have implemented various fraud prevention strategies, such as real-time verification, the ability to shut down accounts rapidly, and the tracking of spending patterns of cardholders over the last few decades.³⁴ While U.S. issuers and networks limit consumer liability, consumers may bear losses associated with fraudulent transactions if they do not adopt risk-reducing procedures in other countries. For example, an Italian banker explained to me that most Italian banks shift the liability back to consumers if they do not use the recommended security procedures for Internet card payments. Merchants also enjoy certain protections (though more limited than those for consumers) if they follow set guidelines when accepting payment cards.

Similarly, the lack of merchant and processor data security measures may pose negative externalities. For example, while the cost of not protecting payment

information for an individual entity may be small, its impact on the system as a whole may be significant. Recently, the industry has been exploring various procedures to reduce this risk.

Market participants have expressed the view that better enforcement of current laws regarding payment fraud and greater adoption of existing industry-wide standards would greatly aid in reducing and containing fraud. Some observers have suggested that public authorities should establish standards, provide mechanisms for sharing information on data breaches, and formulate appropriate responses when wide-scale fraud occurs. Understandably, market participants may be reluctant to share or publicize breaches because of the potential loss in future business.

I. Dynamic efficiency and innovation

Dynamic efficiency and innovation have generally been ignored by economists and policymakers. Some market participants have argued that positive profits are necessary for payment networks to innovate. In other words, regulatory solutions to correct “excessive” interchange fees by using a cost-based approach may stifle future innovation. When general-purpose payment cards were first introduced, issuers and networks faced significant losses and many left the industry to only return later, suggesting that investments in new products and processes may require significant time to recover.

Historically, the card networks have been more innovative than other payment networks, such as those that process checks. In the United States, a law had to be passed relatively recently to facilitate the widespread acceptance of substitute checks instead of the original physical check enabling rapid migration to the truncation of physical checks. In contrast to the networks processing checks, credit card networks were exchanging payment information electronically for more than two decades. In addition, the card networks established real-time authorization systems in the 1970s to combat payment fraud.³⁵ Interestingly, fees charged by third parties to guarantee checks are pretty close to or sometimes higher than merchant fees for credit cards. When similar protections against payment default are included for checks, the cost of check acceptance with similar protections converges to the cost of payment card acceptance, suggesting that payment instruments may differ with respect to the benefits to merchants. Furthermore, some merchants may be willing to forgo certain benefits because of the type of customers that they serve.

II. MARKET INTERVENTIONS

Policymakers in different jurisdictions are encouraging the replacement of cash and checks with electronic substitutes, such as payment cards at the point of sale.³⁶ In some U.S. municipalities, acceptance of payment cards for cab rides has been mandated. A primary reason cited is the safety of passengers and cab drivers (who are often the targets of muggings). In Mexico, the government gave away terminals to merchants to increase the acceptance of payment cards versus cash (Castellanos et al., 2008). However, forced acceptance of payment cards and

government-subsidized merchant terminals are not common. In this section, I explore several market interventions in various jurisdictions and study the impact of those interventions.³⁷

A. Removal of no-surcharge policies

There are several jurisdictions where merchants are able to impose surcharges. Some of the academic research cited previously suggests that if merchants are allowed to surcharge, the level of the interchange fee would be neutral. In this section, I discuss examples where merchants are able to post differentiated prices.

The Australian authorities were concerned about the substitution of credit cards by debit cards; they argued that consumers did not receive the proper price incentives to use debit cards, the less costly payment instrument. The Reserve Bank of Australia (RBA) reported that the average cost of the payment functionality of the credit card was AUS\$0.35 higher than a debit card using a consistent AUS\$50 transaction size.³⁸ To encourage better price signals, the RBA removed no-surcharge restrictions in 2002.

While most Australian merchants do not impose surcharges for any type of payment card transaction today, the number of merchants who do are increasing. At the end of 2007, around 23 percent of very large merchants and around 10 percent of small and very small merchants imposed surcharges. Large merchants surcharged around 15 percent of the time. The average surcharge for MasterCard and Visa transactions is around 1 percent, and that for American Express and Diners Club transactions is around 2 percent (Reserve Bank of Australia, 2008a).³⁹ Using confidential data, the Reserve Bank of Australia (2008a) also found that if one network's card was surcharged more than other networks' cards, consumers dramatically reduced their use of the card with the surcharge. After analyzing consumer surveys, the Reserve Bank of Australia (2008a) noted that nearly 40 percent of credit card convenience users (that is, credit card users who do not need credit to make purchases) did not use a debit card during the time of the survey; this suggests that using credit cards is still preferred by many of those who do not need to borrow.⁴⁰

Some economists have stressed that merchants may surcharge consumers more than their costs. A potential regulatory response is to cap the surcharge. In responding to the 2007/08 review of reforms by the Reserve Bank of Australia, some market participants suggested that merchants might be imposing higher surcharges than their cost to accept payment cards. The RBA has considered setting a limit for the surcharge amount but has not gone ahead with implementing one.

In the United States, merchants are allowed to offer cash discounts but may not be allowed to surcharge credit card transactions. In the 1980s, many U.S. gas stations explicitly posted cash and credit card prices. Barron, Staten, and Umbeck (1992) report that gas station operators imposed these policies when their credit card processing costs were high but later abandoned these policies when acceptance costs

decreased because of new technologies such as electronic terminals at the point of sale. Recently, some gas stations brought back price differentiation based on payment instrument type, citing the rapid rise in gas prices and declining profit margins.

In the Netherlands, Bolt, Jonker, and van Renselaar (2009) study the impact of debit card surcharges. They report that a significant number of merchants are setting different prices, depending on whether cash or a debit card is used. Debit card surcharges are widely assessed when purchases are below 10 euro, suggesting that merchants are unwilling to pay the fixed transaction fee below this threshold. Bolt, Jonker, and van Renselaar find that merchants may surcharge up to four times their fee. In addition, when these surcharges are removed, they argue, consumers start using their debit cards for these small payments, suggesting that merchant price incentives do affect consumer payment choice. Interestingly, in an effort to promote a more efficient payment system, the Dutch central bank has supported a public campaign to encourage retailers to stop surcharging to encourage consumers to use their debit cards for small transactions.

There are instances when card payments were discounted vis-à-vis cash payments. During the conversion to the euro from national currencies, one German department store offered discounts for using cards because of the high initial demand for euro notes and coins to make change for cash purchases (Benoit, 2002). It should be noted, however, that the retailer was in violation of German retailing laws for doing this. In a more permanent move, the Illinois Tollway charges motorists who use cash to pay tolls twice as much as those who use toll tags (called I-PASS), which may be loaded automatically with credit and debit cards when the level of remaining funds falls below a certain level.⁴¹ In addition to reducing cash handling costs, the widespread implementation of toll tags decreased not only congestion at toll booths but also pollution from idling vehicles waiting to pay tolls, since tolls could be collected as cars drove at highway speeds through certain points on the Illinois Tollway. In both of these cases, the benefits of using cards outweighed the costs for society in general. However, benefits from card acceptance vary considerably across merchants.

B. Regulation of interchange fees

There are several jurisdictions where interchange fees were directly regulated or significant pressure was exerted by the public authorities on networks to reduce their interchange fees. In this section, I will discuss the impact of interventions in three jurisdictions—Australia, Mexico, and Spain.

Concluding that surcharges alone would not put sufficient downward pressure on interchange fees, the Australian authorities imposed explicit interchange fee targets for the two large four-party payment networks—MasterCard and Visa—but did not impose any restrictions on three-party networks—American Express and Diners Club.⁴² In 2002, the RBA imposed weighted-average credit card interchange fee caps and later imposed per transaction targets for debit cards.

As of April 2008, the weighted-average credit card interchange fees in the MasterCard and Visa networks must not exceed 0.50 percent of the value of transactions. The Visa debit weighted-average interchange fee cap must not exceed 12 cents (Australian) per transaction. The EFTPOS (electronic funds transfer at point of sale) interchange fees for transactions that do not include a cash-out component must be between 4 cents (Australian) and 5 cents (Australian) per transaction.

The Reserve Bank of Australia (2008a) reports that the interchange fee regulation, coupled with the removal of the no-surcharge rule, improved the price signals that consumers face when deciding which payment instruments to use. Specifically, annual fees for credit cards increased and the value of the rewards decreased. The Reserve Bank of Australia (2008a) calculates that for an AUS\$100 transaction, the cost to consumers increased from –AUS\$1.30 to –AUS\$1.10 for consumers who pay off their balances in full every month. A negative per transaction cost results when card benefits such as rewards and interest-free loans are greater than payment card fees.⁴³

In its recent five-year review of their payment card policies, the Australian Payments System Board suggested that the explicit regulation of interchange fees be removed subject to certain conditions. In other words, the authorities will remove restrictions if the payment card networks do not raise their fees beyond some threshold. However, the actual threshold is not quantified.

Those who oppose the Australian interchange fee regulation argue that consumers have been harmed by reduced rewards and higher fees and have not shared in the cost savings—in terms of lower prices for goods and services. However, measuring price effects over time of interchange fee regulation is difficult.

Another interesting case where government authorities exerted pressure to decrease interchange fees occurred in Mexico.⁴⁴ Similar to the RBA in Australia, the Bank of Mexico—the Mexican central bank—has the authority to regulate retail payment systems throughout the country. Unlike the RBA, the Bank of Mexico used moral suasion to reduce interchange fees. The motivation of the Mexican authorities to reduce interchange fees was to reduce merchant fees that were preventing greater adoption and usage of payment cards in Mexico.

Mexico's Bank Association (ABM) set different interchange fees for debit and credit cards in August 2004; prior to this time, the fees were the same for both types of cards. Interchange fees were set based on a merchant's monthly transaction volume. By August 2005, the debit card interchange fee for the largest merchants fell from 2.00 percent to 0.75 percent while the credit card interchange fee fell from 2.00 percent to 1.80 percent. The category that applied to the smallest merchants was eliminated; as a consequence the interchange fee of this group fell from 3.50% to 1.95% and 3.50% to 2.70% for debit and credit cards, respectively. The ABM also proposed interchange fees based on a formula where the interchange fee balances out the issuing and acquiring banks' profits (net of interchange), and where profits are normalized by revenue (net of interchange). A reference rate is

obtained and specific interchange fee levels are calculated for a number of merchant categories using proxies of the demand elasticity for each category.

In 2008, ABM further reduced debit and credit card interchange fees. The new IF levels implied a reduction in the weighted average of 12.5% and 9% for credit and debit, respectively.⁴⁵ As expected, merchant fees also decreased. In order to follow the evolution of merchant fees, Bank of Mexico gathered information from a sample of 1000 firms that accepted card payments. The results are that from 2005 to 2008, the average merchant discount rate has decreased 12.3% and 23.3% for credit and debit, respectively.⁴⁶ In addition, the installation of POS terminals was subsidized through a private, nonprofit trust fund called FIMPE that was initially funded by the banks. The banks received a tax credit from the government for their investment. It is important to note that there may be significant fixed and variable costs. As a result, the number of POS terminals installed increased to 446,025 by the end of 2008 compared to 129,971 in 2002. POS transactions increased from 52 million in 2002 to 215 million by the end of 2008 of which 46% were credit card transactions.

Unlike in Australia or Mexico, the antitrust authority, and not the central bank, intervened in payment card markets in Spain. Part of the motivation was based on directives by the European Commission regarding fees that were set by networks that had significant market power. Over the period 1997-2007, the number of debit cards increased by 40.9 percent and the number of credit cards increased by 207.1 percent. During the same period, debit card transactions increased from 156 million to 863 million and credit card transactions increased from 138 million to 1.037 billion. Furthermore, the average number of POS transactions per card per year increased from 7.1 to 27.8 during the same period.

The first intervention occurred in May 1999, when the Spanish government convinced the three Spanish payment card networks to gradually reduce maximum interchange fees from its initial value of 3.5 percent to 2.75 percent by July 2002. These maximum fees varied significantly across merchant categories.

In April 2002, Spain's antitrust authority requested the Spanish networks to provide information on how they determined their interchange fees. From 2003 until 2005, several attempts from the industry to maintain their "special authorization" for the setting of interchange fees were refused. Eventually, the networks were requested to set levels of interchange fees that only reflected operating costs and those due to fraud. In December 2005, the Ministry of Industry, Tourism, and Trade decided that the multilateral interchange fees should not exceed the costs to provide card services.

From January 2006 to December 2008, the highest interchange fee levels were reduced in a stepwise manner. Furthermore, a distinction had to be made between debit card and credit card interchange fees, with the former being a fixed amount per transaction and the latter being a percentage amount per transaction. For merchants with an annual value of less than 100 million euro in POS card payment

receipts, the credit card interchange fee was set to decrease from 1.40 percent per transaction in 2006 to 0.35 percent in 2009; for those same merchants, the debit card interchange fees (regardless of the purchase amount) were reduced from 0.53 euro per transaction in 2006 to 0.35 euro per transaction in 2009. These fees are the maximum allowable, and in some cases the actual fees are lower. Additionally, price differences between debit cards and credit cards, merchant sectors, and intra-system and intersystem operations should also be progressively reduced.

Carbó Valverde, Chakravorti, and Rodriguez Fernandez (2009) study the effects of interchange fee reductions in Spain from 1997 to 2007. To my knowledge, they are the first to use bank-level data to study the impact of several episodes of interchange fee reductions for debit and credit cards resulting from moral suasion and direct regulation. They find that intense issuer competition coupled with high interchange fees may have made consumers, merchants, and banks worse off. Clearly, merchants benefit from lower fees and consumers benefit when more merchants accept payment cards if the benefit of greater acceptance outweighs any additional cost to payment providers. Surprisingly, they find that revenues increase among the banks in their sample, even though interchange fees decreased. While the effect of these reductions is positive on banks' revenues, their effect on banks' profits could not be determined because of data limitations. Furthermore, there may be a critical interchange fee below which issuer revenue decreases. Unfortunately, their data does not allow them to find this critical interchange fee. Additionally, in the absence of adoption and usage externalities, the level of the interchange fee may not affect social welfare.

C. Honor-all-cards rules

A payment card network may require that merchants that accept one of its payment products accept all of its products. There are different forms of the honor-all-cards rule. The honor-all-cards rule may extend to any payment card that is issued by a member of a network. In other words, if a merchant accepts a network's credit card, it must accept all debit and prepaid cards from that network. Such a rule enables a card network to innovate by producing different products that when introduced will have a large base of merchants that accept them. The introduction of payroll cards, a type of prepaid card, is an example of an innovation that leverages a card network's existing infrastructure.

In the United States, around 5 million merchants sued the two major networks, MasterCard and Visa, over the required acceptance of the network's signature-based debit card when accepting the same network's credit card. The case was settled out of court. In addition to a monetary settlement, MasterCard and Visa agreed to decouple merchants' acceptance of their debit and credit products. While few merchants have declined one type of card and accepted another type, the decoupling of debit and credit card acceptance may have increased bargaining power for merchants in negotiating fees.

As part of the payment system reforms in Australia, MasterCard and Visa were mandated to decouple merchants' acceptance of their debit and credit cards as well. The Payments System Board (Reserve Bank of Australia, 2008b, 16) is unaware of any merchant that continues to accept debit cards but does not accept credit cards from the same network.

A subset of the honor-all-cards rule is the honor-all-issuers rule. In other words, if a merchant accepts a credit card from one issuer, it must also accept credit cards from another issuer within the same network. Such a policy levels the playing field between large and small issuers through a base product, which each issuer can customize. Otherwise, small issuers would not be able to compete with the large issuers. Larger issuers also benefit from the underlying network effects.

Another type of honor-all-cards rule could cover the acceptance of different credit or debit cards from the same issuer. For example, issuers may have a plain vanilla credit card and also have others that earn different types of rewards. While merchants may not care what types of rewards their customers receive from their banks, merchants may pay different fees based on the type of card used by their customers. More recently, policymakers are considering allowing merchants to discriminate within a card classification, such as a credit card, based on differences in interchange fees.

III. CONCLUSION

In summarizing the payment card literature, I find that no one model is able to capture all the essential elements of the market for payment services. It is a complex market with many participants engaging in a series of interrelated bilateral transactions. Much of the debate over various payment card fees is concerned with the allocation of surpluses from consumers, merchants, and banks, as well as the question of who is able to extract surpluses from whom.

I am able to draw the following conclusions. First, a side payment between the issuer and the acquirer may be required to get both sides on board. However, there is no consensus among policymakers or economists on what constitutes an efficient fee structure for card payments. Second, while consumers generally react to price incentives at the point of sale, merchants may be reluctant to charge higher prices to consumers who benefit from card use. However, surcharging is increasing in jurisdictions where it is allowed. Third, network competition may not improve the price structure but may significantly reduce the total price paid by consumers and merchants. Fourth, both consumers and merchants value credit extended by credit card issuers (along with other benefits such as security), and consumers and merchants are willing to pay for it. Fifth, evidence from recent interventions suggests that market-based fees may not maximize social welfare.

Determining sound public policy regarding the allocation of payment fees is difficult. The central question is whether the specific circumstances of payment

markets are such that intervention by public authorities can be expected to improve economic welfare. Efficiency of payment systems is measured not only by the costs of resources used, but also by the social benefits generated by them. Clearly, further research is warranted to explore the complex market for payment services, and policy recommendations should be based on more in-depth research, especially empirical studies that focus on the effects of government intervention.

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ENDNOTES

¹Amromin and Chakravorti study 13 countries—Austria, Belgium, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States.

²There are countries, for example, France, where the cardholder's account is debited much later. These types of cards are referred to as "delayed debit cards." Furthermore, many U.S. debit card issuers extend credit lines as well, primarily as overdraft protection. For more discussion, see Chakravorti (2007).

³For a discussion of the economics of prepaid cards, see Chakravorti and Lubasi (2006).

⁴For a summary of antitrust challenges in various jurisdictions, see Bradford and Hayashi (2008).

⁵In Australia, the interchange fee for debit card transactions is paid by the card issuer (banks that issue cards to consumers) to the acquirer (banks that convert payment card receipts into bank deposits for merchants), but this is an exception.

⁶Rochet and Tirole (2006a) provide an overview of some externalities in card systems that I cover in this article.

⁷In addition to cash handling and safekeeping costs, some public authorities may find the inability to trace cash transactions an unattractive feature of cash.

⁸In the case of prepaid cards, the identity of cardholders may not be known to the issuer, but there still exists a relationship.

⁹For a review of the academic literature on two-sided payment networks, see Bolt and Chakravorti (2008b).

¹⁰For a more general treatment of two-sided markets, see Armstrong (2006), Caillaud and Jullien (2003), Jullien (2001), Rochet and Tirole (2006b), Rysman (2009), and Weyl (2009).

¹¹Baxter (1983) considers an environment where consumers are homogeneous, merchants are perfectly competitive, and the market for issuing and acquiring payment cards is competitive.

¹²Net benefits for consumers and merchants are defined by the difference in benefits from using a payment card and using an alternative payment instrument.

¹³Schmalensee defines the socially optimal interchange fee as the one that maximizes the sum of the consumer and merchant surplus. Such a measure is appropriate if card acceptance is not used as a strategic tool to steal customers from another merchant.

¹⁴Rochet and Tirole consider two identical Hotelling merchants in terms of their net benefits of accepting a payment card for sales and the goods that they sell. Consumers face the same fixed fee but are heterogeneous in terms of the net benefits they derive from using the payment card. They assume that the total number of transactions is fixed and changes in payment fees do not affect the demand for consumption goods.

¹⁵In Wright's environment, both consumer and merchant fees are per transaction fees. Each consumer buys goods from each industry. Issuers and acquirers operate in markets with imperfect competition. Wright assumes that consumers face the same price regardless of which instrument they use to make the purchase.

¹⁶No-surcharge restrictions do not allow merchants to impose surcharges for payment card purchases. However, merchants may be allowed to offer discounts for noncard payments. For more discussion about no-surcharge rules and discounts, see Chakravorti and Shah (2003).

¹⁷Schwartz and Vincent relax the common assumption made in the literature that the demand for the consumption good is fixed. However, they assume that consumers are exogenously divided into cash and card users and cannot switch into the other group.

¹⁸In this context, a rebate is an incentive for consumers to use their cards—for example, cash back and other frequent-use rewards.

¹⁹For more discussion, see Evans (2003).

²⁰The motivation behind this assumption was based on the earlier cooperative structure of the two large networks. However, the two largest networks changed their structure from associations to for-profit firms.

²¹Chakravorti and Roson only allow consumers to participate in one card network, whereas merchants may choose to participate in more than one network. However, unlike Guthrie and Wright (2007) and Rochet and Tirole (2003), Chakravorti and Roson consider fixed fees for consumers. They compare welfare properties when the two networks operate as competitors and as a cartel, where each network retains demand for its products from end-users but the networks set fees jointly.

²²I limit my focus here to consumption credit. Payment credit—the credit that is extended by the receiver of payment or by a third party until it is converted into good funds—is ignored. For more discussion, see Chakravorti (2007).

²³The empirical literature on credit cards has suggested interest rate stickiness along with above-market interest rates, although some have argued that the rate is low compared with alternatives such as pawn shops. For more discussion, see Ausubel (1991) and Brito and Hartley (1995).

²⁴All markets for goods and payment services are assumed by Chakravorti and Emmons to be competitive. Chakravorti and Emmons impose a participation constraint on individuals without liquidity constraints such that the individuals will only use cards if they are guaranteed the same level of consumption as when they use cash including the loss of consumption associated with higher prices for consumption goods.

²⁵For a breakdown of issuer revenue percentages, see Green (2008).

²⁶Chakravorti and To depart from the payment card literature in the following ways. First, similar to Chakravorti and Emmons (2003), rather than taking a reduced-form approach where the costs and benefits of payment cards are exogenously assigned functional forms, they construct a model that endogenously yields costs and benefits to consumers, merchants, and banks from credit card use. Second, their model considers a dynamic setting where there are intertemporal tradeoffs for all participants. Third, they consider consumption and income uncertainty.

²⁷Farrell (2006) studies the impact of higher interchange fees on consumers who do not use cards. While the redistributive effects generally do not affect social welfare,

he argues that the impact of pricing of a payment instrument in one network affecting the usage of other payment instruments should be considered by policymakers.

²⁸Bedre and Calvano (2009), Bolt and Chakravorti (2008a), and Chakravorti and Roson (2006) are notable exceptions.

²⁹I have often had similar experiences at the end of cab rides when I try to pay with my credit card and the driver chooses not to accept it, even though there are multiple signs stating that credit cards are accepted.

³⁰In Bolt and Chakravorti's model, consumers only derive utility from consuming goods from the merchant they are matched to. In addition, some consumers prefer to consume before their income arrives. Merchants differ on the types of payment instruments that they accept and type of consumption good they sell. Each merchant chooses which instruments to accept based on its production costs, and each merchant is categorized as cash only, cash and debit card, or full acceptance (cash, debit card, and credit card). Merchant heterogeneity is based on differences in production costs. Bolt and Chakravorti consider the merchants' ability to pass on payment processing costs to consumers in the form of higher uniform and differentiated goods prices.

³¹While default rates and theft will differ across countries, Bolt and Chakravorti provide some estimates. For Italy, Alvarez and Lippi (2009) estimate the probability of being pickpocketed at around 2 percent in 2004. For the United States, Scholtes (2009) reported that credit card default rates hit a record of more than 10 percent in June 2009.

³²See Amromin and Porter (2009) and Braun et al. (2008).

³³See Douglass (2009).

³⁴See Nocera (1994).

³⁵For more discussion about innovations in the payment card market, see Chakravorti and Kobor (2005), Evans and Schmalensee (1999), and Nocera (1994).

³⁶In the United States, some payment providers have introduced decoupled debit as a competitor to traditional payment cards. These types of payments use the automated clearinghouse (ACH) network to transfer funds from consumers to merchants for point of sale transactions.

³⁷Prager et al. (2009) review the U.S. payment card market and consider potential regulations.

³⁸Reserve Bank of Australia (2008a), 17.

³⁹Note that in other jurisdictions, card networks may prevent merchants from imposing different surcharges on credit cards from different networks.

⁴⁰Of course, even those credit card users who pay off their balances every month may benefit from short-term loans because of timing asymmetries between their incomes and purchases.

⁴¹For more discussion, see Amromin, Jankowski, and Porter (2007).

⁴²In four-party networks, the issuer and the acquirer need not be the same. In three-party networks, the issuer and acquirer are the same resulting in no explicit interchange fee between issuers and acquirers.

⁴³For more discussion about the effect of rewards on card use, see Carbó-Valverde and Liñares-Zegarra (2009) and Ching and Hayashi (2006).

⁴⁴My discussions with Bank of Mexico staff, especially José Luis Negrín, were critical to my understanding of the Mexican payment card market.

⁴⁵The weighted average interchange fee for credit cards decreased from 1.84 percent to 1.61 percent and for debit cards decreased from .78 percent to .71 percent.

⁴⁶From 2005 to 2008, the average merchant fee decreased from 2.85 percent to 2.50 percent and the average debit merchant fee declined from 2.53 percent to 1.94 percent.

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Externalities in Payment Card Networks: Theory and Evidence

Commentary

Dennis W. Carlton

I. INTRODUCTION

Antitrust and regulatory issues associated with payment systems continue to occupy legal and regulatory authorities not only in the United States but throughout the world. I comment on some of those issues and expand on some of the themes that Bob raised in his excellent paper (Chakravorti, 2009). Bob's paper provides a clear analysis of the many complicated economic forces at work in payment systems and explains why these sometimes complicated models often cannot give definitive answers to some policy questions. The complexity in modeling payment systems arises in large part because such systems represent two-sided markets. Moreover, the fact that collective action is needed in designing and operating so-called "four-party" payment systems raises the spectre of antitrust harm to the public. I will explain in somewhat simplified terms how the two-sided nature of the industry affects the analysis and why the concept has not always been applied correctly. I will then turn to the thorny issues of surcharge prohibitions and interchange fees.

II. TWO-SIDEDNESS

What does two-sidedness mean in a payment system? One simple answer—and I will be more precise in a moment—is that for a payment system to work, merchants require that customers carry the payment card and customers require that merchants accept it. There are two types of relevant externalities that can arise in this situation: the adoption externality and the usage externality.

The adoption externality, sometimes referred to as the "chicken and egg problem," might occur when there are initial setup costs to get one side or the other to participate in the system. But these circumstances arise in many situations throughout the economy other than payment cards. For example, before a consumer will buy a car, he wants to make sure that there are gas stations located conveniently.

When a gas station is built, the gas station provides a benefit to all car manufacturers. Should car manufacturers subsidize gas stations? Should gas stations have the right to negotiate collectively the subsidy level with individual car manufacturers? On the other hand, when a car manufacturer sells a car, this benefits gas station owners. Should a gasoline tax be levied on gas purchases in order to subsidize car sales? Should the car manufacturers be allowed to negotiate collectively with individual gas stations on the size of the tax? The adoption externality logic, which might appear to support such arguments for either taxes or subsidies, is similar to some of the arguments sometimes used to justify interchange fees in payment systems. The fact that one does not often see such schemes, even in markets with “network effects,” as pointed out by Liebowitz and Margolis (1994), suggests that the magnitude of this problem is not substantial in most markets. This point may be clearest once the markets have reached some critical size. That is, once markets have developed, there may be no need for ongoing payments from one side of the market to the other and, in the example involving cars, the payment from consumers to the gas stations is sufficient to achieve efficiency.¹ For example, I understand that debit cards in Canada have had no interchange fees since their introduction yet are widely used by consumers and widely accepted by merchants, so one should be skeptical of arguments that interchange fees are now needed there to overcome an adoption externality.

The second type of externality often associated with payment systems is the usage externality. The seminal paper by Baxter (1983) explained this effect. Imagine that credit card customers impose a lower cost on merchants than do cash customers. In such a setting, the merchant would like to charge the customer a lower price if he uses a credit card. But suppose that, for some reason, he cannot—maybe it is too hard (costly) to have two different prices depending on the method of payment or maybe there are some legal restrictions against doing so. In that situation, as Baxter cleverly explains, if there is an interchange fee and competition elsewhere prevails, the money from the interchange fee will be rebated by the credit card company to the credit card customer, thereby lowering the effective price that the credit card customer pays. This allows the merchant to achieve his objective of charging two different (effective) prices—one to the consumer who pays with cash and a lower one to the customer who pays with a credit card. Notice that in Baxter’s setup, it is the cash customer who pays the higher effective price than the credit card customer and that the cash price is higher than the price that would otherwise be charged if the merchant could charge only one blended price (which would be determined by the merchant’s average costs including the interchange fee).

Why are payment systems a two-sided market? As Rochet and Tirole (2006) point out, a market is “two-sided” when it “matters”—i.e., has real economic effects—how the payments among the parties are structured. To make an analogy to tax incidence, economists know that it does not matter in standard models whether the mechanism to collect a tax works by placing on merchants a \$1 tax per unit on some items or by placing the tax on the customers. In either case, the final effective price received by sellers and paid by buyers is identical. In a

two-sided market, this is not true, and it matters which side pays the tax. Imagine, for example, that it is costless for merchants to collect and pay the tax but onerous for consumers to do so (for example, they might forget and incur penalties, they may not have an envelope to send in the payment, etc.). Then whether the tax is placed on merchants or customers will have different economic effects.

In Baxter's case, payment markets are two-sided because he assumes that there can be only one merchant price for cash and credit customers, so the interchange fee matters. In the absence of this assumption, the interchange fee would be redundant and have no real effects given his other assumptions—i.e., the interchange fee would be “neutral.”² In practice, there are several possible reasons for a lack of neutrality including, importantly, the very rules that Visa and MasterCard have promulgated that prevent or inhibit merchants from charging different prices depending on the method of payment and that restrict the ability of merchants to encourage or “steer” customers to use particular methods of payment.

There are several observations that follow from our discussion of two-sidedness. First, any rules preventing the merchant from charging two different prices to consumers may create a two-sided market where one might not otherwise exist. The consequence of having a two-sided payment system where the interchange fee matters is that there are third-party effects. Specifically, there are third-party effects because as the interchange fee is raised, the merchant price to all customers, cash and credit alike, rises as merchants raise prices to cover their increased costs from the increased interchange fee. Any rebate or reward goes only to credit customers. I have always found it odd that the harmful effect of the interchange fee on cash customers did not receive more attention because cash customers often are poorer than credit customers. (In cases where there are a variety of interchange fees, the consumers whose payment cards have the lowest interchange fees are analogous to cash customers in that they may be harmed as interchange fees associated with other customers rise.)

Second, the rationale to justify rules against surcharging and steering has little, if anything, to do with Baxter's seminal insights. In Baxter's framework, merchants want to charge credit customers lower, not higher, prices so there is no need for credit card companies to prevent merchants from being able to charge two different prices because doing so would benefit, not harm, credit card customers. Hence, in Baxter's setup, merchants want customers to use credit cards so payment systems have no reason to promulgate rules preventing surcharging or prohibiting merchants from steering.

Third, it is possible that competition may not work very well among different card systems in benefiting all consumers, both cash and credit card users.³ The card systems compete to obtain issuing banks and card customers by increasing interchange fees. This allows issuing banks to obtain more revenue, some of which is used to increase rewards, but also raises overall merchants' costs, resulting in a higher effective price to cash customers. The interchange fees are only partly

returned to credit customers and otherwise retained by card payment networks or issuing banks to fund marketing expenses and generate profits. If competition through interchange fees does not improve overall consumer welfare, then there is the issue as to whether the collective action required to set interchange fees in four-party systems raises antitrust issues in countries where interchange fees are not regulated.

Finally, where merchants are prevented from conveying to consumers the price signals reflecting the merchant's cost for the different payment mechanisms, there is the likelihood that an inefficient payment mechanism will be chosen by consumers. If it is inexpensive for merchants to deal with cash customers or debit card customers, then customers may get the wrong signals about the appropriate payment system to use if surcharging of credit cards is not allowed.

III. THE CONSEQUENCES OF SURCHARGING

What are the consequences if surcharging were allowed? This is a relevant issue because in addition to antitrust and regulatory actions challenging interchange fees, rules prohibiting surcharging have come under attack from antitrust and regulatory authorities around the world and, as a result, have been abolished in some countries.⁴ Let me describe some of the consequences.

First, even if surcharging does not occur when allowed, the threat of surcharging can constrain interchange fees. If a payment system knows that an increase in its interchange fee could trigger an increased incidence of surcharging of its payment card, then the payment system may be constrained in its setting of the interchange fee.

Second, there have also been proceedings related to the "honor all cards" rule in which merchants are required to accept all payments cards belonging to the same brand (such as Visa) but having different interchange fees or payment terms (e.g., debit cards, "regular" credit cards, premium credit cards) if the merchant accepts any one card in the brand. With the ability to surcharge, the merchant is protected from being forced to engage in what he deems an uneconomic transaction because he can charge the customer according to the payment card used. Visa and MasterCard have pointed out that such an ability could lead to opportunistic surcharging in which the "best" customers are surcharged. To the extent that such concerns are valid, they could be handled by limiting the amount of the surcharge.⁵

Third, the possibility of surcharging will generally reduce the harm that interchange fees impose on cash customers. The salience of a surcharge also might make consumers more sensitive to the cost of using payment cards and might dissuade their use of the most expensive cards. Usage externalities are completely internalized when the merchant induces the merchant's customers to consider the costs to the merchant of the particular payment system the customer uses.

Fourth, as a practical matter, the ability to surcharge provides some protection to cash customers and therefore should mitigate concerns that interchange fees are harming cash customers. The ability to surcharge does not necessarily eliminate all concerns about interchange fees, because there still is an antitrust issue about whether the collective action to set interchange fees benefits the public even if the extent of any harm from interchange fees is reduced through elimination of the prohibition on surcharging.

Finally, and probably most importantly from the perspective of card networks, the use of surcharging could undo the benefits to the card payment system of interchange fees. As that by itself is such a hotly debated topic, let me turn to it in some detail.

IV. INTERCHANGE FEES

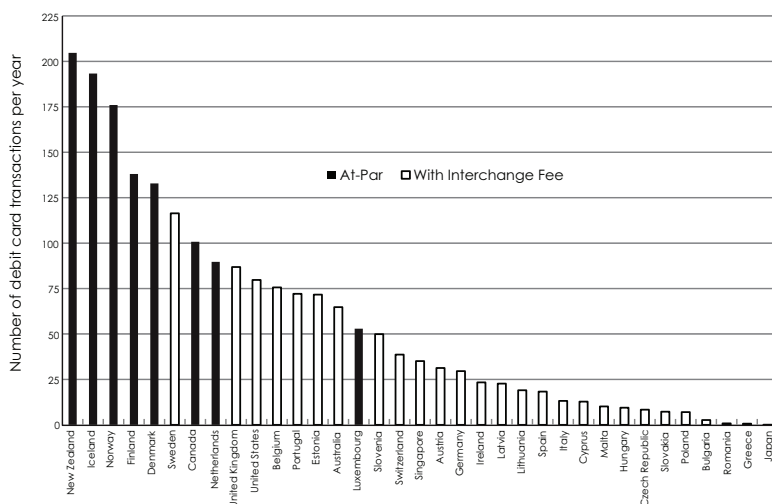
If interchange fees rise, there are several predictable consequences on which there is (or should be) agreement and others on which there is some disagreement. On the agreement side, if interchange fees rise, then in a two-sided market, the cost to the merchant rises and the price that the merchant posts will typically rise. This price increase harms cash customers (and those who use cards with few or no rewards). It may help some card users who may see their rewards rise by more than the interchange fee has increased the merchant price. There likely will be more profit for the issuing bank and more incentive for the issuing bank to spend money on marketing cards to customers.

On the (possible) disagreement side, if interchange fees rise, there will be an incentive for card issuers to compete in order to attract card holders. This competition is, according to some, socially desirable because it creates a benefit to card holders who obtain a sweetened offer from a card issuer. To the extent that this induces more card use, card use could reduce merchant costs. (This is the usage externality discussed earlier in relation to Baxter, 1983.) Furthermore, any constraints on the ability to charge interchange fees could put Visa and MasterCard at a significant disadvantage relative to proprietary systems such as American Express and Discover (who have no interchange fee when they don't rely on outside issuers), thereby harming competition. Let me now evaluate these arguments.

The procompetitive justification for interchange fees is possible theoretically but need not necessarily occur in practice primarily because of the presence of cash customers (or others) whose prices might rise. This means that it is an empirical question whether interchange fees as actually used are helpful or harmful overall to consumers. We do observe that interchange fees exist in payment systems that are much smaller than either Visa or MasterCard, suggesting that such fees can serve some purposes not associated with anticompetitive behavior.⁶

Chart 1 lists the top countries in terms of debit card usage per capita. It turns out that in seven of the eight countries with the highest debit card usage per capita there is no interchange fee, casting empirical doubt on the proposition

Chart 1
Annual Per Capita Debit Card Usage, 2006



Sources: Bank of International Settlements, European Central Bank, Australian Bureau of Statistics and Reserve Bank of Australia, Statistics Iceland, Statistics New Zealand and Reserve Bank of New Zealand, Norges Bank

that interchange fees are necessary to stimulate usage through promotional activity and cross subsidy from the merchant side of the market to the consumer side.⁷ Moreover, if you look at the payment system of checks in the United States, it is a system of par clearing (no interchange fee) and, as Frankel (1998) has explained, that par clearing system worked well to reduce the effects of market power in the check payment system.

