

# Market Obstacles to Consumer Payment Innovation and Public Policy Responses

---

Moderator: Chris Bierbaum

*Mr. Bierbaum:* It is a pleasure to be here this morning to moderate such a distinguished panel. This session is “Market Obstacles to Consumer Payment Innovation and Public Policy Responses.” That is a mouthful. The panel will discuss whether emerging payment methods, whether those are extensions to existing products or new entrants, like mobile, face market obstacles from scale, profitability, or even the regulatory environment.

This panel will talk about the balance between adoption of emerging products and the regulatory environment and how they have to counterbalance each other. Some say there should be pretty light regulatory and public policies. And others say there should be more heavy-handed regulatory public policies. There will likely be debate as to whether regulatory policy does more harm than good.

A couple of examples: A few years ago AT&T, T-Mobile, and Verizon created a joint venture—Isis—and their initial charter was to create a new payment network that would literally compete with Visa, MasterCard, Amex, and Discover. The venture quickly found out through the obstacles it encountered, it would not be able to compete with those incumbents. It since has taken a path of partnership with those associations in partnership with banks as well.

Meanwhile, Google has come out with Google Wallet, which Sprint supports. They, as well, have an open approach that any consumer that wants to load their Visa, MasterCard, Amex, Discover, or other cards, can do so. The other side of both of these coins as it relates to the consumer, and what we heard about from the previous panel, was you could use the Google Wallet that is opened with any card or the Isis wallet that is opened with any card, so long as you can only use those wallets. You would not be able to use other wallets or applications with other cards that have access to specifically near field communication (NFC), in this case.

So it is a matter of—Will the consumers prevail? What do the regulatory environments think of this and how will they interact?—which comes down to one of the key questions—What obstacles do private markets pose for payment innovation in a connected age? What can public authorities do to overcome these obstacles?

Our distinguished panel is comprised of Nicholas Economides, David Evans, Alan Frankel and Bob Lee. We will begin with Mr. Economides.

**Mr. Economides:** I am very glad to be here. But first, let me offer two disclaimers. First, I am not a consultant in any related suit of which you might have heard. Second, I am not responsible for Greece. I have advised them and so on, but it is up to the politicians to take the advice seriously.

I have created the NET Institute, which is involved in network issues, such as payments issues. We support relatively young researchers, typically assistant professors, in work that has to do with different network industries, including some new ones like search and advertising, but also on operating systems and applications, as well as on payments systems.

What are the issues we are dealing with in this session? I will begin with very introductory stuff. Bank cards facilitate transactions. The market is dominated by two large networks—Visa and MasterCard. The U.S. market share numbers are approximately Visa, 42 percent; MasterCard, 29 percent; American Express, 24 percent; Discover, 5 percent. Visa and MasterCard, as you know, are organized in a very particular way, where American Express and Discover are in a sense stand-alone.

There are significant fees collected from merchants. The networks are facilitating the transactions. There is some evidence that these fees are significantly above costs and that these costs are relatively small, compared with the revenue. There are some numbers—not from me but I have read numbers—of \$30 billion to \$48 billion per year in fees in the United States.

That means there is a significant markup of price above cost. Although the consumers, the users, do get additional benefits from the networks—like they get miles, sometimes gas and so on—it is unlikely that the value of these benefits approaches the fee levels that are charged to the merchants. So the networks are actually doing very well. They have high profit rates, comparable with profit rates of Microsoft and Intel, even though Microsoft and Intel have a monopoly position in the PC market, while MasterCard and Visa do not in payment systems. At first glance, it looks like these networks have significant market power.

Now let me talk about an issue that is more specific to this session. Figure 1 is a diagram of the traditional way that card payments are made. The consumer is on one side, the merchant on the other side. You have a network (let's call it the Visa network, although it could be another network). The consumer has a card, the merchant has a card reader, there is the physical connection of swiping the card, and that is how the transaction gets done.

