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# THE FUTURE OF CONSUMER PAYMENTS: AN INITIATIVE ON BUSINESS AND PUBLIC POLICY DISCUSSION

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**Keynote Address:**

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**Panel One:**

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**Panel Two:**

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**Luncheon Address:**

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P R O C E E D I N G S

MR. BAILY: I think it's time we got started. Welcome to Brookings. I think we're going to have a great day talking about the future of the consumer payment system. This is an event that is jointly sponsored by Brookings and the Business Initiative at Brookings. That's something we started, you know, more or less about a year ago to work on issues that are of interest to the business community and the business workforce and their relation to public policy. This spring we released a study on the financial crisis called "The Great Credit Squeeze." We decided not to publish that so far because things, as you know, are moving rather fast in that area. But we'll continue to have various forums and conferences this fall and in the subsequent spring.

Now the payment system is obviously a really important part of the economy. It's quite substantial in terms of its contribution to GDP. It's also substantial in terms of its effect on consumer welfare and on the overall financial system. We're very lucky to have a great set of papers and to welcome some great speakers as well today. So it's -- I feel very fortunate that this is happening today. I'd like to thank Bob Litan who's been important in organizing this.

So I'm going to turn the mike over now to Bob Litan. As you know, Bob Litan is former vice president and director of economic studies here at Brookings. He now spends a good bit of his time with the Kauffman Foundation, but he's still a senior fellow and very active here at Brookings. Bob, thank you.

MR. LITAN: Thank you, Martin. Actually we're meeting needless to say at a rather momentous time in American financial history, and you would be forgiven for thinking that the area of consumer payments may not be as earth-shaking as the events that you're talking -- or at least that we're talking about in the media. But in reality, I think what you're going to find today -- they're not going to be as earth-shaking -- but what you will find is this is an area of rapid technological change, and you'll see it in the presentation that we're about to hear and also the papers that we're going to discuss today. This is actually a very exciting, very dynamic industry, and so when we were looking for a speaker to have as a keynote, we figured that we would go to one of the leaders in the industry. And as it turns out, this year, 2008, is the 50th anniversary of the introduction of the American Express charge card, which arguably was one of the instruments that started this revolution off. And so we are obviously pleased to welcome today the CEO of American Express, Mr. Kenneth Chenault. He's also the Chairman of the company. Ken joined American Express in 1981, and over the next two decades he has held a variety of positions. He's driven the innovation in the industry that you're going to hear about during the course of his tenure. In 2001 he became Chairman and CEO, almost immediately he faced the extraordinary challenges that were confronting the financial sector after 9/11. So he certainly has experience with financial crises.

Today Ken heads a company that is the largest card issuer in the world. American Express was recognized last year by *Fortune Magazine* as one of the 20 most admired companies in the United States, and last month J.D. Powers and Associates again rated it number one in the industry in consumer satisfaction. Beyond his leadership in the payments industry, Ken is recognized as one of today's top CEOs. Barons has listed him for four consecutive years as one of the top CEO -- as one of the top 30 CEOs in the world, and he has received awards from numerous civic, service, and community organizations for his public service leadership. Ken, it is an honor and a privilege to welcome you here to Brookings to deliver our keynote address. Please join us in welcoming Ken Chenault.

MR. CHENAULT: Thank you, Bob, for those kind words, and let me also extend my thanks to The Brookings Institution for sponsoring today's conference.

Good morning. It really is a pleasure for me to join you to discuss the payments industry. Now you're going to be hearing several perspectives today from a number of distinguished speakers, and it certainly is an honor for me to be among them. I have spent most of my business career within the payments industry, so what I hope to offer you today is an insider's perspective.

The payments industry that I know is both global and dynamic. It is without a doubt a highly competitive industry, one that is rapidly innovating and evolving. It is an industry that exists in various stages, largely depending on geography. Now in some markets customer needs are simple. Products are basic and providers are few. In other countries, customer demands are greater. Products are high-tech and the competitive landscape is quite diverse. But regardless of its evolutionary stage in any given market, the purpose of the industry remains the same, to facilitate the conduct of commerce and improve the efficiency of day-to-day transactions among consumers and businesses.

Now as we all know, the global environment is evolving at an accelerated pace, not just for payments, but for all businesses. So even though I know my industry well, I also know that to stand here today and attempt to predict the future of payments is an assignment fraught with peril. I'll concede right up front, there is no crystal ball in my New York office. We have no psychics on retainer that I know of. But while I can't predict the future with certainty for you today, I can offer you my perspective on trends that are currently underway across the industry, trends that will likely shape the evolution of payments over the short, medium, and long term. Now before I look ahead, however, I want to first take a moment to look back, specifically to look back to how we became a payment company.

Now while I'm always on the lookout for opportunities to showcase our employees and our company, let me assure you that this history lesson is not intended to be self-serving. It is relevant today because I believe our own history offers insight into how the overall industry has evolved, and how even today it continues to reinvent itself to meet or anticipate the needs of customers. Now our founders include two names that are well known throughout the business world, Henry Wells and William Fargo. And in 1850 we opened our doors as an express company, a freight company. We moved packages and currency for people across states and across territories. Think Federal Express with stage coaches, that was us. Now as the United States expanded during the latter half of the 19th century, so did the needs of customers. Goods and materials were not just being shipped between states, but to the rest of the world as well. And in response, we expanded our own corporate geography, setting up freight offices in a number of international capitals. Now as the country prospered, more and more of our citizens wanted to see the world, so we formed a travel agency to help them go overseas. International journeys, whether for cargo or people, had to be paid for. And at this point in history, there was no means of payment that could easily cross borders, so we created our own, inventing both the travelers check and the money order. By the 1950s customers demanded greater financial flexibility, both at home and while traveling. And as you heard, to meet this need we launched our first charge card in 1958. And we really are proud to celebrate our 50th anniversary, and we are continuing to innovate.

Now as a former history major, I always look for ways to learn from the past. And while I've gained many insights from studying my company's 158-year history, two are relevant for today's conversation. The first is the importance of driving change, not only in your own company, but through your industry. We've shown the flexibility and resolve to reinvent ourselves, adapting to customer needs in a changing marketplace. And given the dramatic pace of change we're seeing across the industry today, this capability is clearly an important asset for any payment company to have.

Now my second takeaway is that at its core, the payment business is dependent on a very basic element and that is trust. Trust that your payment will be correctly handled, trust that your interest and assets will be protected, trust that someone will be there when you need help, whether it's shipping gold from New York to San Francisco, having a merchant accept a travelers check half a world away, or using a credit card to make an online purchase.  Payments is clearly a trust business. Now I want to acknowledge upfront that confidence in the payments industry has eroded over the last couple of years.  The credit card industry, in particular, has fallen short of the mark in some of its practices. And any assessment of the future of payments must recognize this.  The Federal Reserve Bank and other regulators are working to address specific card practices, and I compliment them on their efforts.  As I'll discuss later on, I recognize and support their hard work in striking a balance, and certainly an appropriate balance, to protect consumers without curtailing innovation and competition that exists across the industry.

Now before discussing some of the trends currently underway across payments, let me first offer up some basics on the industry.  The term "payments" may sound simple, but it actually covers a lot of ground, and the industry offers extensive choices.  Payment transactions can involve a number of parties and take a number of forms, ranging from simple to complex.  For a basic transaction between a buyer and a seller, consumers can choose to pay now, pay later, or pay in advance. Within each category, there are many choices of product. For example, if a buyer wishes to pay at the point of sale, they can use cash, which involves only the buyer and the seller. Or they can pay by check, which typically involves five parties: the customer, their bank, the seller, the seller's bank, and the fed. Or they can use a debit card, which involves a seller, a buyer, their banks, a debit network, and potentially a processor or two. Now given the broad array of choice in a typical developed market, it can be hard to track and keep track of what the term "payment" actually includes. So here are a couple of cheat sheets that may be helpful as you listen to our panel of experts this morning. First there are basic product definitions, depending on whether a payment is made now, later, or in advance, covering everything from wire transfers to credit cards, you can see that payment users have a range of options. And over the past few years, I've also added an overlay to this list, that of emerging payments which can cover all types of transactions. Payment companies such as my own, along with other providers and technology companies, are developing new products and access devices that rethink traditional formulas. Online products, mobile devices, and contactless payments to name just a few are responding to or oftentimes leading customer demand. So in many cases, these innovations are improving the ease and efficiency of customer transactions, and they clearly have the potential to significantly impact the industry.

Now another basic fact about payments is the diversity of its participants, and there are many players across the industry from large companies providing multiple products and services to specialty processors who perform a single function. Now here's another cheat sheet of mine, which gives examples of the various parties involved in different types of transactions. In some cases, including the customer and the merchant, there can be up to seven different participants or companies touching a single payment transaction. Now just to provide perspective, here are examples of some larger players within each of these product and processing categories in the U.S., and as you can see, in most cases payment transactions are sliced and diced among many companies and processors. Some have a niche within a specific area of processing and look specifically to expand their volumes and scale. Others focus on the end-user, offering value and services to the payment customer be it a consumer or a business. Now looking across this landscape, ourselves and Discover are the only providers that have a material presence across multiple pieces of any payment chain. Both of us issue products, we acquire merchants, we process transactions, and we operate networks. In our business model, for example, our objective is to serve high-spending, affluent card members, providing them with premium value and loyalty programs and unique merchant offers.  At the same time, however, we look to improve our operating efficiencies by growing our volumes and expanding our scale.  But an issuer, acquirer, and processor -- being all three -- gives us the flexibility and the means to invest and implement a wider range of innovations and, therefore, meet a wider range of customer needs.

Now that is, of course, just a snapshot of the industry today. Over time, new competitors will certainly join the marketplace, particularly in the emerging areas I mentioned earlier.  Already companies such as Verizon, Bill Me Later, and PayPal are adding innovations and options to the industry and to customers.

Now given the global growth underway across payments, there is clearly room for new approaches, and I expect new providers, technologies, and geographies will further expand the marketplace.  Now beyond new entrants, I also expect that we'll see more partnering across the industry.  Participants will partner with each other to develop new features and technologies that can provide customized services with maximum efficiency.  Now some people here today may not view payments as a growth industry.  May be you saw announcements from some of my U.S. peers that they were diversifying into other product lines because they consider the U.S. card industry to be slow growth. Now that's one view, but I believe it is a narrow view. It only considers one payment product within a range of product options. It only considers one market across a vast global map. I hold a different view. I believe the payments industry as a whole offers a tremendous amount of long-term potential for reasons that fall into three categories: product penetration, technology, and their geographic presence. Now that's not always a clean break across these growth drivers, but here are some examples of what I'm seeing.

First is product penetration. Even within a developed economy such as the United States, electronic payment products still have a lot of unused runway. Among U.S. consumers, it is estimated that cash and checks still account for more than 55 percent of spending. For U.S. small- and mid-size businesses, that number is 85 percent. Now this translates into two business opportunities. For a product provider like us, it means the chance for increased volumes, particularly in specific industries such as healthcare and in other categories that do not currently accept plastic. For the financial system as a whole, it means the opportunity to further improve processing efficiencies and drive down costs by taking even more paper out of the pipeline.

The second trend that will drive growth in electronic payments is technology, the most significant example of which is the internet. For years futurists have been adamant that we will become a cashless society, one where a swipe or a tap will buy you a newspaper or a morning bagel. The payments industry as a whole is clearly making strides in this direction. But consumers aren't concerned with meeting what the futurists say is going to happen. There is certainly a significant number of product pilots that we have seen over the last few years, but consumers still remain committed to cash for certain purchases. Just as the futurists of 50 years ago thought we all would be in flying cars by now, a cashless society is another prediction that seems to be falling by the wayside. The exception to this is the one truly cashless society that exists today, and that is the virtual world. Cash and checks are essentially non-players when it comes to the internet. So anyone conducting business online is automatically driving the growth of electronic payments. Online commerce will continue to grow robustly over the next 5 years, albeit at a somewhat slower rate than the adoption years of the late 1990s. And this growth in online spending will clearly drive growth in payments. Now here's one example from the U.S.: In 2007 U.S. retail consumers spent $150 billion online, a large number, but still a small proportion of their total spending of $4 trillion. But while cash and checks still account for the majority of consumer offline spending, as I noted before, their online spending is 100 percent electronic. With online purchases expected to grow at a compounded rate of 19 percent between now and 2012, the opportunities for payment providers will expand significantly. Now this sizeable business opportunity is attracting a significant number of new players into the field, with retailers themselves, real-time credit products, and companies such as PayPal joining traditional credit and debit providers. The competition is bringing innovation, efficiency, and growth in the payments marketplace, something we will all benefit from.

The third trend that will drive the growth of payments over the medium- to long-term is geography. While certain developed economies have been using some form of electronic payment for years, a number of significant economies continue to be primarily cash centered. Among this group are the BRIC countries, which offer the broad opportunity of high economic growth along with specific opportunities in payments. Economies evolve differently as they develop, and that will no doubt be true for a number of these cash centric markets. For example, new technologies may make it possible for countries such as China or India to skip steps taken by Western economies. Instead of progressively moving from cash to checks to plastic, advances in wireless telecom may allow them to vault past the need for a physical card or check and go straight to the electronic account number. But while their devices and means of access may differ from other markets, I believe their overall development will follow a consistent trend. Even allowing for differences in culture and technology, this trend is quite clear. It has consistently been seen that as per capital GDP increases within a country, the number of electronic payments rises substantially. As a country's educational levels rise, as personal income grows, as technology becomes more available, the use of electronic payments expands, all of which highlights the growth potential of the markets on the left side of the chart.

Now as a payment provider, I look at the size and scope of this opportunity. I want to attack it immediately. But then I quickly recognize that income growth alone will not be sufficient to drive growth in payments because as I said a few minutes ago, the payments business is not just about transactional capabilities. It also depends on trust. Businesses and consumers are not going to generate the level of growth implied here without a strong level of trust. And not just trust in payment providers such as ourselves, but also in a wide array of people and institutions, including taxing authorities, the banking system, the currency market, and regulators. Moving away from a cash-based economy requires a basic level of government and corporate infrastructure. It requires a popular belief in the equity of national policies and their fair implementation. Without these basics in an economy, even the most innovative payment products will have trouble competing with the age-old cash under the mattress. But more important than the impact on the payments industry is the greater impact on the country itself. Without trust in the basics, economies can be hampered, the potential of a society will be limited, and individual growth and productivity will be restrained. Now this trust is essential. It is a prerequisite to generating and sustaining any degree of long-term economic growth. And as someone who heads a large global payments company, I spend a lot of my time on technology investments, processing costs, and telecom capabilities. But one of the most significant roles is I am the steward of our brand. Given our long history, we have a unique legacy to uphold, a legacy of service, quality, and integrity. And as a result we place a great deal of importance on this fundamental idea of trust. My view is that while the global payment system must be open and flexible enough to allow for many different players, it must always be based on integrity and trust. Payment providers, therefore, must be accountable for living up to relatively high standards. Providers who undermine trust clearly limit their own growth potential. For example, I don't believe a company has much of a future if it earns the majority of its revenues when customers make a mistake or don't conform to a rule. Gotcha pricing is not the way to build a long-term sustainable business model or to maintain long-term customer relationships and trust. I believe a company's long-term health is only assured when customers receive value for their money and feel they are treated well. At our company we do not take action -- we do take action, I want to be clear here, when customers fail to pay their accounts on time or they bounce a check. We don't think that's good behavior. But as I said earlier, because of our brand and our desire to retain customer relationships, certain practices don't make the cut, for example, universal default. This is a practice of raising the interest rate for a customer on your own product because they are delinquent in paying someone else. They remain current with you, but their rate gets raised because of problems with another lender. Now a number of companies adopted this practice and generated higher short-term revenues as a result. But we made a conscious choice several years ago to not implement this practice across our card base. To us it just didn't feel right. Universal default and a number of other practices have attracted criticism to the industry. And as an industry, we must respond to these criticisms if we're going to restore the trust necessary for a healthy marketplace that can foster innovation and long-term growth.