Finally, as regards the relative harm a restriction on interchange fees imposes on Visa and MasterCard, we now have several empirical experiments where we can see what has happened as a result of regulatory actions that lowered the interchange fee. Australia is the best example. There, the reduction of interchange fees on Visa and MasterCard transactions, together with the elimination of the prohibition on surcharging, forced American Express to lower its merchant fee.⁸ After a small initial increase in relative purchase volume by American Express and Diners Club (the proprietary payment systems), the share of purchase volume made on these proprietary systems has now shifted back, so that the relative charge volume of Visa and MasterCard compared to American Express and Diners Club is virtually unchanged from the year prior to the Australian intervention.⁹ In no way could one characterize the experience in Australia as confirming the prediction of a “death spiral” that MasterCard and Visa claimed would occur as a result of the lowering of interchange fees.¹⁰

V. CONCLUSIONS

There are two conclusions that everyone involved in these hotly debated issues should be able to agree upon. First, one should be wary of relying on complicated economic models with ambiguous results to justify certain policies. Using such models to justify any particular policy intervention or payment system business practice is fraught with danger because the models often depend in fragile ways on particular assumptions that may be hard to verify. That is why I am skeptical of the theoretical justifications for rules preventing surcharging. But that is why I am also skeptical of arguments that say interchange fees can never be useful to promote competition. Second, in light of the theoretical ambiguity of the consequences of certain practices, one should pay close attention to the empirical evidence, especially that arising from the regulatory interventions into payment systems that are occurring around the world. Only by examining the empirical evidence will we be able to sort out which theoretical models and arguments make reliable predictions. Such empirical evidence should guide our evaluation of the practices of payment systems that are under scrutiny worldwide.

Author's Note: I wish to thank Alan Frankel, Kevin Murphy, Gregory Pelnar, Allan Shampine, and Robert Topel for useful discussions. The views in this paper are mine alone. I have consulted on numerous matters through Compass Lexecon in which I have been adverse to MasterCard and Visa.

ENDNOTES

¹This theory is quite similar to Stigler's discussion of the cycles of vertical integration in Stigler (1951). See also Carlton and Frankel (2005).

²There is a literature on the neutrality of interchange fees or the lack thereof. See, e.g., Carlton and Frankel (1995) and Gans and King (2003).

³See Farrell (2006), Frankel (1998), and Frankel and Shampine (2006).

⁴One sometimes hears the argument that even where surcharging is prohibited, it can still effectively occur as long as it is possible to give a discount for cash. This argument is wrong. A cash discount alone does not allow a merchant to surcharge different payment cards differently depending on their interchange fee. Moreover, if the argument were correct, then presumably neither Visa nor MasterCard would object to dropping the no-surcharge rule in those places where cash discounts are now allowed. I do not understand that to be the position of either Visa or MasterCard.

⁵Another way of viewing payment systems is that they identify buyers with certain desirable buying traits (and influence those buying traits by making payments easier). In this view, Visa, say, approaches each merchant on behalf of a group of specific buyers and asks the merchant for payment for the delivery of these buyers to the store. (In the absence of the merchant agreeing, the buyers may still purchase from the merchant but presumably not to the same degree as if the buyers were using the Visa payment system.) Visa could also engage in some promotional activity to induce buyers to frequent certain stores. In this view, Visa (or its issuers) is getting paid for creating a group of buyers and acting as the bargaining agent for buyers through the interchange fee, some of which it might share with the buyers it represents. Once a bargain is struck between Visa and a merchant, Visa would not want to allow a merchant to undo the bargain by surcharging. The surcharging should then be viewed as a way to breach a contract, but of course, there would be no incentive for the merchant to breach a contract if it was initially in his interest to sign it and he wants it to continue. The interchange fee is then much like a group discount and could raise antitrust issues if Visa represents a large fraction of buyers.

⁶Of course, in the presence of prohibitions on surcharging, issuers favor interchange fees because it increases their revenues. The relevant question is whether there are examples of small payment systems with interchange fees in the absence of prohibitions on surcharging. For purposes of the discussion in the text, I assume that there are such examples.

⁷Countries that reportedly operate debit card systems successfully without interchange fees include Canada, Denmark, Finland, Iceland, Luxembourg, Netherlands, New Zealand, and Norway. In a European Commission investigation, MasterCard claimed that some of the European networks in this list did, in fact, have the economic equivalent of an interchange fee. The Commission reviewed and rejected MasterCard's claim. Commission Decision of 19 December 2007 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement (COMP/34.579 MasterCard COMP/36.518 EuroCommerce

and COMP/38.580 Commercial Cards) (Provisional Non-Confidential Version, pp. 555-608).

⁸ *Reserve Bank of Australia Bulletin*, Statistical Series C3, Merchant Fees for Credit and Charge Cards, <http://www.rba.gov.au/statistics/bulletin/xls/c03hist.xls>.

⁹ *Reserve Bank of Australia Bulletin*, Statistical Series C2, Market Shares of Credit and Charge Card Schemes, <http://www.rba.gov.au/statistics/bulletin/xls/c02hist.xls>.

¹⁰ MasterCard International Incorporated, Submission to Reserve Bank of Australia, June 8, 2001 (as revised, July 20, 2001), pp. 11-12; Visa International Service Association (Prepared by: Network Economics Consulting Group Pty Limited), "Response to the Reserve Bank of Australia's Consultation Document and Report of Professor Michael Katz," March 2002, p. 10. The Australian experience is sometimes used to argue that prices to cash customers did not fall as a result of the reduction in interchange fees, hence the reduction in interchange fees failed to accomplish one of its purposes. I leave a detailed discussion of the Australian experience to another time. I simply point out that most economic models would predict some reduction in cash price in response to the decline in interchange fees and that given the magnitudes involved, identifying a decline in cash prices might be hard to do statistically. But as I explain next, continuing empirical evaluation of interventions such as Australia's are exactly what is needed to resolve some of the concerns associated with payment systems.

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General Discussion

Session 3

Mr. Weiner: Thank you, Bob, and thank you, Dennis. I think you have both done a masterful job of summarizing what is a very complex and technical literature. Obviously, a lot of important issues have been raised, a lot of controversial issues, and, all kidding aside, we want to hear all views. Some central banks are actively looking at these markets and have put in place special policies. Others are analyzing them. It is not just central banks, of course. It is also competition authorities and so on. So, this is a very, very important area to be thinking about. And, again, you have done a wonderful job.

First, Bob, is there anything you want to react to?

Mr. Chakravorti: Thanks, Dennis, for those comments. They were great. Let's open it up.

Mr. Levitin: In the United States, at least, the reason we have four-party networks is really a historical matter. We had interstate branch banking restrictions at the time the networks were created, and that's why four-party networks were needed if we were going to have depository institutions involved in them.

Looking ahead, do either of you see an economic case for having four-party networks instead of three-party networks? Do you see benefits to one arrangement or the other? Or, is it like a lot of the questions, just indeterminate in the abstract?

Mr. Chakravorti: If you look at the evolution of the credit card market in the United States, for example, it was Bank of America that started issuing general-purpose credit cards. They realized in order to expand, partly due to branching restrictions, they had to partner with other financial institutions. But, in a global economy, I don't see four-party networks losing their place. That is not to say there shouldn't be three-party networks that co-exist and compete with them. I see a role for four-party networks going forward.

Mr. Carlton: My answer is similar and it has to do with the fact we are not starting from scratch. It would be a different question if you say, “I am going to allow three-party networks and four-party networks. Who is going to win in light of everybody starting at a market share of zero?”

In many countries, there already is very large penetration, say, of Visa and MasterCard and that means—even if you have three-party systems—they have a tough fight on their hands because Visa and MasterCard have an established advantage. So that’s why, if you look in, for example, Australia, there has hardly been any significant movement in market shares, even though Visa and MasterCard could claim that the recent regulation of interchange harms them relative to three-party systems, which do not have interchange fees. That disadvantage has not materialized in significant drops in market share. My view is—and the evidence so far is consistent with it—is that Visa and MasterCard will remain important payment systems.

Mr. Bennett: My question is on surcharging. Both Bob and Dennis seem to be pointing toward surcharging being a possible solution to many different issues here.

One of the interesting things we looked at in the OFT was, when we see surcharging, and we are increasingly seeing surcharging in the market, we are very seldom seeing it as being proportional to the actual fees that are charged. Often we are seeing it as significantly higher.

My question is, do the panelists think that is because of a transparency issue and these retail companies are finding another way of extracting greater profits or is there some other type of logical explanation which could account for the fact their surcharging doesn’t seem to be proportioned to their costs?

Mr. Chakravorti: There are clear examples of higher surcharges than the retailer’s cost to accept payment cards. I agree with Dennis. If you want to rule that out, you could regulate it, but that gets tricky. The U.S. gas station that I mentioned before has been surcharging for years, and they earned revenue from this practice. Are the people who are paying the surcharge harmed? If you compare it with them going to a cash machine and paying the potential surcharge on the cash withdrawal, perhaps not. One has to compare apples to apples. In our Spanish study, we looked at rival ATM density, because those are the ones that could have surcharges on them. So you have to consider all sorts of factors when determining how big or small a payment card surcharge is.

There is also price competition to some extent. The gas station that I mentioned offers among the lowest gas prices in the area. There is a relatively low gas price coupled with debit card surcharges. How do you separate those two effects? It is not clear to me.

If you have really intense competition, you wouldn’t expect the surcharge to be higher than the cost to accept payment cards. It depends on the structure of competition to some extent.

Mr. Carlton: To my thinking, I separate things into two parts. The first is the opportunity to charge two different prices, the opportunity to surcharge. Just having that opportunity provides constraints, and my preference is to rely on the market to figure out what it wants to do in terms of whether to levy the surcharge or not.

Whether I then want to go further and either regulate the surcharge or regulate interchange fees raises all these questions about the difficulty of regulating. You can get it right or you can get it wrong. I would rather not have to regulate anything. If you think there's some market failure, for some reason, that is imposing very large costs, then maybe you want to intervene. But my own preference is always to see if the market would solve the problem first.

I don't have a good answer to your question of why there is surcharging in excess of costs other than to say, if you look at a distribution of who is surcharging and who is not surcharging, my suspicion is some people aren't surcharging because it is just not worth their while. And then the people who are surcharging are people who not only don't want to pay the differential costs, but for some other reason have another justification for wanting to charge a higher price, but I have not studied that.

Mr. Kimmet: Dennis, I don't know if you've followed what happened in New Zealand, but it is my understanding there—concurrent with allowing merchants to surcharge on the issuing-bank side—the issuing banks can now negotiate against the four-party systems, say, the Visas and MasterCards of the world, and have that rate set by them be the cap. As I understand, how that has played out in that market is the smaller merchants have started to surcharge, the issuing banks then have started to negotiate with merchants, and the prices are collapsing pretty rapidly. Do you have any insight into that?

Mr. Carlton: Are you talking about this recent New Zealand case that just settled?

Mr. Kimmet: Yes.

Mr. Carlton: I don't think it has gone into effect yet. It is going into effect in January, so I don't know whether there have been any effects yet.

Mr. Kimmet: You are starting to see some conversations happen very quickly.

Mr. Carlton: My understanding of that settlement is that surcharging is going to be allowed absent other contractual arrangements, that a four-party system will not be allowed to pass a rule that prevents surcharging, but individual negotiations with banks are possible such that the interchange fee relevant to that bank's payment cards can be set at or below the cap with the possibility that the bank and merchant could agree to not allow surcharging. I think that is right.

Mr. Kimmitt: That is my understanding as well. I would encourage everybody to understand that system.

Mr. Wildfang: Of interest to the group, I am lead counsel for the merchant plaintiffs in the pending litigation.

I have just a couple of observations. One, with respect to real-world evidence: I know the economists here complained that it is hard to get data and evidence. After looking through some 60 million pages of documents in the litigation, I can tell a lot of the assumptions built into a lot of these economic models are inconsistent with the record. One of these days, hopefully, that record will be available, so people can look at it.

Another observation: The rationale for two-sided markets and the need to balance by charging one higher than the other, if that were valid, that would permit issuing banks to also fix the price of interest rates to cardholders or annual fees to cardholders. The economic justification seems identical and yet it seems to be unlikely the Department of Justice would not crack down on an agreement by all the issuing banks to charge the same interest rates or charge annual fees.

Mr. Carlton: I want to make a comment on that. There is an article—I think it's by Liebowitz and Margolis in the 1990s—which talks about the economic literature on network externalities. It makes the point that it is easy to go off the deep end in reading this literature and suggest every single market needs intervention and therefore should get an exemption from some collective-action problem. It makes a very similar point to the one you are making.

Mr. Ruttenberg: In this debate on cards, surcharging, interchange, and all these kinds of things, nobody has explicitly made the point that in the end we are talking about doing payments. If we make a comparison between cash usage versus cards, in the end you would like to replace cash in favor of using cards.

All the debate on interchange—whether or not it is allowed and how high it should be and so on—the point in the end we have all this debate in Europe over the future of the cards business in Europe and yet it is all about the need to have a plastic alternative for cash. If we take this approach, ask yourself the question, why should a merchant pay for my interest-free periods? Why should a merchant pay for the insurance? Why should the merchant pay for the miles I get? In the end, it is just about getting a payment done.

I am in this debate just a little bit. The core function of using a card is doing payments. This approach is just a down-to-earth approach. Is it not also missing in the United States when we discuss cards? It's about doing the payments and not about free miles and all these kinds of things. I would like your reaction for this.

Mr. Chakravorti: For some of those benefits, such as free float, there are merchants in the United States that give you similar terms on their own credit cards they issue, so it is not just bank-issued credit cards that offer some of these benefits.

We can quibble over whether you should get miles, toasters, and other things. In the United States, banks used to give away toasters because they couldn't give interest on checking accounts. We cannot say whether receiving miles for making a purchase at Starbucks with your payment card improves social welfare or not. And there are probably differences in the room about the benefits of rewards, but some essential functions of credit cards are going to be very difficult to mimic with cash.

The second thing I would add is that it's not abundantly clear cards always dominate cash. You could have situations where individuals value their privacy and prefer to use cash. We certainly have heard of southern European examples of tax evasion. Also, like the gentleman on the plane that I mentioned earlier, wanted to use cash because that was his best way to control spending.

Mr. Cook: Bob, you mentioned earlier about the gas station owner in California who surcharged for debit transactions. If I am not mistaken, that is only PIN debit they accept, not signature debit. The two entities that control signature debit don't allow surcharging on those networks. In fact, the network that's owned by one of large schemes only allowed them to surcharge on their network because they were grandfathered in at the time. Is that not correct?

Mr. Chakravorti: There are examples of where the gas station owner actually accepts a credit card that belongs to that chain. So, there are examples where you are right. Although they have to pay a higher fee for credit card transactions, they are not allowed to surcharge for them.

Mr. Cook: But, in the debit card example that you gave, where we're mentioning to the European folks that surcharging does exist in the United States, it is really only in that one example, only in PIN debit, and it's only because of a grandfathered situation.

Mr. Chakravorti: It is true that these are PIN debit transactions because there are network rules that don't allow you to surcharge other types of payment cards.

Mr. Cook: The gentleman from the UK mentioned surcharging may not be a direct correlation to the cost. Would you all like to talk about whether or not you believe interchange is a direct correlation of the financial institutions' cost?

Mr. Chakravorti: The one thing that's clear, I think, is you can't just separate costs and benefits. There is a lot of debate on the cost-based approach to setting fees. Some people argue fees should be purely cost-based. Then the problem arises of trying to figure out what does cost-based mean. So, if a merchant gives out an interest-free loan and then chooses not to give that loan but chooses to accept a four-party credit card, why shouldn't he share in the cost of providing an interest fee loan to move merchandise? There are several arguments that can be made against that—maybe the customer has money in his account. But separating these different types of customers is difficult and trying to figure out the cost is also very difficult in these cases.

Mr. Carlton: In a two-sided market, I think there is agreement an interchange fee by itself isn't necessarily cost-based and it doesn't have to be to create incentives to get the other side on board. That is why regulation of interchange fees is hard if you intend to have a cost-based regulatory system. You have to decide what costs, whose costs.

Mr. Hayes: Dennis, you expressed some skepticism around, would lowering interchange fees curtail efforts to issue new cards into the marketplace? Then, later on in one of your responses, you talk about we're not starting with a clean slate. There are existing competitors here today. As I look at the U.S. market, there are a number of efforts to create new payment mechanisms that do have a much lower interchange rate structure—like Debitman then became Tempo, like Revolution Money, like PayByTouch—all of these were based around being a low interchange cost structure and all of them basically fell by the wayside because they couldn't get cards into the marketplace. They couldn't get the issuing piece figured out.

There does seem to be empirical evidence that a lower revenue proposition of card issuing is insufficient to get consumers to adopt that payment mechanism. I would be curious to get your thoughts—at least in the United States where the pricing mechanism is the way it is today—if there is room for reducing interchange and still growing the card business.

Mr. Carlton: I think you would have to look at when they failed. In other words, if it was at a time (and it must have been) when there still were no-surcharge rules, that's different than if we didn't have no-surcharge rules. So, that's one relevant question.

In the presence of the ability to surcharge, the question is does that so undermine the ability to collect interchange fees, as sometimes Visa and MasterCard allege that it would impair the diffusion of card payment systems. All I'm saying is, based on some of the evidence I gave you, I can see some positive support for the proposition that interchange fees help dissemination of cards. On the other hand, there is a lot of negative support for that proposition. Perhaps one of the simplest implications, as I said in my talk, of the position that interchange fees are critical is that the decision related to the Federal Reserve System to have a par clearing system for checks must have been a mistake. Maybe it was and maybe it wasn't. I won't take a position here. I am just pointing out that it is an *implication* of the position that interchange is critical. That sounds a little strong to me. That's all.

It also sounds a little strong that interchange is critical for promotion when you look at some of the European countries that have zero interchange fees but have very high per capita debit card usage. Now, I'm willing to entertain the possibility that interchange could matter because I believe there are examples of even small systems trying to use interchange. All I am saying is it seems like sometimes people overstate the importance of interchange for card dissemination.

Ms. Masi: My question is to Bob. You mentioned earlier the impact of a two-sided market on innovation. I would like to know more because from the network externality theory and also from reality we know for sure there is some influence of the market power in making an obstacle to innovation. So, it is not so clear but this is traditional theory, a conventional competition theory. My point is just to know your opinion on what the impact is for a two-sided market innovation.

The second one is really a question. Which kind of regulator? Regulation is a word, but regulators are different. As Stu mentioned before, we have a competition authority and we have a standardization authority, which is something we didn't mention before, you know that is implied in this market more than in other sectors. Then there are central bankers. So, tell us more.

Mr. Chakravorti: Let me first say maybe it wasn't clear in the talk. The two-sided market literature doesn't say much on innovation. It's not there. I've had discussants of mine tell me that it is an important issue.

An example of where cost-based pricing was used is the market for electricity in California. As a result of this pricing policy, there wasn't sufficient capacity built up resulting in a crisis in that market. So the notion here is, if you don't have incentives such as the ability to earn profits to innovate, you might not.

One payments example that comes to mind is if you look at checks in the United States, they took a long time to be truncated, partly because of the way they are cleared. An act of Congress was needed to facilitate the mass migration to check truncation. But, in credit cards, you didn't quite see that.

In terms of the other question as to who regulates, that really depends on the country, what's involved and whether the central bank has the authority to regulate retail payment services. Purely for a selfish reason, being an economist, I like the Australian way because comments from all participants are online, whereas in court cases, I have no way of accessing those comments. They are sealed from me for many years.

It seems there may be differences, but in the United States traditionally we've gone through the courts on these challenges, whereas in Australia they went through the central bank. In Spain, they went through the antitrust authority.

The U.S. Department of Justice has had an effect on various types of regulation in terms of the ability to issue non-Visa and MasterCard cards by financial institutions that are members of those networks.

Mr. Hunt: I just have two observations. One is this analogy to par value clearance of checks. I think the analogy to the credit card market is really the honor-all-cards rule, rather than an inference about interchange. We can talk more about that later, if you are interested.

Second, this discussion about surcharging is very interesting. But, in the U.S.

context, it is interesting we do allow a cash discount and yet the implicit assumption here is for some reason that freedom of pricing doesn't seem to work. It is very important to understand the friction, whether it's behavioral or legal or whatever, that prevents the cash discount from behaving in the same way allowing a surcharge would behave.

Mr. Carlton: I think you're right. It is somewhat puzzling there aren't more cash discounts. However, there is a difference between a surcharge and a discount. The surcharge can differentiate among the various credit cards that have different merchant service fees, while a discount for cash cannot.

I also think the salience point people have mentioned earlier would matter. The fact of the matter is, for whatever reason, whoever designed those rules that allow discounting but not surcharging, didn't say, "I allow surcharging too."

So, they must have thought it mattered. My suspicion is it does matter.

Implications of the Changing Payments Landscape for Competition and Efficiency of Retail Payments Systems

Moderator: Wiebe Ruttenberg

Mr. Ruttenberg: Implications of the changing payments landscape for competition and efficiency of retail payments systems is what we will discuss. It is all about competition, but also we have to remind ourselves that we will be talking about the payments industry, which is a network industry, and also cooperation is quite crucial in this context. So, it will be about competition, cooperation, and all that is in between.

Mr. Bennett: I will start with the standard caveat that everything I say is my own opinion and not necessarily that of the Office of Fair Trading (OFT). With that out of the way, rather than have a very general discussion about competition efficiency on retail payments systems, I thought I would talk a little bit about an area of recent interest: surcharging and whether surcharging could be a potential solution for many of the issues that we've been seeing and discussing over the recent years.

The argument here is essentially that surcharging creates a natural constraint on merchant fees. If merchant fees are above the level of benefit the merchants get from a credit/debit card relative to cash, then they'll simply pass on those additional costs to credit/debit card users. Higher fees should change consumers' consumption patterns, and will in turn constrain excess interchange fees above and beyond the level of the benefit from using credit versus cash. That's the theory.

A couple of comments here. First, in general, competition is really a good thing. However, we heard from Bob Chakravorti and Dennis Carlton yesterday that this is a slightly strange market because more competition may actually lead to higher fees to merchants as firms compete on cross-subsidizing card users. But surcharging, at least in theory, puts a limit on this. The more you try to extract from merchants, the more that merchants pass on these fees to consumers of credit cards, debit cards, etc. Hence, it reaffirms the beneficial role of competition.

Surcharging unravels any inefficiency in cross-subsidies. It ensures competition gets to play a more direct role than previously.

My second comment is it is not necessarily clear that all merchants are going to start surcharging. So, while in theory it seems like they have a clear incentive to do it, there is a potential coordination issue here. You don't want to be the first merchant to start surcharging, when all of your competitors are not surcharging. Why? Because we know some consumers will be sensitive to that and will potentially move away.

But there are ways around this. One way, potentially, is for merchants to offer discounts, rather than surcharges. Behavioral economics tells us consumers quite like discounts and, if you frame things in the phrase of discounts, then their response may be very different than if you frame them in the context of surcharges.

Second, there could also be a role for country institutions, such as the central banks or competition authorities, to try to encourage surcharging by merchants.

This brings me on to my third comment. Here, it is not clear that merchants will necessarily surcharge at the correct levels. One of the assumptions on surcharging is only the excess cost, the amount above the benefits merchants get from using credit cards and debit cards, will be surcharged to consumers. If you like, there are no excesses above and beyond the excess.

Looking around the UK, in many of the industries in which we do see surcharging, the surcharge levels appear to be unrelated to the actual merchant fees. The airline industry probably represents the most prevalent user of surcharging in the UK, although you also get surcharging in other sectors, especially by smaller merchants.

Why is this? Well, as we discussed very briefly yesterday, it may relate back to the behavioral economics literature. The literature discusses the fact that people like low upfront prices. People are more likely to consume when they see low upfront prices and don't think too much about the add-on prices that get included.

Airline pricing is pretty famous for having very low upfront prices. For example, in the UK, Ryanair advertises a zero price (or near zero) as the upfront price but with lots of different add-on prices afterward. The worry is that surcharges may just become another one of those add-ons, which are unrelated to merchant fees.

We at the OFT have been looking at these add-on-pricing techniques. We call the use of these types of surcharges "drip" pricing. The idea here is that your price is revealed to you only in drips and drabs. You get only the final price at the very end of the transaction.

An interesting thing here is, if there is going to be drip pricing in the payments industry, the possibility of cross-subsidy goes the opposite way of the cash-to-credit cross-subsidy we currently think about. In that instance, you might find credit card holders and debit card holders are actually subsidizing cash holders, if cash is a

viable method of payment and doesn't attract excessive surcharge fees. So, surcharges are interesting in the sense that the cross-subsidization we're worrying about at the moment, which is from cash to credit and debit, may actually be reversed, and go from credit to cash or debit to cash.

Do these issues mean surcharging is not desirable? Well, like many things in this industry, there is no simple answer. I do think surcharging is worth looking at closely, for two reasons. First of all, it creates transparency and does restore the direct competitive constraint on the level of fees. Now, there is this additional problem in that it may be used as a way of hiding fees for retailers later on down the line. But I believe drip pricing is actually a different and wider issue and as such should be tackled separately. So, to the extent that surcharging is a potential solution for the merchant fees issue, this really seems like something we should invest time to think about.

Second, surcharging may also encourage dynamic efficiency through innovation. As Harry Leinonen said yesterday, it is difficult for firms to compete when consumers don't see a price. What I can imagine here is the emergence of different types of payments systems with different types of surcharges. You might start seeing credit card companies who are offering very generous rewards, but you have to pay more to use them at the merchant. Likewise, you might see credit card companies offering no-frills models with no rewards, but then the surcharge is very low at the merchant. In that sense, one can imagine seeing more choice emerging for consumers.

Just to conclude, I think surcharging is a really interesting area. It may not be a complete panacea, but it is something that definitely deserves to be explored more. I don't think we have a huge amount of empirical evidence on that, but I would like to call for more empirical evidence to determine whether it is a possible solution to a lot of the issues we've been looking at for a long time now.

Mr. Bézard: I'd like to share one key thought with you as far as competition and efficiency are concerned. That thought is that, when looking at the debate about cost of payment and interchange in the United States and around the world, we tend to forget merchants have opportunities to compete in payments. One of the questions that was asked to us as part of the introduction was, is the retail payment market a perfectly competitive market? My answer to that is no. And to be honest, I do not know any market that is perfectly competitive. From the airline industry to the car manufacturing industry, I do not know any industry that is perfectly and purely competitive with no regulation and no government intervention. Ultimately, most markets are going to be skewed one way. The retail payment industry to a large extent is skewed in favor of the card issuers. The issuers have the relationship with the consumer and they have a huge say over consumers' payment behaviors. Now, from a merchant's standpoint, if merchants have concerns over the cost of payments and the deck being stacked against them, what are the alternatives for them? Over the past 10, 15, 20 years and more, the merchant community has

generally tried to address its concerns through litigation or through regulation. In the meantime, merchants have often overlooked opportunities to use competition to defend their interests. Merchants haven't been very supportive of payment alternatives to the offering from banks and card networks. Too often we are looking at the debate between the business interests of the banks and the business interests of the merchants as a debate about what is fair versus what is unfair. Regulators, lawmakers, and courts are increasingly pulled in to address and fix the conflict between the distinct business interests at stake. Few, however, ask the tough question of whether or not merchants are willing to compete. Over the years, there have been a number of ventures in the United States, such as Pay-By-Touch and Debitman (now Tempo), new start-ups or new payment ventures that were built upon the premise that merchants would be interested in sponsoring alternative payment networks that would reduce their merchant-acquiring fees. Those ventures didn't go anywhere. I don't think their failure is simply merchants' fault, but I would argue the merchant community did not try very hard to support those alternatives.

The point I would like to make to regulators is that merchants should be encouraged to be active in supporting alternatives to what is being offered by the banking industry. I will conclude with one example. There are a few examples in the world of payment schemes that are very merchant-centric, very merchant-friendly. One of them is ELV, in Germany. ELV is a very low-cost debit scheme, which is merchant-centric. It accounts for about half of debit card transactions in Germany. So there are some real examples, situations in some countries where merchants do promote some payment alternatives to what banks are offering. Another example is in the United States. Today you have some card networks, like MasterCard, that enable the decoupled debit card product, which is essentially a product merchants could leverage to offer their own debit card alternative to the traditional debit card being offered by banks. Few merchants have expressed serious interest in such a promising product yet. In a nutshell, before trying to fix business conflicts through regulation and litigation, I do think we should give a bigger chance to competition.

Mr. Chu: I am not a regulator. I am not an economist. I am not an academic. So, I am not really sure why I'm here, but I have been in the field, as it were, for quite a few years. Someone asked me at lunch yesterday, "What do you get out of coming to these things besides meeting some very smart people?"

I always use it as an opportunity to set the record straight about who PayPal is and what we are because I believe out in the field—out in the wild—there is still quite a bit of myth and some presumption.

Let me spend a minute giving you some fast facts, and this came out of our third-quarter earnings, so this is all blessed by our Public Relations folks. The rest of what I'll say is my opinion and not necessarily that of my company. Let me give you some quick facts about PayPal.

First of all, we were founded in 1998 as Confinity. The whole thesis of the Series A funding the founders were able to secure—and, boy, those were the salad days of venture capital—was beaming money back and forth between Palm Pilots. It was an interesting idea, though it didn't actually go anywhere. The great thing about start-ups in Silicon Valley is you can fail fast, recover, innovate, and continue to find unmet needs of customers, and we found that in e-commerce payments.

We are an 11-year-old company. We were acquired about five years ago by eBay and are a wholly owned subsidiary. We have 8,000 employees around the world (across 19 countries), and we operate three businesses. We are a payment mark, which is what most people understand us to be as another alternative payment type. We also have a fairly healthy merchant-acquiring business. When I joined PayPal 5½-6 years ago, it was precisely to do that—to form a merchant-services business. That is about 52 percent of our revenue now. We provide merchant processing to a lot of small businesses that would otherwise not get access.

Last year we bought a credit business called BillMeLater. We operate as both issuer and acquirer—and, Tony Hayes, yes, we are a network. In fact, we are a network of networks. We sit on top of the traditional networks, and we believe we add value by making it more efficient to operate between the networks and allow both buyers and sellers, our participants in our business, to be able to efficiently and cost-effectively conduct a payment transaction, which then gets to this notion of efficiency, which seems to be a big theme here as well as competition.

I'll make a couple of observations and leave some questions. If you define an efficient payments market as having, say, four characteristics: 1) low cost with a long downward trend toward lower costs; 2) real-time speed of authorization and hopefully at settlement; 3) easy and convenient access by all parties—consumers and merchants; and finally, 4) part of an efficient market would be that it is standards-based and fully transparent—if that happened and if those conditions were true, I would think in the retail payments market, the outcome would be you would have payments that would have the ubiquity of cards and the ease of use of cards and yet the speed of a wire transfer and the cost of a bank transfer and ACH. I don't think we quite have that, so to Gwenn's point, there isn't a perfectly efficient market in payments today, but there certainly are a number of conditions that would lend themselves to say there should be an efficient market. If the two primary levers of payments networks that drive costs and efficiency are technology and risk management, if you look at the trend—what Dan Hesse was talking about yesterday in his great example about 1G through 4G in telecom—Moore's Law is completely true. The cost of technology has dropped tremendously. That is probably the biggest cost driver. The risk in the network has also dropped tremendously. Loss rates within the acquiring business are pretty low anyway, notwithstanding the current situation on the issuing side of charge-offs. Nevertheless, I don't think that is a problem merchants ought to bear.

If technology costs keep going down and risk is under control, why has the wholesale price, as expressed by interchange, been flat to increasing over the last few years? It seems like there is an interesting gap there. We don't quite have all the benefits of an efficient market.

I would say, though, that notwithstanding all of that, there is a tremendous amount of innovation in the retail payments market, as evidenced by our company. We've been lucky enough to survive and thrive, but there has been an enormous amount of innovation and there continues to be. That innovation employs a lot of people, it generates quite a bit of value in the market, and it continues to put pressure on some of the underlying conditions that may not lead to an efficient and low-cost market. As open competition and more innovation continue, we will incrementally move ourselves to a more efficient payments market.

Mr. Levitin: It's pretty clear right now the payments industry is very focused on the interchange debate. I want, at least in my opening statement here, to look beyond the horizon to speculate on the future. Currently, payments systems are dominated by interbank schemes. These interbank schemes feature bank cooperation, in addition to bank competition. But cooperation is a central element of interbank schemes.

This means, though, there is a delicate ecosystem. There is a balance that has to be maintained between banks that are natural competitors with each other. I want to suggest this balance in the payments ecosystem could shift pretty radically if we see product changes and profitability. There are several potential, maybe even probable, shocks to payments system profitability that are in the immediate future.

First, we have interchange and we have potential shocks to the system, coming both on the litigation side and on the legislation side. What's going to happen first and exactly what it will look like is hard to say. But there is a good chance something is going to give there.

Second, we already have shocks happening on the consumer fee side. So we have Regulation AA and the Credit CARD Act. Even beyond that, a (possible) Consumer Financial Protection Agency might start to change the profitability of credit and debit card issuance.

Third, we have consolidation affecting the industry, particularly in the United States. Right now, all is uncertain whether we are going to see institutions running to be larger or whether we are going to maybe see some institutions split up to be smaller. But we have a dynamic of size going on, especially on the bank side.

Fourth, we have the potential addition of new parties to the system. I am thinking in terms of mobile commerce. I see a move, especially in the United States, into mobile commerce, that will probably mean more mouths to feed. Unless the pie grows, there is going to be stress put on existing business models.

Finally, we are starting to see some movement from credit to debit. That may be exacerbated by what's going on in the U.S. economy right now. Debit is a less profitable product, if only because the consumer fees are much lower. All of this means we are very likely to see substantial shocks to the payments business model.

What does this all mean? If the current system is likely to be destabilized in some way, what is going to happen? I want to suggest we might see some large banks consider setting up independent networks. In the United States, we have at least three banks that have significant enough presence on issuing and acquiring sides that could be sizable stand-alone networks: Chase, Bank of America, and Citi. In Europe, I'm not as familiar with the situation and my sense is, if you look at the entire European payments area, we don't have banks that dominate the scene Europe-wide, rather than nationally, the way we do in the United States.

These large banks have some incentives to become stand-alone networks. First of all, why should they be subordinating their brands to MasterCard and Visa? We can see this when Chase rolled out its contactless card. It went with its own branding of that. Blink is a Chase brand. It's not a MasterCard brand; it's not a Visa brand.

Second, the networks involve a cross-subsidy from the large banks to the small banks. The nature of interchange fees is that—because it is one-size-fits-all—large banks are bearing some of the risk for small banks. There are rebates that offset some of that, but there is still a likelihood the large banks are subsidizing the small banks' participation.

Finally, if we have large banks pulling out of the networks, that may make it harder for small banks to continue to issue cards. That actually is very good for the large banks because if your small banks and credit unions get out of the card business, they may also lose some of their deposit funding because people want full-service banking. And where do you go? You go to the large bank.

There are some reasons why we might see some defection at least on the large-bank side from the multiparty networks. There are certainly some limitations on this, not the least of which are problems doing international transactions. There are ways that could be structured around, and there are also questions of whether the economics of this ultimately would work. Looking into the crystal ball, I'm not so sure in five years we are going to see a payments landscape that looks anything like where we are today.

Mr. Ruttenberg: We had a quite interesting first introduction of the issues. I'll quickly summarize the remarks of each. Matthew made a clear plea for surcharging and the need for further investigation. Maybe my personal view a little bit on this point is that I'm in favor of surcharging also. We have decided in Europe, there just has been a European law introduced, the payment services directive, which makes it explicitly possible to surcharge, unless it is explicitly forbidden by laws on a national level. There is a general movement, so to say, to allow surcharging.

In the European context at least, but maybe there is a problem in the United States, surcharging is not that big of an issue. By now only the most expensive card schemes are surcharged and the low-cost card schemes, that would be currently the national card schemes, are not surcharged at the moment. But there will be competition between the different card initiatives at the point of sale.

On Gwenn's point about more retail merchant involvement in these kinds of businesses, indeed that's always a good point to raise. Looking at the different initiatives in the past where retailers have been involved in the payments business, they were not quite successful. Is it really the business which they would like to be involved in? Of course, if you talk about the big retailers—Wal-Mart, IKEA, and some others that are around us here—they can do it. Maybe some of them have banking licenses. But we also have a vast majority of small retailers, and we should not forget those institutions too. In that way, competition by merchants setting up their own initiatives could be interesting, of course, but we have to be careful that we do not favor only the bigger ones.

Dickson, of course, a tremendous amount of innovation is around indeed. A fascinating question is—and maybe we should go on with the discussion here—how can it be that on one hand we have tremendous opportunities for innovation and on the other hand everybody agrees to some extent that at least the banking sector is not addressing this opportunity in an appropriate way? Apparently there is a role for competition, but why is it that those who are challenged, i.e., the banks, by newcomers and new innovative services, are not reacting in an appropriate way at least in certain geographical areas in Europe?

Adam, it is about the old interchange fee debate. Yes, we have to look beyond that thing, because we have been dominated by this debate several times. And the big U.S. banks setting up their own networks is an interesting point, setting a new scheme, new network, and new card. But will this solve the issue, because who can tell me that in the end they will not make the same mistakes? They will try to make money out of it too.

That makes my point in general. You have to be talking about payments, just doing payments. Let's not make things more complicated than they are. We would like to reduce the use of cash in society. There is a security and convenience issue. On top of that, in the current world, cash is not sufficient anymore because of online commerce. But while at the core we are just talking about how to initiate a payment—that is, how to initiate a credit transfer, direct debit, and card transaction—we are ending up making things too complicated. Yet it is all about how to initiate a payment in the real and virtual world, and I am not sure whether we talk about innovation and competition, whether that focus is still around.

Okay, these are just some general remarks on the first round of introductions. We'll give the floor back to the panel. Adam, with these payment markets: Is there a tendency to become natural monopolies in this case? You indicated to expect new

card schemes to be set up in the United States. We talked about network economies. Can you tell us a little bit of your views on enhanced competition and how it relates to consolidation vs. fragmentation issues?