Figure 1

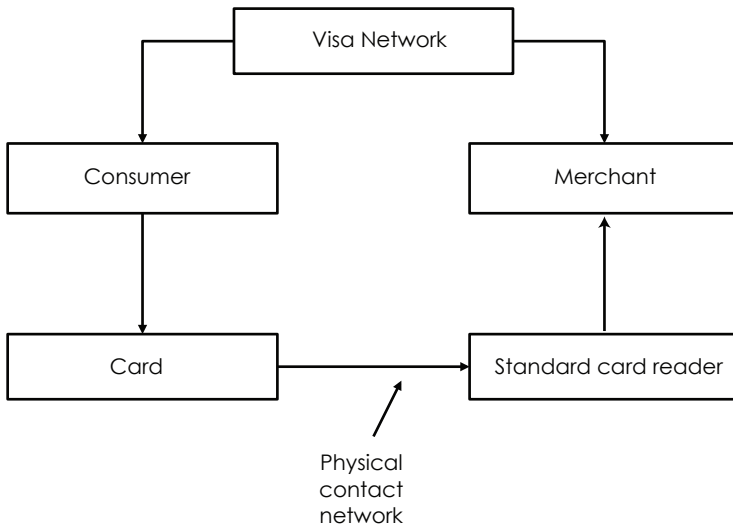
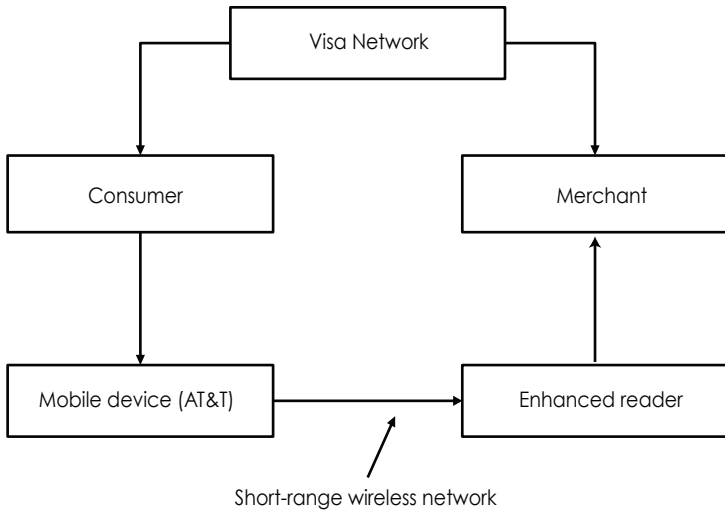


Figure 2 depicts a proposed alternative in which, instead of having the card, there will be some mobile device—for example, AT&T’s mobile phone (but it could be any other company’s mobile phone). On the merchant’s side, instead of the standard card reader there is something else (I call it an enhanced reader), which makes near-range or short-range communication possible. But you still have the connection between the consumer’s mobile device and the merchant’s enhanced reader being on the same Visa network. It is just that the last part—the horizontal connection on the diagram—is going to be different.

The interesting thing here is that there is a possibility of an innovator, the firm that is going to provide the horizontal connection, getting into this process to establish a relationship with the consumer and the merchant. It allows for a multitude of marketing possibilities, as other speakers have already said, because now this intervener, this new company that is going to provide this link, will know some specific attributes of the transaction—not only the amount of the transaction but also the location of the consumer (Is he in the mall? Is he in this particular store? Or where exactly are these things are happening?), and it will create possibilities for new types of marketing.

In terms of how this might be done, I can think rather quickly of three possibilities. One is that it is done by the existing networks, like Visa and MasterCard. They come in, they say, “We used to give you this way to swipe, but now we are going to give you a new way. We are going to set up applications in the mobile phones that will be able to do the near-range communication to a card reader for

**Figure 2**



you and we are going to provide the merchants with the appropriate technology, enhanced reader.”

A second possibility is it will be provided by the mobile carriers, like the joint venture Isis that was mentioned earlier. A third possibility is it will be provided by a third party—“third party” meaning not the networks, not mobile carriers, but somebody who creates an application such as Google Wallet, PayPal, Square, and so on.

How is this going to be done? That might not be crucial, but it might make a difference. It could be done through the proprietary network of the wireless carrier, since wireless carriers have their own frequencies used to communicate with cells and so on. Or it could be done through some of the public spectrum available through smartphones, for example, using Bluetooth or Wi-Fi.