Government plays a crucial role in bolstering public confidence by maintaining a reliable and balanced regulatory framework.

As industries change and evolve, so must this framework. Now an example of this is the work currently underway at the Federal Reserve and other regulators to update rules governing the credit card industry and to strengthen consumer protections. Now we may not agree with all the proposals being considered by the fed, but we do recognize why they're taking actions, and we support their efforts. The new rules being proposed by regulators are sweeping, and they will make the most important regulatory change for our industry in at least 25 years. It is our hope that these changes will bolster trust, trust in the regulatory system, and trust between consumers and payment providers. We believe regulators recognize the need for balanced action and the industry's concerns about unintended consequences. We believe the fed will be open to industry comments and that their final guidelines will appropriately protect consumer interests, while at the same time supporting appropriate access to credit within a competitive marketplace. Now our mutual goal needs to be to stop the abuses that exist today. Strengthen consumer confidence, and to do so without impeding the growth and development of innovation, choice, and value that will benefit consumers in the future. Now I believe the payments industry is at a very exiting point in its evolution. It's a journey that has been characterized by ongoing innovation, heated competition, and high customer expectations. The industry also has enormous breadth. It's not a pure standalone business. Yes, it has its own products and issues, but at the same time it's imbedded into multiple industries across multiple markets and used by multiple customers for almost every type of commercial transaction that exists. The breadth and diversity has attracted vast numbers of providers, ranging from large global companies to local banks and credit unions. Trillions of dollars, Euros, Yen, and RMB get transferred and settled each year. And across the industry, payment systems operate with exceptional efficiency and provide strong value to customers.

Now some providers offer low-cost and large-scale, others offer high-value and service. Some, like my own company, are combinations of both. Now given this range of products and providers, I believe it is a misnomer to call the payments industry a commodity. The term "commodity" implies a sameness that just doesn't exist. It implies mass production and low-value add. The global payment system that exists today is far from a commodity. Today's system is a facilitator of global commerce. It is a driver of business growth. It is a means of developing national economies on behalf of all citizens. For all these reasons, I believe payment systems should be viewed as economic assets, not as utilities. To insure the future growth and continued innovation, the industry should remain open and not restricted by inappropriate barriers.

Regulation will occur, but the regulatory approach to payments should be one that sustains trust, while at the same time encouraging productive value-added growth on behalf of consumers. This industry clearly has a great deal of untapped potential, and I am very excited about our opportunities to realize this potential, and I look forward to the challenge. Thank you.

MR. LITAN: Thank you, Ken. We have -- is this on? We have limited time for questions, so Ken would be happy to answer a few. And we have a mike out there, right? And so we'd like you to identify yourself in asking the question.

MR MACLAURY: Bruce MacLaury from Brookings. Ken, you emphasized understandably trust, two areas under trust that I'm interested in your views. One, privacy, and included within that cross marketing using the lists and so forth, that's one. Second is national security. We've seen the telephone companies pilloried for giving access to the government for tracking payments and other things. How does American Express or the industry handle those two issues?

MR. CHENAULT: I think obviously it's a very, very important challenge and is directly connected to the trust issue. We have had a very strong historic focus on privacy, and the reality is that we trade in information and data. And at the end of the day, customers are trusting us and businesses are trusting us with, in fact, their vital data. And it is very important that we have very strong internal standards of what we will allow or not. We, in fact, don't believe, and for years we have not been on the list for (inaudible) business. Our view is that our lists are private. We're not going to make our revenues off that list. Now what's important is that if customers in fact have interests -- what customers when you do the research, their view is you have all this information and data, why can't you send me what I want? And there you have part of the balance is how do you use that information? What permission do you get from customers for that data? And so that has to be very carefully thought out, but this is not something that we have jumped into over the last few years. We have been very, very focused on this over the last 30 years, that privacy is absolutely critical.

Was there a second part Bruce of your --

QUESTIONER: National security --

MR. CHENAULT: Yeah, I think, look. I think it is, as we're all dealing with, is a very, very tough balance. We obviously are committed to ensuring that we're doing our part for our country, but also at the end of the day what we want to make sure, as we do with any regulatory action, is to make sure that people understand what they're asking for. What is the data? How is it managed? How can we protect the card member? And so we want to make sure that we're educating the government to some of the tradeoffs so that we don't have to provide more info than is absolutely necessary. And that's not an easy tradeoff. That's not a simple black or white answer that I can give you there.

QUESTIONER: Philip Coleman --

MR. CHENAULT: I know very well who you are Phil (LAUGHTER) as everyone does in the room!

QUESTIONER: What percentage of your revenue comes from the membership per year as against the discounts you get from the restaurant where you pay the bill as against what comes from the fact that the customer doesn't pay you on time, and therefore you charge him interest?

MR. CHENAULT: Here is what I'd say as well. I can't from a public disclosure give you the exact percentages --

QUESTIONER: I didn't think you could.

MR. CHENAULT: But we do not -- our revenue model is not driven by backend fees. We are a fee-driven business so the upfront membership fees are very important, and our view is that we charge for value. And the reality is we have customers that believe we're providing very, very strong value. That is to the end-user customer and to the merchant. Every merchant deal we do is an individually negotiated deal.

And the reality is no one is forced to accept us. We have to prove to them that we have that value, but our model -- and what's very, very important is we talk about the spend centric model, and what our model is about is we do well if our customers spend. We believe, though, in transparency and disclosure, and as I said, we don't want to engage in gotcha pricing. So it is not a significant percentage at all in our economic model.

QUESTIONER: Well, the other question is at one time there were only about three or four of you in your business, but now most of us get from our bank an indication that they will give us credit and permit us to purchase, too. How much does that affect the business that you started?

MR. CHENAULT: Here's what's important, as I said, there has been consolidation with traditional competitors. So if you go back to the '70s and '80s, there were far more individual bank issuers. Consolidation has dramatically occurred, but non-traditional players -- PayPal and others -- have made a very, very important difference. Now the reality is when I talked about the fact that we are partnering with competitors, we partner with banks. There was a major case, which I'm sure you know about, that the government handled and the DOJ won that case, and that really was to permit freedom of choice for our consumers and for banks to partner. And the reality is that what customers want is choice, and what we've got to be very focused on is what is the specific value proposition that will drive it? People want to buy their products from different channels, online, offline, their bank. They can also purchase their product obviously directly from us. And so what you want to do is have a variety of channels, but you want to be focused on specific value propositions and from my standpoint, I'm a free marketer at heart. I like competition. I revel in it, and I think that drives innovation. And so the reality is that I think the non-traditional competitors have been very, very helpful in driving competition in the overall industry.

QUESTIONER: Bob Abernathy. Could you briefly describe, sir, what you expect the new rules coming from new legislation to be?

MR. CHENAULT: Well, the reality is that since these rules are under consideration, I can't go through what the specifics or predict what will happen. But I think that the key thing at the end of the day of what the fed in particular is trying to do is to balance protecting consumers. And as I said, there are issues with the practices of some credit card companies, and I think that's important, to in fact make sure that pricing is fair and reasonable and it is disclosed. But I think the other balance that I believe they're focused on is to ensure that they're not going to curtail innovation and competition in the marketplace. So I think what is important is I really do applaud what the fed is doing because what's important for the industry overall is the emphasis that I put on trust. And the reality is the reputation of the credit card industry needs to improve, and some of the abuses need to be dealt with. I think that's what the fed has comprehensively tried to address. We've made our comments about what areas we think need to be looked at, but what we do believe is that the fed is absolutely correct to take and focus on some comprehensive changes.

MR. LITAN: We'll take one more question and then unfortunately Ken has to go someplace else. Let's go all the way back. Sir, is there a mike near you? Here we go.

QUESTIONER: My name is Abel Lonox (phonetic). I have no affiliation, but I do have a question that you said customers remain committed to cash purchases for certain items, and so I have two questions. The first of which is what items predominantly do customers use cash for? And secondly could you speculate as to why they use cash instead of credit?

MR. CHENAULT: Here's the point. The reality is the most I think alarming on one level for those who advocate and say that we're in a cashless society or that the payments industry in the U.S. is small, is the fact that 85 percent of business transactions are done through cash or checks. And so the reality is part of it is an educational process for people to understand the productivity and efficiency that can be driven through moving to credit cards and other payment products. And that's just an amazing number and I think speaks to the fact that we need to modernize a number of the practices on the business side. On the consumer, I think it's a matter of convenience. Smaller priced items, whether it's a newspaper -- but even in retail -- the fact that 55 percent of the transactions -- it really spans the gamut. But I think you'll see a bias towards more lower priced items, but then there's certain categories where it really does vary. And -- I mean I was just in a hotel last week shocked -- this is not a high percentage that's still done in cash, but someone paid for their room at the Four Seasons in cash. I didn't examine their background (LAUGHTER), no questions, it was not my job (LAUGHTER), but I did notice it. So I think, you know, what is important is that part of the payment hierarchy is also driven by impulse. And some people in fact use different cards, checks, and cash from a cash management standpoint. And they say these are bills that I'm going to pay in 30 days. These are bills that I'm going to revolve and just pay a portion. I'm going to use cash when I want to pay in full. So some people when they're making a big purchase, whether it's a TV or whatever, they'll say look, from a cash management standpoint I want to put it on the card, I want to pay it in cash. And what is important then, whatever we focus on, is we want to give customers choice. And so we have a range of products that part of what we're selling in addition to our service is financial discipline. We have a pay-in-full product, you pay at the end of 30 days. People like that discipline and the same customer, in fact, you'll say boy this customer only like charge cards. Then what you find is they have -- they also like to revolve for certain types of purchases. Then you look at other purchases, they also like to use cash. So the point is that I think what is a common theme is one to educate people to the economic advantages of using plastic, the convenience and services that you can get using plastic, but also you have to emphasize the trust, and I think that's very important. But choice in payments is critical. Thank you very much.

MR. LITAN: Terrific, thank you. (APPLAUSE) Thanks for coming. Let's bring up our first panel.

Well we're really privileged today. We have two terrific panels of experts who've been studying the payments industry for many years, and our first paper is going to be presented by two of the experts in this field. It's a joint paper that's been done by David Evans and Dick Schmalensee. They have written numerous papers together. They wrote a terrific book called "Paying With Plastic," which is sort of like I think one of the definitive books in this industry. David has long been with LACG, a well know consulting firm, and is now the co-founder of Market Platform Dynamics with which Dick is affiliated. Dick has just stepped down as dean of the MIT business school, has long been a professor there and one of the leading industrial organization experts in academia. He also served on the Council of Economic Advisors.

So that's our first paper. And then second, we're going to have Vijay D'Silva who is the lead -- he is a senior director at McKinsey and also he's lead in their payments practice. His business is to project the future of the payments industry, and he's going to share his team's thoughts with us today.

So we're going to start out with David and Dick, then we're going to go to Vijay, and then we're going to have an open-ended discussion. I've read both papers and you're going -- at least I predict -- going to see some fascinating material. David?

MR. EVANS: Thanks a lot, Bob. I think we're just waiting for the technology to kick in here. I thought that was a great speech by Ken, and much of what I say is going to be very complimentary to him.

Just so you all know, given the work that Dick and I have done for Microsoft over the years, we're using a Mac today. (LAUGHTER)

MR. LITAN: Which is why it doesn't work, is that right? There, I think it's coming up.

MR. EVANS: You're optimistic, Bob, because of that no-signal sign?

MR. LITAN: Yeah. Well, no, it just changed color so I thought may be something was happening. I can see the computer over there. It's showing up over there; it's just not showing up on the screen.

MR. EVANS: This is why they don't do PowerPoint presentations at the Supreme Court.

MR. LITAN: Vijay, is yours loaded? On a different computer, right? On that one? Okay. Do you want to switch while they work on this? Do you want to continue working on this while and Vijay -- hold on one minute.

MR. EVANS: Why don't you give us one second. Okay, so we have a really great presentation for you. It's a fantastic video presentation. Unfortunately, you're not going to see it today, so you'll just have to take my word for it that it's really great. (LAUGHTER) At some point we will put it up on our website, and we'll stream it for you just so you can see just how great it is.

Change is the buzzword of the day. It's popping up just about everywhere in just about every topic in sight. And when it's used, it implies that things aren't so hot today, but they could become a lot better tomorrow. Change now usually means progress. Now change is a word that's been used to describe what's going on in the payments industry, and to some extent that's what Ken talked about a few minutes ago. We are going through a period of creative destruction in the payments industry these days. Visa and MasterCard have just become, in the last few months, -- or in the last couple of years in the case of MasterCard -- publicly traded corporations with market caps of more than $100 billion, at least as of a couple of days ago. Venture capital money is pouring into the industry, and there are lots of really new cool startups in this business. But for those of us who've been in the business for a while and who've heard the chorus of change before -- so I'm not sure why putting down a screen behind us is going to -- oh, there we go, there we go -- so if Bob gives me permission to get some extra time, I may actually start back at the beginning just so you can see some of the videos we have for you. So Cheryl, do you want to start at the beginning? Ready to go? Okay, you may have heard this before.

Change is the buzzword of the day. (LAUGHTER) It's popping up just about everywhere you look in just about every topic in sight. And when it's used, it implies that things aren't so great today, but they could become a lot better tomorrow. And change usually means progress. Now change is a word that's been used to describe what's going on in the payments industry. We're going through a period of creative destruction. Visa and MasterCard, you might have heard, have just become publicly traded companies with market caps as of Monday of about $100 billion. Venture capital is pouring into this industry, and there are lots of really interesting new startups. But for those of you who have been in the industry for a while and who've heard the chorus of change before, because this is nothing new, the industry's track record of delivering real change has really been pretty unimpressive. Pundits, as Ken mentioned this morning, have been telling us that the cashless society is right around the corner for more than 50 years. Yet cash is cheap, easy, and it's anonymous. It's been around for 3000 years, it's very low tech, and it's hard to beat. It still accounts for a vast amount of consumer spending. There's been a significant decline in the use of paper checks. Check use overall has been declining about 7 percent a year since 2003, but small businesses find this 14th century Italian invention pretty convenient, and even bigger ones can't give up living off of the float. A decade ago, some forecasters said we'd be making a large portion of our purchases online today, yet even though e-commerce is exploding, online spending accounted for only 4 percent of retail spending last year. Granted, as Ken says, 100 percent of that 4 percent is probably cards, but still it's only 4 percent. Now then there's the dumb, old, magnetic-stripe card. We've been paying with one of these for more than 25 years now.

The Chinese recently had to pick a technology for their infant payment system. Something cool? Contactless? Biometrics? Maybe brain waves? Nope. They went with the tried-and-true swipe-able mag-stripe card. Despite the fact that everything involving payments could be done electronically, everything could be cashless, everything could be digital, we still rely on vast amounts of paper and plastic in the process of paying each other.

So why has change in the payments industry been so elusive, at least here in the United States? Why can't we be green in the Al Gore sense of that color? Well for one thing, consumers seem to pretty much like it the way it is. And let me just focus on the plastic part of the payments industry. Cards work well. No one's really given consumers a good enough reason to try something else. Cards are accepted just about everywhere you want to shop, and paying at checkout is really fast. We recently did a survey of more than 500 consumers of all ages. Nearly all of them said nothing's broken and that the process today was safe, convenient, and fast. Consumers are not yearning for change. Merchants, despite all their complaints about interchange fees and merchant fees, are also pretty happy with the current state of affairs. Sure they like card fees to be lower, but they care a lot more about making their customers happy and earning hefty margins on incremental sales. That's the lesson that some of the new alternative payment companies have learned the very hard way. Pay By Touch, Tempo, and Revolution Money to mention some of the recent startups in the payments industry, each began their lives as know-when-to-change-for-the alternative for merchants. But these startups didn't offer consumers any compelling reason to change, and merchants won't accept cards that consumers don't carry and don't want to use. So change for the sake of change doesn't work. But, in fact, profound changes are happening in the payments business, changes that are going to transform how consumers, how all of you, are going to shop and how businesses are going to sell. The sixth, the sixth revolution in the payments industry, in the history of mankind, will almost surely take place over the next decade. It will take place around the world, as Ken mentioned, and it's going to bring tremendous value to consumers and businesses. And it's going to reduce the amount of paper and plastic we consume in paying each other.