Mr. Levitin: Sure. This is the core of the problem with payments systems. They are network economies, and network economies have both economies of scale and also they exhibit network effects. That means you're going to have a natural tendency toward monopoly.

Part of the problem we're facing right now is that we're not dealing with simply one network that has this, but we have multiple networks that are in some ways each acting as their own monopoly and as social policy. But how do we know which one of these we want to favor? I think Dickson set up a nice metric of how we might think about efficiency: cost, access, speed, and transparency. It is not clear to me there is inherently any one network we would want to favor over another.

This is part of the problem. We have multiple competing networks. We don't really know what the economics should look like. We know when we have just one network product competing with non-network products that we want to encourage economies of scale. That can lead to efficiencies. But, when we have multiple competing network products, I'm not sure it is at all apparent what we should be encouraging.

Mr. Ruttenberg: Dickson, it would also be interesting for you to answer this question about mega-monopolies because with your business, aren't you creating a kind of monopoly? You are fighting the current business so to say, but yet you prosper as an organization and you are the only provider. What is your view on this?

Mr. Chu: Well, first of all, we're not the only provider. Let's just put it in context. On a global basis, PayPal has roughly 15 percent market share of e-commerce. E-commerce, on a good day, represents only 5 percent of total retail, so we're hardly a threat to anybody.

Now, having said that, we represent the perception of threat to the installed base of networks because we've innovated something that is somewhat unique in that we're creating a meta-network—a network of networks. We are trying to drive either access, costs or usability efficiencies into the retail payments system by covering and basically offsetting some of the inherent inefficiencies of some of these other networks.

I wouldn't say that leads to any kind of natural monopoly. There are plenty of other people. If you go to your average venture capital firm these days, and I talk to a number of venture capitalists, on any given week they're going to hear a dozen proposals about how they have the new PayPal and they are going to kill PayPal. So, there is plenty of competition. And there are always going to be folks out there, so I don't think it's a natural outcome that we become a monopoly. It may be a natural outcome, as we're successful and we gain more share, we will be big and we'll grow. That's slightly different from the notion of a monopoly.

I don't know what the right market structures are. I am very much a competition, open-market kind of person, and the conditions need to be there to encourage and enable more networks to form and perform as long as the outcome is driving value to customers.

It's interesting to me we talk about this four-party system, when most of the time we seem to forget a couple of the parties: the merchant and the consumer. I'd love to see a network emerge that is very much merchant-aligned or consumer-aligned—that's all about driving down costs of payments and providing more transparent access for those parties.

Mr. Ruttenberg: Matthew, could you talk about natural monopolies, networks, and so on? You are director of economics, though not specialized in payments, but there are other industries—the airline industries, the communication network industries, and these kinds of things. What are your reflections on these other elements about natural monopolies, network economies, and these kinds of things in relation to payments? And also react to what has been said by Dickson.

Mr. Bennett: On natural monopolies, not necessarily. I don't think so. Sure, it's a network, but when you start having things like multi-homing both on the merchant side and on the consumer side, then there is no reason why these should necessarily be natural monopolies. If you have single-homing, then perhaps, but I don't think that is what we see here. We see consumers holding multiple cards. We see merchants having terminals which will serve multiple cards, so I am not sure it is necessarily a natural monopoly.

Does more competition make things better? That was something I discussed slightly earlier. It is an interesting question. You may get static distortions with more competition. However, thinking about dynamic efficiency and innovation, which Dickson was talking about, generally more competition is better for innovation. Sure, you need some sort of profit stream for the winner, for the person who innovates. But, in order to have an incentive to move and actually innovate, you also need competition for that innovation.

I was reflecting on the PIN versus signature debit card system in the United States. When I was thinking about that last night, it sounded very much like a cannibalization issue to me. It sounded like there is an existing system—signature debit—that is pretty profitable. Do you want to create a cheaper system that is going to cannibalize some of that? If there is only one of you, then, yes, maybe eventually you want to because there is going to be some advantage in providing a better product. However, you are not going to want to do it immediately because it can cannibalize some of your existing signature sales.

If there are two or three of you going for it, you either cannibalize yourself or someone else cannibalizes you, so you are forced to move first. In that sense, competition's main benefit is not necessarily the static element, it is more on the dynamic side. I see competition as being very beneficial in facilitating the entry of

new payments systems such as PayPal.

Mr. Ruttenberg: To make some reference to what is going on in Europe, we have two problems to solve. First, we have to unite 27 countries in how they do a credit transfer, direct debit and card transaction. Currently we have 27 countries that do retail payments in a different way, i.e., different technical standards and different business rules. For many years, we've had a single market for goods, services, and capital, but we have 27 different ways to do payments. Consequently, in Europe the retail payments market is still fragmented along national borders.

Second, the retail payments market and banks offering retail payments services have to innovate. There are pressures because newcomers come in and take the market. So we have a double challenge to cope with: integration and innovation. What we currently have in Europe is the challenge to let the banks work together to agree on rules, standards, and schemes, which will be the same across Europe. We now have the pan-European technical standards and business rules to use for credit transfers, direct debits and maybe later for cards too. On top of that, banks have to cope with the competitive challenge to innovate, to create new payments services, especially in relation to online and mobile. I am not sure whether this is currently happening in other parts of the world, but in the United States, of course, you have had a united market for many, many years and innovation is a challenge that has to be dealt with.

My question to the panel is related to the practice we currently have in Europe with 7,000 banks and future payments institutions, which is kind of a new animal introduced by the Directive on Payment Services, working together in the European Payments Council to agree upon European standards, rules, schemes, and so on. To what extent can this cooperation model be used in other parts of the world not only for basic payment services, but also for payment innovations in the field of Internet's online payments and other things? Or is this unthinkable in a very competitive, focused market as in the United States? Can we have such a cooperation model outside Europe?

Mr. Bézard: Is your question about what is the best model to drive innovation?

Mr. Ruttenberg: I am not sure whether there is a best model, but to what extent is cooperation, in your view—because we are always talking about competition—necessary, needed, or possible to bring the retail payments market forward?

Mr. Bézard: In many respects, cooperation has been instrumental in developing the payments industry and is still critical to its future. Ultimately, the payment infrastructure we have right now across the world and in the United States was driven by banks getting together and building associations. Without global associations, I don't think we would have pervasive electronic payments. We would not have this platform upon which issuers and acquirers and other entities are able to compete. Cooperation has been and is very important. What I would add, however, is that when it comes to achieving payments efficiency or supporting

innovation, I also think there are different ways of getting things done. I'm French. I come from a country that is very keen on using government to drive change. And I've been living in the United States for eight years, which is a country keen on using free enterprise to drive innovation and change. There are different roads to get things done. Competition is one of them. Political will is also one of them. Just look at China. The Chinese government is putting a lot of political will behind the building of China Union Pay, building a world-class payments infrastructure. In years to come, we will see a fairly large payments infrastructure there emerging by political will. So, I think the question is, What method works best for which country? As far as the United States is concerned, it is fairly safe to say letting the market play a very active role, letting competition play out, is usually the best way of doing things. In Europe, it may not be seen as the best way of getting things done. You look at the integration of payments systems in Europe. It's taking political will. Without political will we are far from having an integrated payments system in Europe, right? It is not there yet. My bottom line is that I don't think there is a unique answer across every country in terms of how to best drive efficiency and innovation. The right mix of cooperation and competition depends on the local context.

Mr. Chu: I am going to expand on that a bit. This whole notion of getting banks to cooperate, as Gwenn pointed out, think about the birth of Visa and MasterCard and so forth. In a number of these payments networks we are talking about, it was precisely because banks found some way to cooperate and interoperate that these networks were created.

We are getting to the point where another evolution needs to happen, where the discussion needs to be broader. It's not just about banks cooperating with each other, which by itself is a huge challenge. Why not expand the discussion in Europe, or elsewhere for that matter, where you bring other parties into the discussion in terms of cooperation? Why aren't outside providers like ourselves and merchants that have a vested interest in whether or not there is an efficient and cost-effective payments network in the conversation for cooperation and mutually setting these standards and rules of engagement?

That should be a natural evolution because the alternative is that a group of banks gets together and cooperates, but they may very well find themselves in a classic innovators' dilemma where they are so worried about protecting their own interests that they will miss out on the disruptive innovation that is going to come about. Someone else is going to provide the value they traditionally had provided. I think there is a need for broader discussion.

Mr. Levitin: I just want to amplify something Dickson said, which is when you are setting standards, it really matters who is in the room, who is doing the standards-setting. It is not just a matter of, Is it the banks versus banks plus other payments companies or banks plus other payments companies and merchants? But let's remember the consumers are also in that. Who is the proper voice for representing consumers in this context is an interesting question. Is it consumer advocacy groups? Is it the government?

It is important to recognize the payments system is in effect lots of different parties and all the parties affected should have a voice at the table when standards are being set.

Mr. Ruttenberg: I can agree with you, Dickson, and also with what was said by Adam that it is not only about banks in the payments system. It is also about the end users, the merchants, the consumers, and so on. What is interesting—and I am not sure about the U.S. situation—but currently we have in Europe, in the different national contexts, already payment counsels, which are composed of not only banks, but also end users, merchants, corporates, and so on. We are currently in the process of setting this up at the European level in order to have a platform where we can discuss exactly these issues. What are the strategic direction and the framework of the retail payments markets in Europe? What role should everybody be playing and what should be left open to competitive forces?

Presuming involvement in those things is always a little difficult because to what extent am I being involved as a consumer in the standards-setting of my mobile phone or television? I don't know. I think it is completely industry-driven.

Mr. Bennett: I thought it might be interesting to give the OFT point of view of one of the times when we've tried to move the industry forward. This was around the Fast Payments System. In the UK, the banks have now introduced a faster payments system to process payments within one day, rather than the standard three to five days of the normal payment systems.

This came out of the Cruickshank Report in 2002 or 2003. Essentially the OFT's position was to get all parties into a room, including the banks, the merchants, and the consumer bodies as well, in order to gain an understanding of different positions and thereby facilitate the implementation of the Faster Payments System.

Of course, there are a number of different ways you can implement these things. Some ways were more expensive. Some ways had more functionality than others. So, in some sense, there was a value in them all sitting together and discussing what the best way of doing it was.

The consumer organizations surveyed lots of consumers to find out what they would value most. The banks went and looked at how much the different ways of doing it would cost. Eventually they came to a decision that was going to provide the best tradeoff between the benefits and the costs. On our website, we have a cost-benefit analysis of this payments system, which was published in April of this year.

This is an example—a third way, if you like. Of course, there was the OFT standing in the background with the threat of an investigation or legislation, but that gave a good incentive to come to a solution. Actually, there was a solution to be implemented there, and that turned out to be something that was very valuable.

Mr. Chu: By the way, I think faster payments are fantastic, but I think you've only done half the job. You should probably continue to push open access, so all

parties can participate in it. Finally, why is it that faster payments is only for credits and not for debits?

Mr. Bennett: I think that is one to reflect on.

Mr. Ruttenberg: This gives us a nice bridge to the final question to the panel and then we will open the floor for the audience. Because the title of the conference is “The Changing Retail Payments Landscape: What Role for Central Banks?”—Maybe we should call it, “What Role for Public Authorities?” I would like to ask you four to share your views on what should be the role of public authorities, be it a central bank, be it a competition authority, be it a legislator, in the field of retail payments?

Mr. Levitin: On a very general level, I am going to be saying something where there is likely broad agreement, that central banks and public authorities should be ensuring we have fair and efficient markets. What does that mean?

When we are confronted with the realities of payment networks, we have to recognize there is the tendency for natural monopolies that are used maybe for having a somewhat different role than usual for public authorities. I want to bring up by way of analogy the debate that’s going on about health insurance in the United States. There is an argument we have a market failure in health insurance and the only way private actors are going to be kept honest is by having public competition.

We actually have something like that in the payments world, at least in the United States; in pretty much every area except card payments we have public competition. For checks, we have the Fed competing with private clearinghouses. We have that for ACH. Even for cash, historically if you went back far enough, we had Federal Reserve notes competing with national bank notes, competing with U.S. Treasury notes.

We have this strange situation where cards actually look like the exception to the rule, where we don’t have public competition. I don’t think we want to have solely a public option. We don’t want only a government payments network. There are reduced incentives to innovation, but this may be a situation where in order to drive private networks to socially optimal standards and to have a nimble process that has enough innovation in it, but also protects consumer and merchant interests, we may really want to have some sort of government competition. So maybe not the usual role for government, but this may be a case where we have an expanded role for government.

Mr. Chu: I think public authorities have a tremendous role. I’ll use by way of analogy, a phrase I heard years ago: “No one likes taxes, but taxes are the price you pay to live in a free society.”

The public authorities, through regulation, play a tremendous role and, through the right kind of fair, balanced and transparent regulations, create a framework by

which further value is delivered as well as competition. Part of that role—and this is where I disagree with Matthew around the issue of surcharging—is a tactic.

The role of the public authorities should be to specify outcomes that benefit all parties and hopefully drive some societal good and maybe provide some frameworks by way of standards and so forth, but I don't think they should ever play a role in trying to specify "the how." Let the markets figure out how to get to the specified outcomes, as opposed to specifying tactics to the market.

Mr. Bézard: I can't say I am an expert, but I would think the role of public authorities is to care about public matters. I don't agree with Adam about what he said regarding the failure of the card systems in the United States. From a public standpoint, I don't think you can argue there is a failure of the cards' infrastructure in the United States. By many yardsticks, the usage of cards—debit, credit, prepaid—is very successful. There is a high level of penetration, a high level of reliability, lots of different stakeholders in the marketplace to pick up the slack if one network goes down. I don't see where Adam is coming from, when he says there is a failure from the public standpoint. Is there a conflict between business interests, between the merchant side and the bank side? Yes, there is. As a taxpayer—I am not a citizen, but I am a taxpayer—do I want public authorities to arbitrate conflicts between different special interests in the business community? I don't think so. What public authorities have to deal with is the public good and public matters. Again, from a consumer standpoint, I don't think you can argue there is a failure of the card system. I'll take just one example. If you look at low-value payments, which are payments made at the point-of-sale, for instance under \$15 to \$20, the United States has done extremely well by enabling the card network infrastructure to accommodate low-value payments. I can buy a bottle of water at the airport by swiping my card and, thanks to modifications to Regulation E, I don't have to sign a receipt or get a receipt when I do that. Compare that with the situation in many other countries, especially Western Europe, where for many years—10, 15, 20 years—European countries have tried to accommodate low-value payments by building new infrastructures, so-called e-purse schemes, that went nowhere. In comparison, just using that simple example of low-value payments, the U.S. marketplace has done very well in driving the use of cards, the use of electronic payments, for low-value payments. This is just one example, but I don't see how you could argue there is a failure of the card systems. There is an acute conflict between distinct business interest surrounding cards, but no failure of the system as a whole.

Now, back to what the role should be for public authorities. Referring back to what I said earlier, ultimately the role of public authorities is going to vary slightly, depending on the context. In the United States, public authorities are probably well-advised to have a light hand, whereas in some other countries for many historic reasons and cultural reasons, public authorities are probably well-advised to use a heavier hand. The context matters a lot. In the near term, besides caring about the public and not the special interest of certain businesses, I think the role

of the public authorities in payments should be to encourage merchants to step up to the plate and play a more active role in competing in payments. If I were in the shoes of regulators, that is the language I would have with merchants: Step up. What are you doing to compete? What are you doing to have a voice? What can we do to help you to have a bigger voice? To the credit of merchants, we cannot on the one hand say, "Oh, merchants are being beat up by banks and that's unfair," and on the other hand deny Wal-Mart the ability to have a banking license to get into the merchant-acquiring business. Again, I think what regulators and public authorities could do is to encourage merchants to step up and try not to be conflicted about it. In the case of Wal-Mart, ultimately public authorities have been conflicted about giving the firm more freedom to compete.

Mr. Ruttenberg: We have a lot of surprises in the panel because the two U.S. citizens are asking for a public option or asking for a strong government for setting a framework and the French citizen, traditionally in favor of an approach of centralistic government, is asking more for laissez-faire.

So, Matthew, what can you bring to us?

Mr. Bennett: Well, personally, I am not a big fan of regulating final outcomes. Having worked in a regulator previously, I believe that regulation is something that is very costly, resource-intensive, and sometimes necessary but you resort to it when it really is the last resort. So, if there are frameworks you can put in place to ensure a competitive outcome is reached, then those are the better things to do. The extent to which surcharges may or may not create that framework is something that's worth exploring before we necessarily go to regulating final outcomes.

Is there a role for government intervention? I will try to broaden things out a little. One of the things we have done in the OFT, which I thought was quite interesting because the payments services industry had an impact on it, was our investigation into personal current accounts in the UK.

One of the things we found was that customers don't like switching. They really are not very good at switching between banks. In fact, we had encountered the depressing statistic in the UK that you are more likely to switch your long-time partner than you are your bank account, which either says something about relationships in the UK or it says something about the banking industry.

One of the reasons why people are so reluctant to switch is because when they do switch, they often found a lot of their payments went missing, and they spent several months afterwards trying to unwind all the direct debits and the standing orders that have gone awry. We found something like 30 percent of all switching went wrong in some way.

In the payments services industry, there is a role to play in ensuring payments are done efficiently and as quickly as possible. Indeed, this was one of the

driving forces behind the one-day payments services: to ensure there aren't timing problems such that when you switch accounts you suddenly find some of your payments have not gone through. It is interesting in that it shows the payments industry is not just about payments services, merchants, and retailers. Payments services have wider implications on the banking industry and the efficient working of the banking industry. So, there may be roles to think about for government intervention—or for government studies, for example—on the wider implications of the industry.

General Discussion

Session 4

Mr. Ruttenberg: It is now time to open the floor to questions from the audience.

Mr. Wenning: I found the discussion to be very interesting this morning. I have a couple of observations: As one of our members said to us in an industry meeting, cooperation and collaboration may sound fine to you, but from where I sit it sounds a lot like collusion. When you talk about the role of the central bank, there is a fine line between societal interests and societal balances.

The point was made yesterday during one of the conversations that somewhere along the line, after 60 years, the Federal Reserve made the decision to have checks clear at par. Seven out of the eight countries have debit that clears at par. Gwenn made the observation of having a light hand versus a heavy hand when it comes to the role of central banks.

But at some point there should be some balance of societal interest by someone in an oversight role of a payments system in terms of monetary policy. From where some people sit, they don't see any hand in the United States as it relates to credit or debit payments systems.

I guess my question is, when I look at the title of the conference, Where do you see that in terms of U.S. policy going forward? It seems to me there has to be some role in balancing the good for societal needs.

Mr. Levitin: I am going to respond both to you and also to Gwenn, because they go to the same point.

Gwenn rightly points out there is a lot that works really well in the U.S. payments card markets. Let's be careful; we don't want to throw out the baby with the bathwater. But we do have a very particular market failure and you have alluded to it, which is the par clearance problem. The payments system can either clear at par

or clear at a discount. Alan Frankel's work has shown that between the two, we actually want par clearance as there can be dead-weight loss with discounted clearance.

Payment cards in the United States are a really weird hybrid. The system has discounting in parts and then mandates par in other parts. Mainly between banks, interchange is a form of discounting. But then—and this goes to Matthew's point on surcharging—the merchant is told, "*You* can't do the discounting."

What the banks can do, the merchant can't do. To me, that's where the real problem lies. We can either have an entirely discounted payments system. That's fine. It may not be the optimal thing, but we could do that. Or, we could have an entirely par payments system. But the way the current system is set up, for both credit and debit in the United States, is that we have par for some parties and discount for others. That is where the failure lies. We could deal with that simply by fiat legislation or something like that. Just zap it, saying, "no-surcharge rules are out the window."

We could do it in theory with some sort of taxation. One of the concerns is the payments industry is pretty nimble. If no-surcharge rules go out the window, there are going to be a bunch of well-paid lawyers and economists, whose job it is to devise a runaround to whatever the regulation is. Another option is to have a competing par clearing payments system and see if that shifts the burden.

Whether ultimately the right move is going with the public option, I'm kind of agnostic. Dickson may have some arguments with me. I was more throwing that out as something we should talk about. It is certainly something the Kansas City Fed has raised with the idea of having debit transactions cleared through the ACH system. Frankly, with the Credit CARD Act, it might be more feasible to clear cards now that the cards are no longer such an "at will" line of credit.

If we like the move that happened with checks and cash—where they originally didn't clear at par and now we've moved them to being par-clearing—and we have systems that work very well, we should want to see the same thing happen with credit and debit in the United States.

Mr. Bézard: Again, I'm not saying merchants don't have issues and there is no problem. I actually run a market research company, and when some of our clients pay us with a credit card I frankly hate to pay the merchant acquiring fee. So, I understand first-hand what merchants are going through. But the broad question to me is the risk of unintended consequences when regulators step in. Look at the Department of Justice's decision in 2004 to let Visa and MasterCard issuers issue American Express cards to introduce more competition in the issuing world. This decision drove up the competition for issuers' business between Visa, MasterCard and American Express, contributing to increasing interchange. I am generally very concerned with unintended consequences of regulations. My main argument is that merchants have more options than meets the eye. There is room for them to start competing with the banks.

Mr. Levitin: I'd like to say a word in response to that. Lots of things have unintended consequences and the argument against unintended consequences of regulation is an argument against government at all. It is not an argument about particular regulation. The nature of government is to intervene in markets. Once you have a government that only requires taxation, taxation warps markets in its own way. So, if the only basis is a generic concern about unintended consequences, yes, we always have to worry about that. But, unless you can start to point to particular negative consequences you think are likely to result, not just a specter of maybe something we haven't thought of will go wrong, I don't think that argument can carry that much weight.

Mr. Wildfang: This is an observation. The debate here suggests the alternatives are regulation or no regulation. I've just observed, in the United States at least, there is regulation. If you've ever looked at the rules of Visa, there are thousands of pages. The difference is we have regulation by a cartel of banks instead of the government.

I think the real debate should be, assuming we are going to have regulation, Can government do a better job of regulating than a group of banks that have self interest to motivate them? I'd like to hear the panel discuss that, as well.

Mr. Ruttenberg: Maybe I'll misuse my authority here and handle the question myself. It's more than regulation and no regulation. If I look at the role of the European Central Bank and the Eurosystem as a whole (i.e., the ECB and the euro area central banks) we play much more the card of moral suasion. I think it was Dickson who was asking for public authority setting the framework but letting the markets decide on the "how." That is exactly how we do it at the moment in Europe. Of course, we have our special challenges—the integration of the retail payment markets of 27 European countries. There are also the innovation challenges already talked about. Every year, we publish nice reports describing developments we see in the market. We describe the challenges which have to be overcome by the banking community in close cooperation with end-user merchants and so on. We also describe the consequences if they don't do it—the consequences we think will happen. Over the past years, we have seen that this has been a quite successful approach. Very often you can see in banks, especially in the payments business, a lot of people are very busy with the day-to-day business in running their systems and asking for additional budgets to keep on track with whatever, but they maybe spend too little time on more strategic things: What will the market look like in 10 years' time, and what will be the role of banks, nonbanks, and so on in this market?

Maybe a very specific example of this, as a consequence of European integration, is we face the risk of losing the quite low-cost, efficient national card schemes (e.g., the PIN scheme in the Netherlands, Bancontact/MrCash in Belgium, Girocard in Germany). Those pure national card schemes will just disappear because banks have a much more European focus, not only a national focus. The larger retailers are asking for one scheme for Europe and not the more than 20 we currently have.

The risk of the SEPA project is that although we are striving for open, more competitive markets and choice for consumers, retailers, and so on, we'll end up with only two debit card schemes in Europe—Visa Europe and MasterCard International.

There we've said to the banks, "Look, Guys! Is this what you want? Because it also gives a clear indication of what your future will be in this market."

It's all about who will have, in the end, direct contact to account holders, to the account holder in your bank. What will be your role in setting the standards and governance of these kinds of schemes if they are not European-based? It triggered a debate within the banking community. And not only in the banking community, but also an initiative popped up backed by retailers, "Hey, maybe we should set up a new card scheme."

We are not there yet; whether we will get there is still uncertain.

There are now currently three initiatives working to set up a new additional pan-European card scheme, and it is purely based on public intervention by moral suasion by the ECB and the Eurosystem as such. When we pointed at the unintended risks of SEPA for the European cards market and called for an additional pan-European card scheme two years ago, people were laughing at us. They saw us as central bankers sitting in their high ivory tower in Frankfurt, not connected to the real world, but after a few months they said, "Hmm. Maybe you're right."

Maybe the market will not deliver the additional pan-European card scheme and, finally, we have to conclude that our call has not been successful. But, in the end, we can at least say that we have raised the issue and it was left up to the markets to decide how to do it, whether they would like to do it, or take the consequences if not. Concluding, moral suasion—at least in my personal experience—is a very effective, efficient role the public authorities could play before entering into the domain of setting rules by regulation.

Mr. Bolt: I'd like to raise Matthew's point again about consumer switching. The very essence of competition policy is that consumers must be allowed to switch to an alternative. Actually, you are saying they don't switch in the end. But I think there is a difference between *ex post*, not allowing it, or *ex ante*, allowing it and not observing it, because the threat of, let's say, being able to switch can already discipline the market participants.

There is a nice example in the Netherlands that, pressured by competition authorities, Dutch banks had to come up with a solution to make moving to another bank easier and they came up with that solution. Everything is automatically redirected—all your direct debits. And you can even take your account number to another bank, so you have portability.

But then, in the end, nobody moved to another bank. But still, it is there and people *can* move. If you don't observe it, it doesn't mean that it is of no use. It is still a disciplining factor. That is my first comment, and I have another comment on surcharging.

A very difficult question, and you also pointed this out, is What is the right surcharge? Is there a coordination problem among other retailers? Actually, in theory I'm not so sure about the welfare effects of allowing surcharges. I don't know if it is better when the retailers or the merchants swallow the 1 percent discount when consumers use cards. Or when consumers are faced with this 1 percent fee and do not use cards and then more cash payments will be made.

I don't know from a welfare point of view which is better when the assumption is that cash payments are more expensive than card payments if, in the end, surcharges drive people back to cash and cash is heavily subsidized. In the Netherlands, even foreign ATM use is free. I'm not so sure whether the surcharge is the best alternative to having better outcomes for society, if it drives people back to using cash.

Mr. Bennett: The switching comment is something we heard a lot from all the banks, unsurprisingly. The fact that there's a lack of switching actually doesn't necessarily mean there is a lack of competition. The possibility of switching is enough to discipline the market.

While I buy that story to some degree, the fact that when we asked people why they didn't switch, nearly 50 percent said they perceived there being problems and out of the people who did switch, 30 percent said, "We had problems." kind of implies there were fundamental problems, rather than it was all okay and people were just choosing not to switch. If, at the point that everything is fixed and people are still not switching, then I would buy the argument. But, at this point, we still have a long way to go.

On the second point, I think it is an interesting question whether you are going to have welfare increases or welfare decreases. It's probably not the time to get into it right now, but I am happy to engage you in that discussion later on, because I think actually it is welfare increasing, but maybe I can have a chat with you about that later.

Mr. Moore: My question is about the relationship between innovation in the payments system and the regulators' ability to keep up with the changes, especially as it relates to consumer protection regulation, for instance.

There are two examples I'm thinking of. One is you look where innovation has happened in the past few years. PayPal is a great example. You have this new network of networks, as Dickson described. One implication of this is you try to use your PayPal account to pay someone else and by default everything is set up to go through bank transfers, because the costs are lower. One side effect of having PayPal facilitate bank transfers is you don't have the same consumer protection regulations in the event of unauthorized transactions. Regulation E doesn't apply to bank transfers the same way as it does to credit cards.

You also see this in the UK with movement to chip and PIN. This was arguably innovation and improved the security of the payments system there, but one of the ways which banks have responded, since chip and PIN's introduction, is to deny

reimbursement to claims of fraudulent transactions to consumers whenever the PIN has been shown to be used. I am wondering, as we start to see movement toward new payments methods, whether there is going to be always an associated move in an attempt to circumvent or sidestep existing regulatory efforts.

Mr. Levitin: I can answer very briefly—Yes! To the extent consumer protection is costly for payments systems, there is a cost with that. To the extent that is a cost that can be reduced by having less consumer protection, then it makes perfect business sense to do so. This is a case where you may see the market driving against consumer protection rather than for it.

There is a case to be made that sometimes the market will drive for consumer protection, but in these cases consumers don't even know the difference between Regulation E and Regulation Z protections. If you can push them to Regulation E, rather than Regulation Z, you want to do that.

Mr. Gove: I'd just like to make one brief comment on surcharging, because a lot of the discussion has been about the impact of surcharging. A lot of the value in the Australian environment over surcharging has not been that people have actually been introduced to it. It's been as a negotiating tool and what can be achieved as a result of surcharging. So we're seeing a lot of the merchants and merchant associations use the threat of surcharging as the ability to negotiate better deals and lower prices in other areas.

In terms of the actual impact on cash, we're not seeing any move to cash in Australia as a result of surcharging. First, because there is not a lot of surcharging. Again, it is really being used as a negotiating tool. Second, when surcharging has been introduced, it is often only introduced on the more expensive cards. So really retailers surcharge on American Express and Diner's, but not on the scheme cards and the association cards, because they are now a lot cheaper.

And, of course, the EFTPOS domestic debit is also a lot cheaper again. Where there is movement, it is actually from one card type to another card type, rather than from card to cash. I can't really overemphasize the importance of surcharging as part of a suite of tools increasing competition in negotiations. To one of the points that Gwenn has made earlier, it is part of that role of merchants becoming more involved. And surcharging on its own is probably not likely to achieve a lot of these results in Australia. It has been that suite of changes, the ability for non-deposit-taking institutions to become members of Visa and MasterCard, to become self-acquirers, for new acquirers to enter the market, for merchants to do a whole range of fees that has been part of the improvement in the overall scene.

Implications of the Changing Payments Landscape for Integrity of Retail Payments Systems

Moderator: Mark Greene

Mr. Greene: During this panel, we want to discuss some of the stresses on the payments landscape and the fact we have many new payment types—some of which really severed the traditional “Know Your Customer” relationship between banks, merchants, and consumers—such as decoupled debit, which introduced new forms of risk, new opportunities for fraud to take place, new gaps, if you will, in the security continuum we’ve come to rely on in much of retail payments. That’s actually at the heart of what we are going to talk about—the fact that many participants in these new forms of payments often don’t have preestablished trust relationships. Therefore, in that world how can you protect against, how can you even detect various forms of attack—fraud, security breaches—that are taking place?

There are a range of issues we worry about, and you’ll hear some anecdotal evidence from the panelists about how much fraud is taking place in this evolving world of payments. The short answer is that many of the traditional forms of fraud are well under control, but there is a growing concern about new forms of attack, new forms of fraud.

Figure 1 shows a couple of the tools—the technologies—companies are beginning to deploy. Intelligent profiles is when you take a more comprehensive view of a transaction as it flows across multiple nodes and networks and develop an overall impression of different types of fraud, rather than looking at one particular point, such as a given ATM.

Neural networks, which many of you will be familiar with, are systems that learn over time about new forms of fraud. One of the ways they do that is by incorporating adaptive analytics, which actually detect new patterns of attack, new forms of penetration in much the same way antivirus software can learn, understand and cope with new forms of viruses on your PC.

**Figure 1
New Tools for Keeping Retail Payments Safe**

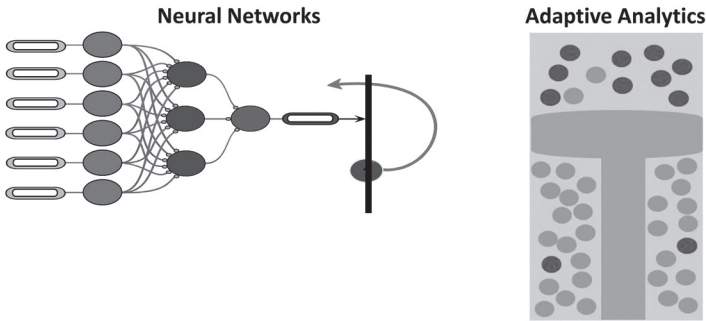


Figure 2 shows that these different types of technologies can be assembled together to provide systemic approaches to some of the risks and attacks we'll be talking about on this panel. I'm not going through this figure here, but suffice it to say, this is a fairly evolving and sophisticated art form.

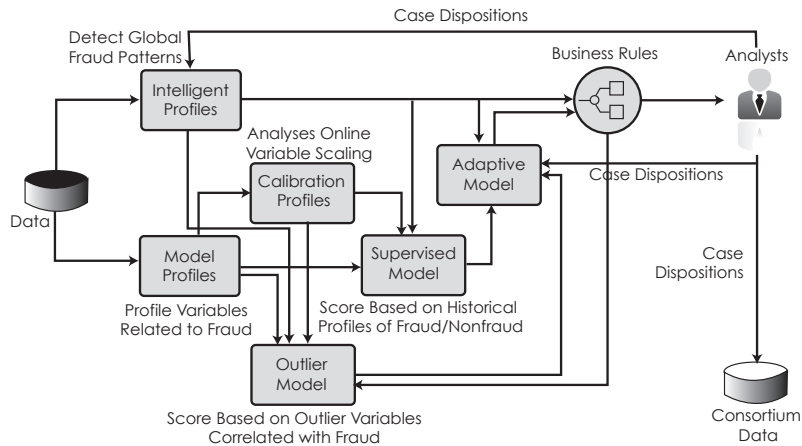
My characterization of the technology approach to these risks these days is that it is a leapfrog game. The bad guys are always looking to push the envelope and find new ways of attacking, and our response as an industry is to try to be equally smart at incorporating new technologies and evolving our approach. This is a snapshot of today's best practice, but certainly the picture will look different tomorrow as the bad guys get even smarter about how to attack some of these systems.

So, with that as a setup, we'll begin the panel with Cathy Allen taking the consumer point of view.

Ms. Allen: Some of us just came from the Atlanta Fed's Forum on Payments Risk that Cliff Stanford and Rich Oliver organized. It was an excellent forum, and I will be bringing some of those insights from the forum into my opening remarks. It was an eye-opening session. There was one panel with representatives from the Department of Justice, the FBI, and the Secret Service, who discussed organized crime and payments risk. We all wanted to go home and cover our heads after we heard about their cases.

My caveat is that I grew up in a banking family here in Missouri. My father, my grandfather, and my great-grandfather were bankers. So I grew up thinking bankers were pretty good people and they did the right thing for the community and for their customers. Unfortunately, I don't always hold that view toward what's happened with financial institutions in more recent times, so I am going to talk a little bit about that. I do believe we're in a transformational time in the financial services industry, and we're going to need transformational leaders and thinking to really get us out of this mess and ready to move the economy forward.

Figure 2
A Systemic Approach to Retail Payments Integrity



The group in this room is an important part of that. You are researchers and thinkers, and we have to take a much more proactive role with our leadership in the financial community to be able to make the kinds of changes that need to happen. I believe we are facing the equivalent of our industry's oil spill, and that means we are in trouble with our customers, with the media, with the legislators. It is something that has been driven by the eroded trust we have—the trust between financial institutions and other institutions, between financial institutions and their customers, and between the public and their regulatory agencies. The media is “on” this issue and will continue to be on this for some time.

The legislators are reacting to consumers. What are we seeing? We are seeing a backlash against regulators, including the Fed. We are seeing anger at banks, at the bank executives, and at the bank employees. We are seeing the growth of internal fraud from disenfranchised and disgruntled employees. We are seeing complaints to legislatures, to the FTC, to the regulators, to the Department of Justice, and to states' attorneys general. We have just begun to see civil suits against financial institutions because of the anger that is there.

Sixty-seven percent of people (this is a recent survey) say they will walk away from their current financial institution as soon as the economy gets better. They are smart enough to understand they have to maintain those current relationships, whether it's a mortgage relationship or a credit card, but they are going to move as soon as the economy gets better.

In a recent study by STRATCOM about how people were impacted by the financial crisis, 89 percent of people in the United States said they were affected, and the sectors and industries that were to blame were: mortgage companies (90 percent), lenders (88 percent), the federal government (86 percent), credit card

companies (81 percent), and insurance companies (56 percent). From there it went down to other kinds of corporations. Truly, the kind of anger that is out there is something we do not want to underestimate.

Fortunately, a recent BAI study of 5,000 executives in the industry actually said that understanding and restoring trust with their customers and improving the image their customers have was important to 50 percent of those executives. I would argue it should be 100 percent, but it is not there yet.

Two major risks we're facing: One is this eroded trust that is one of the emerging risks; I think reputational risk will move right up there along with operational risk as something to watch. And simultaneously we are also seeing greater risks from fraud, cyber-security threats, breaches, and other technology-based threats that serve to also undermine the public's belief in the financial system. All you have to do is talk to businesses about the rash of ACH corporate account takeovers in treasury management and you have a perfect storm of attacking the safety and soundness principles we have.

Unfortunately, I believe our leadership in the financial community has not stepped up. Very little has been done and the public is angry about that. In fact, that old adage, "We're mad and we're not going to take it anymore," is where consumers are. It's not just consumers, it's small businesses, and it's corporate entities. Some examples of why they're mad and why the payments system is in the center of this are:

- 1) The increased fees and interest rates, and the increased non-sufficient funds fees. In fact, there have been studies to show the equivalent interest rate is 400 percent. It starts to make payday lenders look like reasonable alternatives.
- 2) The cutting off of lines of credit for small businesses and corporations. And I can tell you war stories about that, where a form letter will come to many of the businesses we have in the United States just saying, You no longer have your line of credit or your loan has been called in.
- 3) The rudeness of many of the customer service representatives and tellers to the customers that come in to the branches or call customer service.
- 4) The increased incidences of data breaches, which might cause a consumer to want a new credit card from their issuer every quarter.