What about the incentives now—the incentives for entry and innovation? For the networks themselves, the incentives are relatively low to get into this business. Why? It’s because they already own the present setup. So they are always, to some extent, on the defensive, making sure they do not lose anything through this technological change. The incentives for mobile carriers and third parties are high, because they are not part of this business. They want to get in and they want to make money through that.

Different systems will come into existence. Are they going to become compatible with each other or incompatible with each other? What do we mean by compatible and incompatible? For example, Microsoft’s operating system is incompatible with Apple’s operating system on PCs. You cannot immediately run

applications written for one operating system in the other operating system. So, when a new system is set up in near range payments facilitation, there is a possibility that this new system will have compatibility with all providers and it is also possible there will be incompatibility—that is, there is going to be System 1 incompatible with System 2, which is incompatible with System 3, and so on. Under incompatibility, we know from economic theory, that there are very significant inequalities in prices, market shares, and profits. The market is what I would call “a winner takes most market.” You can see when we have incompatibility, for example, in the operating systems for PCs, that incompatibility is very, very significant. Apple has a 5 percent market share there, while Microsoft has a market share of over 90 percent.

In this setup, with incompatibility and strong network effects, we have limited competition among the firms in the market, winner takes most, big market share for the biggest guy, three times smaller for the second guy, three times smaller for the third guy, and so on. Competition is essentially not in the market, among the market participants, but for the market. “For the market” means to be able to be the top guy, who is going to get a big market share. There is a very big incentive for a company to grab a large market share and impose incompatibility.

The setups are most likely going to be proprietary and we should take into consideration two things: First, the networks have significant concentration, but the mobile carriers also have significant concentration. And the network neutrality rules that were passed in 2010 essentially do not apply to the mobile market, so the carriers would be able to do a lot of things that they cannot do in the fixed lines telecommunications market. Now the networks and the mobile carriers most likely will have proprietary setups. The third parties are likely to have an open setup.

Let me show you how these things vary. Table 1 illustrates three provider options on the left side—networks, mobile carriers, third party—and across the top four columns illustrate the provider’s incentive to get into the market; second, the incentive to chose compatibility; third, the consumer benefit; and fourth, antitrust and public policy concerns. Going down, the incentive for a company to enter into the market, as I said before, for the networks is relatively low, because of a defensive incentive; for the other two categories—the mobile carriers and the third party, it is high. The incentive for the innovator to choose compatibility again is low for the networks and the mobile carriers, but it is high for the third party. The consumer benefits are higher and higher as we go from top to bottom, so they are relatively low for the networks, medium for the mobile carriers, and high for the third parties.

What about the antitrust concerns or public policy concerns? If entry is done as a vertical extension of the networks, which as we said before have significant market power, there could be very significant antitrust concerns, but they are vertical concerns. For the mobile carriers, there are significant antitrust concerns, but again they are vertical. For the third parties, there are insignificant antitrust concerns.

**Table 1**  
**Short-range Wireless Transactions Facilitation by  
Mobile Smartphones**

Provided by	Incentive by company to enter the market	Incentive by innovator for compatibility	Likely consumer and merchant benefit	Antitrust and public policy concerns
Networks (Visa, MasterCard, etc.)	Incentive by company to enter the market	Low	Low	Incentive by innovator for compatibility
Mobile carriers (AT&T, Verizon, etc.)	High, new entrant	Low	Medium	Significant vertical extension concerns
A third party application provider	High, new entrant	High	High	None

Should the antitrust authorities intervene? This is a setup in which obviously full compatibility is the optimal solution. Still, it is very unlikely the antitrust authorities are going to intervene for two reasons: First, the antitrust authorities typically do not intervene in new markets, except under exceptional circumstances; second, this is a vertical issue, and to a large extent the U.S. government these days does not intervene much in vertical issues—not never, but not so much.

But, in the European Union, it is much more likely that the competition authorities will intervene. Why? First of all, in the EU, they are more aggressive, as they have shown, in vertical issues. Second, they did not mind imposing stricter interoperability and compatibility conditions on Microsoft between its software clients and servers a couple of years ago.

What about other public policy concerns? Should we be concerned about imposing some kind of regulation in this industry besides antitrust? Then the question to ask is, first, is this industry essential? Is it as important as telecommunications and electricity, in which we can make a case for public policy intervention? Second, is this the right time to do it? Do not forget that many times compatibility and interconnection and interoperability have been imposed, for example, in telecommunications, many years after the industry started. So there is an industry maturity issue as well.