Now most people who talk about change in the payments industry focus on the physical method that we use at the point of sale. They talk about contactless and biometrics, about paying with mobile phones or with our eyeballs or with our fingerprints. But that's focusing really on the tail rather than the dog. The physical method of payment, how we actually pay at the point of sale, the mag-strip card or anything else, is really just an input device into the vast payment network that moves digital money between consumers and businesses. Now much talk about change in the payment industry focuses on the payment transaction. Gee, if we could just wave our cards at the point of sale, wouldn't that be better? Wouldn't it just be so much better if we just had a contactless card that we could wave at the point of sale? Well, no, not really. It might be a little bit quicker, especially if I don't have to sign or type in a PIN, but contactless has not gotten much traction in the United States because it's about making marginal improvements in something that consumers and merchants think works pretty well. Consumers don't see the need for change, and merchants don't want to invest in installing the necessary equipment. The profound changes that we are going to see will be less about changing the mechanics of how we pay and more about transforming the whole process, the whole process of transacting between consumers and businesses. Now most people also look for change from within the payment industry. But they're really looking in the wrong place. The transformation of how we're going transact will be driven by three technological revolutions and from mashups of these technologies with payment methods. You have to know where to look for the revolution, and the answer to that is it's in the data, it's in the cloud, and it's in your hands.

It's in the data. Google and others have shown how crunching massive amounts of data can release enormous value. Online advertising businesses have made fortunes analyzing what you search for and where you browse. The payments industry is sitting on a far richer trove of data than Google and others in the online advertising industry. The online advertising industry, for all of its sophistication, is based on a lot of guesswork. That's why women get really, really annoyed when they see all those advertisements for losing weight when they go in the Facebook pages. But one of the things we've learned is that people actually like advertisements that are relevant to their lives. If I'm looking for a new pair of sneakers, I'm happy to get ads for the best ones or where I can get the lowest price. The payments industry has hard data on where people shop and what they buy. Using those data, respecting privacy concerns, can help companies provide better information and offers to consumers. So suppose I buy a new pair of running shoes at Niketown. I might get ads delivered to my mobile phone for energy bars at the nearest GNC, maybe some coupons to buy some running clothes at City Sports, and maybe $.50 off for frappuccino at the nearby Starbucks. Those are all things that could be done in the future, and to some extent are being done now.

It’s in the cloud. That’s where web-based applications run on lots of interconnected computers. Today’s payment industry you might think is very, very sophisticated, but if you get into the guts of the payments industry today, the chart that Ken showed you of all the businesses that are along the pipe in the payments industry, the payments industry today is built on jerry-rigged linkages connecting very diverse hardware and software. Dealing with this old plumbing for anyone who wants to make change in the industry is painful and costly. Innovation, though, innovation in this business, is moving to the cloud. Now we’re working, Dick and I and Market Platform Dynamics, are working closely with the leader in this area, a Denver-based company called IP Commerce. It’s developed a software platform that sort of sits on top of the payment system. You can think of it as Windows for the payment system. It works with point-of-sale devices, like VeriFone, and processing platforms, like those operated by First Data Corporation, in much the same way that Windows works with printers and other peripherals. Other companies can then build applications on top of the IP Commerce platform. That moves innovation out to the edge of the system, away from the old messy plumbing, out to the edge of the system. PaySimple, another company we’re working with, has a web-based application that allows small businesses to quickly accept multiple methods of electronic payments, and to integrate all of their transactions directly into their accounting software.

It's in your hands. Just about everyone in the world is carrying a mobile phone. Some of them are carrying one of these -- let me see if I have my iPhone here -- carrying one of these, handheld computers with browsers, internet connections, and global positioning. Most people will be carrying a similar device in the next decade. Mobile phones are already revolutionizing payments in many parts of the world. What's amazing now is how developing economies from Africa to India are using mobile phones to move money between people and businesses. It's a lot easier than putting in point-of-sale devices and wiring up card networks. And it's finally challenging the pervasive use of cash in these economies. The real power of mobile phones hasn't been realized though in most parts of the world. Mobile may eventually replace cards at the point-of-sale, but not because we'll be able to wave them at contactless terminals or because we'll be able to SMS messages like they're doing in Africa. Mobile phones are going to replace cards because it's possible to integrate payments, data, and the cloud into the mobile device. It's the mashup of mobile with these technologies, with these new technologies, that's going to deliver the real value to consumers and to merchants. Entrepreneurs are working on a lot of mashups these days in the payments business. Let me tell you about a few ones that I think you ought to watch. Carlitics (phonetic), a very new company that we're working with, is developing an advertising network for financial institutions that allows them to display targeted advertising messages to their credit and debit card holders. It allows advertisers to reach these eyeballs with relevant ads and promotions. Importantly, this technology is able to adhere to the strict rules that regulate the production of consumer financial information. Billeo wants to turn your browser into a shopping and bill-paying portal. Consumers who download Billeo's toolbar can buy online without the hassle of entering card information each time they visit a site. Issuers have a better chance of keeping their cards at the top of the electronic wallet because it can be programmed that way, and merchants can drive individualized offers directly to the consumer. American Express just launched the beta test of Billeo this past summer. Amazon's text-buy it service is turning the online/offline shopping paradigm upside down. Consumers can shop at physical stores where they can look at merchandise. While they're there, they can text Amazon the UPC code of the product that they want to buy. If Amazon has it and is offering a lower price, the consumer can then send a text back to Amazon to confirm the purchase, have it charged to their Amazon account, and have the product shipped. Physical merchants don't particularly like this (LAUGHTER), but it's revolutionary.  Cellfire is mashing up location-based services, and these location-based services are really the coolest thing going on. They're mashing up location-based services, retail merchandizing, and basic couponing.  They're pushing ads to your mobile phone based on where you are and what you purchased in the past.  Most -- a lot of mobile phones now can be used in such a way where if you're willing to allow it, people can tell where you are.

Now change in whatever context isn't without risk, so lots could go wrong.  There's business risk.  In spite of all the cool technology, the payments business is still all about cracking the chicken-and-egg problem of getting consumers and merchants on board a payments platform.  The $300 million investment into Pay By Touch that a lot of venture capitalists made -- Pay By Touch was a new system developed a few years ago where you would go into a store, you would register your fingerprint, and then when you wanted to pay you would just press your fingerprint at the point of checkout.  It went poof in a few years, didn't catch on.

There's technology risk.  Everything really needs to work smoothly and simply for merchants and consumers.  The clerk at the checkout counter probably doesn't have a degree in computer science, has probably only worked there for a few months, and the consumer just wants to get out of there. Merchants and consumers won't tolerate system failure at the point of sale.

There's security and fraud risk. Not only does the technology have to be secure, people have to believe it's secure. Bill Me Later that Ken mentioned in his talk, which is one of the really interesting and successful new payment systems that's been started up in a few years, has built an online business of 4 million account holders on the back of security concerns about entering card information on websites. The way Bill Me Later works is if you press on the button on a website, you're prompted to basically type in the last four digits of your social security number and your telephone number, and with those two pieces of information, they basically do a credit check and you're set to go. So no cards involved. Now people are very skittish about paying with contactless because they envision some gangster in Russia hacking into their bank account. And the biggest reservation about using mobile phones for payment really is security these days.

So given all this, who has the greatest chance to succeed? Ken is right that there is a ton of people that have started up businesses in the payment space. There's an incredible amount of innovation and activity going on. It's not just the PayPals of the world. It's Bill Me Later and many other companies that are starting in this business. A lot of them are going to fail just like most new ventures do, but some of them are going to succeed. So I'm not going to give you any names, at least not for free, but I'll give you a framework for evaluating some of the wannabes. There are two important tradeoffs in the payments industry that determine success. And these can be plotted on a simple 2x2 matrix that shows the degree of consumer change required against a level of merchant investment needed to support something new. When you look at it this way, it's not hard to understand why contactless, for example, has fallen well short, and why the good old fashioned mag-stripe card remains king of the hill. But there's another version of the matrix that measures another tradeoff that's really at the heart of the transformation we're going to be seeing over the next decade. It takes into account the value of the wow shopping experience to a consumer, and how that wow may actually motivate the merchant to make the investment necessary to create a better value proposition for the consumer and derive incremental sales to the merchant. Because that's what it's really all about in this business, it's about driving additional sales to the merchant and it's making consumers want to use the card. If you understand those two propositions, you understand the essence of every business model that's going to be successful in the payments industry.

So this is our litmus test for separating the hype from the reality in the payments world, by focusing on what change in payments should really be delivered. It's the ability to improve the payment transaction by enhancing the shopping experience. And if you want to find out where the wow is going to happen over the next decade, it's going to come from -- where the wow is going to be coming for consumers and businesses, how they're going to get the benefits of the great innovations out there, it's going to come from the three places I mentioned before. It's going to come from the data, it's going to come from the cloud, and it's going to come from those mobile devices in your hands that everyone around the world now has. Now, of course, there's one thing that could get in the way, and now that I've given you sort of the rosy view of the future, Dick is going to do the dismal science approach to this.

(LAUGHTER) (APPLAUSE)

MR. SCHMALENSEE: Since we're in Washington and not in Silicon Valley, we need to say a few things about the government's role in all this. Congress, the new administration, and a host of regulators will find it hard to ignore the developments David has just described. In fact, as I'm sure you all know, plastic cards have already attracted a lot of attention from state and federal legislators and regulators. Some credit card lenders, as Ken has mentioned, in this intensively competitive industry, have profited from deceptive practices, gotcha billing and so forth. Too many retailers have had too much credit card data stolen. Online advertising is also attracting increased scrutiny. Some internet advertisers have been very aggressive in tracking online consumer behavior without the consumer's consent or even knowledge. Policymakers at the fed and elsewhere must, of course, deal with these and other excesses when existing laws and regulations prove inadequate. But in this period of rapid innovation, it's particularly important to proceed with care to do no harm. The payments and online advertising industries bring tremendous benefits to consumers, and, as David has shown, they can do a good deal more in the future. It's vital that regulation avoids stifling socially beneficial innovation, either unintentionally or to protect interests threatened by it. Legitimate concerns about deceptive lending practices, for instance, should not be used to impose unnecessary and potentially costly regulation on the payments function. Legitimate privacy concerns are raised by the use of transactions data for online advertising and by methods that target advertisements based on consumers' locations. And traditional concerns over the protection of personal financial information may intensify. But these concerns need to be weighed against the value that consumers in particular will obtain from new services that are becoming technically feasible. Looked at properly, this isn’t a business versus consumer issue. In fact, foreseeable innovations may intensify competition among businesses for consumers as the internet has already done. To balance privacy concerns, policymakers will need to consider the extent of consumer permission that should be required in various settings. Should we demand that consumers specifically opt in to location-based services? Or to having their transaction data used for delivering them advertisements and coupons? Starbucks after buying running shoes? Not everyone thinks that way, but some do. Or should consumers just have a clear and transparent way to opt out? We believe that privacy advocates tend to overstate the risks involved with business use of consumer-specific data, but they do raise legitimate concerns and there are real risks. We would only urge that policymakers recognize the potential benefits we’ve discussed and proceed with care and caution to deal with the attendant concerns.

Finally, and unfortunately I’ve got to say something about price regulation, though in most areas of the U.S. economy, and in fact of most other developed economies, price regulation is becoming a matter mainly of historical interest. Price regulation of payment systems is emerging globally. This mainly takes the form of merchant-generated pressure for reduction or elimination of the interchange fees that Visa and

MasterCard have traditionally imposed on merchants and passed on to issuers. In the U.S. merchants are brought antitrust litigation to reduce or eliminate those fees. And of course there's a bill in Congress on interchange, which seems intended mainly to create a merchant cartel to shift card costs from merchants to consumers. Overseas antitrust authorities like the European Commission and banking authorities in Australia and elsewhere have already begun regulating interchange. Now with their recent transformation into for-profit publicly traded entities, Visa and MasterCard may in fact eliminate interchange fees at some time in the future. By that I mean like American Express, they may simply impose fees on merchants or on the acquirers who deal with merchants on their behalf, and provide subsidies of various sorts to banks that issue their cards. After all, in every successful payment system from Diners Club onward, every successful payment system from Diners Club onward, merchants have contributed the bulk of system revenue, and they've been unhappy about it. We do not think this will change. If Visa and MasterCard do go down this road and move from interchange to simply discounts and subsidies, the political forces that have put pressure on interchange fees will naturally turn to putting pressure on merchant fees directly. But if they succeed, regulation will then naturally extend to merchant fees charged by all payment systems, including American

Express, Discover, and any future entrants. To be effective, after all, price regulation tends to expand its scope over time. And to ensure that price regulation is not evaded, other aspects of behavior -- in this case a payment system behavior -- tend to get regulated. If this sort of regulation were imposed, competition would be reduced, innovation would be substantially slowed, and the cost to consumers and businesses would be dramatic; although those costs would perhaps only be visible by comparison with countries in which policy enabled innovation to proceed. Price regulation is a thing of the past almost elsewhere, and it should not be a part of the future of the competitive payments industry, particularly now as the industry stands at the threshold of what we believe can and should be a remarkable period of transformative innovation. Thank you.

(APPLAUSE)

MR. D'SILVA: Thanks for having me. I don't have too many videos. In fact, I've got just slides and pictures. What I thought I'd do, though, is maybe take a step back in the course of this discussion and just talk about the payments landscape overall, not simply new technologies because there's a lot of change happening under the covers that is important to realize. And within that context, it starts to become apparent what's driving some of the moves that people have taken in this space.

So let me do four things here. One is just talk about the industry overview, and I'll very quickly go over instruments and types of players. Let's talk about three big trends that are affecting payments overall, and I'll start with the simplest trend around checks. And then talk about changes in the network and the architecture of the payment system. And then talk about some of the emerging instruments that you just heard about. Obviously there are barriers here to some of these changes, and I'll talk about some of those. And then finally talk about what it means for (inaudible) for the industry.

So most people don't realize that payments while all of us use checks and cash and credit cards on a daily basis is actually a substantial industry in itself, and rarely gets reported as an industry. So total revenues in the industry right now are about 40 percent of banking overall, and it's $235 billion, so larger than a lot more recognized industries like hotels and airlines and so on and so forth. And about half of that comes from credit card issuing, which is credit cards that have by far been one of the more successful products in payments history, right? In only 50 years think about the amount of change that's happened on the back of credit cards. But then a quarter comes from consumer deposit accounts, and then there's a mix of other instruments on top of that. If you then look at what it's made up of, really there's this very complex system across payers that are asked to make payments, all the way to merchants as payees, and a whole host of intermediaries in between. There's typically a network in the middle, and this applies not simply for credit cards, but it applies for cash, and it applies for checks and so on and so forth. And then a set of financial institutions typically are the processes that support both sides of the transaction. Then you start to look through instruments, so clearly we've used cash for a while. And if you remember, about 150 years ago, 200 years ago, there were multiple currencies in the U.S., and there was the Spanish dollar on top of that. And the U.S. Treasury came out with the greenback in 1862, and that was probably the big innovation that completely changed the next 50 years on top of that. And then the next innovation in cash was the ATM, which came out in the late '60s. And so to some degree cash has remained steady, and I'll show you some of the numbers in terms of what's been happening, in terms of cash transactions. Checks are a fascinating story. If you looked at what happened in the early 1800s, every bank had its own check. And the only way you could get paid is by taking it back to the same bank. And it was only in the 1850s that clearing houses started to emerge, so a bunch of banks in New York would get together and they would trade checks among each other. And so that process has been a steady progression over the next 150 years until what happened about three or four years ago that I'll tell you about that has fundamentally changed how checks are processed. Then if you looked at more recent instruments, credit cards Ken talked about the last 50 years in credit cards. It first came out -- in fact, in the first half of the 1900s where stores had their own cards, Diners Club had this idea of coming up with a general purpose credit card, and then Visa's predecessor and AMEX both came out in 1958. And so clearly credit cards have grown very rapidly until this decade quite frankly. And then you've got other innovations like debit cards and ACH has been an interesting story on top of that. And then you come to a whole host of emerging instruments, many of which have failed, but some of which are starting to succeed. And this is simply the process of innovation across the industry. So if you look at and you step back and say what does this mean as you look at all these changes over the last 150 years and some of the changes in the last ten, it's always been this process of proliferation, right? There's plenty of new instruments coming out all the time. A few of them succeed, and then there's consolidation because essentially payments is a scale game. It's scaled for processing reasons, it's scaled for trust reasons, and it's scaled for brand reasons.