Again, these instances reinforce concerns about takeovers and who is really watching out for the consumer. These are examples of what has led to the interest in creating a consumer safety commission or, at least, increased regulation and oversight by existing regulators of consumer protection.

One of the greatest challenges our industry faces is, Where will the revenue come from? If we have tightened credit, where will the revenue come from as the fees go down and there is pressure on profits? As credit tightens, will consumers

move to nontraditional players? In other words, the role of payday lenders or other nonbank institutions providing credit will increase. Will that also increase risk in the system?

Finally, What role will nonbanks, such as telcos, play as we move into new emerging technologies?

I am going to stop there, and I'll come back with questions to talk about the two technologies you really have to watch: mobile banking and social networking, and the roles the players like telcos and nontraditional players (the Googles, the Twitters, the Facebook players) will play increasingly in encouraging and driving consumer behavior in that area.

Mr. Greene: And, for the “mad as hell and not going to take it anymore” consumers, the headline on the front page of today’s *New York Times*, “Banks Put Squeeze on Customers Ahead of New Credit Rules,” and five column inches of examples of the things you were just talking about.

Next, Jim Van Dyke is going to provide us with a history lesson about credit and the consumer.

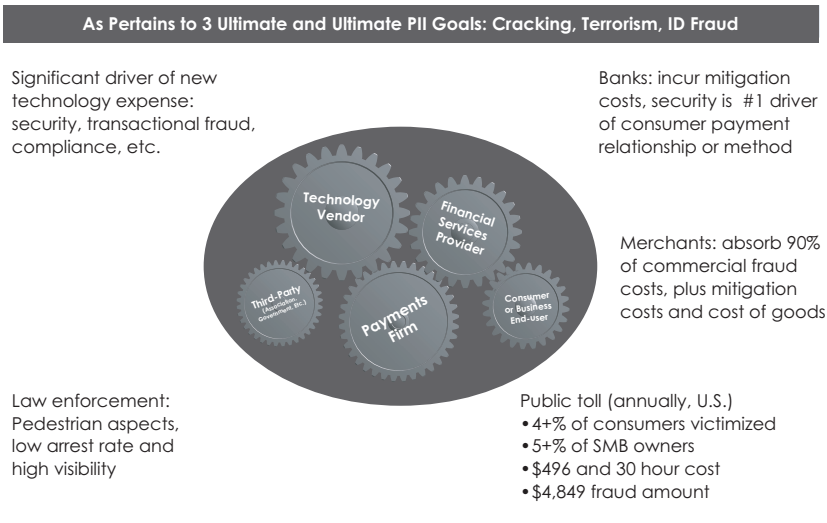
Mr. Van Dyke: I'll start back 110 years ago, and it is quite interesting. To the best of my knowledge, the world's oldest credit card was actually launched right over there, through the window, in Union Station, and it is in our private Javelin collection. I collect old cards, because frankly I find there is such—to put it bluntly—a lack of factual information. You can learn a lot from looking at the history of the payments industry or financial services industry and apply it to how to launch new payment methods.

This particular card was launched by a company that had over 300 horse-drawn buggies out of Union Station. Mallory Duncan, you may want to comment on this and see if the National Retail Federation has a position. There is a public record that shows there was a monopoly charge, an antitrust charge, leveled against this merchant in 1908 after they came out with the first credit card. So here we are discussing payment cards and how that leads to freedom of choice.

Let me move on to Figure 3, which shows payments risk from an ecosystem perspective. We measure banks, consumers, merchants, and processors to try to figure out where there are business opportunities that are currently untapped.

One interesting finding we saw in our most recently released study, which was of 1,000 U.S. multichannel merchants, where we combined loss figures, is a wide disparity between the losses of actual fraud cases here in the United States to the tune of 90 percent that is borne by the merchant, after the consumers pay their \$500 of a typically \$5,000 crime spree in U.S. dollars. Ninety percent of that remaining cost is paid for by merchants and 10 percent by banks. Given we are talking a lot about interchange and if there is a disparity that needs to be addressed with policy changes, I'm surprised no one is talking about this finding. I have to

Figure 3
Payments Risk from an Ecosystem Perspective



wonder, Could there be an incentives issue that needs to be looked at when that goes on?

We've seen no shortage of consumer motivation. Even when you factor in zero-liability provisions, consumers are motivated; they look at it as their money, their identity. You can give them all the protection in the world and you won't reduce their motivation. We see that in our factual data.

Banks certainly have motivation because of the switching that's going on. And we see switching going up. Consumers are fed up, so that is more of a risk to everybody than ever before. Law enforcement and everybody else bears this cost.

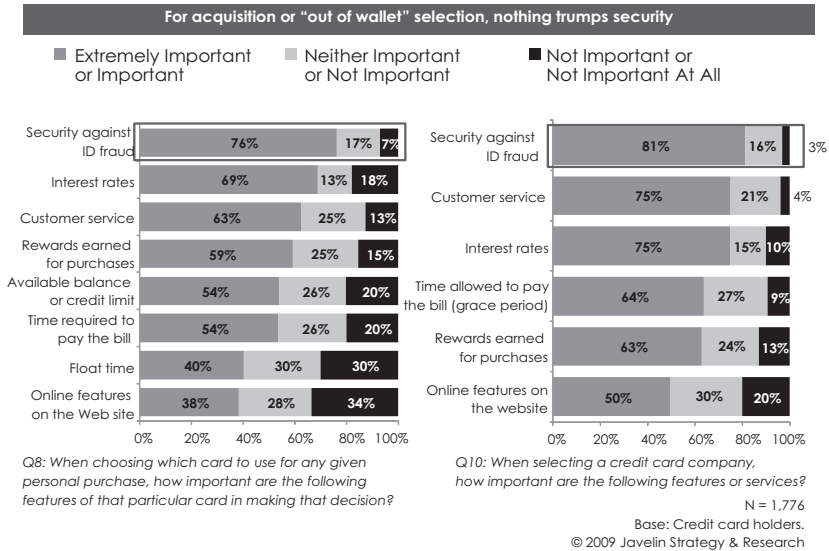
We think there is a way forward, which is what I want to focus on. Chart 1 shows the importance of security in card selection. In our research, we see the risk issue, which is especially high in markets where—like the United States, the UK, and other places around the world—we have worked so hard to achieve frictionless commerce. In some ways, we have achieved frictionless fraud. More bad guys get in as the good people get in.

What we see when we use what is called in the statistical world the aided research method—a series of options are presented to people that basically follows Maslow's hierarchy of needs—is that if you prompt them to think about security, rewards, and many other things, they'll choose security first. Interestingly, a couple of the more prominent marketing successes are based on security.

When American Express Blue, which is no longer positioned around security, was launched one year after PayPal in 1999 before the holiday shopping season it

Chart 1

Security is a Relationship and Marketing Play! (Remember Blue? Citi's "ID Theft Campaign"?)



was all about security. There was a chip on the card. The system wasn't quite ready to do anything with that chip, but it was launched around security. It was a brilliant marketing move and consumers took to it in droves. People will vote with their feet when they think there is something helping them with security. Citi also had a very prominent identity theft campaign.

Chart 2 shows the relationship between how fast fraud is detected and fraud loss. The faster fraud is detected by the account holder—whether that is a consumer or small/medium business—the lower the value of the fraud loss. So we have a real motivation within the industry to protect people.

Chart 3 shows fraud victimization rates among data breach victims in the United States. You have a four-in-100 chance of becoming an identity fraud victim. However, if you receive a data breach notification that you threw away and ignored like most people and didn't change your behavior based on it, you have a nearly one-in-five chance of becoming an identity fraud victim. Yet, people lack the education. Even more than education, they lack the tools to make it easy to manage their finances.

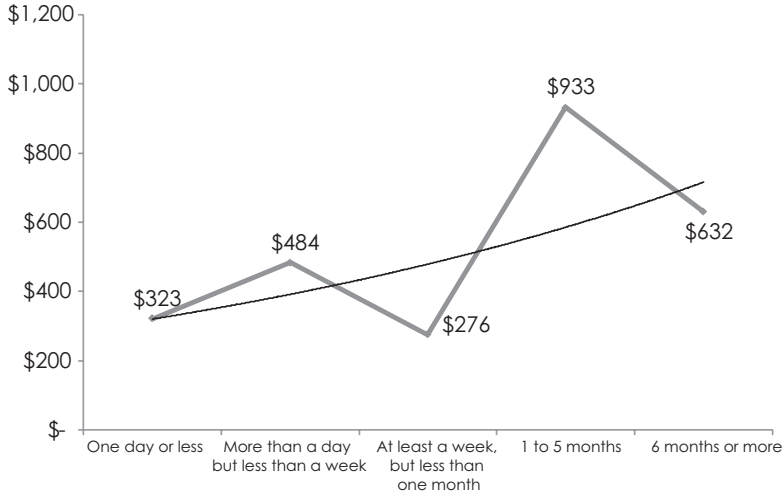
Chart 4 shows banks are doing a pretty good job of resolving fraud cases. They are not doing as good a job working cooperatively with their customers at preventing or detecting fraud.

The way forward, as we see it, is to use mobile technologies. Of the technologies that are currently launched, only the music industry allows people to personalize content. The technology is out there. The consumer will is out there.

Chart 2

Disconnect with Notification May Increase Time to Detect Fraud

In crimes of impersonation, victim-empowerment has tangible value



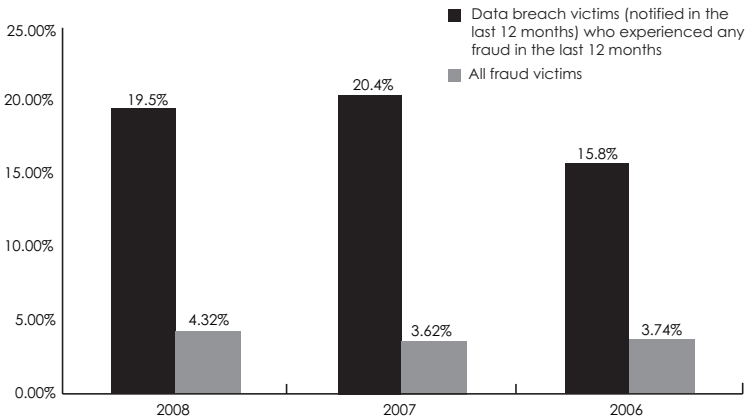
Q25: From the time the misuse of your information first began, how long did it take you to discover it had been misused? by Q34: How much money did you pay out of pocket as a result of the identity theft?

October 2008, n = 475
Base: All fraud victims.
© 2009 Javelin Strategy & Research

Chart 3

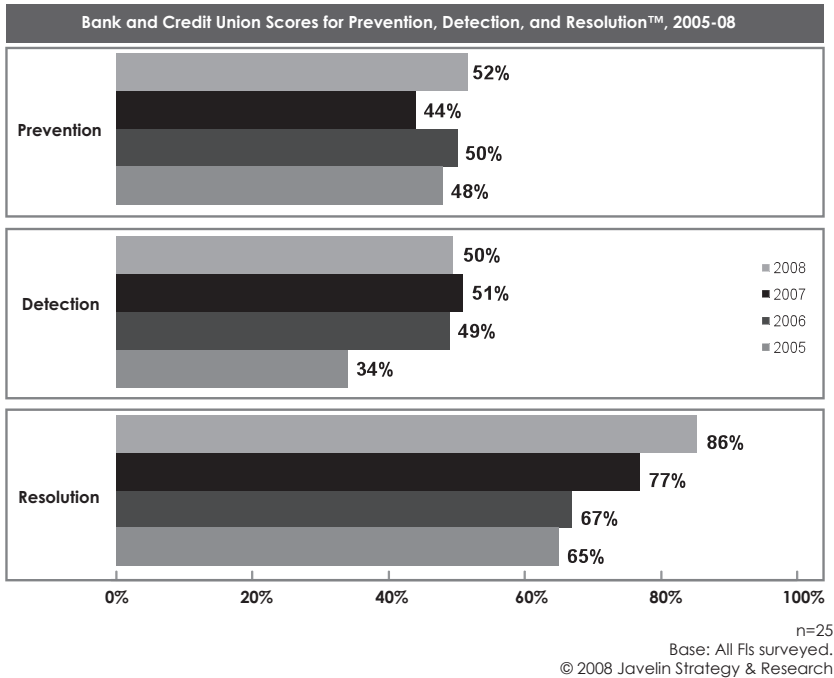
Four Times Higher Fraud Victimization Rate
Among Data Breach Victims

Data show that fraud victims rarely attribute transaction fraud to the breach



October 2008, 2007, 2006
n = 539, 535, 552/n = 4874, 5075, 5000
Base: Data breach victims, all U.S. adults.
© 2009 Javelin Strategy & Research

Chart 4 Many Banks' Best "Customer Control" Capabilities Actually Are About Clean-up



We just haven't seen adoption of it in the financial services industry. It is a way to reduce fraud. It is good for business, good for merchants, good for banks, and good for processors. We're just holding back on giving people what they want. And we can reduce the cost of fraud by \$50 billion, reduce risk, and make the whole industry more successful.

Mr. Greene: Now we have somebody who actually lives on the other side of this equation and sees the fraud and the attacks from the banking perspective. Daniel Eckert, your perspective please.

Mr. Eckert: I will disclaim a couple things. One, at HSBC I actually run our Business Development, Market Intelligence, Card Scheme Management, and Payment Products Group. So I focus very much on the alternative side of the payments industry and not the core credit card industry. So, if everyone was worried that you could have a tar-and-feather party afterwards of me, I focus actually on the other side in the marketplace in looking at alternative ways to serve both our retail customer clientele, as well as our cardholders.

Second, I just would like to state for the record that the views expressed on this panel are my own, and are not necessarily the views held by HSBC.

I am going to switch gears just a little bit to an issuer's perspective, especially focusing on the innovation front and the alternative payments front on some observations I've seen in spending almost a decade in the alternative payments area. When we look at the payments marketplace from an issuer perspective, with the recent economic recession we're experiencing and the tremendous shock we're seeing as a result of regulatory intervention, as well as credit risk intervention in the credit card markets, I guess it goes without saying that it's a very dynamic time to be an issuer in the marketplace. HSBC in North America is about the fifth-largest issuer of credit and debit cards in the United States and, I think, the third-largest global issuer of credit and debit cards in the world, operating in 43 countries—15 of which we have a million-plus card operations.

Something interesting that is going on—and Mark Zandi among other economists just reported on it—is that as a result of the CARD Act (Regulation AA) and the specter of the Basel II Accord being more pervasive in the global economy, fully \$1.3 trillion is going to be sucked out of the credit card system.

Yet the convenience and use of plastic payments still remain. And as a result you have, if you will, a water balloon effect, where if you squish the bottom and it contracts there, the need and demand for that same convenience in alternative payment forms is going to budge out in another area. And it's going to happen quite quickly, much like if you saw a child do a water balloon squishing event.

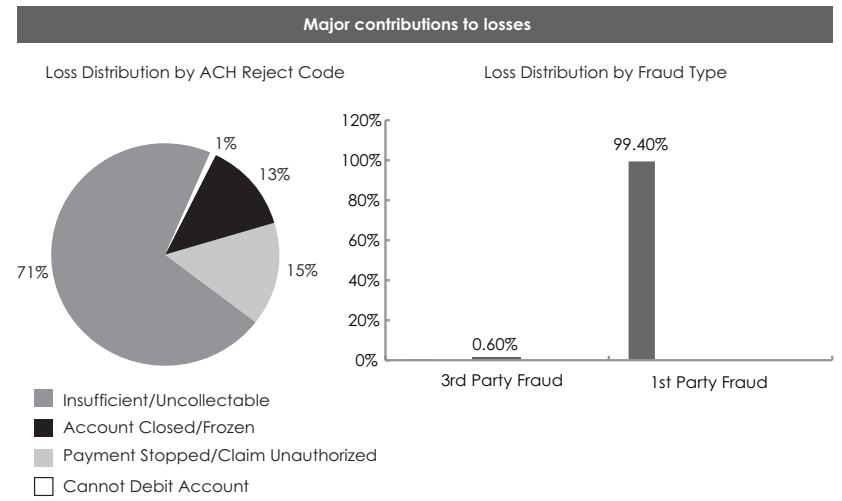
As a result of that, the adaptation that has to occur to ensure the safety and soundness of the system as that scale migrates to a different form of payment needs to be there in order for innovation to thrive and succeed. What is interesting about the legacy payments infrastructure is that far and away you see the innovative set—whether it is the PayPals, the Amazon.coms using ACH debit, or HSBC themselves using their independent debit OptiPay product—leveraging the existing infrastructure to find novel ways to connect the payments plumbing to create value and address consumer needs. However, the challenge is that the plumbing is slow to adapt to those needs. As a result, it very often can stifle innovation.

I want to share—probably for the first time in recent memory—some results of what we have seen, particularly in leveraging independent debit or the ACH network to solve consumer needs and retailer needs. On Chart 5 you will see what we are finding by far and away is that we, and I would say the other sets, are doing a very good job of detecting and preventing any alternative payments structures' third-party fraud—that is, those that are found from account takeover from identity theft or stealing one's account number.

What we are finding, however, is that most of the fraud we're experiencing is of a first-party nature: known identity, validated data using "Know Your Customer" regulatory checks under FACT Act, etc., and yet the person is using the gaps in the current infrastructure to exploit opportunities to just steal—just plain steal—money.

If you look at how they're doing that, as you can see, 0.6 percent of our actual

Chart 5
Infrastructure and Rule-set Exploitation is Significant,
While 3rd Party Fraud Remains Sparse



losses with independent debit is third party, where 99.4 percent of our actualized losses is true first-party fraud—people kiting e-checks, if you will. How they’re doing it is pretty remarkable. They’re doing two things. They are exploiting tiny gaps in an antiquated system called the ACH in the United States, where we have to conduct an authorization to pay and we act as check guarantor to pay that authorization, but wait days, potentially up to eight days, to receive notification on whether or not funds have actually cleared. There are customers that notice and take advantage of it, and we end up being out the money when it comes from an issuer perspective.

They are using is very, very strong consumer protections afforded them in the private regulatory bodywork, called the ACH rules. In effect, if customers call up their bank and state the payment for any reason was unauthorized, what occurs in the clearing system is we receive a notification of unauthorized payment—whether or not there is an affidavit that is associated with it really doesn’t matter—and we eat that payment.

We have very, very little recourse with the receiving depository financial institution side to even dispute when we actually have a standing authorization to debit. We are seeing about 13 percent of our losses come just from that exploitative gap.

Another thing we are seeing is there are new types of risks that occur when we go into the alternative payments and innovations set within this industry. And that is, How do you validate a customer who may have a disassociated account relationship with you? They may have—whether it’s in a digital wallet space, or if it’s in an e-check space, or in a web bill payment space or even in a decoupled debit

space—they are establishing a relationship with a service provider but also have an account relationship with an underlying institution.

That poses unique challenges for institutions. One of the things we've seen is a rash of first-party fraud related to perpetrating those types of attacks. It requires money, investment, time, and knowledge to actually suck those out and ensure they get shut down before a rapid loss-making opportunity occurs for the institution.

Table 1 shows an actual mainframe data extract of some of the things we're seeing. This is a first-party fraud, a type of environment where a collective in and around an apartment complex saw an opportunity to take relatively small dollars, but amass many, many dollars at hand, and our systems had to adapt, overcome, and overtake that penetrating event.

You can see our system was learning as it went—final status: “A” being approved and “R” being rejected—through different schemes and trials, but all the same e-mail address coming in on different names.

You can see how our computer system started to adapt with a neural network, address matching, and e-mail address duplication matching to start shutting down the opportunity.

But these things do not come without costs. They do not come without investments in knowledge. And they also do not come without adaptation to the existing infrastructure, too. In order for innovation to succeed, that adaptation has to occur. Otherwise, innovation can be stunted.

Mr. Greene: Paola Masi will provide the central bank point of view. In Italy in particular, a lot of these payments processes are outsourced, so there are the additional risks to the system of things outside the conventional central bank oversight.

Ms. Masi: Thank you for inviting me to present the first results of Banca d'Italia's survey on the role and risks involved in the outsourcing of electronic retail payments to technical service providers. The latter are very often nonbanking-owned companies. We started our investigations on the stimulus of the findings of the Federal Reserve Bank of Kansas City and the ECB research on nonbanks in the payments system. In particular, we tried to answer some questions raised by Stuart Weiner and Simonetta Rosati's paper on this topic (Weiner, Rosati, et al., 2007); that is, to understand how nonbanks are affecting the global payments system risk profile.

After a fruitful seminar with Stuart in Rome, and the involvement of our colleagues from banking supervision, we defined the methodology and the contents of the project. The idea was to define a questionnaire to be filled in by banks in order to build a database of technical service providers for oversight purposes and to measure the perceptions of risks related to outsourcing in retail payments. For each payment cycle, we identified 15 main activities and five main phases (pre-transaction, transaction, clearing and settlement, post-transaction). Then we asked banks to score and name their outsourcers for any of these activities.

Table 1
Anatomy of 1st Party Fraud Ring

EMAIL_ADDRESS	APPLICANT_NAME	FINAL STATUS	STREET ADDRESS
JAQUEZXXXX@YYYYYY.COM	J. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J.D. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. D. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. D. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J.D. MITCHELL	R	607 BAYWOOD COURT
PEXXXX@YYYYYY.NET	P. OWENS	A	607 BAYWOOD COURT #607
JAQUEZXXXXXXXX@YYYYYY.NET	P. OWENS	A	607 BAYWOOD COURT #607
NMXXXX@YY.COM	P. MARTINEZ	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. MARTINEZ	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	R. MARTINEZ	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	R. MARTINEZ	A	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	R. MARTINEZ	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	J. FUDGE JR.	A	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	J. FUDGE JR	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	M. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	M. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. MARTINEZ	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. MARTINEZ	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. FUDGE	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. FUDGE JR	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. FUDGE JR	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	Q.D. MITCHELL	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	Q MITCHELL	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	C. GRANT	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	J. STARKS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. MARTINEZ	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	W. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	W. MITCHELL	A	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. OWES	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	D. STARKS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	D. STARKS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	M. L. JOHNSON	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	M. JOHNSON	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	M. L. JOHNSON	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	M.E. JOHNSON	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYY.NET	R. MARTINEZ	R	6726 TARA BLVD #19B
JAQUEZXXXXXXXX@YYYYYY.NET	P.A. OWENS	R	607 BAYWOOD COURT

Table 1 (continued)

JAQUEZXXXXXXXX@YYYYYYY.NET	P.A. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	M. JOHNSON	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	M. L. JOHNSON	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	J.D. MITCHELL	R	607 BAYWOOD COURT #607
JAQUEZXXXXXXXX@YYYYYYY.NET	P. OWNES	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	J. STARKS	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	J. FUDGE JR	R	607 BAYWOOD COURT
JAQUEZXXXXXXXX@YYYYYYY.NET	P. OWENS	R	607 BAYWOOD COURT

The survey questionnaire can be found on the Banca d'Italia website, in the "Oversight" section.

The survey involved all Italian banks, and the answers covered almost 85 percent of the retail payments industry in Italy. According to our findings, on average, each bank uses three outsourcers for each card payment and two for each credit transfer/direct debit; these outsourcers might be bank-owned or nonbank-owned. The market structure of technical service providers for payment services in Italy shows a huge number of companies: Banks named more than 170. However, only the first 10 providers are important in the system (they account for more than 75 percent of the answers). It turns out that we have a very competitive market, with a great number of suppliers, and the prevalence of a few technical service providers to which all the activities are outsourced. This might indicate that the potential for mergers and acquisitions in Italy is still high.

There is still a lot to understand from the ownership structure of these technical service providers. According to the survey, only 55 percent of them are bank-owned companies while the remaining 45 percent are nonbanks. But do banks fear the outsourcing to nonbanks more than that to the bank-owned ones? Well, surprisingly, the data give a negative answer. There is not such a huge difference in the perception of risks that can be directly linked to the ownership structure: What seems to be important (and eventually scary) for a bank is the outsourcing "per se," not the ownership structure of the outsourcer. Among the first 10 outsourcers in Italy, there are a few big international companies, which are operating worldwide. From the point of view of banking risks, and also for regulators, this seems to be an interesting point: Information, strategies, data, controls and legal frameworks might be more difficult to govern with only a national perspective.

Based on their past experience, banks scored the perceived risks in outsourcing. According to the results, they are rating fraud as one of the most serious risk events; the most frequent losses are observed in the case of operational

disruptions and frauds; the highest impact in economic terms is on “reputation” and on bank reliability towards costumers; the most critical phase, which is commonly outsourced in the handling of a payment cycle, is the “transaction phase”—which according to our definition, includes relevant activities such as the identification of the customer, the verification of credit lines, fraud screening devices, checking of eventual black lists, etc.

As for perceived threats, based on bank expectations and not on effectual losses, most concerns are related to possible malfunctionings in the use of devices (e.g., POS), including Internet access to payment instruments. Again, as you might foresee, the most feared events are fraud and Internet attacks.

Up to now, given that the analysis is still ongoing, it is possible to highlight four main aspects. First, card payments—in all phases—are outsourced more than credit transfers/direct debits, and this is to be considered in the analysis of the card payments industry. Second, the market structure of the technical service providers is an interesting part of the story to be better understood, above all, in monitoring the consolidation process. Third, I think we should evaluate the implications for market players and regulators of the international dimension of some technical service providers, since they provide not only retail but also large value payments and services. Fourth, there is also a global dimension for some phenomena like fraud, which strongly deserve further attention by overseers and by the market in order to progress in international cooperation.

Mr. Greene: Some of you will remember the old U.S. television show, “Hill Street Blues,” where the sergeant says, “Hey, be careful out there!”

That’s the spirit of this panel. There are bad things that happen out there. So to better understand that and to crawl into some of these remarks, Jim, could I ask you, Are fraud and loss getting worse or not in retail payments?

What does the data show in terms of actual number of attacks and dollars of attacks?

Mr. Van Dyke: Data show quite clearly it is getting worse.

Mr. Greene: So, if it’s not a notional topic that we have, it’s a real-world phenomenon. Then the nature of that, which is both some of the threat and the opportunity—Cathy, you were talking about two technologies in particular: social networking and mobile. Maybe you could expound on why you think those are the relevant places to look.

Ms. Allen: Right, and it really is scary out there, because emerging technologies can lead to an erosion of trust. We’re dealing with something we have never dealt with before and that is organized criminals who use the Internet.

They have web forums. They are as organized as business entities or military organizations. Sometimes they’ve never met each other, other than through the Internet. And they play different roles, from sniffers to card dumpers. There is a

carding forum where, if a criminal has done a breach and wants to know what to do with the names (like where to sell them), they can find help. And there are actually money-back guarantees if the names don't garner money.

Something like 40 percent of the breaches take anywhere from 10 to 100,000 names. Often the hackers sit on the names and account numbers for awhile. The programs we have right now, for instance, for six months or a year of credit watch, really aren't effective when you look at how sophisticated the criminals are. Many of them are bank employees. In 32 to 40 percent of the cases (this came through some of the comments that were made last week by law enforcement, as well as Verizon's security business that does this) there is some kind of partner inside the organization, someone who knows the financial system or facilitates a Trojan being put onto a corporate treasury computer, or who at least knows how to work the system.

So we're not dealing with mom-and-pop criminals. We're not dealing with localized groups. We're dealing with organized crime. If you see how the FBI analyzes cases, you see there are links between criminals in Mexico, Asia, the United States, and the Ukraine. There are people working all the time through the Internet to commit crime.

Mobile banking is going to escalate fraud. Again, we don't have the appropriate security measures in place. Over 98 percent of the people in the United States will have cell phones by 2011. Of course, abroad it has been much more prevalent.

The latest trend in terms of cyber thieves is to go after Facebook, LinkedIn, and MySpace to use it to compile information on consumers to obtain information to take over accounts. Again, as we see those entities, whether it is through mobile banking or through peer-to-peer loans and payments that are done through the social networking sites, you are going to see the criminals taking a much stronger approach.

Mr. Greene: Two thoughts there: You're right about the mobile thing. I bank at a top-five bank and they have very robust security when I go to the regular website from my PC, but when I'm on my cell phone it is a simple password that's used and it's much easier to get in and do mischief on the cell phone than it would be on other channels.

The one good thing about social networking is it is not just the bad guys who are using it. It is increasingly being used by people inside the industry to self-police and spot problems.

There is a website some of you are already familiar with that might be worth checking out in this regard. It is called *fraudalertnetwork.com*. *Fraudalertnetwork.com* has several thousand professionals from the banking industry who are regularly reporting new forms of fraud and defenses against them. It is a very good information exchange regarding this problem.

Ms. Allen: There are two statistics that I think are important for all of us to keep in mind: First of all, there are 77 million GenYers, just the same number as

baby boomers. It is the GenYers who are going to use mobile banking. They are going to drive what happens there. So we have a huge part of the population who will *only* use or want to use some kind of a mobile device.

The other thing is that Facebook alone has 300 million users, and 120 million of them log in every day. It starts to shift this relationship of who owns that customer, who has the interface with the customer. I think we'll come back to talk about this, but really watch the new roles for telcos, for the Facebooks, the Googles, who have the customer relationship. Now they are adding payments or payments-like transactions.

Mr. Greene: Dan, those are your customers we're talking about. And now they are Facebook customers instead is what Cathy is saying.

Mr. Eckert: Well, the banking industry is going through a dynamic change in terms of customer relationship and how customers are viewing that relationship, to tell you the truth. Matthew Bennett had mentioned, and I cite the study often as well, about the grist mill in terms of current account relationships. McKinsey did a study about the United States and I think it reported that only about 3 percent of the U.S. DDA population changes hands in any given year. The reasons behind that 3 percent grist mill, and it's an absolute fact just like Matthew had mentioned, are divorce—you're more willing to change your long-term partner quicker than you are to move your bank; death is the next one, because you have to settle accounts for estates; and finally choice. Yes, it's a sticky relationship, but the nature by which they're accessing that relationship is changing, and the way in which they view that relationship is much more from "That's where I place my funds, but where do I gain that satisfying experience, and where do I feel as if I'm getting a great relationship?"

And it very well may be at Facebook. It may be, as you're seeing in the innovation center in cards, the decoupling nature of that, where a retailer can issue. Shell Saver Card is a great private-label example, where a card can be issued by a brand that has a stronger affinity than that of the underlying current account source. It's certainly happening and it's happening in many ways. As that volume comes without careful attention as to how to structure those, it clearly will create opportunities and avenues for frequent and highly severe losses to be incurred.

Mr. Greene: One way of both strengthening the relationships and also getting ahead on some of the criminal activity Cathy was talking about is by understanding how consumers want to think about their own personally identifiable information (PII) and how they want banks to handle that.

Jim, I know you spent a lot of time looking at that. Talk about the role of PII as the interface between consumers and banks in this discussion.

Mr. Van Dyke: There is this commonly held view within the payments industry, as well as the credit-monitoring industry, that people aren't motivated to protect themselves. I will tell you just flatly we see the exact opposite in our data.

As I said earlier, there is this popular misconception zero liability somehow lessens people's motivation to act. We've never seen a shred of evidence to support that. We only see evidence to the contrary. The more you give people good controls, the more motivated they become. Now it is better to not just resolve the fraud after the fact, but actually put the tools in their hands.

One of the problems we have in the industry today is we take the payments industry plus the regulatory stance: By proposing new ways of encouraging positive action to make bad things happen only to criminals, we encourage a very "paternalistic" stance. That is, we try to be like the parent and treat the customer like a child.

Of course, it's good to have great technologies that we would be lost without. These are vital technologies, like geolocation, neural nets, fraud filters, and all these important things, and sharing of data behind the scenes and so forth. We have to have those. The thing is we somehow spread these misconceptions that people aren't motivated to protect themselves. Our data show that for consumers, all other things being equal, security is not only the number 1 criterion when choosing a new institution, it's also the number 1 criterion when choosing which card to use out of wallet. That has never *not* been the case.

When people don't act like we showed in our data breach study, it's because they're confused and they get these very onerous tools and sets of information that are very confusing. One quick example for those people who use electronic music services: If you were to sign up for a song—those of you who use e-music and have an iPod or use Pandora and hear a song you don't like and you never want to hear that one again—if you use electronic music, it's very easy. You click the button, "Don't Play That Again." Those who use that, you know what that is like and know what I'm talking about.

Could you imagine if you were listening to electronic music, a song comes on you don't like it, and you hear it on your iPod and it says, "Well, to not hear that again, go to your desktop (which is maybe at home), login, authenticate yourself, go to a control panel, click on some radio buttons. Oh, that's not under the card section, that's under the DDA section." The point being that is what the banking industry does. We have tremendous opportunity.

Mr. Greene: This may set up the question I was going to ask Dan, but any of the rest of the panel can respond.

One way of thinking about the kinds of problems we're seeing—both the consumer frustration and the new forms of attack—is really trying to run newfangled payment products on what you, Dan, called "on old-fashioned rails"—ride on the back of things like ACH and so on that were never really designed for that.

I was struck by the fact, in the retail payments space, the need for a new generation network that might have the low cost that's needed, the security, the reliability, those are problems the wholesale payments space faced years ago, and their answer there was networks like SWIFT. We don't seem to have a similar

evolution here. What's the view from a banking perspective? Would you like to see movement toward a new-generation network? Or are you comfortable riding old rails?

Mr. Eckert: It's a great comment. At HSBC, I was fortunate enough to actually be part of an attempt to develop an alternative payment network that was merchant-centric. We actually hold an investment in Tempo Payments, which was exclusively designed to be a merchant-friendly network whose aim was to lower the cost of interchange to something that is highly manageable, and to build acceptance on a secure type of rail that is PIN only. It's interesting to point out that customers—on average—tend to prefer PIN authenticated payments, and it's also a more secure form of payment in the retail payments ecosystem than, say, for signature. The move away from signature-based payments and toward PIN—or even better—chip and PIN authentication would likely advantage all participants in the payments market. Add to that a network whose sole aim was designed around making merchant payment acceptance a low-cost proposition, and you'd think you'd have a slam dunk of an opportunity in payments. But, before going into my thoughts on why it became such a challenge to be successful with that model, allow me to say a few words on the chip and PIN card model.

As a recent analog, the UK just recently mandated to go to chip and PIN as a region. The results from the first half of 2009 show that bank card fraud is down 23 percent. What's even more interesting and intriguing is the report stated that second-order effects are also occurring, where in the UK you can still do “card-not-present” transactions without the chip and PIN because that is the only way you can do it. However, even with this “less than perfect” construct, bank card fraud on card-not-present transactions is down by 18 percent.

There's clearly an ability to do something like this in the United States. The challenge, though, and I've experienced it first hand, is the retail payments landscape is an extraordinarily robust and deep marketplace here within the United States that required billions and billions in investment from its participants to build and maintain a network. For most of its history, this investment was made under the so-called association model. And that cost was borne by the member banks in order to actually promote acceptance, to invest in those acceptance marks, and to afford convenience to retailers providing that acceptance network. However, only now in the last 20 or so years really have those economic rents started to mature to a return. And we are now obviously having a debate as to how much of a return that is.

What we fail to understand is in 1953 when those types of networks started, a humongous amount of money and a tremendous amount of capital inefficiency went into building that type of network. And, when faced with an alternative—such as Tempo Payments—the ability to actually invest in that capital-inefficient model for a 50-year return on investment is just not there. It is not there in the investment markets. It is not there in the venture markets. And, even for an institution

such as HSBC who can invest in a capital-inefficient kind of investment, we found it a true struggle to move beyond acceptance in the United States to about 700,000 participating locations. Beyond 700,000 participating locations, you were looking at a door-to-door investment effort to try to get acceptance.

Another great empirical model to take a look at is Discover Financial Services that continues to build—and has been successful in building—a fair bit of acceptance as a three-party system, but still is nowhere near that of our ubiquitous networks such as MasterCard and Visa. So it is a real challenge to do. That is why you're very much seeing innovation flourish within the existing plumbing, so to speak. At the end of the day, it's easier to build on something that's already been invested in and works and operates, as opposed to trying to compete against that broad and deep marketplace.

Mr. Greene: Okay, but if we're worrying about integrity with new payment instruments, we'll have to do so within the context of existing infrastructures.

Mr. Eckert: I think you're exactly right and it's because, when you look at the model, if you talk to any venture capitalists—especially today and in the last year and a half—the only buzz-worthy investments they are making are: “It has to be capital-efficient and I need to be able to put as few dollars into the equation and get the maximum amount of dollars out of the equation.” If you were to walk into a VC today—Sequoia or anyone of those—and say, “Hey, I've got a great idea. If you give me \$3 billion, I could probably get you a million participating merchants,” they'd kick you out of the office.

The infrastructure just isn't there to invest in it.

Ms. Masi: Just a question. Our survey tells us that banks outsource at least 40 percent of the activities of any payment chain. From a bank perspective, the more the outsourcing activity is standardized, the more the internal controls are easy and automatic.

As a result my point is: If a payment is a “commodity,” where everything is standardized and easy to control, we do not need to pay great attention; the true problem is innovation, and we should focus our attention and worries only on new payments, with no clear standard.

Mr. Eckert: I guess I could respond in saying we are probably the wrong institution to ask, because we actually own about 95 percent of our systems. We are one of the rarities in global banking, where we own, operate, and enhance our systems—and view it as a competitive advantage.

It's publicly available data that we are endeavoring on a global technology initiative to bring to the 21st century our owned and operated technology systems, because we view it as a sustainable, competitive advantage in the marketplace.

Mr. Greene: You make the regulators sleep well at night when you say that.

Mr. Eckert: I think we do. There are certain systems we still do offer through TPS.