To summarize: The crucial thing is the customer relationship and customer information in real time that a new firm in this space might be able to acquire. This

is a very valuable piece of information. It is valuable not just to the card networks and to mobile networks and third-party entrants, but it is also valuable to people we did not really discuss much before, like the search, advertising, and social network firms—people like Google, Microsoft, Facebook, and even Apple.

What I see in this setup is that it is a pretty open battlefield, there is the big prize in the middle, and there are a lot of heavyweight participants. Therefore, I would not venture to say who is going to win. This is a hard battle. This is an open battle. People come with different capabilities from different sides. And I am not sure who is going to win. Thank you very much.

*Mr. Evans:* I am going to take things from a slightly different point of view. I am going to make just three points.

First, we are going through—you have heard a lot of this today—one of the most intense periods of innovation that we have seen in the payments industry for a very, very long time and perhaps forever.

My second point is a lot of the things people call “innovation” would not actually make consumers and merchants better off and often they do not solve a real problem. They cannot, and really should not, get traction in the marketplace in that sense. They aren’t really innovations, even though they are called that.

And the third point, which goes to what the government should do, is that this industry is very complicated, and decentralized markets are actually pretty efficient at discovering the optimal path of innovation in the payments industry. The government really does not have a very good track record when it comes to payments innovation.

Let me take the first point. We really are in a period of creative destruction, which we see in a whole variety of different ways. We have a lot of new technologies and business models that are being introduced. For example, LevelUp, a mobile payments system. It is tying payments to sophisticated loyalty programs. A lot of the innovation we are seeing is blurring the lines between online and offline commerce—PayPal, for example. You have heard something about that this morning.

Much of the innovation we are seeing is coming from major players that are outside of the traditional payments industry—such as from Google, Facebook, Intuit, and Groupon. Venture capital is pouring into payments. Every day, millions and millions of dollars are going into new payments companies, who are potentially rivals to some of the existing players.

The big guys—Visa, MasterCard, American Express—are all acquiring some of these innovative players. Visa, for example, in the midpart of last year, bought Fundamo, which is a mobile payments platform for lesser developed countries. Just about everyone in the payments industry and in related ecosystems are focused on innovation. If you do not think Visa and MasterCard and the banks are thinking about, worrying about, or doing innovation, you are wrong. They are. They may

not be doing it as well as you would like, but they are actively doing it. Take a look at American Express. We have Dan Schulman, who runs basically the innovation operation at American Express.

Finally, all the traditional players in this business are very, very worried. You can see that by just listening to the nervous chatter over PayPal. So Visa, MasterCard, and everyone is taking potshots at PayPal and some of the things they are doing. A lot of that is really a reflection of nervousness of the existing players.

And they ought to be nervous, because a lot of the innovation that we are seeing in this business has the prospect of commoditizing the networks and the issuers. This is the point: if you are using a mobile wallet or using your phone for payment, basically you are not really seeing, not really connected to the network or to the card issuer very much at all.

There are several reasons for why creative destruction is happening now and I disagree a little bit with Michael. There is the spread of mobile devices—and, yes, I am a diehard iPhone user—there are 100 million smartphones in the United States as of January. While I have not done the actual calculation, my guess, based on the demographics of the people who have iPhones and Android devices, is they account for the majority of the spending in the country. These are very high-spending people under the age of 45 that have these devices. So that is a very important development.

The second thing is the development of sophisticated software platforms on mobile phones and in the cloud that empower entrepreneurs all around the world to engage in payments innovation. Think iPhone, think PayPal X, which is a tremendous platform that is driving innovation in the payments industry now. And think about another player that you maybe have not heard of, IP Commerce, which is also a software platform for payments. Many of these new schemes, like Square and LevelUp, are using data in very creative ways to provide value to both merchants and to consumers.

So there is lots going on in this business today. Just because someone says there is an innovation—and this turns to my second point—does not mean it can or should succeed in the marketplace. As a result, we need to be very careful about this word, “market obstacle,” which is the subject of this panel.