The three trends here that I thought might be worth talking to you about, one is around the decline of paper. Okay? And there's been a steady decline over time, and I'll talk about some of the nuances about what that means for the industry. The second one is around what I've called open architecture. So if you look at what happens between the time you make a payment all through the system to the merchant, the number of steps that it goes through -- and there's a whole architecture that's evolved in terms of how these networks are set up and what happens there -- that you can imagine changing quite dramatically as well. And the third form that I'll -- in fact, I'll brush over given the previous speech, is around new payment forms and what that might mean.

If you looked at paper payments in the U.S. -- and I think Ken showed a similar number -- for the U.S. it's about half of transactions, right? So in fact we're not doing too badly on cash. It's about 14 percent, which is similar to many other developed markets. I think where we actually stand out is our usage of checks. You know, checks are a very sticky instrument, in the U.S. in particular, and to some degree the genesis of that is how checks emerged in this country vis-à-vis other major developed countries that didn't go through the same process. In some sense they've leapfrogged us. In Europe for instance it's much easier to get electronic transfers than it is in the U.S. And then you've got this whole host of countries that are primarily cash based, and these are clear opportunities for payments companies today and many of them are taking advantage of that.

If you then dig down to the first trend, let's look at paper a little bit deeper. So let's look at simple flows and transactions, right? So over half the transactions today are cash based, right, 129 billion out of 228. But that's a fairly small fraction of flows. A lot of them are small ticket transactions, people buying newspapers and that kind of thing, and that's been declining. Not at a dramatic rate, about 1 percent a year, and that's true for the last five years. And we think it's going to be true -- a similar number in the next five years as well. With any forecast I think, as Ken mentioned, these are directional. But in general it's actually quite remarkable how slowly consumer behavior changes because it's very different what gets the headline versus what really happens in daily life. So let's say for instance cash is roughly flat, slightly declining. Then you look at checks. We write about 31 billion checks right now, okay? And that's been declining roughly at a 5 percent rate, again not too dramatic, right? And you think that that's going to continue, you just have to stand in line at a grocery store and look at the number of people writing checks. It doesn't make sense to a lot of people, but it happens, and there are many reasons why that happens. Because people are used to balancing checkbooks; they're used to controlling their financial lives based on their checkbooks. So there are a lot of imbedded behaviors here that support the use of checks. For businesses it's even more severe because to some degree a lot of invoices that are being paid back are on the back of accounts receivable and accounts payable systems. Those behaviors are very hard to change, and the investment in changing them is quite substantial. Credit card has had a great run for a long period of time, but in the last few years it's flattened out a bit. And the new story in plastic has been on debit, right? Debit has grown at around 20 percent a year for the last five years, and even most forecasts tend to vary between 14 and 18 percent for the next five years. ACH is a remarkable story. ACH, which is the Automated Clearing House, was introduced in the 1970s, and it was a way for the banks to transfer money back and forth. The first applications were things like payroll deposit, right? Most people used to get checks when they worked for a company; now it gets deposited automatically. The new news on ACH is it is being expanded to many other forms, so when you go on your checking account for a bill pay account, and you decide to pay a certain merchant on a certain date, that happens to the ACH system. So now ACH accounts for a larger volume than checks in the payment system, and is forecasted to -- has grown very rapidly in the last five years alone -- and is forecasted to grow ahead of that. And then you've got a long list of emerging instruments that again are forecasted to grow quite fast as well, but are small dollar amounts, so are not going to change the payment system in its entirety. The big news on the check side, which to some degree the numbers are misleading on, right, so I talked to you about how check volume is declining by 7 percent, and that's true. People are writing 7 percent fewer checks every year or will be. But what changed was as a result of September 11, right? Ten years ago if you wrote a check to a merchant in California, that check had to be physically transferred over to say a checking account in D.C. or a bank in D.C. And there were Federal Reserve planes going back and forth, clearing the check system. So you can imagine some of the infrastructure that's developed around check clearing that's taken now 150 years to evolve, right? And banks became incredibly creative in making the system more efficient. So move to overnight delivery and so on and so forth. After September 11, the entire air fleet, as you know, ground to a halt, right? There weren't any planes flying. And the banking system realized how dependent they were on physical delivery of checks. And so two years later, in 2003, the Check Clearing for the 21st Century Act was passed, and it's called Check 21. Now what that allowed banks to do is to transmit images of checks rather than the checks themselves, and in one stroke that one act has actually changed things quite dramatically in the checking industry. And so within three years, or by 2007, about 50 percent of checks have turned imaged and in the next three or four years, most people would expect paper check clearing to disappear. Now the reason that's important is twofold. First of all, it is $10 billion off infrastructure costs in the industry that's imbedded in checking right now, and that will start to -- it is things like check printers and sorters and bundlers and so on and so forth that will start to notch down. The other difference, which is actually much more fundamental and a bit more subtle, is if you picture a local merchant receiving a check. What they need to do is walk over to the bank or drive over to the bank to deposit that check, and to some degree that limited the amount of competition for banks for merchants because you had to be within physical range to deposit these checks. With Check 21, merchants can now scan checks at the store, at the point of sale. At this point they can compete for any -- at any bank that they want, or banks can compete for their business rather. That alone will start to open up competition for merchants on checking alone, and checks as I mentioned before is a big chunk of payments.

So that's in terms of checking. So I've talked about the most basic form of payments and what's happening there in terms of transformation. Now let's go one step further. Let's look at the structure of payments today, right? And to make it easier to explain, let me look at four other industries, and I'll touch on these very briefly. In the 1800s railways took off, right, in the mid 1800s, and by the end of the century in 1900, most people took trains. And railroad traffic really climbed very rapidly. And what happened was, the problem with trains is, as you know, you have to leave at a certain time, right? The railroad sets the timetable. You've got to go to where the station is, and you've got to go through a route that they've told you about, right? And the railway sets the level of service. Now if you look at what happened -- what the automobile has done to transportation, you can buy whatever car you want, right? You can go wherever you want whenever you want and you can take whatever route you want. And all you have to do is follow a set of rules, and you've got to drive on the side of the roads, right? And you can start to -- you'll see where I'm going in a second -- let's look at computers for a minute. In the 1970s most computers were batch, right? They were large mainframes, and you had to follow the rules, right? You had to submit your job, it got executed at a certain point, and that's all the degrees of freedom that you had. Similarly for telephones. If you look at the migration from landlines into IP phones and into cell phones, there's a similar move away from centralized systems into decentralized systems. And if you're paying attention to the capital markets these days -- not really the events in the last couple of days, but the gradual trend in the equity markets -- a lot of trading is moving away from things like the New York Stock Exchange and NASDAQ into other forms of execution that are off to the side. The key move here is a move towards an open architecture, right? And what's happened is technology has reached a point where you don't really have to have a central room or a central point to do your execution. You can start to think about different ways in which to do business enabled by technology.

And in the case of payments, there are really three things that start to emerge as potential scenarios. One is new ways of interacting with the network. So for instance, right now if you take a credit card or a Visa or an AMEX card, it goes through the Visa system, et cetera, all the way through. And then if you look at some of the pilots in process, right, there are certain retailers that have pilots right now. They still use a credit card device, but it actually goes through a different network. It goes through an ACH network. And if you look at what's happening in the U.K., there are credit cards that will actually have multiple purposes. It's true in Brazil as well where the same card will act as an access device to different kinds of networks. So suddenly now you can start to see one potential scenario where the consumer access device is being unbundled from the underlying network, and that again has a fundamental implication for both the network, its brand, trust and security, and a lot of other issues that have been talked about.

So that's one. The second one is around what I've called the growth of honest networks. So in the old days, banking was extremely fragmented, right? We still have about 10,000 banks in the country. What's happened more recently is the banking industry is consolidated. So whereas now the original purpose of a clearing house was to connect two banks that didn't really know each other, increasingly getting to a situation where it's the same bank on both sides, right? It's the same bank that's the merchant's bank, and it's the same bank that's the consumer's bank. And then you start to wonder what's going to happen with these large institutions or groups of institutions if they try to combine forces, right? So let's look at checking and ACH as an example. There are several instances now in the U.S., in Canada, in the U.K., where large banks have combined forces to process among each other, so essentially bypassing a central network. And the question is what does that mean for the payment system overall when you can have honest or closed-loop networks that attach themselves to open-loop networks. Again, that's a fundamental difference in the industry because it's really questioned just like internet did for computing and just like automobiles did for transportation. It questions this whole notion that you need to be a hub-and-spoke system to have a functioning payments network.

The last one is purely around distributed networks. So for instance, most clearing houses were rooms like this initially, and they turned out to be large computers, but essentially hub-and-spoke. Now that again has given way to more distributed ways of executing. So PayPal clearly; any two people can pay each other. And there are other examples in the industry where it's a series of peer-to-peer networks, and the reason that's possible today is because computing allows you to have multiple tables of to-and-from transactions. The entire derivatives industry for the most part today is based on peer-to-peer transactions. What underlies this is three things. One is standard, right? Clearly you need a set of standards to have a functioning payment system, and we've come a long way in establishing those. Second is security and trust, and I think we've talked about that. Clearly the underpinning of payments has to be a trusted edge or otherwise consumers would never transact on some of these systems. Third one is economics. There's a lot of embedded economics with existing business models that to some degree are barriers to the way things might change, and to some degree might enable them in terms of new entrants.

Now let's move -- shift gears to some of the newer things happening globally. Many of you have seen a map similar to this. I think we've got a database of probably about a hundred different payment types that are emerging, and every now and then a fifth of them will go bankrupt, and another twenty will come on. But essentially what's new now versus looking at this chart ten years ago is two things. One is the increasing processing capacity. It is just quite phenomenal as you all know. The second thing is ubiquity (LAUGHTER) -- may be I'm being cut off at this point. Ubiquity is the second piece. The question is all of us have cell phones; we didn't ten years ago. And all of us have quite a bit of processing at our fingertips. That wasn't true before either. And so if you look at this and say who's trying to penetrate the space, and what are the groups of competitors that are trying to enter? The first one is telecoms, right? On every continent globally right now, there are telecom players who have pilots in process to try and penetrate payments. And the reason's very simple; you've already got a phone in your hand. They've got you halfway. The question is could they jump into what I've shown you is a very lucrative and growing industry? The second thing is -- the second group of players is transit systems. So a great example of that is the Oyster system in Hong Kong -- in the U.K. -- Octopus in Hong Kong, and there are pilots in Japan as well. And in fact, if you look at the U.S., Easy Pass is a great example of that, where you can have active transit systems looking to play a role in payments, not for profit-making purposes, but more for efficiency purposes and consumer convenience. Then you've got a set of players that are pure person-to-person payments, right? Paperless is probably the best known example of that, but there are a number of others that are focused on international remittance. So if you look at the U.S. today, we've got about 13 percent of the U.S.'s foreign born. The last time we saw a racial like this was almost a hundred years ago, right? At the turn of the century, 15 percent of the U.S. was foreign born. To some degree that has spurned a massive increase in international remittance traffic from the U.S. Now the same thing is true in Europe, and the same thing is true in many other countries as well. International remittances have been growing at 15 percent a year. These used to be very informal systems in the past. It used to be cash and relatives taking money back and forth and a whole bunch of informal systems. As the banking systems in each of these markets start to develop, that's a huge growth area for a lot of people. And then finally retailers, right? And I think we've talked about retailers feeling the pressure of payments costs, and retailers have taken various initiatives. There's Tempo in the U.S., and there's Eddy and Swieca (phonetic) in Japan, and there are a couple of other examples in the U.K. where retailers are trying to develop their own payment systems. Some of these have grown, right? If you look at PayPal, PayPal's seen growth rates of 40 percent over the last five years, and right now processes over $50 billion in flows. That's quite a substantial number. If you look at Japan and their growth of contactless e-payment in Japan, it's also been quite remarkable. And there it's been the result of railways and the phone company taking a much more active role in pushing these payment instruments forward, and consumers have gotten the hang of using it, too. On the other hand, a lot of them have been flushed down the drain, right? (LAUGHTER) And I think you can think of plenty of these examples. There's been several billion dollars of money -- of investment that hasn't been realized, and some of these have declared bankruptcy. There was one company that was actually sold on EBay, and some of them have been bought at fire-sale prices. And so the question that leaves you with is A. is there a better way of guessing what the successful technology is? May be to some degree, but inherent in this part of the payments landscape is risk and investment risk. And that raises a set of questions for one as well.

So now if you look at what this means in terms of running, what are the barriers here? And I think you've heard about some of these themes in the press and the last two conversations. One is critical mass, right? Clearly any payment system needs liquidity, and for liquidity you need payers and payees. And if you don't have a sufficient number of those, it's very hard to make a system work, which is why some of the more successful examples have been where people have piggybacked on an existing customer base. You look at the transit system in Japan or the telephone system in Japan, or if you look at PayPal with EBay's customer base. So clearly how do you get critical mass fastest, that's been a big subject of debate.

The second one we've talked about, which is trust and authentication. It's interesting that fraud rates in the credit card industry, and we work with a lot of these cases, so fraud rates have declined steadily in the last several years. So they're now down to a few basis points of transaction login, right, for credit cards. And that's the result of credit card issuers getting much more diligent with using technology to very quickly detect and prevent fraud. On the other hand, identify theft has been growing as we all know, as has stolen credit cards. So as some categories of fraud have declined, other categories of fraud have emerged. And so clearly trust and authentication is a key aspect. There are different initiatives in the industry right now of people trying to use one-time credit card numbers, et cetera, to try and get around this issue of trust.

The third one is investment process and appetite, and this is not really in terms of an industry, but it's really -- if you spend a lot of time with players in the payment space and it's very hard for a traditional financial firm to make an investment that they think has only a 20 percent chance of succeeding. It's much easier for a venture capital firm to make that kind of bet. And so in many ways traditional financial firms have a difficulty in terms of placing bets in multiple spaces, waiting for the successful bet to pay off. And so that clearly is one thing hanging over the industry. Clearly the credit cycle has also pressured the investment appetite of many people in the industry, so that's going to be another thing that will make it difficult to invest in.

The fourth point is organization silos. Most financial institutions today are organized by product or by segment. Unfortunately payment cuts across all of these, and it's very hard to actually put your arms around a payments investment when it actually touches several budgets and several businesses. It takes much more of a top-down approach to make it work.

And then finally entrenched business models. Most payments firms today operate off of a high fixed-cost base, but a fairly low variable-cost base. It's a scale game. It's very much around technology and brand expense. Unfortunately pricing obviously has to be on a variable basis, and pricing's based either on transaction or on percent of transaction volume. And that's created all kinds of incentives for folks to try to intermediate or to get around payments pricing today and that's caused some of the innovation in the industry as well.