Mr. Greene: I wanted to ask one more question before we throw it open to the audience. It is the one you prompted, Cathy, with your remarks about the need to rekindle trust between consumers and the banks. Do you have some thoughts on how you do that? The bankers in the room should do what to get the consumer to feel better about them, both in payments and more generally in retail banking?

Ms. Allen: The first thing is to apologize to your customers. I oftentimes do that when I'm out speaking in front of consumer groups. Say, "We're sorry. We got you into this mess and we will get you out."

I'm very straight about that, because when the history books are written about what happened with this current economic crisis, a lot of it is going to fall on the shoulders of the financial institutions for a variety of reasons we can talk about.

So, one is to acknowledge that with the consumers, because at least it will dissipate some of the anger.

Second is to treat your customers with respect. I think Jim had some very good points about this. They're not stupid. They get what's going on. To try to hide things, such as fee increases or interest rate increases, to not be transparent is *not* a good thing to do. So being transparent is important.

Third is to help and work with customers to not incur fees. This is where mobile is an important part, where you can send an alert through e-mail or Twitter or texting to say, "Your account is low. You might want either not to take money out of an ATM or not spend, especially with a debit card." So having those kinds of alerts.

Fourth is to enhance financial literacy. There's a lot of controversy about what really works in terms of education, but what we do know does work is education around the transaction. So that if they are getting a mortgage, if they're opening a credit card, if they're getting their debit card, having mandatory education and a way to work with them. Again, Jim's point of being a partner with the customer around security and identity theft—preventive types of issues.

Finally, there is a huge opportunity for the bank that "gets it." There are very few right now that are getting it. This is not a promotion for JPMorgan, but at least what they're saying in their website and in their annual report is a lot more consumer-friendly than most financial institutions are doing. Taking that role as the trusted adviser, helping to simplify the complexity of the financial responsibilities we have, and going back to try to work with the customer.

Again, one of the most egregious things banks did was call in loans and cut off lines of credit, not just for consumers, but for businesses, with form letters. What would it have taken to have an account rep call them up and explain, "We're in an economic downturn. Can we work with you and maybe lower the line of credit?" But, because they didn't do that, we've got a long way to go to restore the trust.

I will end by saying one thing. Trust equates with regulation to the consumer. There are a number of studies that show that. So the more we are going against regulation, the more consumers are going to be skeptical. So the more financial institutions are fighting against increased regulations, the more consumers will be skeptical. I encourage financial institutions to both be proactive and create smart legislation and smart regulation, because that's one of the things that will create trust. Consumers believe the regulators should be looking out for their good.

Mr. Greene: So maybe a jump-off question before we go to the audience. The Consumer Financial Protection Agency that's being debated: Good idea, bad idea, should the banking industry rally behind it or try to self-police, to brand it? Jim.

Mr. Van Dyke: My thought on it is I'm just waiting for any agency—new agency or existing agency—to work for empowering the consumer and the small-medium business customer. If it takes a new one to do that, I'm all for it. But, if that new agency is not going to do that, then I'd just as soon see that same effort go in the existing one. I see a huge void in the existing financial regulatory market today and the commercial market. I'd like to see somebody step up and fill it.

General Discussion

Session 5

Mr. Greene: So, the theme of the panel is about integrity, which seems to have two threads from these remarks. There is a trust thread. Integrity speaks to the belief of all the participants that good things are happening with known counterparties. But, then, there is also a subtext as far as security threats and technical challenges and penetration in attacks, which of course are amplified in an environment where trust is lacking upfront.

Comments and questions from the audience on any of those?

Mr. Grover: I have a comment and a question for Daniel Eckert. You touched on the difficulty of building critical mass in new payments systems and referenced specifically Discover. Discover is on a path to achieving acceptance parity with Visa and MasterCard, at least in the United States, by in effect emulating their open model and by harnessing existing delivery infrastructure through merchant acquirers. At least on a national level, it is difficult but achievable.

You also touched on Debitman. The original Debitman business model was predicated upon retailers originating new cardholders. Any thoughts on why retailers weren't more successful, didn't more vigorously originate Debitman cardholders?

Mr. Eckert: I would say, as reference to Discover, you're absolutely right. They are in many ways emulating the four-party system by working through merchant processors now to gain broader acceptance. It would be interesting—and I have not done this research; if anyone has I'd love to hear a comment on it—to see what the cumulative paid-in capital is into Discover card since its inception and how much it has cost them to achieve the acceptance marks they've had.

The most recent empirical data point is what they paid for a deteriorating network acceptance model, but still, nonetheless, \$160 million for Diners Club to at least get some overseas acceptance. If you look at DFS, which was really a domestic

acceptance model with very limited ability to do anything overseas, Diners Club offers them an opportunity to do so at \$160 million price tag. I don't know of many new venture capitalists that are willing to plunk down \$160 million on a new network. You do have a challenge in terms of how much investment it requires.

As it relates to the Tempo Payments model, you are absolutely right. It was conceived with the purest of intentions and that was one of the reasons why we were so attracted as HSBC to the model—it seemed to have provided the answer to the merchant model. It's PIN-friendly. It seemed like customers prefer PIN, although there is refuted evidence now that says it's a toss-up. It was a low-priced model, a fixed fee for payment; it seemed to have all the characteristics that made sense for merchants' acceptance.

The challenge was two-fold and a bit nuanced. The first challenge is you are dealing with a two-sided market. In hundreds of meetings I've had with retailers about acceptance, the challenge is, "That's great. You're offering me a low-cost model. But, for four cardholders, that doesn't help."

That's just a fact. That was exactly what was said behind closed doors.

The second challenge is then working on the acceptance model through an emulated structure, such as going through merchant processors. It's nuanced because you can sign a deal—let's say with First Data—to gain a great press release that says you have access now to 400,000 accepting retail locations. But that is actually a misnomer.

What that means is you have "technical" access to those accepting locations. You still need to talk to one merchant at a time for them to turn on that access and put up the acceptance marks so that customers are aware the network is accepted. That is a monumental challenge. It is a \$1 billion-plus brand-building exercise. It only happens with sneakers on the street, knocking on doors at the local bodega. Yes, you can get some big chunks down with the IKEAs, the Walmarts, the Targets, the Home Depots, the Best Buys, and the Costcos, which is exactly what Revolution Money has been doing and what Tempo had tried to do and finally threw in the towel. By the time you get to, say, 200,000 locations, which sounds like a large number relative to the 4.5 million locations you really need to have somewhat ubiquity in the United States, the amount of money that was required to do so was not able to be raised within the venture capital community.

Ms. Garner: One thing we hear in Washington is banks—and in particular small banks—rely on interchange fee revenues to help cover fraud costs. One example is the reissuance of cards in the event of a data breach, which I would argue is a very reactive type of response.

So, my first question is basically for Catherine Allen and James Van Dyke. Do interchange fee revenues stifle bank incentives to proactively innovate to best protect their customers' data from fraud?

Second, given numbers from James' presentation that merchants absorb 90 percent of commercial fraud costs, etc., does that further disincentivize banks and networks from innovating and implementing stronger fraud prevention technologies proactively?

Mr. Van Dyke: Both merchants and banks do incur significant mitigation costs for all the technologies upfront and all of the customer handling costs of managing costs, so on that front, they're fairly equal. But I do think from an economic analysis standpoint, there are some incentives issues, significant questions raised, when the interchange system allows the bank to keep the profit but pass on a lot of losses to merchants. That is a concern, particularly with the increased amount of data breaches going on. If that cost is largely landing in merchants' laps, that does bring about a motivational question.

Ms. Allen: One of the issues is fraud is increasing. We have sophisticated criminals going after the system, and we have a mandate in the United States to make our customers whole. Somewhere, somebody is going to have to pay for that—the financial institutions. So interchange is one of the places they look to have some revenue coming in as other revenues are moving down. It's unfortunate. As I was talking about the perfect storm, we're hearing banks are increasing fees at all different levels because the revenue streams have gone down in the mortgage area, they've gone down in the basis points in a number of their interest products.

At the same time, the costs of fraud and cyber-security threats are increasing. Unfortunately, right now, financial institutions are even decreasing the amounts of money they are spending on fraud and cyber-security. It's a disaster waiting to happen.

Mr. Greene: As things are going, we take it as a given the consumer will be made whole. The subtitle of this conference is "The Role of the Central Bank." Is there a role for the Fed or other central banks to play in the allocation of loss between banks and merchants—because it's the 90-10 you pointed out, right?

Mr. Burns: I'm fascinated by this whole discussion. Jim, you talk about the possibility of some imbalance in incentives. And Cathy argued interchange is needed to pay for that side of the balance. If you think about these costs, and I'll take your point and I'd like to hear more about it if you do truly believe there may be some imbalance in terms of the allocation of costs. I think, Mark, that is what you're getting at.

How do you create the balance? And I've been thinking for some time that one of the economic tools is to use an interchange vehicle, which from its inception was designed to create a better balance between costs or whatever you might want to call it in terms of acceptance and the original motivation. But can't that tool be extended or can't that conflict be extended to improve or to provide appropriate incentives for other parties within the payments system to invest in fraud protection?

Mr. Van Dyke: Your question is, Should there be more incentives for any other entities to create more effective fraud mitigation capabilities? To me, those are the two issues I see when I look at research on all the entities and the two crimes that are always there of “steal the data, use the data.” The most effective way to profit from PII exploits is to go directly into an institution yourself as a bad guy and ride on somebody else’s good reputation. That’s the most profitable way to do it.

The two issues that stand out in my mind are 1) that you have the person whose identity is being used, no one is empowering them, and people say things that aren’t true, like the person is not motivated, they can’t make a difference or they will just bother our security experts. Behind the scenes, things have to be there. I’m not saying those aren’t important. There’s that and then 2) there is this funding equation. I would agree with what you’re suggesting, which is that some kind of funding stream needs to go at fixing this problem—which is to take the identity holder and get more tools in their hands. Cathy’s point: There are peer-to-peer tools, social and networking tools, and especially mobile tools. I think mobile banking has the safety advantage and is the greatest monitoring device that’s with you all the time. But, if the information is not real time and it is not easily modifiable, it’s not going to work.

Mr. Greene: There are maybe two thoughts there. There is the incentive to better equip the consumer, but also the 90-10 ratio suggests there is some pricing incentive to move more of the pain toward the banks and away from retailers.

Do you want to defend yourself, Daniel?

Mr. Eckert: Like I said, there will be a tar-and-feathering afterwards. This is the first I’ve heard of this 90-10 statistic. It seems pretty dramatic. If I look to the marketplace and understand empirically how things could change, one would imagine if 90 percent of the fraud loss occurring in the retail payments system is actually being borne by retailers, then one would think that there would be much greater collective action by that set to improve security at the point of sale. It is my understanding in the ecosystem, the reason why you see a lot of fraud push back, particularly the account takeover, identity theft, etc., is the notification happens to the issuer, the issuer goes to the retailer through its merchant processor to verify whether the appropriate checks were made when accepting that payment and—failing that verification—the chargeback procedure puts the onus of responsibility back to the retailer.

One of the ways to solve that problem is to increase authentication at the point of purchase, so the person who has the card has a dual or even three-factor authentication procedure to keep the retailer in good status.

What’s happening in the UK chip and PIN environment is truly the risk now is borne back to the consumer because of the multiple authentication systems that occur when a chip and PIN card is actually accepted. That’s good for banks, that’s good for retailers, maybe it’s questionable whether or not it’s good for cardholders,

but it at least *puts* the onus of responsibility for safety, soundness and security of those card payment instruments back on the people who have them in their purse or wallet.

But we don't see that in the United States. We continue on with the same retail acceptance model we have largely because, I would believe, no one wants to bear those costs. If 90 percent is being borne by merchants, it is amazing that we don't see chip and PIN becoming a much greater argument for investment within the retail POS landscape. There are some strides. I know Wal-Mart does a very good job of terminal driving to PIN acceptance for a couple of reasons, both for cost-efficiency and for authentication reasons too.

Mr. Greene: Stuart, if you and Dick Porter were looking to take some research topics from this session, maybe that's one: What is the role of the Fed in helping to allocate responsibility for assumption of loss, given where the burden currently lies today in the incentive structure? And it's increasing.

Mr. Taylor: I've spent the last year working with small retailers on data security. PCI, as we all know, is one of those amorphous moving targets that is more stick than carrot. What I'm finding is there is a huge degree of noncompliance in what we call the Level 4 merchants. We are talking about 5 million merchant stores out there that are not compliant.

The reasons why there is pushback are multiple. One is—the Verizon study was quoted—while about 40 percent of the breaches occur in retail, 97 percent of the *cardholder* breaches occur in financial institutions. So, in other words, retail only accounts for 7 percent of the card accounts that are compromised. When I talk to my members and they're spending, on average, \$20,000 per store to become PCI-compliant, last year their pretax profit was \$40,000. With \$20,000 a year to become PCI-compliant, they're finding it much more effective to self-insure. If you take my industry to the *n*th degree, it's \$1.5 billion.

We are being mandated by the five card brands to pay \$1 per outstanding card for security. At the end of the day, if you still get breached, you're not in compliance and all of the Account Data Compromise Recoveries (ADCRs) and everything else are going to come back down on your head.

I guess my question back to you guys is, first and foremost because we are talking about the Fed's role, Isn't that a role of the Federal Reserve to protect what is becoming the next generation of currency called plastic and the integrity of that currency? Taking a lead role in determining what that data security standard is going to be is part of a national framework that also includes health records, personal records, data security for electrical grids, etc. Shouldn't there be a national conversation that includes, as a subsection, the financial sector on what the national data security standards are going to be? The main reason is there is another factor that's coming in, and the states are individually legislating data security policies in the absence of a federal policy. So, if you are a multistate retailer, you now don't know

how to comply with any of the state legislation that's out there. What we have is a Tower of Babel. There is an absolute role for the Fed to come in, take a realistic role, don't tell retailers to go to triple data encryption standard (DES) when there is not a problem on single DES output. Take a more rational approach. And also you need a third party who is going to be willing to throw out the existing antiquated rails.

Mr. Greene: We don't have a Fed representative up here, but there are lots in the audience. Anybody want to speak to that?

Mr. Weiner: I might say that the next session, of course, is on the Fed as operator and, by that, there are some central banks around the world who, in fact, are maintaining security databases now. That seems to be an extension of that idea, so perhaps we can get into that in the next session.

Mr. Greene: Paola, one of the things you've been talking about is the need for more international collaboration.

Ms. Masi: That's one of the aspects we can add to the debate on fraud. As overseers, and from a system perspective, we are trying to agree on and build a database on fraud at the international level. At the European level, we are trying to agree on a common definition of what fraud is, how we can properly measure it, and who is the authority/institution allowed to store and use confidential data. We, as central bankers, are trying to understand how to build up a reliable and "official" database on fraud, since the available information is too often dodgy and the evaluation of the impact of the fraud on the economy is very different. We are working on this, at least at the European level (as Wiebe Ruttenberg can testify), as a part of the project to have a single database on cards payments.

I must tell you it is a difficult project. We are talking to different categories of stakeholders of any card scheme, starting from issuers and acquirers, and it is really hard to strike the proper balance among conflicting interests; moreover, we have to define how to compare between different nations and between different kinds of card payments. That is why I believe we need to increase our effort at the international level—not only at the European level—to understand, standardize and collect reliable data on fraud. I think also the World Bank should be involved in this effort, and together we can address the question.

Mr. Greene: So international cooperation is needed, but I think your point was, even within the United States, there is plenty of room for improving the standards. The story as I understand it so far is the risks in the retail system are growing, they are growing perhaps by leaps and bounds as a result of some of the new products, the new technologies, the new entrants coming into the space and yet retailers who bear the disproportionate burden and cost of all this are not given the proper regulatory structure to rely upon. They don't know how to operate. They are not sure about the rules of the road. So, is the role of the Fed domestically and similar central banks internationally to help pave that road?

Mr. Taylor: Databases are great. But that is all rear-view mirror. Essentially what the retailers are involved in is a chase-the-crook type of investment strategy,

which is as soon as we find out some new breach, everybody gets lawyered up. Two years later we find out what the breach was and then we can't even react to it because the same exploit has been replicated. It's all because we're trying to incrementally fix a system that really needs a fundamental redo.

For instance, why isn't there a PIN on every transaction? In my market, the solution is to have somebody put in their zip code. If customers can't stand PIN, why do they like a five-digit zip code?

Mr. Eckert: I would like to jump in on that and reiterate that my views aren't the express views of HSBC on this front. However, this is precisely where a regulatory intervention could be very helpful because it is a shared problem for which there is a clear market failure. We're all bearing costs. It's costing the consumers in terms of hidden costs to manage this, and we don't have a lot of joint cooperation among all the parties that are victims to this fraud playing well and nice together.

For example, we have third-party databases where banks have come together in a multilateral fashion to try to share information. But it is voluntary. Early Warning Systems is one on the checking account side. Another one is Certegy Check Services, which is run by Fidelity Information Services, but it has its challenges. First of all, it's based on legacy plumbing information (checks, which we all know how voluminous checks are nowadays), but then secondarily, it is voluntary participation by usually the largest banks, but not necessarily always.

Fraudsters know this. So what do they do? If you looked at some of my subsequent pages that I didn't share in my opening remarks, just as soon as we have a countermeasure to try to help detect and eliminate this at least from the issuer front, then there are five websites that list those institutions that choose not to participate in those Early Warning Systems and ChexSystems to tell the fraudsters where to go! That is clearly a market failure, where you could see a regulatory body, such as the Fed, start to set standards for the betterment of market efficiency as opposed to intervening in a way that could potentially create some unintended consequences.

Mr. Van Dyke: A couple of points: 1) PIN versus signature has been talked about a lot, so I'll just say from our data—and we have seven years' longitudinal survey data—it's pretty clear. The more knowledgeable you are about technology, the more you prefer PIN. The less knowledgeable you are about technology, the more you prefer signature. So the group that prefers signature is going out of the economy. Truly, I think it's pretty straightforward.

This issue of how we would implement these systems, and I appreciate what you said about people entering their zip code, so why wouldn't they enter a PIN? That's a good way of characterizing it. One of the challenges is these crimes we are talking about are inherently complex. Just on the surface, there are two crimes within this one crime of so-called identity theft—steal the data and use the data—and there is often a supply chain of criminals. They are international. They are the

person next door. It's everybody.

Where I think we fall short, because it's hard to take boring research data and convert it into action with these multiple crimes, multiple criminals and evolving things, is that we look at things like malware and Trojan horses and we stop right there at the first crime, which is security. We don't consider how people can use this in transactional fraud. You really have to keep both scenarios alive at once and involve the identity holders and the multiple participants in the supply chain of payments.

Mr. Peirez: I find myself agreeing with many of the comments on this issue, although the Fed's role in terms of what it could study and do is probably broader than what's been discussed because the 90-10 discussion is frankly the exact opposite of what our data show in terms of who is bearing losses. No disrespect meant, Jim, I usually agree with most of your numbers. However, with this one I don't see it. The Fed could do a really great service by trying to identify what costs are being borne by whom. That would be fabulous information for all of us.

Frankly, Peter, to your point. We do provide interchange incentives based on authentication method. It is one of the core rate-based decisions we make. So, if we could get better information on who is bearing what costs in that regard, that would help us independently set our prices in the way free markets should. That would be great information to have. But I don't think we should assume one side is bearing more costs and then start studying how to create incentives around it. We should study who is bearing what costs *first*, then we can try to decide where it should be placed.

And, then, just for the sake of argument on the PIN situation, PIN with chip is a very secure system worth discussing. Dan's points are right on in terms of the cost and the incentives. Personally, I would hate to see us push PIN with magnetic stripe more. It is actually quite insecure and opens up ATM fraud in a way I would hate to see. It's what the Europeans have started to experience, particularly the United Kingdom, based on how they still mag stripe their cards with PIN. I would discourage us from thinking of PIN as a panacea. It's not. Frankly, my zip code is public information that anyone could find and my PIN is not. That is why I enter my zip code happily at the gas station. I wouldn't want to enter my PIN—personal knowledge. It's research-based.

Mr. Eckert: I actually like Josh Peirez's comments, because one of our challenges is you deal with the limited data that are available. What you are suggesting is a system whereby we motivate more participants, financial institutions and merchants to share data.

I agree on the other. The better the quality of data, the better the quality of the decision. I feel pretty good on the numbers we have, but we need more.

Ms. Allen: I want to go back to your question of the role of central banks. I see three important roles that also need to be in the mix. First, I do think the Fed

needs to take a much stronger role in consumer protection. There may not be a need for a consumer protection agency, if the existing regulatory agencies took a much stronger consumer protection position.

Second, the Federal Reserve Board has taken a leadership position in Washington around the cyber-security issues. It's very complex. There has to be global law enforcement, financial institutions, technology providers, and telcos at the table. Again there is a stronger role the Fed could take.

Third is this concept of nontraditional players—nonbanks—acting or looking like banks or doing financial services-types of transactions or activities. Maybe it's the *activities* that should be regulated, not necessarily the entities, and all of that should be done in the name of security and creating the safety and soundness we need to preserve in the United States.

The Role of Central Banks in Retail Payments: The Central Bank as Operator

Richard Oliver and Stuart E. Weiner

I. INTRODUCTION

Central banks throughout the world seek strong economies and stable financial markets. These goals, in turn, rest to a considerable degree on well-functioning payment systems. Payment systems, especially retail systems, are evolving rapidly across the globe. Electronic payments are becoming the norm. New technologies, new participants, and new market structures continue to arise. Recognizing the significant changes underway, many central banks have been re-evaluating their role in their respective retail payment systems. This paper looks at the operator role in particular.

The first section of the paper addresses the operator role in both theory and practice. It first examines the various objectives, roles, and economic rationales that central banks rely on in formulating and implementing payments policies. It then surveys specific operator roles that central banks play throughout the world. The second section of the paper offers a description and analysis of a specific case study, the Federal Reserve. It first examines the Federal Reserve's past and current involvement as a retail payments operator. It then explores future options. The paper ends with some closing thoughts.

II. OPERATOR ROLE: THEORY AND PRACTICE¹

A. Objectives and Roles

Safety and efficiency are the principal objectives of central bank retail payments policy. Virtually all central banks stress safety, and most stress efficiency. Some central banks also highlight accessibility, for example, the Federal Reserve. Others add competitive conditions as an explicit objective, for example, the Reserve Bank of Australia.

Fostering safety in retail payments is typically interpreted broadly as seeking an environment in which economic agents are able to undertake transactions smoothly and securely. In some cases, central banks use the alternative term, integrity, to describe this objective. Integrity arguably is a richer, more informative term in that it draws attention not only to the safety and soundness of individual payments entities but also to the safety and soundness of a payments system operating as a whole. A retail payments system must have integrity—it must be reliable, and it cannot be vulnerable to disruption or failure at any point along the payments chain.

Fostering efficiency in retail payments is similarly broadly interpreted. While rarely formally defined, most central banks appear to regard an efficient payment system as one that uses a minimum of economic resources for a given level of economic activity. Efficiency, of course, is influenced by such factors as technology, innovation, market structure, and competitive conditions, all of which are taken into consideration to varying degrees by central banks.

Central banks serve three principal roles in retail payment systems: operator, facilitator (catalyst), and overseer. The level and type of involvement in these three roles vary widely across central banks, reflecting different histories, institutional structures, and legislative authorities.

The operator role of central banks falls along a spectrum. In many countries central banks offer final settlement on their books for some retail payment systems. Some central banks also provide direct clearing services for some retail systems. In addition, many central banks provide retail payment services to government agencies, and some maintain databases for security and fraud mitigation purposes. Central bank operator activities are surveyed in greater detail below.

The facilitator, or catalyst, role of central banks also falls along a spectrum. Activities range from maintaining contacts with private sector firms, to conducting research on important payments topics, to encouraging and initiating various market outcomes. Central banks sometimes work with other public authorities in their catalyst role and also often draw on their strong relationships with their country's financial institutions and banking and payment associations.

It is in their role as overseers that central banks' involvement in payment systems has evolved the most in recent years. The Bank for International Settlements has observed that "the concept of central bank oversight of payment and settlement systems has become more distinct and formal in recent years as part of growing public policy concern with financial stability in general...and the function has now come to be generally recognized as a core responsibility of central banks (2005)."

As in the case of operator and facilitator involvement, the level and type of oversight activity varies considerably from central bank to central bank. Some central banks have explicit legal authority and powers for retail payments oversight. Others have less well-defined authority and powers. Oversight activities can range

from general monitoring of payment market developments, to establishing industry rules and standards, to on-site supervision of specific firms and networks.

B. Economic Rationales

Central bank involvement in retail payments is almost always undertaken in furtherance of one or more of the overriding objectives discussed above. So, at its most general level, a central bank's involvement is almost always grounded in broad public policy considerations. But often underlying these broad public policy rationales are more distinct economic rationales. Sometimes these economic rationales are made explicit, sometimes they are not.

Comparative advantage and economies of scope. One economic rationale underlying payments policy is comparative advantage and economies of scope. Virtually all central banks maintain reserve or settlement accounts on behalf of major financial institutions. Because of this, it is sometimes argued that central banks have a comparative advantage in performing intrabank funds transfer services—there may be economies of scope between maintaining these accounts and providing funds transfers among these accounts.² This comparative advantage/economies of scope consideration, along with a near-universal concern over systemic risk (see below), is the reason why most central banks in fact operate large-value (wholesale) payment systems. While economies of scope are typically not offered as a rationale for retail payments involvement, the possibility has been raised.³

Market failures. A second economic rationale underlying payments policy is market failures. A market failure is generally defined as a situation in which market forces lead to an inefficient allocation of resources. This can mean that a given service or product is being produced at a higher cost than necessary, or that a service or product that is being produced is not fully consistent with the preferences of consumers. Assessing whether a market failure is present can be a difficult task, however, and grey areas abound. In payments markets, market failures can potentially arise for a number of reasons.⁴ It is convenient to group these into three categories: externalities, noncontestable monopolies, and asymmetric information.

An *externality* exists when the benefits or costs accruing to an individual agent taking an action do not coincide with the benefits or costs accruing to society as a whole as a result of that action. Externalities can be either negative or positive.

One example of a negative externality is that associated with *systemic risk* in payments systems. Systemic risk is the risk that the failure of one party in a payments system will lead to the failure of other parties in the system, having a domino effect that may eventually be transmitted to other parts of the financial system or economy. Systemic risk can arise from externalities because individual agents conducting transactions in a given payment system will not take into account the effect that a late payment or insufficient funds on their part could have on the system as whole. Central banks throughout the world devote considerable resources to monitoring and evaluating large-value payments systems and any associated systemic risk.

Another, related, example of a negative externality arises in the context of *underprovision of safety measures* in a payments system. Payment systems typically involve a large number of entities, including networks, banks, processors, merchants, security firms, Internet service providers, and so on. Schreft (2007) has noted that a data breach at any one of these entities could have a major impact on all of the others, but individually, none of the entities has an incentive to take this interdependence into account when making security investments. As a result, safety measures could well be inadequate for the system as a whole.

A third example of an externality, this time a positive externality, arises in the context of so-called *network effects*. Payments products and services often involve networks that require a critical mass of participants on two sides of a market. For example, enough merchants must be willing to accept a specific form of payment for consumers to use that form of payment, and enough consumers must use that form of payment for merchants to install the necessary hardware and software to accept that form of payment. But because individual incentives do not take into account such network effects, such products and networks may not develop, even though consumers and merchants, once the product or network was in place, would benefit.

Closely related to this are *coordination difficulties*. Situations may arise in payments markets where coordination among participants would be beneficial to all concerned—for example, adoption of uniform standards, adoption of a common technology, or use of single shared resource. But agreement on a specific standard, technology, or business practice may be difficult to achieve since participants will typically vary in size and preferences, and some may be tempted to “free-ride”—that is, bear little or no cost—on any agreement that might be made. Such coordination difficulties are another example of an externality, in which the benefits to participants in sum are greater than the benefits to individual participants. The result is an underprovision of services or products.

A second type of market failure potentially impacting retail payments is *non-contestable monopolies*. Because there are large economies of scale in processing electronic payments, it may be cost-efficient for just a small number of firms to operate. But this, in turn, may give these firms significant market power, which can lead to monopoly or near-monopoly pricing and provide insufficient incentive for innovation. If such firms believe they have potential competitors who could enter their market—that is, if their market is contestable—competitive conditions could still prevail. But in the absence of credible contestable threats, economies of scale can lead to a monopolistic or near-monopolistic market structure.

A third type of market failure potentially impacting retail payments is *asymmetric information*. An example is when a seller of a payments service knows more about the security features of that service than a potential buyer (Schreft 2007). Naturally, the seller wants to highlight the positive features of the product but has

little incentive to reveal any negative features, for example, poor fraud protection. If the buyer is able to find another seller selling the same service but with better fraud protection, there is no problem. But if such information is difficult to verify, sellers with strong fraud protection are unable to differentiate their product and hence have little incentive to provide this protection. The result is, this asymmetric information can lead to lower average fraud protection than some buyers would be willing to pay for.

Public goods. A final economic rationale potentially underlying payments policy is so-called public goods. A public good, once supplied, can be consumed by all without limiting the consumption of others. Because a public good is available to everyone, individuals have little incentive to pay for additional increments of the good since they will be able to enjoy any additional increments paid for by others—this is the so-called free-rider effect. The result is an underprovision of the good.

Some have argued that payment system safety and efficiency are examples of public goods and have used this line of reasoning to suggest a role for central bank involvement. At its core, however, is the more fundamental rationale of externalities. As noted above, externalities can lead to an underprovision of safety measures. And network effects and coordination difficulties can lead to an underprovision of efficient payments products and services.

Additional considerations. While economic rationales are clearly important, other considerations also factor into the nature and extent of central bank involvement in retail payments. A key consideration with respect to a potential operator role is ensuring that the central bank does not have an unfair competitive advantage in offering a particular payments service or product. In the case of the Federal Reserve, for example, the Monetary Control Act of 1980 and ensuing pricing principles adopted by the Board of Governors require full cost recovery, including all operating and float costs and imputed taxes and return on capital for each service line offered.⁵ In the case of the Eurosystem, the cost recovery principle states that “in order to avoid competitive distortions or a crowding-out of market initiatives, NCBs (national central banks) which offer retail payment services to credit institutions take due account of the requirements and competitive environment of the market concerned, including cost recovery.”⁶

Central bank involvement in retail payments—as operator, overseer, or facilitator—may be subject to other criteria and considerations as well. For example, does a particular payments activity—a new service, a new regulatory requirement, or a new industry initiative—carry an acceptable level of operational, reputational, or financial risk for the central bank? Are there potential legal restrictions associated with a new activity? What degree of reversibility or irreversibility is inherent in a given planned investment? What kind of private sector response is anticipated in light of a new initiative by the central bank?

C. Operator Role in Practice

As noted earlier, central bank involvement in retail payment operations varies considerably across countries. In some countries, the central bank has little or no presence. In others, the central bank has a significant presence.

Many central banks provide settlement services. The central banks of all G10 countries and Australia, for example, provide settlement services for some, although typically not all, retail payment systems.⁷ This settlement takes place on the books of the respective central banks. Depending on the particular country, payment systems making use of this service include paper-based systems, usually checks; direct debit and credit transfer systems; some debit card and ATM systems; and some e-money systems. Credit card systems, in contrast, typically do not make direct use of central bank settlement services, nor do postal and other giro systems.

A number of central banks also offer direct clearing services to various retail payment systems. A recent World Bank study reports that 102 check clearinghouses serve 116 countries (2008). Central banks operate 57 percent of those clearinghouses or provide other check services. Similarly, 83 ACH systems processing retail electronic credit transfers and direct debits serve 97 countries. Central banks operate 40 percent of those ACH systems. Tables 1 and 2 list the countries in which central banks perform these services.⁸

In the United States, for example, the Federal Reserve provides both check collection and ACH services. The Federal Reserve has been an active operator in the nation's check collection process since its founding, and it has been a prominent participant in the ACH industry as well. The Federal Reserve's operator activities are discussed in greater detail in the next section of the paper.

In Germany, the Deutsche Bundesbank operates its own Retail Payments System (RPS). RPS is used to clear and settle checks, ACH credit transfers, and ACH direct debits. Roughly 700 credit institutions and other Bundesbank account holders, such as public authorities, use RPS, and they submit about 9 million orders per day. The RPS has a market share of under 15 percent in German payments.⁹

The Bank of Italy manages the BI-COMP clearing system. This system enables participants to settle retail payments made by customers using paper instruments, such as checks, or electronic instruments, such as credit transfers. BI-COMP calculates each participant's multilateral debit or credit balance at the end of each clearing cycle (three per day). Prior, preparatory bilateral clearing of payments is performed by private entities.¹⁰

A fourth example, the National Bank of Belgium, fully operates the CEC (Centre for Exchange and Clearing) retail payment system. The CEC is a non-profit organization chaired by the National Bank of Belgium, with the board of directors comprising representatives of leading banks, the post office, and the

Table 1
Central Bank Operates Check Clearinghouse or Offers Other
Check Services

Albania	Egypt	Malaysia	Solomon Islands
Angola	El Salvador	Malta	Sudan
Bahamas	Germany	Mauritius	Tanzania
BCEAO	Ghana	Mozambique	Thailand
Belgium	Guyana	Myanmar	Trinidad and
Belize	India	Nepal	Tobago
Bhutan	Indonesia	Netherlands	Uganda
Cambodia	Israel	Antilles	United Arab
Cape Verde	Italy	Nicaragua	Emirates
China	Jordan	Oman	Uruguay
Colombia	Kenya	Paraguay	USA
Costa Rica	Kuwait	Portugal	Venezuela
Cyprus	Lebanon	Qatar	Yemen
D. R. of Congo	Lesotho	Romania	Zimbabwe
Dominican Republic	Macao	Rwanda	
ECCB	Madagascar	Saudi Arabia	

Source: The World Bank, 2008, "Payment Systems Worldwide—A Snapshot"

Table 2
Central Bank Operates ACH System

Afghanistan	Egypt	Latvia	Portugal
Albania	Estonia	Lithuania	Serbia
Austria	Germany	Mauritius	Slovenia
Azerbaijan	India	Moldova	Solomon Islands
BCEAO	Indonesia	Mongolia	Tanzania
Belarus	Italy	Mozambique	Uganda
Belgium	Kazakhstan	Netherlands	USA
Colombia	Kenya	Antilles	Venezuela
Costa Rica	Kyrgyz Republic	Oman	

Source: The World Bank, 2008, "Payment Systems Worldwide—A Snapshot"

Belgian Bankers' Association. The CEC is the central point for channeling a variety of retail payments, including checks, electronic transfers, and card payments.¹¹

Finally, in addition to providing assorted settlement and clearing services to market participants, many central banks also offer various retail payment services to other branches of government. And at least two central banks operate databases for payment security purposes. The Bank of France maintains two national databases focusing on check-related matters, while the Bank of Italy manages a database directed at both check and payment card incidents.¹²

III. CASE STUDY: FEDERAL RESERVE

A. Background

As noted in the previous section, the Federal Reserve has historically played a key role in the U.S. retail payments system. The legal foundation for the Federal

Reserve's involvement in retail payments is found in a number of statutes, including the Federal Reserve Act of 1913, the Electronic Funds Transfer Act of 1978, the Monetary Control Act of 1980, the Expedited Funds Availability Act of 1987, and the Check Clearing for the 21st Century Act of 2003. The Federal Reserve has emphasized three overriding objectives for payments policy: safety, efficiency, and accessibility. In recent years, the term integrity has sometimes been used in place of safety to underscore the attributes of reliability, security, and resilience in addition to safety and soundness.

The Federal Reserve acts in all three roles in retail payments: as operator, facilitator, and overseer. Its involvement as an operator is based on guidelines developed in the White Paper of 1984.¹³ The White Paper lists three criteria that must be met for the Federal Reserve to consider introducing new services: the Federal Reserve must expect to achieve full cost recovery, the Federal Reserve service must expect to provide a clear public benefit, and the service should be one that other providers alone cannot be expected to provide with reasonable efficiency, scope, and equity. The Federal Reserve's involvement as a facilitator is usually self-initiated and directed at improvements in the overall payments system. For example, the Fed might bring together key industry players to collaboratively address industry problems with interoperability or risk management. The Federal Reserve's involvement as an overseer is based on an assortment of statutes, arrangements, and agreements and is performed by a separate and independent staff that operates at arm's length from the Fed's payments operations staff.¹⁴ The roles and rationales for Federal Reserve involvement as a retail payments operator, in particular, have evolved over the years, as discussed next.

B. Historical and Current Operator Role

The history of the Federal Reserve System's engagement in retail payments operations flows from the unique demographics, geography, and history of the U.S. banking system.

The United States is a geographically immense country by any standards, consuming more than 3.5 million square miles of varied topography, cultures, and local practices. Over time, the U.S. banking system has embraced large national banks, more modest regional banks, and thousands of small independent banks, savings banks, and credit unions. It is a thriving model of diversity, constantly changing over time, regulated and overseen by no fewer than five national regulatory agencies and 50 state banking agencies.

The challenge for the U.S. payments system is to provide reasonably equal, safe, and sound payments options to its inhabitants regardless of location or banking affiliation. While never officially recorded as public policy, this ideal has seemingly become a *de facto* national objective and is at the core of the Fed's documented financial services mission statement. Unlike many other nations, the U.S. payments system in general, and its retail payments system more specifically, is not

overseen by any single or collective payments authority, government agency, or body of law. Instead, it is essentially a free market outcome, regulated by a series of state and national laws and regulations, as well as private rules and practices, much of which is encompassed in the arcane Uniform Standards Commercial Code (UCC), which is adapted and implemented on a state by state basis.

To an outside observer, such a system may seem ripe for problems, certain to exhibit significant gaps in service provision, and equally certain to underachieve the aforementioned public policy objectives. In fact, some of these weaknesses were in evidence as the United States grew and evolved through its first 125 years of existence.