To begin with, there are some serious obstacles to market adoption. The most important one is that payments currently work really, really, really well. You swipe your card or you click online, it all happens in a second. Merchants get paid. Everyone knows what to do. A lot of the mobile phone solutions we have seen that have not done very well have failed because they are just too complicated.

I remember an entrepreneur a couple years ago, when he pulled out his phone and tried to give me a demo on how it works. Lots of clicks and movement. Five minutes later you are able to do the transaction. I am exaggerating a little bit, but the problem with a lot of these solutions is, frankly, they are not very good.



The next most important problem is the chicken-and-egg problem. A lot of the innovations we are seeing can only succeed if you get merchants and consumers to agree they are good ideas or there is some kind of a side payment to get both sides onboard. That is a really hard business problem. But it is especially hard if the innovation does not make merchants and consumers better off. So Revolution Money, Pay By Touch, a whole bunch of other ones like that failed because of this.

Then there is the massive amount of sunk cost that is already tied up in the payments industry, from the rails to the processing, software platforms for FDC and TSYS and so forth and all the learning that the clerks and consumer have done. And that leads to massive inertia in the business.

Entrepreneurs may encounter lots of market obstacles. But market obstacles are not the same as a market failure. A lot of the ideas are not going to gain traction, because at the end of the day they do not really generate incremental benefits that exceed the incremental costs. That has really been the problem with the adoption of NFC.

Waving contactless cards at the point of sale seemed liked a great idea to executives at MasterCard and Visa, but as it turns out it, it did not work out that way. Maybe it will in the future, but at least at the moment all the effort that has gone into contactless over the last five or seven years seems like it was at least too much too soon.

When it comes to payments innovation, I guess my view in terms of what the government should be doing, is the short answer is they should probably stay out of the way. Which is not to say “never,” but by and large I am not particularly a fan of the government getting intimately involved in this business.

First, we can talk more about Nick’s presentation in the comment period, but there is really no evidence there are market failures in the adoption of payments innovation at this point in time. A market failure would be a situation where innovation that really does increase social value does not get adopted in the marketplace. Maybe someone could provide some evidence of such a market failure but I do not believe anyone has.

Second, there is no reason to believe the government could identify market failures with any great degree of accuracy. Even people who are deeply knowledgeable about payments are not very good at predicting what consumers and merchants really want. That, I think, is one of the lessons from the mass hysteria over NFC.

Third and finally, governments do not have a particularly good record when it comes to payments innovation. I know this is probably a controversial statement here at the Kansas City Fed. Let me give the government credit. Three millenniums ago, a government actually invented the first metal coin and that was really

great. But there has not been a lot of innovation since then.

I do not know what your feeling is about the plastic money that was just introduced in Canada. But by and large, there has not been a lot of innovation coming out of governments—and even coins. After the Lydians introduced the coins, what did they do with it? The next thing the governments did—remember, payments is always a bundle of payments and something else. So what are coins? Coins soon became a bundle of a payment instrument and a way to impose taxes on the economy by depreciating the value of the currency.

Then, of course, there is the huge bet the Federal Reserve System in the United States put on paper checks. I know we heard a lot of great things about paper checks this morning. I take the point the Federal Reserve is very proud of their record with paper checks, but there is at least an argument the Federal Reserve System went quite a bit overboard in the 20th century supporting a relatively inefficient payments system in the United States. So I do not think the government has a particularly good track record when it comes to innovation.

Yes, there are market obstacles to the adoption of innovation, but there are not market failures, at least that I can see. It is implausible and certainly unproven that regulators could make the right calls, on average. If I have a few minutes during the discussion, there are some additional comments that I would like to make on the presentation that Nick gave. Thank you very much.

**Mr. Frankel:** Poor checks, always getting a bad rap. The thing about paper checks is that they were turned into an electronic version called debit cards, which was a superior, lower cost product, yet it cost eventually orders of magnitude more to merchants to accept debit cards than checks. So, there is something wrong in the market; I would disagree with David about the lack of market failures.

I have spent a lot of time over the past decade analyzing and debating with David and others how the current generation of retail payment technologies has, at least in my view, been characterized by inefficiency and market power that have denied the public of some of the benefits which would have been generated had card payment systems operated in a more competitive marketplace.