So what might this mean? In some sense it depends on who you are. So if you step back and say U.S. payments is really one of the most stable industries you can think of, right? It's got very stable systems and very stable processes, a stable set of players with structural advantages. On the other hand as I shown you before, a lot of the growth is happening outside the traditional spaces, so if you look at the incremental revenues in the industry or the incremental profits potentially, a lot of that is outside the space where traditional players play. And so what might people do? The one thing is to avoid the two extremes of either hubris or panic. And I think we've all been in rooms where you simply don't know, and you go one extreme or the other. And I think taking a much more measured view in terms of what's happening or what could happen going forward is important.

The second one is I think incumbents like large banks and other institutions often forget about how many natural advantages they have in the system in terms of stable processes, working infrastructures, large customer bases, trusted brands. But on the other hand, you need to be willing to selectively cannibalize what they have because I think a lot of new entrants are going to reinvent business models where if you're stuck in an old way of doing things, there's a risk that you'd be obsolete.

Third is clearly as any standardized liquid process, it is based on one size fits all. Unfortunately consumers don't make choices that way. And the question is how do you get a segmented view of what users want and play to the segment. So for instance, there are plenty of opportunities around purely online, right. And many people are focused purely as online. Other folks are focused on certain verticals because there is certain information that goes back and forth with vertical industries. So clearly trying to get the right user perspective is important.

Fourth is participation in alliances, acquisitions, investments. Some institutions do these well, most do not, right? And the question is if you were an incumbent player, how do you start to play the game of partnerships to make sure that you've at least got your foot in the right places in case it starts to yield. And I think as I mentioned before, no one's quite sure which ones of these will take off because it's a function of several factors.

And then finally as I showed you at the start of this, it's really a mosaic, right? It's a mosaic across different segments, different kinds of payments. And the question is how do you pick your shots to maximize the chance of success here? Now if you were a new entrant, you would think about this differently, right? The classic mistake that new entrants make is overestimating how quickly consumers will buy onto a certain product or way of doing things. Consumers change very slowly. I realize there's headlines that certain products and services, but in general, in general, payments practices where there's issues of trust and established behaviors, it takes much longer than most people expect.

The second one is a large customer base is an asset, right? And I've shown you the examples, and other instances where if you are sitting on a large customer base for other reasons, clearly that's an advantage to try and get critical mass in the system. And clearly there's an infrastructure that goes along with that.

The third one is it's important to be differentiated and also to have a substantial improvement. I've seen many cases where companies come up with an answer that 20 percent better than today or even 25 percent better. That's not enough. It has to be dramatic to catch people's attention because the existing payments players have plenty of degrees of freedom to fight back. And so the question is how do you dramatically improve performance on any number of dimensions, be they service, cost information to try and get the critical mass. Clearly banks are strong, and a lot of players have made the mistake of not partnering with banks and financial institutions. I think the smarter players have been able to do both, right? Compete as well as collaborate.

And then finally it is a marathon, right? There aren't any quick wins. The quick wins that you do hear about have been luck, right? In general I think it helps to think of this as a marathon. What that does mean is it matters in terms of funding strategies. It matters in terms of break-even costs and how people think about that. There is a scenario in which the payments industry actually turns out to be like the pharmaceutical industry, right? And to some degree if you look at one aspect of the pharmaceutical industry, in 2002 most pharmaceutical companies developed their own drugs, right? They used to have very large research departments and roughly only about 39 percent of drugs were sourced from the outside, okay? And almost two-thirds of the drugs were sourced from the inside and were developed internally. Now that's an expensive proposition, and it's very hard to stay in the flow. Since then, obviously biotech companies have been proven extremely successful, and research, independent research has been very successful. Today the ratios have reversed. The average pharmaceutical firm imports about two-thirds or almost two-thirds of their late-stage drugs, and only develops a third in-house. If you look at how that happened -- what that means for payments today, it may well be that given the uncertainty around investment risks, incumbents or large firms today are better off trying to figure out who to buy and who to invest in at a late stage versus trying to develop things from scratch.

That's all I had for this discussion, and thank you for your time. (APPLAUSE)

MR. LITAN: Okay, those were two great presentations. Floor's open for questions. I don't want to monopolize; I've got a lot of my own, but I figure you guys hopefully will have some. We'll start -- wait for the mike.

QUESTIONER: I'm Peter Burns with the Philadelphia Federal Reserve Bank in our Payment Card Center. And I just wanted to pick up on, and maybe extend the conversation a little bit, and pick up on the discussion about trust -- and I think Vijay used the term "trust and authentication." We had a recent discussion in Philadelphia that frankly surprised me, and it was dealing with fraud and data breach issues and so on and so forth. And we had a lot of knowledgeable representatives of the industry networks and academics in the audience. And people talked a lot more about chip and pin for the first time -- people talk about chip and pin -- people now are talking and using words like "inevitability" --

SPEAKER: Could you explain "chip and pin?"

QUESTIONER: Oh, I'm sorry, it's an authentication device utilizing a dual factor authentication so you have a chip embedded in the plastic itself and it's mirrored -- it's coupled with a personal identification number to authenticate the transaction at the point of sale. And it's a technology that -- and I think the big difference in talking about this today than three or four years ago is that a number of our guests were speaking about the move towards chip and pin in most of the world with the exception maybe of Central Africa and the United States. And their concerns about two things they were concerned about. One is the movement of fraud towards the weakest link, that's old story, and then very interestingly the question of inner-operability amongst markets. And I'd be very interested in -- you gentlemen all have observed this industry and you've heard this debate of authentication for a long time. I also, just to throw in if you want to talk about it at all, everybody said well yeah, but what about card not present, the internet transactions. I'd just be interested in hearing what you all have been thinking about in those areas.

SPEAKER: Let me give a top-of-the-head reaction and my more thoughtful colleagues can respond. I spent some time in Paris last spring, and it's very interesting. If you pay with an American credit card in a French restaurant, they have the handheld terminals. It has a place for silly American cards to be swiped, and sophisticated French cards to be inserted and the PIN entered. So it really is two worlds, and I found they have this lovely system that lets you rent bicycles in Paris, but unfortunately you need a "smart card" to rent the bicycle. The terminals don't accept our old fashioned cards. Look, it's a pretty straightforward matter is that fraud rates rise on signature cards, the attractiveness of making that changeover goes up. But you do have to do new terminals and maybe terminals that can go both ways in the U.S. as they do in Paris. It's a little hard to predict. I haven't been party to kinds of conversations you talk about it. It's not a great surprise. It has always been a little bit of a puzzle to people, not when you look that closely, but at the surface that we use this ancient technology and most of the rest of the world uses PINs with smarter cards with chips inside. But it has made sense in the U.S. and it may make sense for a while longer. We'll see.

MR. EVANS: Let me put just a little bit of gloss on that. I mean there's a reason why Europe has gone to chip and pin, and in France for example chip and pin has been used for a long, long time at maybe not as sophisticated as it is now. The reason for it in Europe is an awful lot of the card transactions in Europe are done offline. So if you go to a French restaurant, you're not doing a card transaction over the telephone lines, you're putting in your card and it's being authenticated in the device, and then you're done. Historically, the reason for that development in France and other countries is because of the historical lack of sophistication of the telecommunications networks. So they went a different direction because of a lack of technology, whereas we went in a different direction because of the sophistication of our telecommunications system.

The second thing I guess I'd observe is that you see basically two different bets that are being placed on cards in the world. In Europe you have the bet placed on chip and pin, so that's a card with a chip in it. In the U.S., MasterCard and Visa have placed a bet on a different kind of chip card, namely contactless cards. In Europe the card associations are basically mandating the movement to chip and pin. In the U.S. MasterCard and Visa and American Express are putting cards out there, but they're not really forcing it, and the result is contactless chip cards in the U.S. -- and this is something I've spoken out about a lot -- it has not worked out well. An awful lot of effort has gone into it, but it doesn't look like that technology is going to take off.

MR. D'SILVA: I think the points have been covered. The investment cost is quite substantial, and there is no -- it's not just that, it's just there's no central point of investment. Individual retailers have to spend money to upgrade their investment, which makes it a little bit harder. The U.S. has gone to what is convenient, so contactless -- the principle there has been convenience, but even that's been undermined a little bit by the fact that you now don't need to sign credit card slips under $25. So if you go to a McDonalds, it's actually pretty fast to simply swipe the card and get it back. The whole issue of using a chip in the smart card thing, if you'll remember in the 1996 Olympics had a huge smart card pilot then, and obviously that didn't really work out that well. So clearly it has to be consumer driven if it's going to succeed. The one challenge right now is that from an issue of perspective, fraud is actually a very low number right now, and the majority of the cost is on credit. And so I would suspect the most issuers today and maybe for the next year or longer are going to be more intensely focused on credit issues than on fraud issues, which will make it that much harder to do something like this.

MR. LITAN: Question over here?

QUESTIONER: My name's Cary Whaley and I'm with Independent Community Bankers of America. And the last question focused around whether or not the mag-stripe on the card was obsolete. I guess my question goes whether or not the wallet that you put the card in is becoming obsolete? And as more companies look at mobile-based technology, one what rails would they go on to allow your phone, cell phone, to become a wallet? And how are the payments companies going to be able to adapt to that?

MR. LITAN: Did everybody hear that question? Because I'm not clear about the -- did people hear that? Okay, good. All right, whoever wants to answer, it's about mobile replacing wallets.

MR. D'SILVA: I can take that, so on the one hand the question is who gets to make the decision first of all? So there's a battle right now between telecom companies and financial institutions, and so the question is as both of those start to push forward, where will that end up? So there are a couple of pilots in place, a pilot in Africa where it's really around mobile payments for remittance purposes. And essentially what happens is it gets added and credited onto a bill or it shows up as a prepaid amount on your phone card, and some of the pilots actually bypassing the traditional payment systems overall and really leveraging the phone as a storage device. And (inaudible) is the same thing. It basically adds on to your telephone bill. So that's one class of -- within the phone system there are two technologies. One's near-field communication and one's SMS, so uni-text message based. Depending on which -- now that's different by country, right? And so depending on which path it takes, clearly that will advantage the banks or the telecoms in turn. So SMS basically -- there are a few companies that I think David had some of those examples on the screen before. The few companies that use text message technology -- you don't really need to be a telecom to introduce that because you and I can send text messages to each other. So there are a few pilots around and that will influence again who gets to make the decision. The decision having been made, then the question is what rails, like you said, will it go over? That's up for grabs right now. So right now the default is the credit card network because it's probably the easiest network to piggyback on top of. And if you look at all accounts are connected for the most part to credit cards. On the other hand the moves within the industry to start once you've got the customer relationship, you find a different set of rails to move across. The one that turns up in the U.S. is ACH, right? So Bill Pay It is happening on top of the ACH network primarily because of perceived costs and convenience. Obviously, that's a daily system, a daily batch that introduces its own issues. So I think it's a great question. I suspect that will take several years to evolve. The two bets that you need to make, one is how quickly will all of us get rid of our wallets and start paying with a phone? And then the other one is that having happened, you know, who's going to win in that battle?

SPEAKER: All great points and just two quick follow-ups on that. There are two additional ways you can in theory pay with a mobile phone. One is you can pay with a barcode. So instead of a contactless, you can have a barcode pop up on a mobile phone and it gets scanned at the checkout. So there are people looking into that. And then the other interesting way that you can pay with a mobile phone is many of us certainly of our generation are not all that excited about typing out SMS messages, but we're really familiar with using a browser. So a lot of phones are coming with browsers so there's also internet kind of activity on the mobile phone as well. So that's another way it can be paid. I think there's agreement that paying with mobile phones in the United States is probably a long, long ways off for all sorts of reasons.

SPEAKER: But I also want to go back to the point that David made in his talk, and that is once you do think about having the mobile phone hooked into the payment system, the ability to deliver content that's specific to you and to where you are triggered by information from payments gets to be very interesting and raises a set of concerns obviously, but gives you a whole lot of power. I mean one of the issues with "smart cards," chip-based cards, is that intelligence doesn't do much with a limited device like a plastic card, but with a phone, with the intelligence in there, you get to have all kinds of interesting possibilities. So I think the payment by phone, though there are a lot of obvious obstacles, there are a lot of questions as David's remarks stressed, once it begins to roll, it has transformative potential.

MR. LITAN: Yeah, question?

QUESTIONER: My name is Wheeling Greeney (phonetic). I'm from Amherst, Massachusetts. I have two questions. The first one is about the cost to own stores. When I go shopping for example in a local bookstore or just local stores, they have very low margin such as at the Chinese grocery store when I go shopping. The sign says "no credit card, cash only." And I suspect the reason is because the 3 percent that they have to pay in order to receive credit card. So for small stores or local stores I like to support them so I give them cash, knowing that if I give them cash, they will make a little bit more money on the end. That's one, so I think that might be -- the question is I know that you are trying to maybe promote more credit card plastic payment, but the feeling is to support local merchants that they are not hooked into this big machine, I feel inclined as a consumer I want to support them by paying cash. So how do you address that cost issue here? And the second question is about the credit fraud. When I go shopping, for example, when I go to J.C. Penney or stores like that, I would rather pay cash because the store is about T.J. Max and so on lost information they had that caused big time for consumers. So the wariness about my information being stolen, it also makes me try to pay either cash or check as much as I can. So how do you address this kind of fear in a consumer like myself? Thank you.

MR. LITAN: Who wants to take that?

MR. SCHMALENSEE: I'll jump a little bit. I think merchants make choices, consumers make choices. I have to say when I use a credit card -- when I use a card at merchants where I feel the kind of sentimental pull it seems you do for the grocery store, I tend not to use the American Express card, not because I'm not a loyal American Express cardholder, but because they charge merchants more than Visa or MasterCard. So I can make that choice. Cash is of course cheaper for the merchant to some extent, but there are costs of handling cash. Cash isn't free. There are thefts. There are all kinds of other issues. I think it's a -- what's interesting about the industry is merchants and consumers do have a range of instruments with a range of characteristics. Some merchants don't take American Express, some don't take any credit cards.

SPEAKER: Some don't take cash.

MR. SCHMALENSEE: Some don't take cash because of their costs of handling cash. On the second point, I think there is a role for government in dealing with the kinds of security issues you're talking about. I think it's hard given that there have been these breaches for consumers to believe it when a company says your data are perfectly secure with us, don't worry. I think there is a role for government to enhance security through careful regulation, careful regulation. But look, this is -- these are computer systems. Nothing is unhackable, nothing is perfectly secure.

MR. EVANS: Can I ask Dick a -- this is a devil's advocate question?

MR. LITAN: Of course.

SPEAKER: Okay. So let's go back to your discussion about potential price regulation that may come along in limiting the merchant discount, okay, the merchant fee. Why doesn't somebody say well think about all consumer payments as sort of a balloon, and the way it is now the merchant pays, all right, and the consumer pays less, but in reality the merchant pays only initially. They're going to pass that cost on in the form of a higher cost of the goods, so eventually the consumer pays under that system. So if regulators later come along and they push down the merchant fee and then the consumers end up having to pay more directly for the cards, why isn't it sort of a wash? Consumers get hit no matter what. So what difference does it make that there's regulation? That's the question.

SPEAKER: Well, you can look at Australia I think -- first of all, David and I have actually said that. We're getting a little tired of saying it over and over again, but look at Australia where they've reduced the discount and you get less effort by issuers to issue cards, and you get reductions and rewards programs that increases in fees. You can document that. Are there lower costs at retail? Well, it's a little hard to see it. It's kind of indistinguishable. These are small changes to retailers' overall costs, and you can have deep debates about whether any of those savings are passed on to anybody or whether retailers just hold them.

Retailers aren't an automatic pipe to pass costs through. Margins vary, competition isn't always perfect. From the consumer's point of view, in Australia you see an infinitesimal or no visible change in the prices you pay at retail, and you see cards being less attractive. Now, you know, maybe their price changes at retail, the cost changes at retail, maybe it's a wash, maybe it's not. What you're doing is you ultimately since there're only people in this world, people ultimately pay costs, pay all costs. But the question of what form and through what channel matters.