Individual states printed and minted their own currency and coin, even as the United States divided itself into two federations during the Civil War. But as the nation's footprint expanded through the latter half of 19th century, and as the population became more mobile, the differences became less tenable and Congress moved to fill the gaps. The need to standardize and nationalize currency and coin became evident, and the need to develop another payment instrument, the check, to avoid transporting great quantities of cash about the country became obvious. The U.S. Treasury took on the first challenge, but they needed another entity to be their agent in tackling problems of geography, moving currency and coin, and clearing checks about the country in ways that promised equity and safety.

Consequently, as industry leaders gathered in the early 20th century to address a number of banking issues, they created the Federal Reserve, replete with a national footprint of regions, offices, and staff. In the process of citing the responsibilities of the Federal Reserve and attempting to achieve a fully liquid supply of money, they noted some of the gaps in the existing system of payments and in a subtle, but historical way, they charged the Fed with a specific duty—to clear and settle funds for checks deposited at the Reserve Banks. From this seemingly innocuous beginning, the Fed's role in check clearing evolved. The Reserve Banks became the glue to hold together 50 states' worth of payments practices.

As the population grew, the number of checks being written grew even more rapidly, and the Reserve Banks evolved to meet the challenge of providing an efficient, effective, and timely check clearing network by opening a number of regional check processing centers around the country.

Over time, with the advent of sophisticated computer technology and the further evolution of technology-based firms, the Fed's role was challenged as a potentially unfair competitor to a private sector anxious to build new payments businesses on the backs of their automation capabilities. But absent a structure to allow interstate banking, the need to maintain the glue to operate efficiently across 50 states was still present.

Consequently, in 1980, as a secondary issue to resolving an increasingly ineffective reserve accounting system, Congress moved to address industry concerns,

not by taking away the Reserve Banks' role, but by establishing guidelines to ensure that Fed/private sector competition took place on a level playing field. Reserve Bank check and ACH clearing services were made available to all financial institutions. In return, the Reserve Banks were directed to price their wire transfer, check, and ACH services in a specific fashion so as to cover all direct, support, and overhead costs, in addition to a Private Sector Adjustment Factor (PSAF) that included the imputed value of taxes, insurance, and return on equity typical of a private entity.

As the technology of the payments system matured in the late 1960s and early 1970s, leading banks began to discuss ways to take advantage of the technology to improve payments system efficiency and effectiveness. The concept of electronifying many types of payments for which checks were popular was spawned in the form of the ACH, first in California in 1972 and then in Georgia in 1973, and over a period of years, in Minnesota, New England, and the rest of the country.

The ACH concept viewed ACH transactions as direct replacements for checks and created clearing models that directly mimicked the clearing approach for checks, recognizing that these so-called "electronic checks" needed to be originated, edited for key elements, presented to other bank counterparties, and settled between all parties to the transaction. While the depositing, clearing, and settlement could be performed by computing systems, delivery to customers' banks represented a huge operational challenge. Only a few banks were prepared to accept electronic media, and the evolution to universal electronic receipt appeared likely to be lengthy.

Consequently, collectives of banks, frequently organized within Federal Reserve territories, formed local automated clearing houses and recognized the need to provide for paper output media as a means of allowing originating banks to achieve benefits from electronic origination, while receiving banks worked through their extended business cases for electronic receipt. These local ACHs realized that the best way to ensure timely, efficient delivery of paper payments information was to piggyback them on the nation's existing local check transportation networks, most of which were provided by the Federal Reserve. As a result, most Reserve Banks became ACH service providers for their regions.

Over time, the need to exchange ACH payments between regions became clear, and the banking community turned to the Federal Reserve, the nation's only national check clearing entity, to develop an interregional ACH exchange capability using the Fed's national check transportation network. That network already accessed all financial institutions across the country, thereby providing the universal connectivity needed for every bank to originate and receive payments on behalf of their customers. In local areas where private sector check clearing houses had been established (New York, California, and Arizona) the private clearing houses provided local ACH services and interchanged payments with each other and the Fed to achieve national coverage.

In the late 1980s, the Federal Reserve followed the lead of the New York Clearing House and mandated the advent of an all-electronic ACH network. California and Arizona joined in, and a fully electronic, national ACH network was born. Moreover, the payments formats, rules, and practices for exchange were developed by the private, bank-owned National Automated Clearing House Association (NACHA). The Reserve Banks, in collaboration with the other three ACH operators, agreed to bind their customers to the privately developed rule set as a means to ensure universally compatible standards among all banks. This certainty of specifications then resulted in the emergence of multiple software vendors who supplied the systems for banks to use to originate and receive ACH payments.

Ironically, the general process for moving to an all-electronic ACH network has been virtually duplicated in the wake of Congress's move to electrify the nation's check clearing system in 2004. Private sector providers and the Federal Reserve worked collaboratively to develop and adopt formats, rules, and procedures for electronic check image exchange, this time under the auspices of the American National Standards Institute (ANSI). In essence, the history of the Federal Reserve's operational presence in retail payments is accented by continuous collaboration with the industry in the areas of standards and rules that produce universal interoperability for all service providers.

In addition to being an efficient universal service provider and a prominent industry collaborator, the Reserve Banks have also served as a trusted intermediary in times of stress. In the wake of the "no fly" ban during the 9/11 crisis, the Fed played a lead role in getting the check clearing system operational within three days and, in the interim, guaranteeing deposit settlement to collecting banks even though the items could not be presented for collection on a timely basis. In essence, the Fed absorbed the float as a means of meeting the president's public policy commitment to keep the nation's payments system operating. When Hurricane Katrina devastated the Gulf Coast, the Reserve Banks took the lead in working with other payment providers and financial institutions to move check and ACH payments in and out of devastated areas. And in 2008, amidst the erupting financial crisis, the Reserve Banks became a safe harbor for clearing and settling payments transactions when the financial stability of some institutions was in doubt. In summary, the Fed operates its payments businesses in a highly competitive, fully transparent fashion, day in and day out. But the Fed is also in a position, as a quasi-governmental agency, to change hats during times of disruption to do the things necessary to preserve the integrity of the nation's public payments infrastructure.

C. Future Operator Role

Looking to the future, and recognizing that the roots of the Fed's involvement in retail payments center around the check collection system, some observers have suggested that the Fed's role is no longer necessary in a fully electronic payments network. There appears to be an assumption that the opportunities of new technology and the presence of the Internet will allow financial institutions to privatize

all payments clearing and settlement and easily create the ability for banks to present items directly to other banks in the same way that individuals can send e-mails and text messages directly to any other individuals. From a purely technological viewpoint, such an outcome is clearly possible. However, from an economic efficiency and safety and soundness view, the path to the future may be less simplistic.

Transacting payments is a very different business than routing e-mails, in that issues like data security, data privacy, settlement risk, counterparty risk, relationship management, efficiency, contingency, and exception handling become far more important. As a result, countries around the world characterized by primarily electronic payments networks and a large number of financial institutions have consistently maintained one or more clearing houses, switches, or payments intermediaries as a cost-effective alternative to manage the issues noted above on behalf of all parties.

Absent such central utilities, banks interested in direct relationships are frequently confronted with the need to negotiate one-off bilateral legal agreements and implement non-standard technical, operational, problem management, risk control, and customer service procedures with each organization. Consequently, banks typically employ such direct relationships with a limited number of high-volume or high-value endpoints. In a future environment sensitized to the current financial crisis, confronted with worldwide growth in payments fraud, and scrambling to find profit margins in commoditized payments products, the use of intermediary clearing and settlement agencies seems likely to be a meaningful part of any efficient and effective payments solution.

The role of a central bank such as the Federal Reserve continuing to be a retail payments central service provider, however, is a more debatable issue, centered in a nation's view of the public policy nature of a payments system. If one believes that the U.S. will continue to be a country of thousands of geographically and functionally diverse financial institutions, then one might believe that the role of the Fed in the future will still exist in some manifestation of its current form.

This continuing role, however, must be predicated on the Reserve Banks meeting the market test of cost/revenue match under the stipulations of the Monetary Control Act so as to avoid the possibility of subsidization that would distort market outcomes. Given the partial public good role of the Fed, this remains an ongoing challenge, but it also ensures a level playing field fundamental to justifying a central bank's role in payments operations. In fact, the issues that dominate the industry today—financial stability, risk management, fraud, and consumer protection—might seem to cry out for the engagement of a fair and properly motivated public entity that can balance the welfare of all parties in times of success and times of stress.

Optionally, the Fed could retreat from its current role over a period of time to foster a fully private retail payments solution, such as is the case in a large number

of countries across the globe. The Fed could assume the role of a payments regulator developing and implementing regulations, as appropriate, to deal with the issues of efficiency, integrity, and equal access noted above. Such an option would allow the private sector to fill the gaps in service left by a Fed withdrawal over time and remove any arguments of public subsidies and unfair competition that are occasionally raised in criticism of the Fed's current role.

Typically, such solutions feature one or more national clearing entities, as well as the needed number of regional and local organizations to create universal access and coverage. Prices and service features are determined by each party, and competition weeds out ineffective players. Participants generally agree to compensate each other for use of each other's networks as a means of ensuring universal coverage. Over time, service levels, security, and other factors are determined via law and regulation devised by a national payments authority.

Of course, U.S. card networks work in this manner today, although the public oversight infrastructure in place is not clearly defined or, some would argue, terribly responsive. As a result, a wide range of issues are in debate with regard to service and pricing practices in the card world, including interchange fees, interest rate levels, credit limits, identity theft, denial of service, and collection practices.

Congress is currently debating the possible need for a broader consumer protection agency and a payments system oversight agency to help address these and other issues. Such outcomes could help address the issues at hand, but experience in some other countries suggests another set of potential problems with a fully privatized, government-regulated payments system: the promulgation of laws and regulations that address emerging problems on a piecemeal basis absent hands-on experience in the marketplace and a comprehensive understanding of the underlying business economics of proposed changes. For example, regulation directed at achieving technology changes with short lead times or focused on requiring certain pricing regimens may distort market outcomes by creating impractical business cases for market participants. Experience has shown that participants may then drag their feet in implementation and cut corners in other areas to create the business case.

Further, in times of stress, public policy stances are arguably harder to implement in fully privatized systems where maximization of profit for the private entity, as opposed to overall public welfare, is the appropriate driving force. Price gouging at gas stations and retailers during natural disasters is an example of this phenomenon. In summary, privatization of all retail payments infrastructures in the U.S. is an option for the future, but with that option comes a number of challenging issues.

To address those questions, would it be reasonable to raise an equally provocative alternative—the extension of the Federal Reserve into the card network space? Such a possibility has been raised in the past by various banking organizations who feel that card company practices favor some providers over others and that pricing practices are unfair and exorbitant. Likewise, retailers have filed and won lawsuits

challenging mandated practices by the card companies. The presence of a public-policy-oriented intermediary such as the Federal Reserve, it has been argued, could deliver many of the same benefits accrued over time in the check and ACH systems, with the Fed acting as one of the major intermediaries between large and small banks, ensuring that reasonably equal access, efficiency, and integrity of the system is in place. Critics of such proposals have countered that such intervention is completely unnecessary, and that the card industry effectively and successfully meets the needs of its customers.

From a very practical perspective, it should be noted that the card market is fully mature, and that current providers have invested millions in the existing infrastructure and relationships. A new entry into the market would have to raise and invest capital sufficient to provide promising scope and scale economies to be successful over the long run. This barrier has prevented any meaningful new entrants into the card markets in recent years.

In fact, history has shown that many electronic service markets tend to become oligopolies over time as the largest players benefit from growing economies of scale. These economies result in commodity pricing and reduced margins that drive out smaller, less efficient players and serve as a barrier of entry to new players, absent any dramatic developments (for example, economic collapse or massive fraud) that would redefine the public policy aspects of the system. Without substantial government subsidies, therefore, it appears unlikely that the Fed could easily or efficiently enter the card market at a scale that would invite long-term success.

IV. CLOSING REMARKS

These are challenging times for central banks. Over the past two years, global financial markets have experienced a level of turmoil not seen in decades. Economies worldwide have entered, and are struggling to emerge, from severe recessions. Central banks are being called upon to help restore economic and financial stability throughout the world.

Less visible, but no less important, are challenges facing central banks regarding payment systems. Well-functioning payment systems provide the underpinning for virtually all financial transactions and economic activity. Ensuring a safe and efficient payment system, therefore, is a mandate shared, implicitly or explicitly, by all central banks. Yet the environment in which this mandate is being addressed is changing in important ways. This is especially true of retail payment systems, which are evolving rapidly across the globe. Electronic payments are becoming the norm. New technologies, new participants, new risk profiles, and new market structures continue to arise. In response, many central banks have been re-evaluating their roles in their respective retail payment systems.

This re-evaluation will continue in the months and years ahead. What market developments and conditions warrant central bank activity in retail payments? More specifically, what types of economic rationales—market externalities,

noncontestable monopolies, asymmetric information—provide a basis for central bank intervention? Should that intervention, if deemed appropriate, take the form of operator, facilitator, or overseer? And, if operator, what types of activity are suggested? Such questions remain critical items on central bank agendas.

Authors' Note: The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Atlanta, the Federal Reserve Bank of Kansas City, or the Federal Reserve System. The authors thank Marc Andries, Michele Bullock, Paola Masi, Dirk Schrada, Christophe Stas, Bruce Summers, and Maria Iride Vangelisti for valuable information and discussion, and thank Christian Hung for valuable research assistance.

ENDNOTES

¹Much of this section draws on Weiner (2008).

²See Green and Todd (2001) for discussion.

³See Stern (2005).

⁴Lacker (2005) provides a contrary view, arguing that market failures are largely absent from payments markets.

⁵Federal Reserve (1984).

⁶European Central Bank (2005).

⁷Table 1 in BIS (2003) provides a list of settlement and clearing activities of the G10 and Australian central banks.

⁸Retail payment operator activities and governance structures vary widely across countries. In addition to those noted in the Tables and discussed in the text, some other examples include: The Reserve Bank of Australia is involved as an operator but in a limited way, calculating the net settlement obligations for a number of retail systems; see BIS (2003). In Switzerland, the Swiss National Bank (SNB) oversees the Swiss Interbank Clearing (SIC) system, which is operated by the Telekurs Group (jointly owned by banks) on behalf of the SNB; see Swiss National Bank (2009). In Canada, the Bank of Canada does not have an operator role but does chair the Canadian Payments Association, which operates Canada's national payment systems; see Bank of Canada (2009).

⁹Deutsche Bundesbank (2009a, 2009b).

¹⁰Banca D'Italia (2009).

¹¹National Bank of Belgium (2009).

¹²Banque de France (2008) and Banca d'Italia (2008).

¹³See Federal Reserve System (1984).

¹⁴For discussion of the Federal Reserve's facilitator and oversight roles, see Weiner (2008).

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The Role of Central Banks in Retail Payments: The Central Bank as Operator Commentary

Joshua Peirez

We've heard a lot about the different roles the Fed and other central banks can play in terms of being a facilitator, an operator and/or overseer. In our case here in the United States, and in some other markets, I would also add one other—examiner—which creates an acronym I quickly came up with, FOOE (phooey), which frankly is what I feel a lot of times in dealing with different parts of central banks.

I've previously had the opportunity to comment on the Fed's role as overseer and facilitator, and have met with many examiners. However, this is my first opportunity to directly talk on the subject of a central bank as an operator of a system. For that, I am thankful. It's actually the first time I've been forced to think about that in a very meaningful way, and the paper did a great job in sparking my thoughts.

Let me start by saying that in thinking about the Fed as an operator, it caused me for the first time to realize I'm actually talking about a competitor of mine. That is an interesting shift, because I usually don't treat my competitors with quite the deference with which I tend to treat my overseer or facilitator. We laugh, but that is to some extent the crux of the problem of competing with the entity that also oversees you.

I would also say, and I think this has proven true in the check clearing system, and to a lesser but still significant extent in the automated clearing house (ACH) system here in the United States as well as in other markets, to some extent for that very reason as well as reasons of scale, that when you do see a central bank step in as an operator, you end up with some quasi-government-type monopoly. It is extremely difficult to get your head around how you are going to compete with someone who is setting the rules and can just change them, should you come up with great innovations that harm their business.

I want to take a second to talk about my role at MasterCard these days, because it is relevant to the discussion we are going to have here. I'm responsible

for our innovation in new areas, so I look at things like mobile, person-to-person payments and e-commerce, as well as bill payment relevant for ACH and check purposes in particular, and areas like cardholder controls, which are the ability to give cardholders the types of things we've been talking about, such as alerts, the ability to set their own spending preferences, receive information, etc. I'll go into some more depth on that.

Let me also say I have rewritten my entire remarks this morning after listening to the session yesterday and this morning to try to comment on and bring to bear some of my thoughts on what has been said so far.

There were a few shocking things for me from yesterday. The first is I found myself vehemently nodding in agreement with Professor Carlton for the first time in many years, because I agree wholeheartedly with a very healthy degree of skepticism around "complex analyses leading to ambiguous results" and using that for purposes of policymaking.

The problem is, when he says that, he means that about the arguments made on the other side. I would posit that the arguments are complex with ambiguous results on both sides of many of these issues. It is an area that is extremely difficult to come in and regulate or to run a business in. Just assuming what you would like to be true and then acting based on that is a very dangerous way to make policy and is unfortunately what I believe we've seen in many markets.

To extend that quite a bit, the other thing Professor Carlton said that I found quite correct was that you really have to look at the results. Once again, you have to look at the results in both directions. So when I look at results on things like efficiency, when I think of Rich's comments here about making sure we cover all players in the space and that we do provide services to everybody equally, I look at the fact that we as an industry have more cards, more merchants, more transactions every year and substantially so. We have more markets around the world we open up. We have more competitors coming into the space now than ever before. Technology has really enabled that. I wasn't sure how to take Dan Hesse's comments yesterday as to whether he was looking to play with us or compete, but that is another area we obviously look at.

Most importantly, we have to be sure there are great innovations coming. I am going to hit on this point quite a bit. It is not innovation for innovation's sake. It's innovation for the benefits it brings. It is exactly what competition and free markets are aimed at creating and what government-run monopolies make sure do not get created.

With that, I want to turn quickly to the comments Harry Leinonen had to say yesterday in response to my question on consumer choice and what role that played. I was struck because his answer very much goes to the crux of how one feels about this space. His answer was, to some extent, and I'm paraphrasing—Why would you ask about consumer choice? That doesn't seem to be a relevant question.

A payment is just a way of connecting one account to another, so why do you need many of them, and what does choice have to do with it?

Frankly, that is the core question. If you don't care whether consumers have a choice, and if you don't think consumers should have the ability to make different decisions (and when I say consumers, I mean merchants as well) about how they pay for things and how those payments are processed, then it is quite easy to conceive of a government-run payments system that is the only one that exists; it doesn't have to change or adapt over time, it doesn't have to drive costs down, and it doesn't have to come up with innovations.

However, if you believe as I do, consumer choice is paramount, and it is paramount because of all the new payment types that are brought into the system through the new choices that are given to consumers. We heard Dickson Chu talk about the things PayPal has done to penetrate new merchant segments. I'm not sure about the 15 percent figure, Dickson. We can talk about that offline, but there is a large segment of smaller merchants online, which are serviced only by what PayPal has brought to bear. That innovation would not have existed in a public-only world, and that was enabled by our rails initially—not by government rails, even though they are now pushing them the other way.

It really boils down to how you feel about consumer choice as paramount to actual decisions being good. In that sense, I was struck by some of the comments about the fact that people here don't think consumers make good choices or don't know how to make good choices, or maybe consumers don't really know what's good for them. I ultimately do believe in the power of consumers, at least over time, to know and to decide what is good and what works for them when presented with the right options. And, yes, transparency is important in that regard.

You end up with inferior, less-optimal products like our U.S. check clearing and ACH systems when you do not have private-sector entities pushing innovations and pushing consumer choice and consumers deciding what wins as the paramount reality. I'll come back to that in a bit, but I do take great faith in consumers and their wisdom about what they want. To think otherwise is to make a mistake and discredit the power of the individual to truly understand what's good for them.

I also want to say that to me it is not “just a payment.” We've heard a lot of times, “Well, it's just a payment.” But it's not. It is all the things that go with it. The last discussion on security really struck me, because one of the things I haven't actually sat in a Fed conference about, and would love to be in a Fed conference about, is consumer ease of use. You can have really secure products no one will use, because they are impossible to use. You have to start with something that is easy for a consumer and beneficial to a consumer, then you can talk about how to best secure it. But you have to start with what is easy and beneficial to a consumer. And I'll get to my points on security in just a second.

Now turning specifically to Rich and Stu's paper, let me start by saying there is one thing in there I wholeheartedly agree with, which is the arcane nature of the Uniform Standards Commercial Code. I thought that was a great observation. I am not sure the Fed has any authority to do anything about that, but if you do

I also agree with about 90 percent of the comments in the paper, in terms of the high burden that should be met before there is public-sector involvement in operating a system. I just don't agree that burden has actually been met, and I probably would disagree with many of the conclusions around the particular circumstances that led to the creation of the check clearing and ACH systems, which would be the subject of a fact paper that I might turn in separately rather than using my time here to go through.

All of the arguments for why an operator role is justified in my mind boil down to things that are really part of the facilitator or overseer role, not the more critical question of whether to get in and compete with private-sector entities. Checks were a great example. The fact that checks have gone electronic in the last few years is great. The fact that they didn't go electronic for the 90 years or more before that to me represents the abject failure of the system as set up. If there were private-sector entities—whether it was one or many operating in that space—you would have seen checks become electronic way earlier, as you did with the paper in the card system as was discussed yesterday.

We saw that efficiency as an opportunity to drive down our costs, because we were not pricing based on being able to recover costs plus a margin. We were pricing based on value. So we have to drive down our costs and drive up our value. We have to do both things, not simply do whatever we want and then come up with a formula to cover that plus a margin. That is the discipline the private sector brings to a particular innovative space.

The next thing I would say is that, frankly, if the private sector were running the check clearing system, it probably would have come up with a debit-card-type system way earlier. It would have been an obvious thing to do. Even today, the fact that you have electronified the back-end of it is great; the fact that you still have to write a check is a massive problem.

The ACH has been done slightly better. However, there are still—and Dan Eckert pointed this out—some real fraud issues there. Additionally, there are some real timing issues. The fact that you don't have real-time authorizations, and that you don't have guarantees in that regard, are real problems to the greater adoption.

I want to make one other point here. What I find to be very powerful is the fact that, whenever we're at these conferences, it always comes down to "cheap or free is good"—somehow that's efficient—rather than "cheap or free is bad." You look at one particular thing, rather than the whole system. Of course, if two things do exactly the same thing, it is better that it be cheaper, but you have to make sure you understand the question.

As I was sitting here yesterday, I decided to use my iPhone to look up a definition of the word “efficient,” because I wasn’t really sure we were all saying the same thing. Just a quick show of hands: Who thinks they know what “efficient” means. Nobody? And who thinks they know what “cost-efficient” means? I decided to avoid all economic definitions, because apparently to define efficient or cost-efficient in economics takes 100 pages. So I went to a much quicker source. Webster’s dictionary definition of “efficient” is “productive of desired effects, especially productive without waste.” Okay?

Then I said, “Okay, well what does ‘cost-efficient’ mean?”

Oddly enough, that is actually not a phrase. It does not exist according to Webster. They turn it into “cost-effective,” but it basically means “economical in terms of tangible benefits produced by the money spent.” So it doesn’t actually mean “free or cheap.” It means whatever you’re spending, you are being productive in what you create from it. Spending more for a better product is perfectly efficient and perfectly cost-effective, as much so as spending nothing on something that creates very little benefit. That gets lost in this discussion, and I want to point it out.

Industries ripe with innovation show the cost-effectiveness and the efficiency of what we do. We have an electronic authorization and clearing system. We have fraud tools that are quite good, notwithstanding the last discussion. We are still seeing on a global level, basis points of fraud. As a percent of overall transactions, that is still among all-time lows on a global basis, just as well as here in the United States, relative to what we saw years ago. Yes, the criminals are on the rise, as they do cyclically become. We will catch up with them and overtake them. The Fed does have a good role to play there in helping us get there faster, but we will get back there.

I talked about inControl—another great innovation. This is something MasterCard has on a proprietary basis, giving cardholders the ability to set their own controls—how much they spend in various merchant categories, getting alerts by e-mail or text message when they actually exceed one of those spending categories or whenever else they determine they would like to get them. For security purposes, inControl also allows a cardholder to create a single-use account number that only exists for one transaction and then goes away. So if it is the subject of a data breach, it cannot be reused by the criminal who steals it. There are great innovations with chip, with contactless, with mobile, with e-commerce, which would not exist but for our systems, person-to-person payments and transit.

We heard a little bit from Bob yesterday about taxis. I saw an interesting article in *The New York Times* last week about New York City taxis. They’re seeing tips up about 20 to 30 percent when people use cards versus cash, which is obviously a great benefit to them. They are not complaining as much as they were when the card systems first came out. They don’t say it doesn’t work when you try to pull out a card anymore. They actually will take the card now.

These are things that have been enabled by contactless capabilities—transit systems and subways. So the question, Harry Leinonen, of why consumer choice matters and why it's not just from one account to another, is why you can't go in a transit system and use your account of choice to make a payment. We need to get to the point of enabling that.

We run an at-par clearing system in the bill-pay space. Quite frankly, it's really hard to justify investing or innovating in that space, because we're competing with the ACH and check clearing systems. It is very, very difficult—as some people have pointed out—to price differently, because the Fed has set a benchmark price. Some would argue that's good. I would argue that's bad, because we have not created innovation in the bill-pay space that would make those payments more efficient, meaning they would get the desired outcome. They would be more effective. They would be faster. They would be more guaranteed. They would be more beneficial to the consumer.

As I am out of time, I am going to rush ahead and say, I think there is no doubt that the private sector achieves the very things that would indicate that maybe there is a failure requiring the public sector to step in. There is, in my mind, no integrity issue, because in spite of 9/11, the economic meltdown of last year, and many, many bank failures, we have not failed to clear a single transaction. We have not had a single bank failure that we couldn't manage with the protocols we had put in place to manage them.

Yes, at the wholesale level, there is absolutely a role for a central bank, but at the retail level we have covered it quite well. Costs are fair, in my view, and I know many of you disagree with that. I am not going to argue they're cost-based, but I am going to argue they are very much value-based and way cheaper than the value all of you receive from them. We bring tremendous value that often gets understated. Free or cheap is not efficient or cost-effective. It is just free or cheap. Okay? Many of you may like to buy a cheap car, dishwasher, or whatever. You should do that, but you should also have the option to buy the more expensive one.

The check clearing system, if it were efficient or cost-effective, would have led to debit or e-check way earlier. That actually required an act of Congress, not the operator innovating in that regard. To think of Congress as being the impetus for innovation is a real struggle for me.

I talked about many of the particular things there, so I want to say I think Stu had it right in his 2008 paper when he said the Fed's decision at the early stages of credit card development not to clear credit card slips through its check clearing operations helped spur the private sector to ultimately create an advanced electronic solution for the clearing of credit card transactions, which was a positive outcome in terms of efficiency. I would like to see the Fed make similar decisions to promote efficiency by letting the private sector be the ones to innovate, as that is what they do best. Truer words could never have been spoken, and I would heed us all to follow those words.

One last point as I conclude: I want to address the fact that there have been some people talking about collaboration, which someone equated to collusion. I just want to say that at MasterCard we independently set our rules, we independently set our prices, and we do it based on what we think is most effective, efficient, and cost-effective for our system. And we do it independently. We hear as much noise from issuing banks as we hear from merchants about our pricing decisions—sometimes more. Yes, one side thinks it's too high and the other side thinks it's too low. We do look at things like security, how we promote one side versus the other, and how we place incentives in the right place, we do all those things. To see the Fed play a role in helping have better information on which to make those decisions would be fabulous. However, I would hate to see the Fed supplant its decision making for that of the free market.

General Discussion

Session 6

Mr. Oliver: Thank you for being provocative, Joshua. I would start by saying perhaps you give us far more credit than we deserve. The statement that the Federal Reserve might set a market price or something like that has certainly not proven to be the case in the past years.

I was particularly struck by the questions about innovation. By the way, I am a big free-market advocate; I absolutely believe in the power of innovation in the private sector through market means. The discussion about, if in fact the Federal Reserve and the check world should have innovated sooner to move into electronics or cards or e-checks or something like that, that's a rather interesting discussion, because the fact of the matter is we tried to do that, starting 20 years ago.

I assumed responsibility for the product office 11 years ago and, at the time, we had already been providing electronic check collection services for 10 years. But we weren't seeing those practices mimicked in the private sector. These are interesting questions, and I would say if the only business the private sector was running in that case was the check business, it would have happened.

But, instead, what we've seen recently—whether it's been in innovations we've tried to bring to the marketplace like same-day ACH or getting at your issues—is we don't have an ACH system that particularly serves the temporal needs of improved payments practices, reducing risks in debits by limiting the number of days of exposure and whatever. It is absolutely an accurate comment from my point of view.

We have announced we are going to offer such a service in the second quarter of next year. We've had difficulty in convincing the industry we should offer such a service when it would seem to be a natural evolution of not only efficiency, but effectiveness, risk reduction, and what have you. Why? Because the silos that exist within payments across banking institutions cause them to try to defend their own

turf. Putting in a same-day ACH network might seem like a great efficiency and a great public policy move for the country, but it may not be a move that is particularly good for the wire transfer business, the electronic check business, or the debit card business, which may see a portion of their marketplace threatened.

This always seemed to me to be puzzling. Why would an institution do this? My own personal opinion is because we don't have in place in this country individuals managing the overall payments operations of financial institutions whose singular goal is to look out for the bottom line profitability of the organization. Instead, we manage it within silos, and we find out the kinds of things you ought to expect to see aren't happening.

I don't think what you've suggested is a necessary consequence, and I don't think the Federal Reserve's engagement has hindered. Rather, I think we've done a great deal of innovation and have very much expedited the adoption of electronic checks through our presence and persistence in trying to get our customers connected through the network.

Mr. Weiner: First of all, thanks, Josh, for your comments. They were very insightful, as usual. To be as succinct as possible, I believe the Fed's presence in check collection and ACH has served the nation well historically. Going forward, I don't have strong views about the Fed's role in checks. As regards ACH, I believe our continued presence there is entirely warranted, if for no other reason than to help ensure a competitive environment. Were the Fed to exit, leaving only EPN, new entrants could appear but certainly can't be assured. As far as innovation goes, it strikes me that the Fed has been innovative in ACH. But, arguably, we could be more innovative. Rich, of course, is much closer to that than I am.

Finally, this session, of course, examines the Fed as operator. But, I also think it is important to examine the Fed as overseer. In my view, the Federal Reserve could be doing, and potentially should be doing, much more in overseeing not just traditional systemic payments systems, but what the Bank of England has called systemwide systems. The Dutch central bank, for example, provides a very good example of my preferred way of going about it. I am anxious to hear what Ron Berndsen has to say in the next session.

Mr. de Armas: I have to say, Josh, I really found your statements about free and cheap to be very enlightening. I don't disagree, actually. I think services should not be free, but that belief is inconsistent with your practice, because you force merchants to process payments for free at the same cost as cash. So we're providing a service to consumers for free. Why shouldn't we have the opportunity to charge for that service?

You also talk a lot about customer choice. You believe consumers have the right to choose, but how can consumers make the choice if they are not aware of the cost? If a bus, a cab, and a limo cost me the same thing, I am going to take the limo every time. Without understanding the cost piece, how can you make a choice?

Mr. Peirez: I'll just answer the question I think you're asking.

First, let me say that just because I believe a consumer doesn't need to know exactly what interchange rates apply on a particular transaction or what a merchant claims the overall cost of that particular payment form is to them doesn't mean I think a consumer understands what those products cost them. It is no different—and we've had this debate a million times with all of you so I'm not going to belabor it—it is no different than all the other costs a merchant incurs in providing a service.

You provide an integrated service, just like you provide an integrated refrigerator. With consumers, they don't get to decide they would have been fine with a cheaper icemaker than the one they ended up getting in the refrigerator they bought. When they use their cards, they know the fees that apply to them; just like when merchants choose which cards to accept, you know the fees that apply to you.

There have been great strides in the last few years in making those fees more transparent to you. Maybe there is more that could be done. We've talked about some of those things. I have no problem, as I've testified before Congress, in terms of printing your costs to a consumer on their receipt or telling them those costs at the point of sale. Go ahead. I have no problem with that. So, if it's a question of knowledge, do it. Our rules don't restrict it. I can't speak for the other guys, but they are over there. You can ask them. So I agree in that regard that consumers should be able to make those choices.

In terms of surcharging, which is the heart of the other part of your question, if I am correct, again it's something we've spoken about quite extensively. As I said in Chicago, although I will try to repeat that answer here as best I can, we have a number of markets where surcharging has started in the last few years. We're monitoring it very closely to see the results and to see how it plays out. You've heard some interesting things on both sides here today, which is what we're witnessing as well, in terms of surcharging—which is that in some cases it bears no correlation to cost—and thus begs the question.

I disagree on the answer that was given to the question today about the difference between discounting and surcharging. Merchants do have the ability to discount for cash. I just don't think cash is really cheap, even though merchants like to say it is. You just don't have a line item that says "my cash discount fee." If you did, it would be a much higher percentage in my mind for many, many merchants—not all—than what they see for cards. There are just some fact points there we disagree on, Mario—more so than the principles.

Mr. Levitin: Josh, this is also a question for you. You are right that cost efficiency is the main metric we should be looking at. In my mind, that raises the question of whether the new value that card networks have provided tracks the increase in the cost of payments. Since 2000, we've seen something around a 50

percent increase in interchange costs. Has there been a 50 percent increase in new value provided, or where is the new value? Can you spell it out?

Mr. Peirez: I am not going to take your assumption on the numbers as fact, because that is not accurate.

Mr. Levitin: If you want to show some other numbers, I'd love to see them.

Mr. Peirez: We have and we can show others. I also appreciate the question, because I've seen your work extensively and we've never had a chance to meet, so thanks for the question.

Let me say two things on this question. First, there was a lot of discussion about the investment required to bring a network live and put out the infrastructure, etc. So, yes, to some extent as you build in those networks, you do have the ability to bring new things to life quicker, to use the network you've built to bring new innovations to bear. I don't agree that costs overall in the system have gone up. You have to look across the board at costs; you can't look at one particular cost. You have to look at interchange add-ons by the acquirers in terms of discount fees and cardholder costs. And, yes, times have changed in terms of write-offs and things like that, so you're bearing that. But I still believe there is a great correlation between the value we bring and the costs that are involved. Sometimes you bear certain costs in one year as a loss leader for value you get in the later year. Sometimes you extract it at the same time. I'm not held to a formula like the Fed is of saying, "Here are my costs and now I'll extrapolate a mark-up based on what I see in the market."

I look at it based on my investment dollars, and it's no different than anything else. You have a period of time where you have an innovation that's different from what others have where you can extract a different rent. Then others come in with a similar product and your rent goes away. Then you have to spend a lot of money to bring it back up. What we've done is exactly explicable in basic economic and pricing theory that any business would engage in. It's no different.

Mr. Taylor: This is a quick question on PIN-debit markets for Richard. The Kansas City Federal Reserve issues the status of PIN-debit report every three years. I think there is one due this year. In looking through the data, from 1996 to 2005, which was the last data point, PIN-debit costs have risen about 15 percent compounded annually. Can you comment on the value in the new innovations that have occurred within the PIN-debit market that would justify that kind of price increase?

Mr. Oliver: The answer is no. I actually don't have a lot of engagement in the card world at all. There are two other people here who could better answer that question, but I assume the answer is nested someplace in the technology that has to be adopted first of all to accelerate PIN-debit. I might add, by the way, we're just starting into the fourth cycle of the Fed's payments system market research study. We are growing that study also, asking banks for the ratio of PIN-to-signature debit and so forth as another means of trying to corroborate the data. I'd ask my other two panelists to comment.

Mr. Weiner: You're probably referring to the Kansas City Fed studies we've done in the past—about six years ago and then three years ago—on ATM and debit card markets. We have a lot of information on what's been developing in those markets, including pricing. Yes, there has been a movement up in PIN fees, and they have narrowed the gap with signature. The last time we wrote about that, there certainly was the thought among myself and my coauthors that it has something to do with competition in that market, and we heard yesterday, of course, that competition in these two-sided markets can sometimes be counterintuitive. In that case, it can sometimes, because of the competition for issuers, lead to an increase in interchange fees. But I really don't want to go any further on that topic. Maybe we can talk offline. It's rather tangential to this discussion of the central banks' role.

Mr. Leinonen: I want to comment on consumer choice because I am really in favor of consumer choice, but you have two different levels here. You have the customer service provider level where you should have consumer choice and there should be competition, but then you have the service provider at the trunk network level, between the service providers, and there it is good to have only one way, an overly efficient one, and see the governors keep that efficient. So, if you compare with SMSs, you have just one SMS-type of service—the trunk level for that. Would it be better for customers if you have two non-interoperable text message systems? The same applies if you look at e-mails. If you would have two different e-mail systems, you would have to transfer e-mails somehow between them. That would be a problem.

When you go to payments, it is very interesting here when you talk a lot about checks, but you still have the situation that all checks are accepted in shops and in banks—the one without having check type 1 or check type 2 and different networks for different checks. But, in cards, you suppose it would be more efficient in having three or four different trunk networks, instead of having a situation where all cards are accepted and all card transactions transferred in one network, and then the competition would be among acquirers and among issuers towards their customers, but not in the trunk networks, and the problems you have now where I see extra costs at least and not full efficiency, which you could reach.