There are some lessons we can learn. As David just explained, successful entry by new payment systems is hard. It would be hard in any case due to our familiar chicken-and-egg, but it was made even harder by the conduct of incumbents that, among other things, made it difficult for entrants to gain a foothold.

Unlike banks and card networks, merchants historically have been poorly organized. Even the largest merchants together account for only a small fraction of U.S. retail sales. The top 10 banks, on the other hand, account for around 90 percent of credit card volume. Merchants tend to take all of the major cards, while network rules have created a marketplace in which merchants have been unable to shift volume from a high-cost card or network to a lower-cost card, once both are accepted. The result is a set of competitive bottlenecks, each of which has been able

to exercise substantial and long-lived market power.

So, while there is a lot of excitement about innovation, it is prudent to evaluate how the market is designed now, and when considering new entrants and technologies, to consider whether innovation is designed to result in a new set of bottleneck monopolists or truly unleash a more competitive environment in which providers that reduce costs and prices actually gain market share.

In the existing card payment systems, the race has been over which of the networks can exercise the most market power—on behalf of itself or its bank clients. Fee revenues have been pursued not to achieve efficiencies but in spite of resulting inefficiency. The clearest example is, again, debit cards. Issuing banks went to great lengths to encourage customers to use signature authorization rather than PIN authorization, because they made more money and higher fees on signature, and despite the fact that it was a more expensive, less safe network.

One of the lures of payment markets for providers—when merchants do not or cannot effectively influence payment choice, or choose network routing when they are paying the fees—is that providers can in effect not only tax transactions that use their own systems, but also tax other transactions and essentially all retail sales. Unlike debit cards, network rules have meant that a credit card can access only a single network to post a transaction to the customer's account. For any customer, there is in effect only a single pipe connecting the merchant to the customer's account. There may be front ends that compete over convenient access to the credit card network. But networks, banks, and maybe some others have acted on an incentive for there to be only single account or network accessible easily by a particular phone or digital wallet app or device.

But it would be interesting if consumers could instead opt into a system in which multiple cards or accounts can be detected by merchants due to a different kind of interface at the point of sale, so that merchants could see what kinds of payment options the consumer has and tailor payment offers. We heard about tailored marketing offers, what about tailored payment offerings? To save 200 or 300 basis points, maybe a merchant would give you something right there at the point of sale. In my view, an interface should be designed so at least the merchant can have the option to display payment options alongside perks, discounts, surcharges, rebates, and whatever else it wants to offer.

MasterCard's rule stated, and in some places still states, that a merchant could not "discourage the use of a MasterCard card in favor of a competing brand." American Express prohibits a merchant that accepts Amex cards from "trying to persuade or prompt their customer to use any other charge, credit, debit, stored-value, or other account access device instead of American Express cards." Such restraints eliminate potential strategies that could be used by merchants and payment innovators to give a boost to new, more efficient, or lower cost payments. An example would be a merchant wants to give an incentive at the point of sale to use a new PayPal credit card that is funded through the ACH rails. Under the Amex

rule, it would not be allowed to do it, as I understand it.

In fact, both merchants and the Department of Justice (DOJ) have sought to eliminate some of these restraints through litigation. Statutory and regulatory changes have also been brought to bear to unleash some previously prohibited competitive forces in retail markets. But merchants continue to litigate over other card network restraints. And, while DOJ obtained some relief from Visa and MasterCard, it has not reached a settlement with American Express. The nature of the competitive playing field will shape the types of outcomes that flow from the competitive process with both existing and new providers of payments services.

I sometimes hear questions, predictions, or both about who is going to be the next Visa, MasterCard, or Amex. Will it be Verizon, AT&T, and Sprint? Will it be Square and PayPal? Will it be Chase and Citi, or Google and... Google? Or will Visa, MasterCard, and Amex continue to be Visa, MasterCard, and Amex and continue to collect their sales taxes into the future, despite the possible proliferation of new technologies? I would like to think with a well-operating, competitive, innovative marketplace, the answer could be “nobody.” It does not have to be a new bottleneck monopolist. To go to Nick’s point, you do not have to have that kind of incompatibility that gives somebody long-lived market power.