MR. LITAN: Okay, and actually we're having a paper the second panel. Dick Schmalensee is going to talk exactly about that issue. I think probably present a different view, am I right?

We have time for a couple more minutes or questions -- Bill and then Bruce.

QUESTIONER: Bill (inaudible). How much in your judgment does it cost in the transaction if you use a credit card rather than pay cash? And secondly -- it does cost more. Secondly, why hasn't it developed a practice where a person can show the credit card but then say pay you in cash and therefore get the discount from the purchase price? And my third question is with all these changes, which certainly reduce the cost of transaction, how much of that has been passed along to the consumer or the shareholder?

MR. EVANS: So cost is a funny thing in that question. In terms of what the merchant is paying as a fee when a plastic card is presented, if it's a signature card it's somewhere in the neighborhood of 2 percent and maybe a little bit more, probably 2.5 or 3 percent if it's an American Express card. If it's a PIN transaction, the cost the merchant is paying is going to be less, and I was actually going to suggest that your neighborhood book stores which to PIN debit because that's a cheap alternative. So that's a little bit less. But you can't stop there with the cost question because from the standpoint of the merchant, there's also a cash cost of handling cash, there's a cost of handling checks as well. There's a cost of training people in the different mechanisms. But far more important than any of those there's the question of the benefits that the merchant gets in terms of delivering value to the consumers. So the reason most merchants accept credit cards is because consumers want to use them at the merchant. So you're delivering a value to the merchant when you're giving them the ability to take cards. So I think the question is not just a question of what's the fee, but you have to take into account what the cost of alternative payment mechanisms are for the merchants and also what benefits the merchants are getting. Merchants have the choice of weighing those costs and benefits and taking or not taking cards.

QUESTIONER: We live in a society which says if you don't make $50 thousand, you're poor. Why don't you teach people that you save money if you can have a discipline where if you pay cash, the merchant should charge you less than he does if you use a credit card?

MR. EVANS: Yeah, the second question. The credit card systems have long had rules, which have been knocked down recently, that said you couldn't have a surcharge for credit. But merchants have always been able -- as far as I know -- always and everywhere been able to offer a discount for cash. And it's interesting and in some countries they can now offer a surcharge for credit, and studies have found they mostly don't. Mainly I think because the amount of the cost difference is sufficiently small that to offer a 2, 3, 5 percent discount adds to customer confusion, alienates some customers, hard to know, but they've always been able to and they don't do it. So I don't have a good story.

MR. EVANS: And let me just add to that which is that there are several countries around the world now where the no surcharge rule has also been eliminated, so merchants have the complete flexibility to do anything they want with respect to that. And some of them -- some merchants do take the card companies up on that and they have surcharges for using credit. But it's really very uncommon.

SPEAKER: Five, ten, fifteen percent maybe? It's not a big deal where it's easy.

SPEAKER: That's been true in Australia now. It's been true I think in the U.K. It's been true in the Netherlands and a few other countries.

MR. D'SILVA: Just reinforced the point. There are three things that I just want to say. One is in looking at the cost of a credit card transaction to merchants, just to be -- I think there've been broad-brush statements in terms of who's high and low and what the cost is. There's a number of various charges depending on the product and depending on whether it's a charge-back, et cetera. So I think that's part of the mix to just clarify up front. The second point is I think -- Dick you had mentioned this -- the total cost of accepting cash is higher than most merchants think. I think the larger retailers are completely on top of this issue because they measure it fairly carefully in terms of the total cost of pilferage and processing of the cash and the float, et cetera. But I don't think the smaller retailers are as aware of the total cost, the relative cost of the transaction. And the third point is just transaction size. I think what credit card companies have often marketed to merchants is the average transaction -- on a cash transaction -- is lower than what it would be on a credit card. People spend more on a credit card. Now that gets to your point as to whether that's the right thing to be encouraging people to do, and clearly that's a moral issue as to whether we should be encouraging people to save and not make it easier for them to spend. In some sense, I think the reason why debit has taken off is because there's a segment of consumers who believe that by a debit card directly hitting their bank account, that's an in-built kind of control over their spending habits, and I think that's even true for charge cards as well, the fact that you've got to pay it off every month imposes some level of discipline on folks, which is not true for credit cards.

SPEAKER: If I could just say one more thing, Bob. The premise of your question, Bill, is that payment cards, plastic cards, are somehow costly and inefficient, and that's a premise that I guess I fundamentally disagree with. In terms of where we want the payment system in the U.S. economy to go to, we certainly do not want the payment system in the U.S. economy to go to the increased use of cash and the increased use of check, which in a very narrow sense are cheaper forms of payment for the merchant. If you take the interest of consumers and merchants overall into account, I guess it's my view that payment cards, debit cards, credit cards, and so forth, have turned out to be widely embraced by merchants and consumers in the economy because it's a really great thing. People actually like them. And there's an awful lot of discussion about the relative cost of cash and check and so forth for the merchant, and you know, is cash more expensive or less expensive? I actually don't think that's what driving the decision on the part of merchants to take cards. I don't think it's that narrow cost benefit question of different forms of payment. Merchants take credit cards, they take debit cards, they take any form of payment that the consumer wants to pay with for one fundamental reason, which is they want to serve the consumer. It's a way to compete for consumers by taking payment instruments that the consumer wants to pay with.

SPEAKER: Your third question I'm not sure I understood. Your question was where do the savings wind up? I think if you look at the credit card business, you have literally thousands, but certainly even with concentration of a fairly large number of issuers who are competing like crazy, so it's hard for me to see that basically this is why the bulk of the gains have wound up in the stockholders' pockets. It is usually the case when you have competitive suppliers of an innovative product. Consumers tend to get the bulk -- consumers/retailers/customers get the bulk of the benefits. I haven't seen quantitative studies. It just seems to be on the basis of first principles given the level of competition. That's the way it has to shake out whether it's retailers, consumers. What that looks like, I don't know, but in terms of stockholders, I don't see stockholders having made a ton from this just because of the competition in the business.

MR. LITAN: Bruce, if I could ask you to either hold your question or talk about it privately because we're over time. Listen, I think all of you may not realize -- I mean I've followed this industry for a number of years. This is a real treat. These guys are super stars, and I really want to thank all of them for making terrific presentations. We're going to have a 10-minute break and then come back for the second panel. Okay.

MR. LITAN: Okay. Could I ask everyone to retake their seats? I think we're going to have a really interesting second panel today.

Our three presenters today start with Nicholas Economides who is a professor at the Stern School at NYU. He's an expert on the economics of networks. I was intrigued in his background how many different countries he has advised, not only the FTC here but also governments in Greece, Ireland, Portugal and one more that I can't read my own notes on, but obviously is somewhat in demand around the world.

Our second presenter will be Drazen Prelec who is a professor at MIT's Sloan School. He's also a professor in the Department of Brain Sciences and has a Ph.D. in experimental psychology as well as having studied applied math. So this is a very interesting and unique paper. It's delightful that you've come to talk to us.

And our third presenter will be Tom Brown. He was previously Associate General Counsel at Visa. He is now a partner at O'Melveny and Myers in San Francisco. He's a legal expert on issues around the payment system. He's also a lecturer in law at the Boalt School at Berkeley.

So let's get started, Nick, if you could start us off, please. Thank you.

MR. ECONOMIDES: Well, thank you very much.

I'm a professor at the Stern School Business. I've created and run the NET Institute which is an institute that focuses on network problems, and as you will see this is one of the types of problems that we'll be talking about today.

So, as far as the NET Institute is concerned, if you're an assistant professor involved in these kind of issues, we'll be glad to consider you for funding. That's what we do. And, if you are from some wealthy corporation, we take money with no strings attached.

I should put a disclaimer, given all the lawsuits that are around here in this industry, I'm not consulting for any of the issues on any of these lawsuits.

So the way I would like to see this problem is as electronic transaction facilitation, and I see these cards and other mechanisms and people have already, other speakers have very eloquently explained already the various mechanisms that are there, not just cards. But, essentially, what all these mechanisms create is electronic facilitation of transactions between merchants and consumers, and some of them offer additional services like credit, for example.

Now the market for this facilitation has been dominated by Visa and MasterCard, and there are some stand-alone cards like American Express and Discover which are smaller.

And, I'll run down the market shares. There are, I think, approximately correct: Visa, 42 percent; MasterCard, 29; American Express, 24; Discover, 5. If you count the other payment mechanisms, maybe these numbers are a bit smaller.

There are significant fees that are primarily collected from merchants to facilitate these transactions. How big they are is a matter of debate, and I'm just writing there, an estimate which might or might not be exactly correct, but let's say it's of this order, 13 to 15 percent of revenue. Also, the amount of fees is also debatable, but let's say it's between 38 and 48 billion per year.

How do these transactions work? If you are American Express or Discover, the consumer pays the merchant, let's say, $100. The consumer pays American Express $100. American Express keeps $3, approximately, and gives $97 to the merchant.

If you are in a four-party setup, like the Visa and MasterCard network, the consumer buys from the merchant, goods worth $100, pays the issuing bank that issues his card $100. The issuing bank gets $98.50 from the acquiring bank and then the acquiring bank pays $98 to the merchant. So the merchant gets paid $2 less, approximately.

So, if you think about it in terms of markets -- and I think as an economist I would like to see this as a market -- there are really three markets, and it's complicated. Let me spend a couple of minutes on this because most of you are not economists, so let me try to explain what's going on here.

So what's going on here is that the money goes from the merchant to the acquiring bank to the issuing bank and then back to the consumer. But since this is a single transaction, right, from the consumer to the merchant, somehow whatever money is made in Market One and Market Two and Market Three must add to the total value of the market. So these are three different markets, but they're in sequence. This is, to start with, a bit weird, but this is the way the setup exists.

Now, additionally, there is an additional issue, that these banks, because of the way they're set up, can make money either from the consumer side or from the merchant side or from both. This is a function of them being in a network. So it's kind of similar to having a phone network, and sometimes the calling party pays and sometimes the receiving party pays or sometimes, as in cell phones, both parties pay.

You can have this setup, and this setup is important for what happens in this market. You'll see it makes a big difference of what happens, of how the economics work in this market and how the networks have the ability to charge a relatively high fee.

So having three markets, remember now the total amount we made in these three markets adds to each other: Market One, Market Two, Market Three.

Market Three is from the acquiring banks to the merchants. It's considered generally competitive. Whatever happens, whatever imperfections there are in these markets, let's assume that they don't happen in Market Three, but they happen further back in Market One or Market Two.

Now, of course, if the acquiring bank has a high cost from Market One and Market Two, it has to pass it to the merchant in Market Three.

So what happens in Market Two? This is within the Visa network or within the MasterCard network. There is an issuing bank and an acquiring bank. The network -- that is Visa -- sets the maximum interchange fee, and banks typically do not deviate from it. So we don't really have a market there. There's no market determination between the issuing and acquiring banks. It gets set by the network.

Then further down, the issuers compete with each other to sign you up, to sign people who are going to make good transactions, have high income, whatever, whatever, whatever the reason is there.

Now if there is market power in Market One and the kind that Market Two doesn't really operate, then it gets passed on. The high fee gets passed on to the merchants in Market Three.

I hope it made sense. Okay. Do you understand this idea?

Even though Market Three can be competitive, if something goes wrong in Market One and given that Market Two doesn't work, there are implications for market Three.

So what has been going on in this industry, there are relatively high price to cost markups despite the fact that Visa and MasterCard do not have dominant positions which is a bit peculiar, right, because you would like to be able to see from the point of view of economics that when firms have a dominant position -- let's say the way Microsoft is or the way Intel is – then they're able to have high markups.

But these companies, Visa and MasterCard, don't have such high market shares. They have 42 and 29. So, with 42 and 29, you would expect the industry to be much more competitive than it appears.

How does this work? It works in a very interesting and complicated way and not the way usually market work.

How? The networks make sure that the consumers do not face directly the cost of their transactions. So, since they don't face directly the cost of the transactions, they cannot choose to use the lowest fee card. They don't have any incentive to choose the lowest fee card because they don't see what the fee is that one card or the other card charges the merchant. So that's number one.

Number two is the merchants, because of the contracts of the networks of Visa and MasterCard, cannot charge different prices to reflect different card fees if different cards had different card fees. So this is a bit too many hypotheticals.

Suppose you had MasterCard with a different fee than Visa. The merchant is precluded from being able to show a price difference based on that to the consumers. So he's forced to charge the same fee. Let me explain how this works, the second part.

The specific contractual obligations to the merchants which come from the agreement that they have to write with the networks, with Visa and MasterCard, which do not allow them to respond to differences in fees of the two networks, to respond with different prices to different fees, and do not allow the controllers to choose which card to be based on the cost of the transaction imposed on the merchants.

See, the idea is that the customers in the end don't see the cost of the transaction. And, how do you make sure of that? You make sure of that -- the network makes sure of that by making sure that the merchants are not allowed to charge different fees.

I'll go into this in a bit more detail in one second. Let me just say very quickly what the effects of that are.

The first effect that Mr. Corman, I think, mentioned before is that the card transactions are subsidized by cash transactions. If you are a cash buyer, you end up with higher prices with a merchant. You pay more for no reason really. Card transactions are subsidized by cash transactions.

Additionally, high cost card transactions are subsidized by low cost card transactions. So, if there are different cards with different fees, since the fee is going to appear uniformly, they are subsidized. The high cost cards are subsidized. This creates a significant market distortion, and we can talk about it in a bit more detail.

So let me explain to you how exactly these things are imposed on the merchants. Here is the Visa contract. It's available online in 2008. It includes a rule which I'll call, for brief, No Surcharge rule which has these three requirements:

One, a merchant, if he wants, can charge the same for a Visa transaction as cash. He's allowed to do that.

Two, if a merchant offers a discount for cash compared to Visa, he cannot offer the same discount -- that is the cash discount -- to MasterCard, to a comparable card. So, if a merchant decides I'm going to give you 3 percent less if you give me cash, he cannot give 3 percent less to MasterCard. This is part of the Visa contract.

Three, if a merchant offers a discount to a comparable card –- let's say MasterCard –- he has to offer the same discount to Visa, which I call the Most Favored Customer rule. So the merchant cannot offer a discount to one card and not offer it to another.

The effect of this rule here is the merchant cannot offer better terms to customers who buy with MasterCard than those who buy with Visa if MasterCard, hypothetically, was offering a lower fee. He's not allowed.

Why is he not allowed? He's not allowed because of the contract that he has to sign to be able to accept Visa. Therefore, the merchant has no price flexibility.

I wrote this to give you an idea of how, more or less, you can think of. It's as if Coca-Cola imposed a requirement that a can of Pepsi has to be sold at the same price as a comparable can of Coca-Cola.

So the only option left to the merchant is not to accept a network card. If he does not like the pricing, he can just say: I'm not going to accept Visa. I'm not going to accept MasterCard or American Express.

A similar rule from the MasterCard contract, the so-called No Discrimination rule: Merchants may not engage in acceptances, practices or procedures that discriminate against or discourage the use of MasterCard cards in favor of any other card brand.

So this is a bit more general, but it includes as a special case the previous one.

Now the bottom of this is what I call the Most Favored Customer or MFC rule. This has an important effect which has been analyzed in investment organization theory for some time. Salip, in 1986, has a paper, and there are other papers. This is just an indicative paper. He has established that the Most Favored Customer rule can be used to facilitate price increases to collusive levels.

Why? Because if a firm is considering cutting the price, if a network firm -- let's say MasterCard -- is considering cutting a price, instead of affecting one customer, he has to affect all customers. Therefore, he might not cut the price because it's going to have a big impact on revenue.

