The Role of Central Banks in Retail Payments: The Central Bank as Operator

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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 Practice[1]

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 *noncontestable 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 nonprofit 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 Tobago
Belize	India	Nepal	Uganda
Bhutan	Indonesia	Netherlands Antilles	United Arab Emirates
Cambodia	Israel	Nicaragua	Uruguay
Cape Verde	Italy	Oman	USA
China	Jordan	Paraguay	Venezuela
Colombia	Kenya	Portugal	Yemen
Costa Rica	Kuwait	Qatar	Zimbabwe
Cyprus	Lebanon	Romania	
D. R. of Congo	Lesotho	Rwanda	
Dominican Republic	Macao	Saudi Arabia	
ECCB	Madagascar		

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 Antilles	USA
Colombia	Kenya	Oman	Venezuela
Costa Rica	Kyrgyz Republic		

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 electronify 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

[1]Much of this section draws on Weiner (2008).

[2]See Green and Todd (2001) for discussion.

[3]See Stern (2005).

[4]Lacker (2005) provides a contrary view, arguing that market failures are largely absent from payments markets.

[5]Federal Reserve (1984).

[6]European Central Bank (2005).

[7]Table 1 in BIS (2003) provides a list of settlement and clearing activities of the G10 and Australian central banks.

[8]Retail 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).

[9]Deutsche Bundesbank (2009a, 2009b).

[10]Banca D'Italia (2009).

[11]National Bank of Belgium (2009).

[12]Banque de France (2008) and Banca d'Italia (2008).

[13]See Federal Reserve System (1984).

[14]For 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.