The goal of the competitive process in payments should not be to replace one set of monopolistic networks with a new set or, even worse, multiple successive layers of uncompetitive bottleneck monopolies sitting on top of one another. Public policy should be alert in a way it was not in the last generation to ensure there is at least the possibility of multiple, competing pipes over which to route transactions with the parties paying the fees having the choices, and that any technologies, standards, or rules permit innovations that facilitate competition at the point of sale.

As Michael Katz pointed out in Australia, merchants have commercial relationships with their customers, permitting them the possibility of internalizing each other’s costs and benefits. In fact, merchants’ interests typically are aligned with those of their customers. Merchants should be free to be innovative to encourage or discourage the use of any existing or new payments as part of the competitive process and use to price and other economic signals to their customers with respect to payments in the same way they can steer, promote, or charge different prices for Coke or Pepsi.

But merchants are fragmented. And one role of public authorities, then, is to ensure merchants, not just technology providers, have a free field to innovate with respect to payments.

**Mr. Lee:** Good morning. Unlike my esteemed fellow panelists, I am not an economist. But I did stay in a Holiday Inn Express last night.

Seriously though, while I may not be an economist, I am a hands-on technical leader with a wide and deep breadth of engineering knowledge. At Square, I worked on everything from our mobile clients to our highly available payment

processing system, all the way down to the embedded firmware that runs in our reader. So I have a lot of versatility.

Suffice it to say, that as an engineer, I am comfortable talking about the latest programming language or data structure more than I am about matters of public policy. I think I stand to learn more from you all today than you do from me. So thank you for having me.

I understand this session is about market obstacles to payments innovation but, as evidenced by Square's rapid growth—we are currently accepted by more than a million merchants and processing greater than \$4 billion annually—we have yet to encounter what I would call insurmountable market obstacles.

From my perspective, Square's ability to deliver innovation has been limited far more by resource constraints than by the market itself. In other words, I could use an unlimited supply of H1B visas; but when it comes to the payments market, I am pretty happy with the status quo.

I cannot offer a lot in the way of policy recommendations beyond "Please do not change anything," which was echoed by a lot of the other panelists here. I can tell you how Square has innovated so far and how the market conditions allowed for, or enabled, that innovation.

Hal already introduced you to our products. Thank you, Hal, very much. That was very kind. I will just take this moment to add a little more color.

The first thing you should know is, while Square's products are recognized for their simplicity, our applications are just the tip of a very sophisticated iceberg. Our success stems largely from our ability to take on this entire payment experience end to end, payer to merchant and build an integrated platform that shields the users—both the payers and the merchants—from these inherent complexities.

Square was founded three years ago by two guys, Jack Dorsey and Jim McKelvey, both of whom are St. Louis natives like myself. They came up with the idea for Square when Jim, a glass blower, lost an important sale because he could not accept a customer's credit card.

Jack and Jim started off with the seemingly simple goal of accepting card payments on iPhones and Androids. Their first step was to try to sign up for a traditional merchant account. The existing merchant onboarding process was far from the simple, fast user experience we wanted to deliver. They quickly realized getting there would require far more than a simple smartphone app, so they expanded Square's scope accordingly.

Before Square, I am sure plenty of you are familiar with the current state of merchant accounts. If a merchant wanted to accept card payments, they would have to sign up for a merchant account. This takes several weeks and requires

a credit check. If the merchant is approved to accept cards, many are not, they have to pay for hardware, sign-up fees, interchange fees, assessment fees, processor markup fees, monthly fees, cancellation fees, settlement fees, and—worst of all, in my opinion—variable rates based on the card types.

For example, some Visa cards cost merchants more than American Express, but the merchants do not really know this. And, from what I have seen, and there have obviously been several articles about this, the processors go out of their way to hide the true costs of accepting certain types of cards, because they do not want the merchants to favor one type of card over another. This is one of the things we really sought to fix.

Most merchants have no idea what they actually pay. And, as I saw with my mom's antique shop firsthand, card processing fees can make it nearly impossible for a small business to turn a profit. Indeed, the majority of card processing fees are paid by small businesses in America.

We at Square addressed these problems and more with our first product, which is the Square card reader. Hal already told you a little bit about it. This Square card reader incorporates the Square dongle, the card reading dongle, a terminal app which runs on the phone, and it is coupled with a custom payment gateway, which we implemented that supports the back-end processing. Anyone can download our app, sign up, and starting accepting cards in about two minutes. Contrast that with three or four weeks that it takes with a merchant account. You receive a reader in the mail in about one or two days. And we charge one simple rate, regardless of the card type and that is 2.75 percent of the transaction.