In economics in general, it's good to be able to compete for its price for one customer rather than for everybody at once. If you force somebody to compete for everybody at once with the same price cut, then it has a bigger impact and it has a tendency to increase prices.

Now I think there's an additional aspect of the contracts that I should talk about, and this is called the Honor All Cards rule. People mentioned it before.

There are many types of cards, and people didn't mention in detail before, but different types of cards have different fees. So, for example, debit cards with PIN verification have much lower merchant fees than signature-based cards which is the usual way we do most of the transactions. Of course, not only there are non-network people like let's say your bank that directly offers a debit card, but MasterCard and Visa also offer a debit card with, themselves, a lower fee than the signature-based Visa or MasterCard.

These networks, to avoid losing profits in credit cards, have imposed a requirement that if a merchant accepts Visa -- let's say Visa debit -- then he also has to accept all Visa cards. That's essentially, the Honor All Cards rule.

So let me go into a bit more detail. A merchant accepting a Visa debit card issued by Citibank also has to accept Visa debit cards issued by somebody else, not Citibank but let's say Chase or Bank of America or somebody else. But, additionally, he has to accept any Visa products including Visa credit cards which, in economics, is called tying.

Here is the particular rule. The rule says: The merchant shall promptly honor all valid Visa cards when properly presented as payment.

So tying, I won't go into detail here. Tying has other competitive properties and consequences. I won't go into detail why it forces people to buy something they don't necessarily want to buy.

It's as if Microsoft told your corporation: If you buy Windows, you also have to buy Office. Or, if Dell told you: If you buy Dell servers, you also have to buy Dell laptops. Clearly, you might like one, but you don't like the other. So this is a problem of tying.

The present equilibrium, the present market conditions is card transactions subsidized by cash transactions, and this has consequences for people who are relatively poor, who do not have credit cards, and they end up paying more to the merchants.

It has high cost card transactions subsidized by low cost card transactions, and the networks themselves have incentives to keep increasing the interchange fees to attract more issuers. Let me explain that.

The interchange fees goes from acquirers to issuers. Issuers are the people who issue the cards. The network would like to have a lot of issuers, obviously, because the more issuers it has the bigger network it is and so on and so on. It would like these guys to be subsidized -- that is the issuers. So, it has an incentive to keep increasing interchange fees to keep the issuers happy and to attract more issuers.

This is what I see in very broad marks as the present situation, and I think it would be good to make some changes. Let me explain what I think the changes are and why I think they're good.

The change starts with abolishing the No Surcharge rule, so allow merchants to charge different fees to consumers depending on how much they're being charged by the network. Of course, that comes together with abolishing the No Discrimination rule, and I'll also tell you why I think it's a good idea to abolish the Honor All Cards rule.

If we do these changes, we would allow more competition and we would allow the market between issuers and acquirers to really work. At the present time, what I called Market Two -- if you remember a few slides ago -- between issuers and acquirers doesn't work.

Why doesn't it work? Because the network itself sets the fee and not in bilateral negotiations between a bank and an issuers.

So bilateral negotiations between pairs of banks, issuer and acquirer, would allow the fee to be set by the market. There, we could have a situation in which the interchange fee, which is something like 1.8 percent right now or something of that order, could be reduced or at least a negotiation could start from a power position, a zero interchange fee position.

Now where it's going to end up, nobody can say. It would depend on the power of the two parties negotiating. But at least we would be sure that it's a market that determined the fee and not arbitrarily set by the network.

There are two objections to this proposal, to this kind of proposal. Objection number one is that there are too many issuers and too many acquirers and how are they going to be able? You would need too many contracts. That's not really the case because both the acquirers and issuers are concentrated markets. Therefore, you need relatively few contracts to be able to deal with that.

The second issue is kind of more subtle. You might have an issuer with very special customers, with very valuable customers who are going to make very valuable transactions. So he might demand from the acquirers a very high price, a monopoly price for himself.

I, personally, think that's not the problem. I think that if somebody has monopoly that he acquired in a legitimate way, let him exercise it. That's perfectly fine. It's, in my opinion, an isolated problem if the proposal is adopted.

The present rules with the imposition of the same fee across the whole market between issuers and acquirers creates a bigger problem in my opinion, a much bigger problem than the isolated case of a particular issuer with great customers.

Additionally, I believe the competition among issuers for these valuable customers in the medium run or in the long run is going to solve the problem because these customers are going to be offered great terms by other banks, and then competition between these issuing banks is going to result in lower fees.

So I believe that the effects of the proposed changes, which were eliminating the surcharges, the No Discrimination rule and the Honor All Cards rule are going to create more competition across networks, by intra-network between Visa and MasterCard and American Express and more competition within the network, inter-network competition within the network between issuers and acquirers. That will result in lower transaction facilitation fees.

Let me talk a bit about Australia. I'm not an expert in Australia. I already said I'm not involved in the legal fights there or elsewhere. So I'm reporting what I have seen in published work.

The Federal Reserve Bank of Australia reduced interchange fees for credit cards in Australia from about 0.95 percent to 0.55 percent in 2003 and later on, in 2006, to 0.50. Now these fees are considerably lower, much, much lower than the U.S. fees because Visa and MasterCard have an approximate 1.8 percent fee, and American Express has a higher one.

At the same time, the Reserve Bank of Australia allowed surcharging, so allowed the merchants to charge more if one of the networks had higher fees imposed on a particular merchant.

The interesting result, and I've seen this in published work, is that the merchant fees, which you would have expected would have fallen from 0.95 to 0.55, let's say 0.40 percent, fell more than the interchange fees fell -– which, in my mind, means that allowing the surcharging and allowing competition among the networks created lower fees. Some people have called it a natural experiment. Additionally, there is additional evidence that the overall cost to the economy of facilitating transactions fell there.

I guess there could be more radical changes. I'm not going to advocate one or the other, but there could be ways in which the authentication can be separated from payment, and large merchants might eliminate acquirers and so on. But I won't go into this in detail.

So, if I want you to remember one thing about this market, it is that this market is strange because the customers do not pay like in every other transaction. The customers do not pay the fee that they create by their transaction and, because of that, it doesn't work well. It allows for fees to be high compared to a normal market in which people would see if the price is high, then they would buy less of something. So that's essentially my point of view.

We want to create a situation in which the customers face the fees, face the costs of creating transactions, and then they will be able to decide by themselves if they want to pay high or low depending on other benefits they might get from American Express or Visa or MasterCard or a particular type of, let’s say, United Airways card or whatever they want. So my proposal is essentially to give the customers more choice and allow them to face, allow the system to make them face the actual cost that they are creating through the transactions.

Thank you very much.

(Applause.)

MR. LITAN: The next speaker is Drazen Prelec.

MR. PRELEC: I, too, was going to present this on a Mac, but in light of the adventures this morning I decided to go with PC.

So I’d like to thank Bob for the very nice invitation, and I’m delighted to have an opportunity to share some speculations that some have been print, others haven’t been in print yet, but they’re speculations about the psychology of payments, how people feel about payments.

I think in light of the presentations earlier today, much of what I will discuss will be complementary. It will really be the perspective of a psychologist and someone also who has worked on marketing and product development about payment arrangements, not about transactions per se.

I think in looking and speculating about new payment methods, it’s natural to focus on the transaction. Usually, the innovations involve some new wrinkle in the transaction process itself which captures the imagination. Moreover, from a corporate point of view, transactions drive revenue, making transaction volume the first and most obvious metric to watch.

Now, for these reasons, it’s easy to overlook the fact that for the consumer the transaction is only a means to an end. It’s the cutlery, not the meal itself. And, the quality of the transaction is entangled with the quality of the decisions that the transaction implements.

So we have this idea of a consumer actually reaching decisions in stage one and then implementing those decisions in the transaction, but there is quite a lot of evidence that the transaction opportunities influence the decisions that are made. So, if a payment mechanism chronically encourages poor decisions, consumer enthusiasm for that method will wane. To make things even more complicated, consumers themselves may not be fully aware of or able to explain why their transaction preferences are changing.

I’m going to take up today, briefly, the question of what might be the core benefits of payment arrangements, and I'm thinking here of payment arrangements, not just different payment instruments but also choices of payment plans, flat rates versus variable rates, so thinking of payments in a very broad sense of how you pay for a product or service.

To think of payments as providing any benefits at all may seem a little strange. It's more natural to think of payments as a necessary evil which financial and technological innovations can perhaps mitigate. On the financial side, these innovations give consumers more flexibility about how they pay, more control over time and risk. Technology, in turn, can make individual transactions more convenient, fast and secure.

These are not insignificant objectives, but they are largely concerned with removing the imperfections of traditional modes of payment. If there is a utopian vision here, it's an essentially negative one of total financial liquidity and effortless instant transactions. Implicit model of consumer preference is simple, emphasizing the dimensions of cost, risk, security, privacy and speed.

Now, if we look at some major trends in the evolution of different payment instruments, we see that this list of needs doesn't seem to be complete. Among the major categories, the major growth categories and instruments, we have debit cards and prepaid cards, and neither of these two methods provides obvious financial advantages over credit cards.

This has been mentioned many times.

It may be possible to come up -- with debit cards, for instance, you cannot roll over the balance into uncollateralized debt. Typically, debit cards are not linked to reward and so on.

And, prepaid cards are even worse than debit cards. With prepaid cards, you have to load the card. So there is an additional element of a liquidity right there.

I don't think one can claim that the success of either debit or prepaid cards can be associated with financial or technological or at least not dramatic financial or technological innovations. I mean debit cards were technologically possible for 20, 30 years, I believe.

So, instead, it seems that these different payment methods have been introduced, and they've been successful because they tapped into overlooked, but evidently important, customer needs. I will now offer some speculations on what these needs might be, and these speculations are really inspired by some experimental evidence in behavioral economics and also inspired by some inferences from what we see in the marketplace.

What do consumers want from payment arrangements beyond the obvious financial and transactional benefits? Jumping to the conclusion, I'd like to at least identify three different baskets of benefits:

The first is to enjoy products and services as if they are free, costless.

The second is to be able to justify payments with salient benefits. So when they actually write a check for something, they ought to know what they're purchasing with that.

And, finally and probably most importantly, to preserve financial responsibility and self-control. We heard this morning, Ken Chenault mentioned that part of what American Express is selling is a discipline. So this, I think, is a large component that identifies maybe the critical customer need.

Let's just focus on the first one, to enjoy product and services as if they're free. Think about why. Why is this a problem at all?

What I should say now is psychology started as an armchair discipline and now is turning into a neuroscience. So I will also give you first with a little bit of an armchair introspective exercise and then show a tiny bit of recent neuroscience that's relevant to this.

So here's a thought experiment. Let's consider the following dinner scenario: Let's suppose you have had the bad luck in some kind of a game to be responsible for paying an expensive dinner for you and some of your very good friends, and this is on some kind of a dare. You drew straws, and you drew the short straw. So let's say in a month's time you're going to have to treat them to a large and extremely expensive dinner.

The dinner is at a fabulous restaurant. They are good friends. Nothing wrong with the event itself except it's, let's say, roughly twice as expensive as the most expensive dinner you've ever had on a per person basis. Let's just frame that experience for a moment, and that's called Scenario A.

Compare that to Scenario B which is identical except for one additional detail. A few days before the dinner, the restaurant calls you up -- you've made the reservation -- and tells you that as part of their promotion that dinner is going to be free. Let's say the menu has been set ahead of time.

The question is: Is there any difference in the experience of the dinner itself?

Now, of course, when you get that phone call, it's a minor financial windfall. So you should feel good about the phone call. But, separate from that, does the dinner experience feel any different? Let's think about that.

When you ask people this, you don't get unanimous opinions.

First of all, there is a right answer to this question. If you are rationale, the right answer is no. It should feel exactly the same because it’s the same experience. There’s been a little adjustment in your overall wealth, but that is unrelated to the dinner itself.

Now here’s what I think is the majority intuition, and then there’s also a minority view. The majority intuition is that if we had a little pleasure meter that we could measure in your head, how you feel about the dinner. The orange line is the dinner, that’s time, and this is our little utility meter.

If the dinner is free, the pleasure meter would read something like this. As the dinner approached, the curve would go up. Then it would be satisfaction. Then after the dinner, you would have some memories, and so that’s the package.

What if it’s not free, well, I think it would look something like this -- meaning in the initial phase you’re thinking about the experience, but as you go halfway through the dinner and you get closer to dessert and dessert to coffee and the coffee and then you know the check is coming, then you plunge into the red.

If this corresponds to you, if you are with me so far, let’s call this gap the moral tax. The odd thing about it is I think to some extent, maybe 1 percent, 5 percent, 10 percent –- you can pick a number - it’s there. Like the poor, it’s with us. All right. It’s something that’s humming in the background of consumption all the time.

The structure of payment arrangements influences the size of this tax. Consumers can do tricks, mental tricks and financing tricks, to make this tax small. Some of these tricks are harmless, and some of these tricks are harmful, but where the payment arrangement enters the picture is in adjusting the size of this tax.

So, now, the first question: This was armchair speculation. There are actually two questions that come up. Is it real and does it matter?

Is it real question: For a number of years, we were kind of speculating about this, and we looked at indirect evidence. There are things you can see in the marketplace that seem to be indirect evidence for attempts to reduce this moral tax. But wonders of science, there is recently some sliver of neuroscience evidence that you can actually spot something like this.

I will just give you a little sampler of this. This is a study that I did with colleagues at Stanford and Carnegie. You take a person and you ask him to make shopping decisions in an FMRI scanner where his brain is being imaged.

Now the technology is that this device has a very powerful magnet, and when a particular region of the brain is activated an after-effect of that activation is blood flow in that region which brings oxygen, which serves as a magnetic field. Then, as a sort of aftershock, that magnetic field, the perturbations of that magnetic field are picked up by the scanner. So you can trace approximately, localized activation of brain.

And here's what the people in our experiment did: They made a large number of shopping decisions of which some were real. They didn't know which ones were real. So, across, they would see a product, could have a chocolate, and a price, 7. They would make a decision, yes or no, and move on to the next.

This is just rapidly cycling through it. The typical products that they saw were things that appealed to 20-year-olds, our subjects.

What we were looking for is regions in the brain that would separately track a reaction to price from the reaction to the product itself. So I will now show you two such regions.

The first one, it's in the mid-brain, and it's a region that previous studies have demonstrated reflects pleasure, appetite, motivation. Based on price studies, this is what you would spot, kind of a pleasure meter.

The two lines, the red line and the blue line, will be the time course of activation in that region as our subjects go through the cycle of seeing the product, seeing the price and making a decision. Red line is for products that they reject. Blue line is for products that they accept.

So, when they see the product of Godiva chocolates, if it's something that they buy, activation goes up; if it's something they don't buy, activation goes down.

Then the price comes on, but when the price comes on the two curves already start to merge. So this is a part of the brain that seems to be saying: Aha! I like this thing, and I'm not thinking about the price.

The second region now is the insula, and this is a region that's previously been associated with negative things: disgust, rejection and pain.

Now tracking activity there, the product appears, and again the two lines are activations on occasions when they like it and they buy it or when they don't like it and they don't buy it. No difference. So this region is silent when the product appears.

However, when the price appears, then the region becomes more activated if they reject. So this is a little bit of evidence that there is some negative experience associated with a presentation of the product itself, just a sliver of evidence.

So let's return to this picture, and I will now look at just a couple of strategies that people might use to escape the moral tax.

The first one is a bad strategy potentially, and this is using credit cards. Now this is an area where there's scandalously little hard experimental evidence, and I will show you a tiny bit. Essentially, the only study looking experimentally whether asking a person to use a credit card in an otherwise identical situation increases the likelihood that they spend.

In the experiment, we had students bidding for Celtics tickets to a sold-out Celtics game. It would turn out to be an important game for other reasons. So the market value of this was not stated and not explicitly known. Half the students thought if they won the auction they would pay by credit card, and half the students thought that if they won the auction they would have to pay by cash within 24 hours.