In many countries, we have that kind of situation. I'm coming back in a little bit to Finland, and I can say we have not had any ACH in Finland and we have open acquiring of cards. So all cards are accepted and all in one network, and this network operates directly between all participants. That, you could say, is the Internet way of doing it. There's no e-mail ACH and no SMS ACH. You could also work without payment at ACH if you really want to make it efficient.

Mr. Peirez: Harry, I couldn't agree more with your analogy. I just disagree with the underlying facts you present, which is the behind-the-scenes service providers in those industries are more than one. You heard Dan Hesse yesterday. It is not the industry creating a single new pipe. They may create interoperable

standards and that is essential. And I do think any work central banks can do in helping create standards more quickly and bringing parties together for standard creation more quickly would be great. As an industry, we coordinate on that across systems. Yes, you want that interoperability of standards, but you also want people competing on that pipe in terms of what else they are going to bring to market, what they are going to give to those front end providers in terms of enabling them to compete on the back-end.

So I fundamentally disagree that you can have one underlying technology pipe that everyone in the front end then accesses, and that somehow creates consumer choice. There is only so much you can do off that one pipe. That's like saying, "Here you would have had the check-clearing pipe and everyone could have innovated off that to have cards."

That's true and, until four years ago, you would have everyone still clearing with paper. I just disagree on where the analogy follows.

Mr. Leinonen: I just ask you if there is enough consumer choice in the telco industry and mobile telephones?

Mr. Peirez: It varies substantially by market, actually. In some markets, no, and in some markets, there is great choice on handsets, but not on network operators and plans. In some markets, there is great choice on network operators, but not on available handsets. Then, in some markets, you have both. So, in some cases, yes, and there are markets where I would argue maybe not.

Mr. Duncan: This morning, Gwenn Bézard asked a provocative question, which was, Why don't merchants compete to create new payments products? I was pleased to hear Josh answer that when he said, "How do you compete with someone who gets to create the rules and can change them when you try to innovate?"

As the two regulators potentially on the panel, what should be the role of government in removing rules that prohibit parties from discouraging or encouraging the adoption of innovative products?

Mr. Weiner: Well, my reaction is that one of the roles of central banks is overseer, and the overseer role is itself a spectrum. Josh mentioned we should perhaps consider our regulator role as well. In my view, regulator is a part of the overseer role. Another part of the overseer role is thinking through the rules and regulations and ensuring there is a level playing field in whatever market the central bank has a mandate in ensuring efficiency and safety.

Without commenting on this specific example, I think there is certainly room for central banks around the world to periodically rethink and reexamine their retail payments systems and ask themselves, Are there things we could be doing to make these systems more efficient and safe? And much of what we've talked about the last couple days, in fact, falls under that umbrella.

I was struck this morning by the discussion about security. Security standards seem to be lacking in many cases. There was a suggestion that, Why don't central banks, or the Fed in particular, step up to the plate and, say, be a little more vocal in encouraging certain security standards? Personally, I think that is a suggestion that ought to be taken seriously. So this is an indirect answer to your question, Mallory, but I certainly think it is in the purview of a central bank to be thinking about what's efficient and, specifically, the kind of rules and regulations that are in place, as long as it doesn't overstep its bounds.

Mr. Oliver: You raised an excellent point about the issue of your competitor being your regulator. The issue is, how have we dealt with that dilemma, because it is a serious point, and we've dealt with it with a very strong and wide Chinese wall. Anytime I try to develop a service, I have to get it approved by people who ask the question, Will this service be detrimental to private-sector competition?

By the same token, coming the other way, as an overseer I fully agree overseers should try to find ways to adopt rules that enhance competition. It doesn't always happen. Instead, they find rules that enhance political outcomes sometimes or something like that. But, in that context, with the passing of the Expedited Funds Availability Act in 1988, the Board forced the adoption of certain rules that eliminated the concept of presentment fees; that is, one bank could charge another bank for the privilege of collecting the checks at their door.

The Reserve Banks from a competitive standpoint should have been totally opposed to that because it meant these checks could now bypass us for free on the presentment side. Instead, we supported it and adopted competitive services as a means to try to address that issue. So it can be done, but it has to be done carefully.

Central Bank Oversight and the Changing Retail Payments Landscape

Ron J. Berndsen and Bouke H.J. Buitenkamp

I. WHAT IS PAYMENT SYSTEMS OVERSIGHT?

Supervision of payment and settlement systems, known as oversight, is among a central bank's responsibilities. For the Netherlands, the legal basis for oversight lies in the Banking Act of 1998 and in the EU Treaty. Oversight is a form of supervision aimed at promoting the security and efficiency of payment and securities clearing and settlement systems. De Nederlandsche Bank (DNB) considers that this includes all payment systems, payment products and securities settlement systems of relevance for the Netherlands. The supervision consists of monitoring these systems and products, assessing them in the light of international standards and—where necessary—insisting on changes.

Oversight has dual objectives. The first objective is to help prevent systemic risks in systemically important payment systems. To assess systemically important payment systems, standards are used which are intended to prevent one party's problems (e.g., liquidity problems) from spreading to the other payment system participants and beyond. The second objective of oversight is to control risks which may affect the smooth operation of the payment system. One example is fraud via electronic means of payment, such as the skimming of bank cards. These risks may endanger the smooth operation of payment systems, even if there is no systemic risk. Nevertheless, the poor functioning of one or more payment products may have significant economic and social implications, and may ultimately damage public confidence in the payment and currency system. This approach to the objectives of oversight is in line with the general definition put forward by the BIS.¹

II. HOW WE DO OVERSIGHT

In this section we introduce the way oversight is conducted at De Nederlandsche Bank (DNB). The focus here will be on oversight in the retail payments area.

DNB, as a Eurosystem central bank, conducts oversight in line with the Eurosystem's oversight policy.²

A. Scope of oversight

In line with the two goals of oversight of mitigating systemic risk and promoting the safety and efficiency of the payments, the scope of the oversight is rather broad. In our case all payment systems, payment instruments and securities systems that are relevant to the Netherlands are in scope. In 2008 there were 22 oversight objects for the Netherlands (see Table 1) of which half belong to the retail space. A central role in the retail payments area is played by the automated clearing house (ACH) called Equens. The ACH clears more than 95% of all interbank retail transactions. Furthermore, there is a payment scheme owner—named Currence—carrying the following main payment instruments: debit card PIN, direct debit, e-purse, an Internet payment instrument and a paper-based instrument.

There is an important distinction between on the one hand the wholesale and securities systems and on the other hand the retail payments area. In wholesale and securities systems, the process of internationalization in Europe, kick-started by the introduction of the euro, is far more advanced than in the retail payments area. The physical IT infrastructure supporting the real time gross settlement (RTGS), central securities depository (CSD) and central counterparties (CCPs) that are relevant for the Netherlands is located abroad. In the European retail space the Single Euro Payments Area (SEPA) project is setting the stage, but it will take some more years before SEPA-wide payment instruments have reached a critical mass. The different degrees of internationalization are reflected in the way oversight is conducted. For wholesale payment systems, such as TARGET2 and CLS, and for securities systems, such as those offered by Euroclear, LCH.Clearnet and European Multilateral Clearing Facility (EMCF), cooperative forms of oversight are standard, while for retail systems and products oversight is still largely organized along national lines or cooperative oversight is in an initial phase. It is widely expected that the corresponding national instruments will be replaced by their SEPA variants of the credit transfer and the direct debit.

In cooperative oversight there is more than one overseer that has an interest in the well-functioning of a system or payment instrument (and often there are quite a lot of overseers and other supervisors) because the system is of importance in more than one country; the system may be multi-currency or operate cross-border. In such cases one overseer takes primary responsibility for overseeing the system, the so-called lead overseer. The role of the lead overseer is to coordinate oversight tasks and to ensure to the extent (legally) possible that the other authorities agree on a common, consistent approach. The other overseers with an interest in the system then usually enter into a memorandum of understanding with the lead-overseer that describes the agreement between the parties on how to conduct oversight.

Table 1
OVERSIGHT OBJECTS AND ARRANGEMENTS (2008)

System	Lead overseer/regulator	Other overseers/regulators
Interbank large-value payments		
Target2	ECB	Eurosystem NCBs
Target2.nl	DNB	
EURO1	ECB	Eurosystem NCBs
CLS	Federal Reserve System	G10 central banks and other central banks of the 17 currencies involved
SWIFT	National Bank of Belgium (NBB)	Other G10 central banks
Securities clearing and settlement		
LCH.Clearnet SA	Rotating chairmanship for regulators Euronext countries	Other regulators from Belgium, France, Netherlands and Portugal
LCH.Clearnet Group Ltd	Commission Bancaire (France)	AFM, DNB and the regulators from Belgium, France, Portugal and the United Kingdom
EMCF	AFM and DNB	
Euroclear SA	NBB and CBFA (Belgium)	AFM, DNB and regulators from France and the United Kingdom
Euroclear NL	AFM and DNB	
ECC	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	AFM, DNB and Bundesbank
Retail payments		
Equens	DNB	
Paysquare	DNB	
VISA Europe	ECB	DNB and NCBs from Belgium, Germany, France, Italy, Austria and the United Kingdom
MasterCard Europe	NBB	DNB, ECB and NCBs from Germany, France, Italy and Austria
Currence (Chipknip, Acceptgiro, PIN, Incasso, iDEAL)	DNB	
NVB (Spoedopdracht)	DNB	
UPSS	DNB	

A second distinction between on the one hand wholesale/securities and on the other hand retail is the number of different parties involved in the respective payment chain. On the retail side, there are many parties involved that provide different services to consumers and merchants. Many of these parties may be non-banks, which in itself poses some challenges for central banks. This was in fact the topic of the previous Kansas City Fed Payments Conference in 2007.³

Determining the precise scope of retail oversight is therefore sometimes challenging. A recent example can be found in the so-called overlay payment service. This service was introduced in the beginning of 2009 in the Netherlands and also in some other countries. An overlay payment service is a service where, from the perspective of the consumer, a third party intervenes between the consumer and the Internet banking application of the consumer's bank when the consumer pays for a good he or she ordered at the website of an online-merchant. By doing so, the overlay service provider is able to provide real-time information to the merchant whether the payment was sent or not. The merchant then receives the payment amount in due time following normal interbank settlement. However, in the process, the overlay service provider obtains authentication data from the consumer that, under most terms and conditions of Internet banking in the Netherlands, are to remain secret at all times. Although the overlay service may be an innovation allowing consumers to pay for online goods and services, it is also interrupting the end-to-end secure connection between the consumer's computer and the bank's server, raising serious objections.⁴ It is therefore very important and at the same time difficult to determine whether an overlay service is in or out of scope as it doesn't fit in any of the usual categories of a payment instrument, a payment system, a credit institution or a payment institution. It is therefore not easily brought within the scope of oversight.

B. Prioritizing the work

The oversight department of any central bank will presumably have limited resources for conducting the oversight. Prioritization is therefore a necessary annual exercise. Having determined the scope which could be seen as the "width" of oversight, prioritizing could be termed the "depth" of oversight: determining the amount of resources to be spent on each object. For the systemically important (retail) payment systems prioritizing is fairly straightforward as—given their systemic importance—a considerable portion of the available oversight capacity should be used to assess such systems. Those assessments can be comprehensive when a new system is planned or when an existing system undergoes a major change that implies a potentially large change in its risk profile. In any case, at De Nederlandsche Bank, assessments are updated annually in order to have at least once a year an overview of how well the system complies with the relevant standards.

For retail payment products and other non-system roles performed by parties in the payments infrastructure, determining the priority is less trivial. Typically, systemic importance of retail payment products is low. For payment instruments a triennial cycle is used for planning the assessments. The order in which the instruments are assessed within the triennial period depends on the perceived level of risk. Important drivers are the amount of fraud, whether there are any known complaints by the general public or substantive negative media attention, the amount of time elapsed since the last full assessment and any proposed joint cooperative oversight assessments. The triennial cycle ensures that each payment instrument

is at least periodically assessed. The assessment and its follow up are refreshed on an annual basis.

It is good to have a plan but sometimes deviating from the plan is necessary. Suppose everything is neatly prioritized and planned, resources are allocated and the assessments have had their kick-off meetings. Then a financial crisis or a major operational disruption hits the payment system or its participants. The traditional view assumes that the overseer would not be involved during the crisis itself as oversight is a form of *ex ante* supervision. The overseer is therefore involved pre-crisis (in normal oversight mode) and post crisis (to conduct a post mortem and see to it that the lessons learned are indeed implemented). The global financial crisis that started in August 2007 and especially the weeks following the Lehman Brothers default on 15 September 2008 showed that there is a role for the overseer to play. Not in managing the crisis or the disruption itself—that remains the responsibility of the system operator—but in gathering in a timely fashion the status of other systems and critical participants so this can be used to assemble an up-to-date picture of the whole relevant infrastructure.

C. Reporting the outcomes of oversight

The reporting phase of an assessment is an important step to improve the degree of compliance with the relevant oversight standards. We distinguish between internal and external reporting. With internal reporting we share the assessment with the oversight object. The result of the assessment against the appropriate oversight standards is usually a report listing the major findings, the degree of compliance with each standard and the requested follow up (if any). After internal validation within the central bank it is essential to discuss the results of the assessment with the management of the oversight object and to reach agreement on the follow-up. The follow-up is a list of issues that need to be resolved by the system under oversight in order to improve the degree of compliance. This internal report and the follow-up remain confidential.

External reporting is vital from a transparency viewpoint. The oversight function of the central bank needs to be transparent about its goals and oversight policy methods.⁵ This is widely recognized and is a responsibility that central banks have subscribed to in the report “Central bank oversight of payment and settlement systems” issued in May 2005.⁶ Some central banks pursue a higher level of transparency than the minimum responsibility just mentioned through also publishing the outcome of the oversight (Bank of England annually since 2005, the Banque de France in 2006 and 2009). As of 2006, DNB also publishes an oversight chapter in its annual report.⁷ In that chapter a summarized version of the assessment results of the oversight objects is shown, of course without disclosing classified information. The content of the publication is sent for consultation to the overseen systems and—in the case of cooperative oversight—the other competent overseers. In doing so, external reporting can be viewed as a powerful way of promoting the oversight goals as experience shows that the oversight policy of publishing assessment results

in itself has a disciplinary effect on the overseen entities.

III. THE RATIONALE OF OVERSIGHT

The decisions of a (sufficiently large) payment system provider may have far-reaching consequences throughout society. Both during the design phase and in the day-to-day management of a payment system (or payment product), decisions are made that may affect the ability to conduct payments in a society. The ability to conduct payments in a timely and secure manner is crucial for the smooth functioning of an economy. For the large real time gross settlement (RTGS) systems, this dependency is widely acknowledged. But it also holds true for large *retail* payment systems.

A case in point is the use of the debit scheme “PIN” in the Netherlands. In the Netherlands, debit card use is very widespread. PIN payments can be made at 184,000 points-of-sale, including the vast majority of retail stores. In 2008, a total of 1.75 billion points of sale transactions have been conducted using PIN. With a population of 13.5 million (aged 15 or older), this comes down to almost 130 transactions per person. Balance verification takes place online with each transaction, and the associated payment account is debited typically the next day. Especially when a payment product is so widely used as PIN, it reaches a point where it becomes impossible to swiftly substitute away from it in case of an operational calamity. The public simply does not carry enough cash anymore. Checks, which might provide a flexible alternative in some other countries, have been fully phased out in the Netherlands. Not only have the cash balances of the general public fallen, it is also unfeasible for the public to quickly obtain sufficient cash in case of an operational calamity with PIN. Banks have reduced the number of physical branches and ATMs use the same online PIN verification⁸ as PIN transactions. Clearly, should a major operational failure in the online PIN verification process occur, this will have far-reaching repercussions throughout Dutch society.

Decisions by the scheme owner of a significant payment instrument, such as PIN in the Netherlands, have implications that go beyond the normal influence of a private company. As a result, the well-functioning of significant payment systems and instruments is of interest to society at large. Oversight is the way for society to guard its interests regarding the activities of a payment system or a payment product. As is clear from the PIN example, our main focus is on those payment products that are sufficiently widespread (or are likely to be used widespread in the foreseeable future) to impact society at large.

Establishing that decisions of payment systems have implications for society is a required, but not a sufficient condition to establish the need of an oversight function. After all, if society can be fully assured that payment systems will always make correct choices in the absence of oversight intervention, there will be no need for active oversight. In the rest of this section, we conjecture that a payment system can be expected to often make decisions that are in line with society’s preferences,

but may also fail to do so. In order to explore the question in more detail, we first note that the decisions that are of most importance are the ones that affect the safety of the payment function and/or its efficiency.

A. Safety

The perceived safety of a payment instrument is one of the most important factors that determines whether consumers will use it. If a payment instrument is perceived to be unsafe, consumers are likely to shy away and use an alternative payment method. Hence, it is of great importance for the firm that exploits the payment instrument to ensure that a payment instrument is considered to be sufficiently safe by its potential customers. Given the importance that customers typically attach to the safety issue, firms that exploit a payment instrument are likely to attach a high weight to ensuring that their payment instrument is considered to be sufficiently safe. However, the firm also incurs the costs of safety measures. A profit-maximizing firm will weigh the total costs of safety measures against its benefits.

Will the level of safety that a payment service provider chooses⁹ be optimal from society's point of view? There are several causes to doubt that this will always be the case. First, a firm may under-invest in safety because of a lack of resources. If, for instance in case of hefty competition, payment fees come under downward pressure, necessary security measures may be postponed or cancelled. Second, note that a firm is not only concerned about the actual safety of their product, but also by the safety of its product *as perceived by the public*. If the firm considers that it can create a positive (and persistent) gap between the perceived and actual safety of the product, it may choose to attempt to influence the perception of safety rather than the actual safety of the instrument. This situation may be most likely to occur if the risks consist of low-probability/high-impact calamities that are very costly to prevent. Especially in these situations the firm may decide to accept the risk that the calamity occurs rather than actively trying to mitigate that risk.

A case in point is the direct debit scheme as it was implemented in the Netherlands up until a couple of years ago. Direct debit is a very common payment method in the Netherlands. In 2008, 1.23 billion direct debit transactions took place for a total value of EUR 300 billion. To put this number into perspective, it is slightly above 50% of total Dutch GDP in 2008. In general, with a direct debit, the recipient debits the account of the payer after receiving a mandate to that effect. If a direct debit transaction is done while the necessary mandate is not present, the payer has the right to have the payment reversed. In the Netherlands, the administration of the mandates was (and is) done solely by the recipient. With mandate verification being done only in case of a complaint/payment reversal, a recipient that faces a pending bankruptcy could turn rogue and misuse the direct debit scheme to collect money from all of its customers. Up until several years ago, few measures were in place to prevent such rogue payments from being processed. The safety net was far from perfect. For instance, the recipient's "normal" payment behavior was unknown to the processor that processes the direct debit payments.

This implied that the plausibility of a batch of direct debit transactions could not be verified by the processor. Since the delivery of a batch of direct debits often took place on an unencrypted data carrier (a tape or floppy disk), manipulation of the batch could even take place in transit. Overall, these risks have not materialized, but that could arguably be merely attributed to the fact that only a small group of people was aware of the security caveats. Hence, although a large fraud would have severely damaged the reputation of the direct debit and would have resulted in a large financial loss, the underlying security risks existed for a prolonged period. Apparently, the chance of such a large impact fraud was considered to be too small to warrant corrective measures. Following critical oversight assessments and a lot of media attention a couple of years ago, such risks concerning the direct debit were addressed.

Generally, the negative effects of a failing payment instrument will go beyond the scope of the payment service provider, especially if the payment instrument is widely used. Conversely, the measures it takes to mitigate those risks will create benefits for society at large. Differently put, the safety of the payment instrument is a quasi-public good. A private, profit-maximizing firm that only partially benefits from positive effects of its actions, but at the same time incurs the full costs of those actions, cannot be expected to fully internalize its positive external effects. A well-known result from public good theory is that in this situation the firm will “produce” less safety than would be optimal from the point of view of society.

B. Efficiency

Markets for payment instruments are two-sided, requiring that two separate, identifiable groups of customers together use the payment product. Both groups are needed for the successful use of the product.¹⁰ In the case of a payment instrument, one group of customers consists of the holders of the payment instrument (the issuing side) and the other group of customers accepts the instrument as a means of payment (the acquiring side). This two-sided setup complicates the network effects that exist in these markets. Basically, for each customer group, the value of being “connected” to the payment product is a positive function of the size of the other group of customers. So, for a holder of e.g. a credit card, the value of possessing the credit card positively depends on the number of shops where that credit card is accepted. Vice versa, for a store, the value of accepting a certain credit card depends on the number of holders of that credit card. Although these network effects are thus rather complex, it is straightforward that they are a positive function of the overall size of the combined user group. The more people use and accept a payment instrument, the better it can function as a means of payment. Markets with significant positive network effects generally also exhibit strong economies of scale. That is, as the number of users of the product increases, the average costs of operating the payment product falls because of the existence of sizable fixed costs. Furthermore, with marginal costs of an extra payment generally being very small, a payment product may prove to be an uncontestable monopoly.

We will not focus on the difficult pricing issues that arise in two-sided markets with strong network and participation externalities.¹¹ Rather, our aim is to infer whether a private firm running a payment product is likely to produce an overall level of efficiency that is optimal from society's point of view. For this, we note that in markets with strong positive network effects and economies of scale, the value to the customers of the payment product may outweigh the marginal costs of a transaction by a large margin. If, furthermore, the payment product is a *de facto* uncontestable monopoly, monopoly profits are likely. Although optimal from the firm's point of view, monopoly pricing will generally not deliver optimal results for society as a whole. This is because the extra revenues that the firm generates are likely to shift the focus away from cost effectiveness (static efficiency). Furthermore, product innovation (dynamic efficiency) may be suboptimal due to the lack of competitive pressures. This is not to say that the converse situation, with fierce competition, will automatically result in better efficiency. In highly competitive markets, fees may be driven down to marginal costs, making total cost recovery difficult. On the one hand, this will naturally increase the focus on static cost efficiency, but on the other hand, dynamic efficiency is likely to suffer because of the lack of resources. In all, due to network effects and economies of scale, payment firms may not deliver the level of static and dynamic efficiency that are optimal for society.

In conclusion, both the level of safety and efficiency that a payment firm produces may not be optimal from society's point of view. The oversight function of a central bank is a means to incorporate the external effects that a payment firm exerts, in effect promoting the socially optimal levels of safety and efficiency. It has to be noted that the extent to which oversight is an effective tool depends on the efficacy of the oversight function. There is a risk that market failures are merely replaced by a government failure. This happens if oversight turns out to be ineffective or when it introduces new, and possibly larger, problems that did not exist prior to intervention. Of course from our perspective we assume that oversight, on balance, is effective in increasing social welfare.

IV. CHALLENGES TO OVERSIGHT FROM THE CHANGING RETAIL PAYMENTS LANDSCAPE

A. Identifying new initiatives

New retail payment initiatives emerge almost on a monthly basis. A part of the initiatives stem from companies that are already within, or at least close to, the payment sector. Quite often, companies that offer new payment instruments come from outside the traditional banking and payment community, e.g. the telecommunication sector. Especially this group of "outsider" start-ups may be relatively unfamiliar with the oversight function of the central bank and unaware that they might be subjected to oversight. For oversight, this implies that it might be challenging to ensure that we are aware of all relevant initiatives. Furthermore, we need to be ready to start active oversight as soon as we feel that new entrants turn into

relevant players.

For all ends and purposes, the identification of new potential oversight objects is not a major practical issue. In the past months, DNB has performed a stock-taking exercise that showed that a large number of nonbanks are active in the payment sector, together covering virtually all sections of the payment chain. Considering only the nonbanks that offer services to a significant number of banks, we find that most of these service providers are already subjected to oversight or other forms of supervision. Generally, once start-ups have become aware of the oversight function, in most cases they are willing to be subjected to oversight. This may at first sound counterintuitive. After all, being subjected to a supervisory body places an extra burden on these start-ups as it takes time and effort to comply with oversight standards. The reason for this counterintuitive outcome is that these companies often feel that being subjected to oversight may be a valuable asset in their relationships with potential partners and customers. A payment product firm needs to gain the trust of potential customers as consumers will need assurance that the product is sufficiently safe. Being subjected to oversight helps these companies to signal to the public that they can be considered to be trustworthy. De Nederlandsche Bank also publishes the results of oversight in its annual report, which implies that there is a two-sided risk for the firm: We could also assess the start-up to significantly fail the oversight standards.

After the identification of new relevant players in the payment market, a practical question arises regarding the scope and the optimal intensity of oversight. As was illustrated in section IIA, those questions can sometimes be challenging as new and emerging nonbanks don't always fit in any of the typical categories.

B. Increased competition

Many of the new entrants in retail payments markets direct their attention on the beginning and the end of the payment chain, offering consumers and merchants new and innovative means of conducting retail payments. Often, alternative payment instruments will be available and the introduction of a new payment method will not increase the total number of transactions. However, in some cases, a new payment instrument enables trade that had not been taking place before, for instance because consumers or merchants previously felt that there used to be no safe payment method available. In these instances, the total number of transactions will increase. A case in point is PayPal, which has served, among other things, as an enabler for international consumer-to-consumer trade that had previously been infeasible due to the prohibitively high costs of conducting consumer-to-consumer cross-border payments. However, we feel that the PayPal example does not constitute the typical case. Rather, in most markets, alternative payment methods *are* available and the introduction of a new payment instrument is unlikely to significantly affect the total number of products sold. In these situations, a new payment instrument will be a substitute (often a close one), for existing payment methods. If we abstract from the cases where a new payment instrument is responsible for

a significant increase of the total number of transactions, it is clear that we can normally expect new retail payment products to increase competition in the retail payments market.

If we consider the (theoretical) case with only one, uncontestable, payment instrument, it is clear that the entity that governs will be able to charge monopolistic usage fees from its users. In reality, several competing retail payment instruments exist that may be each others' imperfect substitutes, and each may also offer a unique set of characteristics that sets it apart from alternatives. Generally, we expect that payment firms facing competition will not be able to charge total usage fees that are as high as in the monopoly case, although the resulting market structure or the specific characteristics of the payment instrument may still allow for usage fees that remain significantly above marginal costs. This is for instance shown by Bolt and Soramäki¹², who compare a market with two competing payment instruments (with Bertrand-type competition) to the monopoly case and unequivocally conclude that overall fees are lower in the duopoly case.

A Dutch example that shows, according to the Dutch competition authority NMa, excess revenues in the presence of market power, is the PIN scheme in the Netherlands as it operated until some years ago. For a long time, the PIN scheme has been the only domestic debit card scheme in the Netherlands, thereby competing with alternatives such as cash and credit cards. The company Interpay, founded by a consortium of eight banks, provided the network services for PIN transactions. It was also the sole provider of PIN acquiring services, offering these services directly to merchants. In 2004, the Dutch competition authority concluded that Interpay had been abusing its position of power through overcharging merchants.¹³ Its fee structure allowed Interpay to earn significantly more than the NMa considers as a normal return on equity. In response to the NMa ruling, a more competitive structure was formed, in which banks (as opposed to Interpay) offer PIN acquiring services to merchants, thereby competing amongst each other. In effect, the monopolistic structure was broken up. This change in the competitive structure was one of the main factors that led the NMa to partly remit the fines one year later.

Overall, we expect that the fee revenues of all payment firms will fall as a consequence of increased competition. Both the usage (volume) and the fee (price) are likely to be adversely affected. The usage falls because the total number of retail payments have to be split among more competitors. Fees fall because in a more competitive environment, the value of the payment instrument to customers is reduced, because of reduced network effects. Furthermore, increased competition from substitutes implies that the usage of each payment instrument is reduced, resulting in lower network effects and therefore a reduction in consumers' willingness to pay for the payment instrument.

How does increased competition impact the oversight function? From the

point of view of oversight, the reduction in total fee revenue itself is not of primary interest. However, the reduction of total revenues may affect payment firms' decisions in fields that *are* of primary interest to oversight: safety and efficiency.

Regarding the effects of more competition on efficiency, on the one hand, the existence of more payment networks that compete for the same number of payment transactions implies that (positive) network externalities will decrease. Hence, it is likely that static efficiency deteriorates. On the other hand, competitive pressures may incite firms to focus more on product innovation in an attempt to reduce costs or create added value for customers. This may improve dynamic efficiency. Overall, the effect of more competition on the efficiency of retail payments is ambiguous.

Increased competition has two, opposing, effects on safety. On the one hand, as established in section IIIA, payment firms may, related to their external effects, “produce” less safety than would be optimal from the point of view of society. If total revenues fall as a result of increased competition, this may prompt payment firms to postpone or cancel costly safety measures that might be crucial to prevent low-probability/high-impact risks, thus increasing the chances that a payment instrument fails. On the other hand, however, with more alternatives methods of payment available, large-scale operational calamities that hit only one of the payment instruments will have a less severe impact on society. After all, consumers and merchants would in such an event find it easier to switch to alternative payment methods. Overall, even if the “production” of safety is adversely affected, this may or may not be problematic for society.

Oversight needs to ensure that the minimum safety and efficiency standards remain observed. Although the effects of higher competition on both variables are ambiguous, heightened competition may change the assessments of the safety and the efficiency of retail payment products, both existing and new.

C. Emergence of common payment infrastructure

As indicated above, new entrants to the retail payment markets often seem to sprout very near to final consumers. With payment product innovations, such as mobile payments, aimed at changing the interaction between merchants and their customers, most of the new entrants want to position themselves at the endpoints of the payment chain. They may, however, find it difficult to position themselves, not only because of competition of existing payment instruments, but also because they need to find a way to connect to existing payment infrastructures. Some initiatives sprung from banks, which clearly are in the best position to ensure a connection to existing payment infrastructures. Truly new entrants to retail payment markets, however, are likely to face difficulties in connecting to current payment infrastructures. Operators of those payment structures may need to be forced by law to open up and grant competitors access to their networks. In light of the experiences in other sectors, including networks for cable TV, mobile telecommunication

and electricity, this is likely to be a jerky process that may take significant time. The overlay services that have been referred to above are a telling example. The “product” that these companies want to sell, is the guarantee that a customer has indeed executed a payment to the benefit of the merchant. For this, they use a method (authenticating and conducting payments on behalf of the consumer, using their credentials) that clearly cannot be endorsed as a safe and prudent way of conducting payments. However, it appears that safer methods would crucially depend on the cooperation of the consumer’s bank, which would be in a position to provide a guarantee that the consumer has made an outgoing payment.

We expect that in the longer run, developments such as this one will lead to a situation where a wide range of retail payment instruments exists, but that those products connect to a limited number of payment infrastructures. “Payment infrastructure” should in this respect be understood to include a wide range of elements that are used for conducting payments. It not only pertains to clearing and settlement (which in most countries already is very concentrated), but also to payment terminals in merchants’ shops, to communication networks used for financial transactions and even to the physical carrier of the payment instrument. Technically, cards can combine debit and credit payment products and, for instance, an e-purse. In fact, cards that combine a debit product with an e-purse have been in use in the Netherlands for roughly a decade. In a similar fashion, payment terminals are or can be made flexible so as to accept multiple products that are within a previously defined specification.

A move towards a situation where payment infrastructures are used for several payment instruments changes the risk profiles of these products. A (possibly significant) part of the operational risks originate at the physical infrastructure, and if that infrastructure is not dedicated for a specific payment product, a failure will simultaneously impact all products that use that infrastructure. Differently put, the safety and efficiency of several payment instruments crucially depend on the safety of the common infrastructure.

The concentration of operational risks may also give rise to legal governance risks. After all, who is primarily responsible for the functions that the shared infrastructure performs? The conventional view is that the governance authorities of the payment products involved is, as they have outsourced to the common infrastructure. Furthermore, outsourcing should never imply that responsibilities are transferred. Hence, from this point of view, the governance authorities of all products that make use of the common infrastructure each are responsible for the functions that the common infrastructure performs for their product.

There are, however, two drawbacks to this conventional view. The first one regards the efficiency of the oversight function itself. There are costs involved in the conduct of the oversight function; costs that are ultimately borne by society. The

efficiency of oversight may not be optimal if, for operational issues related to the common infrastructure, we would address all individual governance authorities. We would be putting the same requirements, pertaining to a single infrastructure, on a range of governance authorities. Rather, it will in certain situations be more efficient (i.e., lowers costs to society) to direct the oversight attention regarding these operational issues directly towards the operator of the common infrastructure itself.

The second drawback relates to the overall risk profile of the common infrastructure. With the use of a common infrastructure, operational risks of several retail payment products are concentrated. Individual governance authorities only carry a responsibility for the risks that the infrastructure implies for their own payment instrument. However, as a failure of the common infrastructure impacts a whole range of payment instruments simultaneously, the risks to society may be larger than the sum of the individual risks that it poses to the governance authorities. After all, the ability to conduct retail payments may be severely impaired if several payment instruments fail simultaneously.¹⁴

An example that illustrates this issue is the Dutch Interbank Authorization Network Switch (IAN-Switch, or Switch), which is operated by Equens. The Switch plays a central role in the authorization of retail payment transactions that require the use of a PIN code. It performs this function for a wide range of products, including point of sale transactions with credit and debit cards, the authorization of cash withdrawals and recharging e-purses. It receives requests for authorizing PIN codes and acts as a switchboard, routing the requests to the respective bank or payment institution. The response (authorization) from the bank is also routed through the Switch back to the payment terminal, ATM or e-purse recharge station. Furthermore, several additional functions have been added, such as a stand-in function which allows payment transactions to be conducted even if the bank of the holder of the payment instrument is temporary offline. If the Switch should fail, this would instantly halt all point-of-sale transactions that require PIN verification (including the debit card scheme “PIN” that is so widely used in the Netherlands) and all ATMs, halting retail payments.

A wide range of products use the Switch, including all major credit cards and debit card schemes. In order to cover the full extent of the risks that the Switch poses to Dutch retail payments, DNB Oversight is currently in the process of placing the Switch directly under our oversight. This does not imply that the governance authorities of the affected retail products may now ignore the operational risks that are associated with its function. What they can do is reduce their effort to monitor the Switch as they may now take into account that it is a function directly under oversight.

V. CONCLUSION

It may not always be obvious which new entrants to the retail payment market need to be subjected to oversight. There is a risk that oversight fails to identify relevant new entrants, although this risk is probably limited for two reasons. First, as the oversight function only deals with parties that in themselves are large enough to impact society, they will normally be identified before they reach that threshold. Second, new entrants often seek out overseers, hoping to obtain a sign of recognition from a trustworthy party.

New entrants can normally be expected to increase competition in the retail payment market rather than open up new markets. As the number of transactions will need to be split among a larger number of companies, the average usage of each competing retail payment product will fall. Furthermore, because of increased competition, the fee per transaction is expected to fall. Overall, with lower volumes and lower prices, fee revenues for each competing product, both new and existing, are expected to fall. With less fee revenues, risks increase that necessary safety measures are not undertaken, especially those aimed at preventing low-probability/high-impact events. This may warrant increased oversight attention. On the other hand, it may be less dramatic if such **operational calamities occur as more alternative** payment methods are available and the impact on society of one failing payment instrument may be less severe. Overall, even if the “production” of safety is adversely affected, this may or may not be problematic for society. An increase in the fierceness of competition in these network industries implies that (positive) network externalities will decrease, possibly reducing static efficiency. On the other hand, competitive pressures may turn the focus towards product innovation and improve dynamic efficiency. Overall, the effect of more competition on the efficiency of retail payments is ambiguous.

Probably the most significant impact of the changing retail payments landscape on the oversight function is the emergence of common payment infrastructures. We expect that the payment infrastructure will evolve as several other network industries have done in the recent past, turning from competition of networks to competition on the networks. Such an evolution changes and concentrates operational risks. In order to guard that the oversight process remains efficient and ensures that risks that surpass individual payment instruments are well-contained, oversight is being focused on common payment structures rather than only the payment instruments’ governance authorities.

ENDNOTES

¹BIS, "Central bank oversight of payment and settlement systems," May 2005.

²See <https://www.ecb.int/pub/pdf/other/eurosystemoversightpolicyframework2009en.pdf>.

³The conference proceedings can be found at: <http://www.kansascityfed.org/home/subwebnav.cfm?level=3&theID=11323&SubWeb=10683>

⁴DNB's position on overlay payment services can be found at: <http://www.dnb.nl/en/news-and-publications/news-and-archive/persberichten-2009/dnb223392.jsp> (in Dutch).

⁵This paper is doing exactly that.

⁶BIS, "Central bank oversight of payment and settlement systems," May 2005.

⁷DNB Annual Report 2006, 2007 and 2008.

⁸Furthermore, ATMs need to be filled with cash. In case of a run on ATMs, the short-term capacity to restock is likely to fall short as well.

⁹In the absence of oversight.

¹⁰For a general treatment of two-sided markets, see Armstrong (2006) "Competition in two-sided markets," *RAND Journal of Economics*, Vol. 37, No. 3, Autumn.

¹¹The two distinct groups of customers (holders of the payment instrument and merchants that accept it) are likely to face wildly different fee structures. It is even quite conceivable that one customer group actually pays a negative fee (that is, receives a fee) for using the product. For the current purpose, we can limit ourselves to the sum of the fees that are charged to merchants and consumers together.

¹²Bolt and Soramäki, "Competition, bargaining power and pricing in two-sided markets," DNB Working Paper 181 (September 2008).

¹³http://www.nmanet.nl/nederlands/home/Actueel/Nieuws_Persberichten/NMa_Persberichten/2004/04_10.asp (in Dutch).

¹⁴If the risks associated with the concentration of the infrastructure are considered to be too big, oversight may also require governance authorities to diversify and use multiple, distinct infrastructures.