Something else new that we did is we do not even charge a per transaction fee. A lot of merchant accounts will charge 15 cents to 30 cents per transaction and, if you are selling a coffee for \$3, that really increases the percentage you are paying to the card companies. We do not charge that. There is no fine print. We do not require a contract and even the hardware is free. To me, this is really the special part about Square, not necessarily the app or the cool little card reader. It is that we are really providing a good service to small merchants, like my mom.

Getting here required us to work closely with our acquiring banks and the card networks. We had to reinvent the merchant onboarding process, so we could go from four weeks and a credit check down to two minutes and no credit check. We had to reinvent it to make it move faster and be more permissive, but all the while mitigating risks. The reason it takes four weeks is because there is a lot of risk checking and the like that we had to supplant with different checks.

Today, Square's card reader meets the needs of everyone from the sole proprietor at a farmers market to a taxi driver all the way up to—I do not know if you guys noticed over the holidays, but the Salvation Army used the Square—and today both the Obama and Romney presidential campaigns are using Square too for political donations. I think this is a pretty exciting change.

From there we have our next product, which is called Square Register. This couples card processing with traditional point-of-sale features like you might need for a more brick-and-mortar shop. The idea here is we are bringing these features that were formally only enjoyed by big box merchants—like that “small” merchant out of Arkansas—to small businesses and leveling the playing field for small merchants.

For example, a small merchant can use our analytics product that we provide them for free that is all included with the transaction fee to drive supply chain and staffing decisions. A coffee shop or bar could see that they are doing twice as much business on Wednesdays and staff up accordingly or they could buy enough milk and coffee so they do not run out.

Finally, a little more than a year ago, we successfully tackled the payer side of the equation with “Pay with Square” formerly called Card Case. A customer can find Square merchants around them and then pay those merchants. You can pull up the app and see a list of merchants that are around you. They can be ranked based on various criteria we provide. You do not have to take your phone or your wallet out of your pocket and this is really huge, I think.

So the first time a payer visits a merchant they open a tab. Then at the check-out, the payer tells the merchant their name. The merchant will see the payer’s name and the photo on their screen and they simply tap it to finish the payment. They just have to open that tab mainly on the first visit to a merchant.

From there, the payer can opt into Living Square and open a tab automatically any time the payer visits that merchant. In that case, unlike NFC, with Square the payer does not even have to take their phone out of their pocket anymore.

So when I go to my favorite coffee shop that I go to every day, I just walk in, I order my latte, and then I walk out. They already know who I am. The merchant knows me by name. I do not even have to tell them my name anymore. It is really cool. I think it is very close to the ideal experience.

To deal with Square is, I think without a doubt, the most effortless and enjoyable payment experience in the market. It is also one of the most secure. In contrast to NFC solutions I have seen, with Pay with Square, no card details pass through the merchant’s device. The merchant’s and payer’s devices both talk directly to Square servers. If a payer loses their phone, they can simply reset their Square password. They do not need to call the card company or wait for another card to come in the mail.

It is safe to say we have accomplished things few would have imagined just a few years ago. You can rest assured that you can expect even more of this kind of innovation from Square in the future or an equal level of it.

So back to the topic of the panel, market obstacles and public policy responses. Market self-regulation has worked pretty well for Square so far. PCI and the other card network rules are not always abstract enough to allow for our products;

maybe sometimes they are a little too prescriptive. But since these are not laws, the card networks can waive the rules when it makes sense and allow companies like Square to keep operating until the standards have a chance to catch up, standards which we are participating in.

This works because the credit card network's motivations are very aligned with Square's—that is, we both want to increase acceptance, reduce risk, and provide a great user experience. My simple descriptions cannot really do our apps justice, so I urge you to download them and try them out for yourself. All you have to do is search for Square in the App Store or on Google Play. If anyone wants to stay in contact with me, always please feel free to reach out. I am happy to help with any questions you have regarding Square, even Android devices, or the mobile industry. You can find me at @crazybob on Twitter. Thank you very much.