Central Bank Oversight and the Changing Retail Payments Landscape

Commentary

Jonathan Williams

I'd first like just to say how honored I am to be invited to comment on such an insightful paper. I'd also like to say that like Dickson Chu I am not an economist. So that did prompt a question in my mind when I was invited. Why me? Because I don't represent a bank at all. We're not a payments institution. We are not an operator of payments. In fact, we are not even under oversight. What's worse, I suppose, I'm a European.

One thing I do bring to the table is I bring a different perspective. We sit outside typical payments operations, as a vendor of technology services and a provider of the data which helps you make payments transactions day in and day out. So I hoped by stepping outside, I'd be able to give you a slightly different look at the issue of oversight from a central bank perspective.

I have to say it's been a real pleasure to comment on this insightful paper. I hope to be able to share some of my viewpoints and observations, and illustrate them with some examples from Europe and the UK.

My first observation is this particular paper is unlike a lot of papers or publications on oversight. It is not utopian. It actually takes a pragmatic view of how you can really implement central bank oversight with all the different pressures we have, including the changing landscape of payments. I suppose I ought to point out these are my views brought from experience, so don't hold me to them.

First, look at how we do oversight and the question of the scope. Ron, in this paper, said it needs to be a broad scope and needs to encompass all those different entities, those different targets for oversight, which could have a significant effect on the systemic or systemwide risk of the payments within your individual target location.

There is a good question of where to draw the line and whether, for example, Experian, as provider of lots of payments data, should be included within the oversight of a central bank somewhere. I do definitely agree with Ron when he talks

about making a clean assessment against assessment standards, because it will give a good objective view of whether that organization, whether that target of oversight, is actually compliant or not. Only by actually having proper well-defined assessment standards and the proper assessment methodology can you actually get a good answer to that question.

But there is also another thing we need to bear in mind when we are looking at central bank oversight and that is also the user voice—the voice of the users of the payments system—and what their problems are. It may well be that we don't see from a banking perspective there is a particular issue with one particular payment type. The users on the ground really understand that. That is an important part of the overall understanding of how oversight can be implemented. Understanding and getting information from the users of payments systems is as important as being able to assess those against independent standards.

There is also an interesting question of multinational organizations that offer different services around the world and whereabouts those organizations should be overseen. One good case in point is the SWIFT cooperative, of course based in Belgium, but they provide services worldwide and not necessarily all the same services in different locations. In some locations, they very much provide services for the real-time gross settlement systems.

Ron in his paper brings up a good question of prioritization. There is never enough time to be able to oversee all the different targets for assessment we would want to look at. Therefore, there needs to be a pragmatic approach taken to exactly which ones we look at first. Ron also makes the point we have to be pragmatic and react to changing events in the payments industry. And certainly with the changing landscape it does affect that quite considerably.

One of the things we need to bear in mind is something which is really outside oversight and that's looking at the payments policy or payments strategy on how that might help our prioritization of which targets we look at first. Certainly, if we know where we are in terms of the systems we view as legacy and those systems we view as “the to-be systems” then maybe concentrating on those two different ends—the ones we want to end and the ones to encourage—maybe that helps us prioritize oversight of those different types of organizations.

Ron asks a couple of very good questions on *why* we do oversight. There are three things which sit within the environment around oversight. First is the payments strategy, so where are payments going in our territory and our region, what are the things we want to try to encourage, what are the problems we foresee over the next few years? Then there is the other side, which is the regulatory side. So, once we've overseen a particular target organization, if there are consequences associated with noncompliance, how do we encourage regulation to be able to tackle those particular issues?

There is also the issue of separation of operators from scheme owners. We've already heard about the Chinese walls within the Federal Reserve Bank of Kansas City. But, over the last five or six years, we've seen a number of different scheme owners set up completely separately from the operators of those payments systems.

There are a couple of good examples. There is Currence obviously in the Netherlands. In the UK, we split our clearinghouse, Bankers' Automated Clearing Services (BACS), into a scheme company, BACS Payment Scheme Limited and VocaLink, the operator of that ACH. In the UK, we've also given the ownership of the Faster Payments scheme you've heard about earlier on to the CHAPS Clearing Company that operates the real time gross settlement (RTGS) system, which is an interesting decision. I can completely understand now why it was done.

What role to safety and efficiency? To a large extent, in his paper, Ron points out it's the confidence of the users of the payments system in that payments system. So when in the UK we replaced our clearinghouse access mechanism for corporates, which is called Bacstel with an IP-based version innovatively called Bacstel-IP, there was a lot made of the change in new technology.

What was interesting was they completely changed the way their security worked. Historically, we used to have calculator-like devices for putting authorization numbers on individual sets of payments. With Bacstel-IP, we moved to smart cards, which was much, much better. Of course, the message wasn't that the security wasn't good enough before, it is just now a lot better.

This is the sort of thing we need to encourage—the improvement in overall systems—and try to avoid the systemwide failure the Bank of England has been talking about in some of their payments systems. In the UK, we have a systemwide flaw potentially in the direct debit system, so that if, for example, I gave somebody else's bank details to pay one of my bills, then there aren't typically systems to be able to detect that type of payment fraud.

In fact, a journalist famously said, "Well, you can't use my account details. If you're going to use my details, pay me some money. So go ahead."

Two days later he found himself paying £500 to a charity by direct debit. What was interesting was not the fact he was extremely opinionated and had to eat humble pie, but the fact that it highlights a problem—there is no safeguard for that type of fraud. Therefore, there is a need, a potential opening, a potential chink in the armor of the direct debit scheme in the UK which can be exploited.

In the UK, we also looked at how payers perceive how secure systems are. We are very keen on the direct debit system, as you are probably aware. So much so, when we started off moving consumers across the direct debit payments, we assess an unlimited guarantee. If they disagreed with a direct debit coming out of their account, they had an unlimited time to recall that payment back.

Under the tenets of the payments services directive, all of the countries were

asked to look at that recall period to work out whether that should be shorter. In the UK, we very much looked at it, talked to all the corporates, and we said, “Maybe a little over a year,” and then proceeded not to change it at all. So it was then kept as an unlimited guarantee, which is important. It means no direct debit payment in the UK is ever final. It always might possibly be called back in 50, 100, 150 years’ time, which is a problem.

Ron also talks about efficiency, as part of the banker BIS definition of what oversight should look at. Of course, the easiest way to identify efficiency is to look at the *user* interest in the things which may help them. In the UK, one of the inefficient parts of the system was that payments that failed would occasionally be returned, not by the electronic system they had been paid out by, but a paper system, typically missing a lot of the reference information. In fact, that was done by one of our larger banks in the UK and not particularly helpfully. I hope they were subject to interesting discussions with the central bank about that.

In terms of efficiency and payments, it’s to some extent the strategic view of where our payments are going that helps us look for those efficiency improvements. In the UK, the Payments Council, which is the strategic body looking at payments over the next 10 years or so, has set up a number of different projects. Two of which I’ve been involved with are around payments records information—how you reconcile the individual transactions back to the customer accounts and the standardization of account numbers.

Unlike you, our account numbers vary from 70 digits to 12 digits, including alphabetic characters. In some cases, there is no particular pattern. It is a problem in the UK. It is a problem if you’re trying to pay into the UK as well. For efficiency goals, we suggest asking users.

Matthew Bennett was talking earlier about the issues of transferring accounts between banks. I hope I’m able to offer him a potential insight on these questions why that doesn’t work particularly well. In the UK, bank transfers of things like direct debits and standing orders work very well. There is a system called ToDDaSO, transfer of direct debits and standing orders, which actually does that particular process, but it relies on the corporates that own the direct debits, the recipients of those payments I suppose, to be able to change their records and their business systems. Not all corporates do that, which is one of the problems caused by the direct debit system. I am sure Matthew is already aware of that.

Some efficiency savings actually come by talking with users of payments systems and finding out what the problems are. That particular interaction is quite useful to shed light on where we can improve and where the targets of our oversight can help.

We talked a little bit about new initiatives and new entrants to the market. Really, the reason why those new entrants are, I suppose, challenging—like the

overlay payments system mentioned by Ron earlier—is they challenge the assumptions that were originally made. The assumption of online banking is you have the user in front of you and they directly enter data into that online banking system. With the overlay system, that's not the case. It sits in the middle in intercepting some information.

Therefore, when we're looking at new entrants and they are challenging those assumptions, we should consider whether those assumptions are still meant to be valid or whether we need to change those assumptions and potentially change the assessment standards for which we are doing oversight.

I do have a question on new entrants and their willingness to be overseen. Ron has obviously had a very positive experience dealing with new entrants into the market. I'm slightly concerned, but in some cases we don't get the degree of transparency from those new payments service providers that we do from historical financial institutions. There is always a question of what the consequences are if that new entrant does not want to play ball with oversight.

In the case of the competition in the paper, Ron talks about how competition may drive down safety. Actually I have an example where competition drove up safety or at least complicated it anyway. In the UK when they moved to this new Bacstel-IP system and they looked at how individuals might identify themselves, each bank went for a completely separate trust scheme and set of smart cards and set of standards—all interoperable, but ever so slightly different. Therefore, there was no single point of failure in terms of the trust scheme.

Of course, it caused a lot of problems for corporates, which were dealing with multiple banks, but that wasn't the problem. It was arguably slightly more secure. And there was a very technical issue, which was called split siding, which if you're interested in I'd be happy to discuss later on. It was a very deep technical issue, which again was a risk-averse way of looking at it.

So the question is, if fees go down, does that drive a lack of innovation? We would probably all agree, if there is less money around, there is less money for investment. I suppose the corollary isn't always the case. If the fees go up, the innovation doesn't suddenly come in. Just the profits go up and the shareholders get happier.

Finally, looking at the common infrastructure, it is certainly a question of economies of scale versus stability. If you're using multiple infrastructures, which still make economic sense, then arguably there is some greater strength associated with that.

In the UK, the Faster Payments scheme actually relies on the Bacstel-IP interface window to be able to submit payments from corporates. Instead of having two completely separate systems—so if Bacstel-IP failed you would be able to use Faster Payments—they run across the same piece of hardware and, therefore, there is a good question as to whether they are giving the level of stability required.

In conclusion, this is a great paper. It is extremely pragmatic and takes a number of steps forward in how to really implement oversight. There are some questions it poses over the central bank levers over new entrants to the payments market. My personal view is we should be using the user voice more when we are trying to assess those individual targets against their assessment goals.

General Discussion

Session 7

Mr. Weiner: Very interesting paper and comments. Ron, do you want to respond at all to Jonathan?

Mr. Berndsen: I think having the user voice heard more is a very good recommendation. When we come up with new standards, it is standard practice to have a user consultation. So, for three months, we put the standards on our website. Everybody is free to join and give comments. Do we attract a user with that? Sometimes we do, but maybe sometimes not, and it would be good to solicit more of the user's views. That was a good suggestion.

Mr. Weiner: Great. Let's open it up now.

Mr. Bolt: A question for Ron about accessibility to, let's say, common infrastructures. You said the infrastructure needs to be open so that other users can exploit the infrastructure. Is then oversight also concerned with the access pricing of those infrastructures? The owner of that common infrastructure can be a private entity, which can be invested in that infrastructure for a long time and everything is up and running, and then suddenly somebody else in the infrastructure needs to be open for everybody. Of course, the owner wants to have a return, so he asks an access price to use that infrastructure, and his oversight is also concerned then with the access pricing of those networks.

In the telecom business, that is an open issue and is a difficult problem. If the access price is too high, you cannot really compete as an entrant. If it's too low, perhaps inefficient competitors enter the market, so you need to strike a balance there. Is oversight also concerned with debt or just making sure infrastructures are open, but that is then the end of the story? What about network access pricing?

Mr. Berndsen: That's a very good question. In the oversight world, it is important there is open access, especially to systems where there is no alternative. For instance, the example we have is the Switch in the Netherlands. You have to have access if you want to do something there. It is not customary to talk about pricing or what pricing would be good. The standards would say you have to admit everybody who has a certain type of low risk as a participant. If you have a proper payments system, everybody who is a participant and who is compliant with the access rules, those access rules cannot be discriminatory against nationality but can be discriminatory only for the risk level the participant brings. For big systems, that risk should be low. So, this is the same for the Switch, for all types. So, we do not go and say the price should be such and such.

Mr. DeCicco: Ron, this is a question for you. Although it's a little outside the paper, I'd be interested in your views around central banks' role in terms of global oversight. From here I mean global cooperation or collaboration, as there could be common interest in requirements that cut across markets, for example, with respect to anti-money laundering (AML) mitigation and oversight and the information requirements we carry from market to market and across border.

From a practitioner's perspective, I know many would argue we are not seeing consistent requirements across different markets, or their requirements are interpreted differently from market to market, which leads to some inefficiency at the very least as we conduct our payments practices in markets. From your perspective, is there any dialog within the central bank community on looking at the aspects of the global nature of our business and the need for some more cooperation and collaboration?

Mr. Berndsen: There is, to a large extent, global cooperative oversight on established systems like SWIFT or CLS or other international systems like central counterparties, which operate cross-border. That is now a well-established practice. But oversight is not everything. You mentioned AML: That is not something that is in oversight standards or in the oversight sphere. In those committees, we do not consider AML, for instance, as data privacy is not an issue in the oversight sphere.

Of course, I can feel sympathetic to the idea that central banks should be able to align on that, but that's not something in systems oversight. But there is global oversight on the systems I mentioned.

Mr. Weiner: I don't want to put anyone on the spot, but it would be interesting to hear the perspective of the other side—those networks that do cross-border business—on what their views are of global oversight, whether they think what is in place now is sufficient, burdensome, or not burdensome. Are there any thoughts on that?

Mr. Gove: If we take the last question a step further, one of the biggest issues I find going around the world is the consistency of data and quality of data, interpretation of data fields, and what have you. We're seeing a lot of work going on now in diaries in different countries. There is probably different data being collected

in each of those diaries. Different bodies are collecting data—the Reserve Bank in Australia, the APACS in the United Kingdom, a lot of the data in the United States come from merchant publications, which are most important. Is there a role for the central banks in coordinating and, on a global basis, in setting some standards for what data should be collected, because the better the quality of the data, the better decisions everybody can make?

Mr. Berndsen: That is a very interesting question. The central banks need a lot of data in order to be able to make assessments, for instance, but also for other functions in the oversight function. As a facilitator or as a policymaker, you have to have access to enough data in order to base your judgment or your policy. I would say this seems a little bit broader than just the oversight information that would be needed to be gathered. In the Eurosystem, we are trying—but it's only Europe of course—to align on data and to see how we can collect it in a more efficient way. That goes from payments data to balance of payments. That's a very broad area. To some extent, that would be very beneficial to have.

Another example that comes to mind is the new oversight group on the central counterparties for credit and default swap clearing. That is a whole new business. These are new companies, which have been around only for one year now, and from the start, the overseers have said, “Okay, we are trying to cooperate from zero on,” when they are trying to operate and to see what the data needs of the central banks were. They have all been aligned, so on that small part—but it's a new part—we already have alignment of data. Going back to well-established things as in the payments area, it becomes more difficult to align on that. But that would, of course, be a good idea.

Mr. Williams: To add to what Ron said, as a user of that sort of data—transactional statistical data—I must admit I find it very difficult to get a single world-wide picture for the same period of time using the same sorts of definitions. It is difficult to do, and central banks are in an excellent position to try to capture that information in addition to their oversight work. I suppose the question is, Who is going to fund the doubling in size of each of the oversight or statistical departments to enable that?

Mr. Gove: The type of data being collected around the world by various bodies is not in any standardized format. Given that there are attendees present from a number of government bodies from various parts of the world, I'd like to know if these bodies might get together and agree to some standardized method of data collection, definitions, and reporting. For example, data from the United States often includes signature debit with the credit data, whereas the PIN debit is reported separately as “debit.” Fraud data is also inconsistent in its format from country to country. This makes it very difficult to compare one country with another. Better quality data will mean better decision making by all parties involved in the payments industry.

Mr. Weiner: I think that is a really good point, John, especially to the extent

you hope central banks are viewed as a trusted third party, where proprietary data could be trusted. It would be a nice way to pull all that together. Certainly, the researchers in the room would appreciate it, not to mention those with policymaking and overseer responsibilities.

Conference Wrap-Up

Bruce J. Summers

I would like to compliment the conference organizers in having conducted a conference that has produced an abundance of light and a minimum of frictional heat. I think Stu Weiner laid that out as a success criterion in the beginning, and he has admirably achieved it. My task has been to summarize the conference, to provide perspectives on the material.

First of all, I am going to offer some perspectives from a public policy standpoint on the construction of the conference, if you will, the background leading up to the conference itself. That's the *ex ante* part.

Then, I've tried to identify some of the key themes that were identified both by the presenters and the discussants during the course of the conference. Part 2 of the talk is going to be an attempt to identify those themes. What I did coming in is try to crystallize five key questions that deal with consumer choice, market incentives, clearing and settlement, system risk, and the role of the central bank in retail payments. That is the organizational construct I used that will constitute the second part of my remarks in terms of organizing the themes I've tried to identify. I'll be the first to admit I'm not comprehensive, and I'm sure I've overlooked some important thoughts.

Starting with perspective, and my own priors, the conference underscored that integrity and efficiency are public policy concerns. They show up on the agenda. I'll offer a couple of thoughts to support that. From a U.S. perspective, we have an estimated \$225 billion in noncash payments made each day, and those constitute payments in a national economy where up to 70 percent of the gross domestic product is attributable to retail payments. Just small nuances in the efficiency of the operation of the payments system can have a very significant impact on the functioning of a modern economy like that.

Second, a premise that efficiency depends on public confidence and trust—that was a key theme here and it is also underscored in some research I happen to be involved in with a couple of the Federal Reserve Banks, including Chicago and Philadelphia. The heavy lifters behind that research—Dick Porter and Bob Hunt—have been here at this conference as participants. So, that is research yet to be produced.

And, finally, let me emphasize a point about the popular press keeping at the forefront of our attention issues involving retail payments. Unfortunately, the news is not good in the retail and the financial press. This point was made several times during the conference. So, there is a lot of intrinsic risk simply associated with public perceptions and perceptions of the press with respect to the efficiency and integrity of the retail payments system.

It is really important to be able to agree on the use of key terms when we talk about the role of the central bank in the payments system and to try to clarify the terminology used in the conversation. I want to define three retail payments system domains. First, rules and standards where scheme owners are active; payments instruments, which are referred to several times in this conference as the front-end or service-provider domain; and then clearing and settlement mechanisms (CSMs), a term I borrowed from the European Central Bank taxonomy for defining a component of the payments system, the back-end or the operator domain. When we talk about the role of the central bank, we want to be really clear where it is the central bank would play.

Who are the actors? Consumers are certainly on the demand side, but on the supply side, service providers to consumers on the front-end, the operators on the back-end and then the policy authorities. This is where oversight falls. I want to underscore (and this came up in their conversation, too) policy authorities are in two broad groups: self-regulatory organizations in the private sector and then public authorities, which include central banks as overseers but a lot of other authorities too—supervisors, consumer protection, fair trade, and so on.

It's hard to focus explicitly and solely on the role of the central bank when it comes to policy authorities. And I'd add in legislatures, parliaments, or, in the United States, Congress. So if there is a void to be filled, if policy authorities and self-regulatory organizations aren't doing the job, that void is going to be filled, and it could be by the legislative arm.

I cast a perspective on policy considerations, *ex ante* to the Kansas City conference, just by looking at the agenda, and the perspective I gathered coming here looking at the agenda was we would learn a lot about consumer needs. We would learn a lot about the nature of the markets in retail payments systems—the two-sided markets with externalities where incentives are crucial to good outcomes.

We would talk about the clearing and settlement mechanism, where there is a good deal of concentration but the change taking place is creating opportunity

now for new entrants. We would talk about bad actors being able to exploit the scale economies in these systems to scale up fraud to a massive level, potentially at least and hypothetically.

And then we would talk about the nature of public policy development. It's very hard to do, and, as evidenced by our conversation, the role of the central bank in public policy development is at least open to some debate.

This is not the only payments system conference this year looking at the landscape. There was one earlier in Cape Town, South Africa, which I happened to have had an opportunity to attend. It also focused on the global landscape for payments systems, so I had some perspectives—priors, if you will—that I brought with me to the conference, based on the Cape Town conference. At least one or two of you I know attended as well. These are *ex post* takeaways because the conference is over. By the way, you can readily access the proceedings of that conference by going out to the World Bank homepage, www.worldbank.org/paymentssystems, and there is a summary of the themes for the landscape conference in Cape Town. In Cape Town, we talked about diverse and dynamic consumer needs, and we talked about the public in two groups: the well-served public and the poorly-served public. There was a big focus on the needs of the unbanked public. I expected to hear a lot about that on this program, but we really didn't talk much about that.

I am going to provide an example here that's close to home: the venue of the conference being the United States. From recent prior Fed conferences on the retail payments system, people estimated there are 70 to 80 million people in the United States alone who are underbanked. That is an astonishing figure. That is larger than many countries, right? So it seems strange to me in a way that somehow you jump to the conclusion you have to go to an undeveloped economy to get into issues involving the needs of the underbanked. But here, right in our own backyard, in an important, developed country, you have that issue.

A takeaway from Cape Town: Costs and incentives tend to be misallocated, and government authorities are in a very interventionist mode on a national and an international basis globally. Nonbanks are in the vanguard of change. Where the action is, in terms of innovation in payments systems, tends to be principally in the nonbank space. We picked up on that here in Kansas City.

Finally, central banks tend to be the principal overseers in payments systems, but by no means are they the exclusive public authorities that are active in this space. Then, rounding out Part 1 in perspectives, I have some personal perspectives I want to share with you. My priors and my biases, at least subliminally perhaps, lie behind what I captured as key themes of this conference.

First of all, when you look at where the issues tend to percolate up in retail payments systems, it seems to me that principally on what we call the front-end, the marketplace for consumer services, we see issues involving access, pricing, security, and consumer protection. That would tend to be the magnet for public policy attention.

Second, my personal view is that systemic consequences of fraud and risk in the payments system tend to be underappreciated. Maybe I'll have another comment or two to make on that when we talk about the conversations here at this conference.

Third, agreeing with what has come before, such as Cape Town, nonbanks—but especially telecommunications companies—are playing an extremely prominent role, and they tend to be vertically integrated service providers. When we talk about telecommunications companies' entry, it's the infrastructure that's carrying all the streams of data, but they are also the front-end service providers, providing the new payments services. At least that is the way this is starting to emerge globally. This raises all kinds of not necessarily bad, but interesting and profound questions with respect to vertical integration regarding the delivery of payments services by nonbanks.

Compared with central bank operations, oversight tends to be the more direct, flexible, and powerful approach to achieving public policy goals. I simply observe central bank oversight in the retail payments space is on the rise. I would assert operations tend to be on the decline.

Finally, and again pertinent to the venue of the conference in the United States, the Federal Reserve Board, which is the entity that's lodged with the legal authority to conduct supervision and oversight, evidences minimal interest in payments system oversight. There is an important point we didn't capture or articulate here related to this that I'll circle back to at the end.

Let me get now into Part 2 of my attempt to capture some of the main themes in the conference. First of all, with respect to consumer needs, we heard from Dan Hesse that people want anywhere, anytime services including banking and, broadly speaking, real-time account maintenance. The kind of real-time service we have in telecommunications is strongly desired.

I observed that our deliberations during this conference appear to have left consumers out. Market incentives and economic theory in two-sided markets are very complex; they don't really provide clear answers, and it's prudent to be very wary. Our speakers said that. We also learned the theory needs to be validated empirically, but my observation is systematic data are not yet available, and it's going to be a long time until they are.

For whatever reasons, we have theory, we have data that indicate price and cost incentives appear to be largely hidden from consumers, and they tend to distort behavior. In principle, a strong takeaway for me is cost transparency is a good thing. A relatively safe public policy program would be based on removing barriers to cost transparency.

In clearing and settlement, back-end concentration gives rise to monopoly protection of market franchises. We heard it manifested in seemingly subtle ways: the unwillingness to pursue standardization and to facilitate portability of bank account numbers. Those are essentially barriers to market entry.

Looking ahead, we need cooperation in a procompetitive, coordinated environment, including a lot more than just things. We heard it is not just about things anymore.

For system risk, this is a short list of issues because I don't think we stepped up to the question of systemic risk larger than a business problem. I did hear the case can be made the banking industry is facing the equivalent of an oil spill. That's pretty bad, but I noted it sure is a lot less worse than a nuclear meltdown, right? I think we still want to explore and probe the problem of the question because it is so important. What if there is something bigger at stake in terms of being able to scale fraud massively in the payments system?

We heard a key central bank theme about the types of risk in the payments system. They were focused on outsourcing. Then we heard a lot about the capital intensity of establishing networks in an interesting sort of way. To make enhancements to security, you must tinker with what exists, as opposed to spending a huge bundle of money that can't be justified on a return-on-equity basis with respect to new investment.

Finally, I'll make three points on the role of the central bank that interestingly didn't come up in the last session. I gleaned these from conversations leading up to our last session on the role of the central bank. If there is a public will that drives competition and innovation, people admitted it might include a so-called public option for an active operational role by the central bank. (I simply add parenthetically if you are an advocate of the public option, I would find a different name for that because it is dead on arrival if you call it that.) We heard there needs to be a national conversation led by the Fed, perhaps with respect to the baseline security standard we expect to be deployed in the payments system. We heard there should be a stronger role for the central bank in consumer protection or the federal bank should play a stronger role in consumer protection, security standards, and oversight of nonbank actors taking on bank-like roles. And I don't think we should interpret that as being as sinister as it might sound.

We heard in the last session from the Fed speakers, Rich and Stu, there are synergies between operations and development of public policy. We also heard a strong case for the role of payments system oversight, and we drew out in the conversation that payments system oversight by central banks needs to be extrapolated internationally because retail is really a global business.

I am going to conclude with a final comment. That is, there is something we didn't capture here that is specific to the unique jurisdiction of the venue of the conference in the United States with respect to what I'm going to call "the dilemma" the Federal Reserve faces in retail payments system oversight.

I see the dilemma this way: Traditionally the Federal Reserve has played a very strong and I would say effective, credible role. Give the Fed a lot of credit. Historically that's an arguable point, and I am sure I could get an argument on that here,

but I would argue it. And my sense is the Board of Governors, which has explicit legislative authority to conduct oversight, is limited by this authority to oversight of the 12 Reserve Banks. Until 10 or 15 years ago, the payments system was check and ACH. I would assert the Fed, because of the role of the Board in terms of oversight of the Reserve Banks and also because of the high hurdle rate established by law, basically has confined the Reserve Banks to the check and ACH business, not the payments system business. The dilemma is, if the Board of Governors evidences minimal interest in oversight of the retail payments system and the footprint of the Fed is really compressing now, the Fed has itself in a corner with respect to the nature of its role and how effective it will be.

General Discussion

Conference Wrap-Up

Mr. Burns: I loved that “dilemma” part because I’ve been thinking about this for a number of years. So what is the way out of here? This is a question of how do you get the Reserve Banks, to the extent that’s desirable, involved in a broader view of the retail payments system? So, we have the Reserve Banks participating in an FOMC-type of an environment, a monetary policy set. They are involved in various aspects of central bank governance through the offices of the president and so on and all these various committees. How can that be extended into the retail payments oversight environment?

Mr. Summers: I don’t think I have an authoritative answer to that question. I would say—and I welcome others to bring their thoughts forward—there is a standard model now for the exercise of payments system oversight. Ron did a terrific job of outlining how that standard model is deployed, not in a utopian sense, but in a very practical, hands-on sense. I would simply offer there isn’t a lot of competition to get into the check business today, right?

When you look at the trends in payments systems, the way I interpret the data, ACH is not the fastest growth area today. So, it could be that the Fed could continue to play a very effective role in those limited spaces and still take on an active oversight role. But it has to be very, very careful in doing so.

One thing we didn’t talk about is the pitfalls of being an overseer and an operator. I won’t go into it, and I won’t open that Pandora’s Box now, but there are real challenges.

Any other observations on that question that was raised?

Ms. Masi: Just a qualification on a much stronger role of the central bank in consumer protection, because in Europe several central banks do not enter into consumer protection because they are overseers and so they have to care about the efficiency and safety of the system as a whole, which might sometimes be in contradiction with defending only one stakeholder, which is the consumers.

Mr. Summers: You're highlighting the potential contradictions and the difficulties in being a consumer protection agency and an effective overseer as a central bank. Maybe that helps explain why there is diversity in this public policy space.

More than one person from the private sector at this conference identified a fairly strong demand for some type of intervention on the part of the Fed as the central bank and as an overseer of the payments system in the United States, either with a light hand or with a heavy hand. Then there was discomfort expressed for the invisible hand, which is the currently defined role.

I would observe that with the Dutch central bank—we saw it here—the objects of oversight are listed, and they include retail payments systems. You can go out to the Federal Reserve Board website and the objects of oversight are listed, and I don't think they include retail payments systems. I just think there is an issue there. I would encourage bilateral or multilateral dialog with the authorities to make sure that's not an overlooked matter.

Mr. Berndsen: I want to respond to your question about the systemically important payments system and other systems. What I didn't allude to in my talk is that we internally distinguish between two types of goals. The first one is systemically important. Then, you have a direct link to financial stability. If financial stability is at stake, you have a systemically important payments system and that is a different type of goal of oversight than the other one I talked about, which is system-wide risk for retail payments. Yes, you don't have the financial stability aspect, but you have the aspect of creating big disturbances in the economy or directly to hurt consumers. But we can distinguish between those two types of goals.

Mr. Moore: We're looking at ways of oversight and maybe a light touch. There have been a lot of worries about systemic risk and worries about the security of the system.

It was telling that you mentioned worries about journalists bringing up the issue. Part of the reason why journalists feel compelled to do this is because a lot of the information on incidents when they happen is kept hidden from public view as much as possible. This leaves us in a situation to speculate what the magnitude of the risk is. Perhaps a good role for the Fed—or for some government organization—is to start collecting data on the incidents and frauds we are seeing and tracking that over time.

There are other countries that are doing this to one degree or another—the UK Payments Association does it and the Bank of France does it. If we can move toward a situation where we are collecting and disseminating aggregated information on fraud rates, we can have a rational response public policy-wise further down the line. At this point, it is still a fairly light-handed approach.

Mr. Summers: Transparency is good.

Mr. Bolt: To me, it seems there is still this problem of regulatory capture in the sense that if the central bank is also a player in the payments landscape, but at the same time—and I think Josh alluded to that—is also the overseer, then it is not completely obvious to me that is a conflict of interest. On the one hand, if you are player in the same area, you can always hope the authority is credible and completely trustworthy. On the other hand, the other parties could always accuse a central bank—if it's also doing something in the payments business—of regulating, overseeing, or making changes that affect the other players in the game.

So, there is always this tension between regulation and being a player yourself in the payments landscape. You have to be careful, I guess.

Mr. Summers: I certainly take that point. Thank you very much.

Conference Attendees

CLAIRE ALEXANDRE

Financial Services Regulation
Vodafone Group

CARLOS A. ARANGO

Principal Researcher
Bank of Canada

RODRIGO COLLARES ARANTES

Head of Department, Department
of Banking Operations and
Payments System
Bank of Brazil

ALAN BARKEMA

Senior Vice President
Federal Reserve Bank of Kansas City

BILL BAROUSKI

Executive Vice President
Federal Reserve Bank of Chicago

ANN-MARIE BARTELS, AAP

CEO
EPCOR

CAROL COYE BENSON

Partner
Glenbrook Partners

DOUG BERG

Vice President
Wells Fargo & Company

MARGARETTA BLACKWELL

Assistant Vice President
Federal Reserve Bank of Richmond

WILKO BOLT

Economist
De Nederlandsche Bank

TERRI BRADFORD

Research Specialist
Federal Reserve Bank of Kansas City

PETER BURNS

Senior Payments Advisor
Heartland Payment Systems

TROY CARROTHERS

Senior Vice President
Kohl's Department Stores

JANE CLONINGER

Director
Edgar, Dunn & Company

MIKE COOK

Vice President, Finance and
Assistant Treasurer
Wal-Mart Stores, Inc.

JUSTIN DEAN

Assistant General Counsel
Federal Reserve Bank of Kansas City

MARIO DE ARMAS

Director, International and
Interchange
The Home Depot

ROY DECICCO

Managing Director
JPMorgan Chase

JOHN DRECHNY

Senior Director, Payment Services
Wal-Mart Stores, Inc.

MALLORY DUNCAN

Senior Vice President,
General Counsel
National Retail Federation

DENISE DUNCKEL

Senior Business Leader
Visa, Inc.

JAN ESTEP

President and CEO
NACHA—The Electronic Payments
Association

ALAN S. FRANKEL

Senior Advisor
Compass Lexecon

JOHN FRICKE

Chief of Staff
FSTC Division of FS Roundtable

BEN FUNG

Research Advisor
Bank of Canada

SHARON GAMSIN

Vice President
MasterCard

LIZ GARNER

Director, Government Relations
Food Marketing Institute

Conference Attendees**ESTHER GEORGE**

First Vice President and COO
Federal Reserve Bank of Kansas City

GEOFFREY R. GERDES

Senior Economist
Federal Reserve Board of Governors

SERGIO GORJON

Senior Expert on Payment and
Securities Settlement Systems
Bank of Spain

JOHN GOVE

Director
TransAction Resources

SALLY GREEN

First Vice President and COO
Federal Reserve Bank of Richmond

TRACY GREER

Trial Attorney
U.S. Department of Justice

ROGER GRIFFITH

Group Head—Global Settlement
MasterCard Worldwide

ERIC GROVER

Principal
Intrepid Ventures

KATHY HANNA

Assistant Treasurer
The Kroger Co.

CHAD HARPER

Cash Product Office, Policy and
Product Development
Federal Reserve Bank of
San Francisco

FUMIKO HAYASHI

Senior Economist
Federal Reserve Bank of Kansas City

Conference Attendees

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KAREN HELMBERGER

Vice President of Operations
Union Bank & Trust Company

SUSAN HERBST-MURPHY

Industry Specialist
Federal Reserve Bank
of Philadelphia

TOM HESTER

Senior Economist
Visa, Inc.

STAN HOLLEN

CEO
CO-OP Financial Services

DIANE HOLLOWAY

Vice President
Federal Reserve Bank of Dallas

CHRISTIAN HUNG

Research Associate
Federal Reserve Bank of Kansas City

BOB HUNT

Assistant Vice President
and Director
Federal Reserve Bank
of Philadelphia

DWAINE KIMMET

Vice President, Financial Services
The Home Depot

JAMIE LANDHEER

Senior Vice President
Fifth Third Processing Solutions

DAN LITTMAN

Economist
Federal Reserve Bank of Cleveland

MELISSA LOWRY

Vice President
Wells Fargo & Company

DAVID MARSHALL

Senior Vice President, Financial
Markets Group
Federal Reserve Bank of Chicago

JASON MARSHALL

Senior Director, Payments
Services, Treasury
Wal-Mart Stores, Inc.

JONATHAN MARTIN

Assistant Vice President
Federal Reserve Bank of Richmond

DANIEL McDERMOTT

U.S. Head of Government Relations
Visa, Inc.

JIM McKEE

Senior Vice President, Retail
Payments Office
Federal Reserve Bank of Atlanta

ANDREAS MELAN

Group Payment Card Manager
IKEA Group

CINDY MERRITT

Assistant Director, Forum for
Retail Payments
Federal Reserve Bank of Atlanta

KORIE MILLER

Vice President
Federal Reserve Bank of Kansas City

JONAS MILTON

Economist
Sveriges Riksbank

DEBORAH MINEHART

Economist
U.S. Department of Justice

TYLER MOORE

Postdoctoral Fellow
Harvard University

TAKESHI MORI

Deputy Director
Bank of Japan

RICHARD MORRISSEY

Interchange Policy and
Governance
Visa, Inc.

HARISH NATARAJAN

Payment Specialist
The World Bank

JOSÉ NEGRIN

Senior Economist
Banco de Mexico

BARBARA PACHECO

Senior Vice President
Federal Reserve Bank of Kansas City

RICHARD PORTER

Senior Policy Advisor and
Vice President
Federal Reserve Bank of Chicago

ROBIN PRAGER

Assistant Director
Federal Reserve Board of Governors

MARDILSON FERNANDES QUEIROZ

Senior Advisor, Department
of Banking Operations and
Payments System
Bank of Brazil

PILAR RAMOS

Vice President, Global Public Policy
and Regulatory Strategy
MasterCard

JAMES REUTER

President
FirstBankData Corporation

Conference Attendees**PAUL ROTILIE**

Research Associate
Federal Reserve Bank of Kansas City

RONASAK RUENGVIRAYUDH

Director
Bank of Thailand

SCOTT SCHUH

Director and Economist,
Consumer Payments Research
Center
Federal Reserve Bank of Boston

GORDON SELLON

Senior Vice President and
Director of Research
Federal Reserve Bank of Kansas City

CLIFF STANFORD

Assistant Vice President and
Director
Federal Reserve Bank of Atlanta

DENNIS STOKELY

Director of Cash Management
Safeway, Inc.

RICK SULLIVAN

Senior Economist
Federal Reserve Bank of Kansas City

GRAY TAYLOR

Payments Consultant
National Association of
Convenience Stores

DAVID WALKER

President and CEO
ECCHO

ZHU WANG

Senior Economist
Federal Reserve Bank of Kansas City

MARTIN WEIDERSTRAND

EU Policy Advisor
IKEA Group

Conference Attendees

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TOM WENNING

Executive Vice President and
General Counsel
National Grocers Association

K. CRAIG WILDFANG

Partner, Head of Antitrust
Robins, Kaplan, Miller & Ciresi LLP

HEIKE WINTER

Head of Section, Retail Payments
Deutsche Bundesbank