What were the bids like? The bids of those who thought that the winner would pay by credit card, the average bid was about $60. The people who thought that they would pay by cash, the average bid was $30. So this was about a two to one ratio between those anticipating payment by credit card.

Not everybody is a passionate Celtics fan. So let's extract the top 20 percent of the bids in both conditions and look at the average of the top 20 percent.

People were assigned by random in the two conditions. So these two top 20 percent groups should be, in some sense, identical. They are the real fans, and only through luck they wound up in one condition or the other.

Here, the difference was even greater. In the credit card condition, the average of the top 20 percent was about $150. In the cash condition, it was a little under $60.

Now we did more or less the same thing with a different group of people but selling now a gift certificate, which is a relatively fungible thing, for $175 at Legal Seafoods Restaurants.  This is a restaurant right next to the Sloan School.  All students know about it.  Absolutely no effect between the cash and the credit card condition.

So this is a tiny amount of evidence.  I can't tell you whether 1 percent of the cases correspond to the Celtics case or 90 percent of the cases correspond.  But what is clear is that for some people, some of the time, credit cards increase the likelihood that they will buy.  It's certainly not a number that is fixed independent of the situation.

I'm convinced that this is not something that consumers are aware of because if they were aware of it, then you could sell them cash for credit card charges, and I don't think you could do that, not for a very big markup.

Again, why is $175 gift certificate different than Celtics tickets?  I don't know for a fact, but I suspect that Celtics tickets are a luxury.  It's a guilt-inducing thing.  You don't know quite what the price is, and the credit card eliminates some of that pain of paying.

And, we can have a discussion about why that's so.  Partly it's because the payments are delayed.  Partly it's because the payments, when they come, are bundled in with other things. You can't really tell what they're like. So there's sort of a fuzziness of connection between the act of purchase and the moment. In fact, it's not clear when you'll pay for it, and you'll never have to pay for it as long you can keep rolling, rolling over.

That's a bad tactic for minimizing the moral tax. Now here's a good tactic.

A good tactic is to prepay, and prepayment is wonderfully appealing in all kinds of ways. If you ask consumers how they like to hypothetically finance their vacation that's going to take place in six months and they have a choice to finance before or after, most of them claim that they would prefer to prepay rather than pay afterwards.

If you pose the identical question, but instead of a vacation they're paying for a washer-dryer to arrive in six months in a new home, then they prefer to pay later.

It's an identical financial decision. But in the vacation scenario, you are craving for the prepayment because, if you prepay, then you can enjoy the vacation without thinking about the cost. Also, on the payment side, if you pay for the vacation afterwards, you feel like there's nothing. These payments are not being covered by any future consumption, whereas with a durable you're paying for an ongoing service.

Prepayment takes many forms. Sometimes it's labeled as prepayment like with a prepayment card. Other forms of prepayment are simply to buy, to own things. If you own a vacation home, then when you use it you don't feel the cost because it's been prepaid.

There are all sorts of what we call buffer currencies, which are miles, points, frequency programs, beads in the Club Med vacation arrangement. These are sort of fake currencies that are placed in between real money and consumption. So when you buy the fake currency, you're prepaying for consumption later.

And, the beauty is that you don't have to commit to specific items to purchase. You're buying something that's somewhat fungible. You're buying a somewhat fungible commodity, and so that takes away some of the moral tax.

This is the final category of, again, tactics for minimizing moral tax: flat rates and subscriptions. So these are fixed fees for health clubs, Netflix.

Netflix is a wonderful example. The most popular Netflix rental arrangement is to be able to rent up to three movies. There's no limit to how often you can rent new movies, and there's no late fee. So this is beautiful in two respects. One is the only thing you have to worry about now is which movie you want to watch and when you want to watch it.

You don't have to worry about whether watching an additional movie is worth the cost.

In the traditional arrangement, when you get the late fee, that's one of the most annoying payments you can imagine because it's money that's wasted. There's nothing you can point to there.

This is an example of actually you can craft a business strategy that forfeits all of these tempting sources of revenue -- late fees, additional volumes and so on -– and simply deliver a package that actually makes consumers more satisfied. Prix fixe menus also have the same function.

Ending with an allusion to another big tradeoff, since this is the Brookings Institution, many years ago, Arthur Oaken wrote a book about equality and efficiency as being the major tradeoff. I'd like to suggest another tradeoff that's relevant for the design of payment mechanisms and payment arrangements, and this is a tradeoff between arrangements that promote hedonic efficiency and arrangements that promote outcome or economic efficiency.

Essentially, I've organized them as the left column where left is there for left and right is for right. That's not accidental. If you look at the list on the right: Increases flexibility, adds consumer choice and by making salient, marginal costs, guides consumers to make more rational decisions.

The list on the left: Imposes restrictions, complications, blocks exchanges but protects consumers from the perception of cost.

There is a genuine tension there. The sort of utopian goal, I would say, would be somehow to reconcile these two. So, if you could convert the hard constraints on the left side into soft discretionary constraints that the consumer could invoke if they like but also abandon if the inefficiency cost seems too high, that would be an admirable goal for the future of payment arrangements.

(Applause.)

MR. LITAN: The last speaker is Tom Brown.

MR. BROWN: I want to thank Bob for allowing me to be here, while I get this booted up. I see so many familiar faces in the audience. Some of us have been on the payment train for a long time, and some of these events I've had to sneak into from time to time. So it's nice to be given an opportunity to speak.

The other thing I'm sort of reminded of, coming after a group of economists, is how difficult it can sometimes be to mediate between what they offer and how an industry actually works and how quickly things change, too.

MR. LITAN: (Inaudible.)

MR. BROWN: No, NO. I need to get here. Right.

We're still waiting. There we go. There's my little icon.

And how quickly things change, too. In particular, I can remember a day, for example, in the United States, when the Honor All Cards rule was still part of the tool kit that a network could use to encourage people to accept different forms of payment. Alas, however, those days have passed as anyone who works for Visa or MasterCard can attest, and the changes that have followed have not necessarily followed those that might have been predicted at the time.

Let's now move on to where payments are today. I'm going to try to do a couple of things here, and I will confess that it's somewhat difficult in the current context.

Today's presentations have, in fact, been amazing. I mean Ken Chenault did a wonderful job of laying out the vision for a company that over the last 150 years has really driven evolution in payments. Two of my teachers in the payment industry and in economics gave us a wonderful overview of how plastic has changed people's lives and where things are headed.

I now want to step back a little bit because this is a complicated industry and with the information that Professors Economides and Prelec have given us, there's a temptation to think: Well, we see these problems out there and we must now regulate. We've seen consumers separated from the pain of paying, so that means that the federal government should step in and control how it is that we access the assets that we have or the assets that we expect to get.

Or, that there's some issue fundamentally with how the payment industry in the United States has been organized over the last 50 years, and it's up to the federal government to step in.

I want to suggest that we pause, step back and assess how this industry works and how it's likely to work over the future and to provide some historical context.

So, with that, you might wonder actually, in a world in which we're all now interconnected via the internet at virtually all times and we can all follow the ebbs and flows of our stock portfolios as the financial markets respond to the convulsions of the past weekend -- I see many of you now reaching for your iPhones -- why is it that we have payment instruments at all? Why don't we just rely on the direct exchange of goods and services?

After all, I'm a lawyer. It's a valuable thing. I could presumably trade it for the things that I want. And, there's some reason to believe that when our ancestors climbed down from the trees and began spreading out across the globe, that that's how trade worked. I traded my eggs for your furs and vice-versa.

It turns out, however, there are some real limitations in that as a method of payment or a method of exchange. It works great for small groups, but as the number of groups grows the number of direct connections between participants also has to grow. And so, our ancestors realized fairly early on -- in fact, incredibly early on -– that direct exchange doesn’t scale, and they moved to establish means of value exchange between participants in place of direct exchange.

You might wonder why there’s a cow in the center of the wheel, the center of this network that now connects us all. It’s because historians of money believe that the move from direct exchange to an agreed upon means of exchange happened before we learned to domesticate plants. So cattle was probably the first means of exchange thousands and thousands and thousands of years ago.

Dick is shaking. I didn’t get this from *Paying with Plastic*. They identify several different means of exchange: slave girls, tripods. I didn’t feel comfortable with either of those images on my slide, so I chose a different version of history.

But the key here, the key to any means of exchange, whether it’s a $20 bill or a head of cattle, is that everybody recognizes it as something that’s useful, not necessarily for its intrinsic utility. I have no particular need for a head of cattle in my back yard in San Francisco. It’s too big. There’s not enough grass.

I don't particularly like carrying $20 bills. It's useful for me as an instrument of exchange.

So let's keep this idea of utility coming from our collective decision to use a given instrument in the back of our minds as we think about the key question that's sort of been teed up which is: What's the role that the public authority should play in regulating the payment industry?

That's one concept to keep in mind because, as Ken Chenault pointed out earlier today quite eloquently, I think, this is an industry built on trust, promises. It brings us together. I have acquirer up on the stage, and I know that everybody here knows how this industry works, but it's gone pretty quickly today. And so, I think it's useful to have some sense of whom the participants are.

Acquirer is the word that's used in this industry to describe the person who has the relationship with the merchant, the person who actually cuts the check to the merchant after a payment has been received. There's a promise from the acquirer to the merchant that's made, right? The merchant has promised that the acquirer will pay them for the transactions that they executive. So that's one key promise to keep in mind.

There's a second promise, that the merchant will promise to honor valid cards. It used to be in the United States that if you were accepting cards on the Visa or MasterCard system that you had to accept all the ones that bore the flag. That's no longer the case. Now you can pick and choose between the categories of cards. But still there's this promise that the merchant makes to the cardholder, that if you're carrying a card and you walk into a merchant that accepts those cards, that a valid card is going to be honored. So that's a second promise.

And, we trust that when we put these things in our wallet, they're going to be honored. That's why we carry them around. Otherwise, right? Otherwise, these little cards, these little plastic cards with little mag stripes on the back are utterly worthless. They're not even really good as bookmarks. I mean I much prefer a $20 bill to a plastic card as a bookmark.

Then the third promise, the third promise is that the cardholder promises to pay the issuer.

So how do we make all of this work and where's the payment piece in all of this? Because there is a distinction, after all, between the payment piece and the management of either the relationship with the merchant on the one hand or the cardholder on the other hand.

When I'm talking about payments here today, I'm talking about this business of moving money from place to place and not necessarily, not necessarily with this other business of managing the relationship with the cardholder or even managing the relationship with the acquirer.

So we can see with American Express that these things all come together because American Express historically managed the relationships directly on both sides, right, and it's easy to keep all of those promises when you have relationships both with the people who accept the method of payment and with the people who are using it.

It gets a little more complicated, a little more complicated when you have a open loop system, right, because the person who has the relationship with the cardholder –- that's me, Tom -– is not necessarily the person who has the relationship with the merchant. So, in order to make this industry work, in order to move value from place to place, in order to keep these promises, you need an intermediary.

For random reasons really, I just picked Visa. Visa helps to keep the promises on both sides.

In thinking about the payment industry here today, I want to keep people's attention to this act of keeping the promises and settling up the transactions between those financial institutions that have relationships with merchants on the one hand and issuers on the other. I want to put aside, for at least the time being, this issue of managing the relationship between issuers and cardholders and acquirers and merchants.

So where does this take us? Well, I think the place that this takes us is to think through how has this industry evolved over the last 50 years. It turns out there are lots of golden anniversaries this year. Who knew? Reading *Paying with Plastic*, I didn't know, I don't think, that this was also American Express' anniversary year. I did know, however, that the Visa system –-

AUDIENCE: You need to read it more closely.

MR. BROWN: It's in there, yes. Maybe, like Professor Economides, I was working from the first edition with the Honor All Cards rule.

But I did know that it is the 50th anniversary of the network that we think of as the Visa system.

When I think back across American Express, Visa, MasterCard and Diners and look over the last 50 years, I think we can identify 3 broad trends that have really driven the industry and that I think we can expect will drive the industry forward. So I want to talk about all three of them, and fortunately they all begin with P, a little alliteration today.

We have Products, we have Points of Sale, and we have Processing. I want to try to help you think about each of those things, and then we'll use those things to think about what role, if any, the government should play in regulating the industry. So let's start.

Oh, this is the new Amex model.

Let's start with ways to pay. I've built a little timeline. I didn't have access to the fancy moving images thing that Professors Evans and Schmalensee used. I'm going to use that on my next one, I can tell you.

But if we look back over the last 50 years, what we can see is this extraordinary evolution in the types of products that people have access to over a single network. Back in the last forties, which is when Diners Club was actually founded, cards came in one color like Model Ts, right, black. You could get a charge card, and that charge card required you to pay an annual fee up front and then to pay your bill at the end of every month.

Then over the next 10 years, there was some slight evolution in the industry. It began issuing charge cards to corporations, and out in Fresno the bank that had been founded by A.P. Giannini decided to start a network built around credit cards. It was for him and for that bank a natural extension of the business model that had taken Bank of Italy from San Jose to a truly national institution known as Bank of America.

I believe that the people who had settled around the valley we now think of as the Silicon Valley but at the time was an agricultural area and a fishing community devoted to walnuts, herring and crab, that the people in that community could manage their own expenses according to their needs and not to the calendar of the seasons, not when the walnuts ripened in the trees or when the crab season opened outside the Golden

Gate. It was through that business that A.P. Giannini and his bank were able to ride out the Great Depression.

It turns out that the companies whom many of the Eastern institutions had extended loans to proved not to be great credit bets. But, boy, oh, boy, those farmers and fishermen in San Jose were able to pay their bills throughout the Great Depression.

And so, the extension after World War II to this consumer lending business and giving both merchants and consumers, access to credit to meet their needs, was a natural extension of that model and proved to be quite successful, taking the system from Fresno shortly to around the world within a span of 20 years.

But that story of evolving the ways that you can pay didn't end with the evolution and the creation of the credit card. American Express came on the scene at the same time and quickly leapfrogged Diners Club with the creation of a new card, and the primary feature was that it had a higher membership fee.

I'm not making this up, honestly. This is in *Paying with Plastic* too. American Express' primary innovation with respect to the green card that they introduced in the sixties was the fact that it had a higher membership fee, and Diners Club was left absolutely flummoxed because American Express quickly was able to attract higher net worth customers who spent more money. Diners, as an important player on the payment scene, quickly fell away.

So, from those sort of small beginnings, we've now landed in a world in which we have literally -- literally -– I mean each of these boxes represents thousands and thousands of issuers and thousands and thousands of different terms. We've gone from a world in which it's one size fits all, annual fee plus pay at the end of every month, to an incredible variety in how these transactions work and settle up.

I want to pick out just one box, and I want to focus on this Government Benefits box up there. That's a reference to people using the network and using plastic cards to distribute government benefits, a fairly recent innovation, but one that's enabled governments around the country to save a considerable amount of money.

I've got five examples on the slide: Indiana, New Mexico, Ohio, Rhode Island and Texas, all of whom have embraced plastic as opposed to paper as a means of distributing benefits.

The benefit to the state of distributing benefits via plastic card and using electronic means to settle these transactions is an enormous savings in the cost of distributing money. You don't have to worry anymore about misplaced or stolen checks. You can save on postage costs. You would give somebody a reloadable prepaid card, we'll call it.

You can add benefits to that card without cutting them a new check each and every month. The savings can be considerable as you can see from the experience in Texas where they've managed to save, over the span of really just three years, almost $6 million.

So the idea here is that this evolution in the way that this network that connects all of us can be used takes enormous amounts of cost out of the system. We all derive benefits from that, and there's every reason to believe that the evolution in the way that people pay and that take advantage of this network will continue to grow.

Now which particular dimensions? I think it's difficult. I find it, frankly, impossible to say with any particular degree of certainty.

But I do go back to this slide and look at healthcare and the use of the system both in distributing money for reimbursement but also in helping people make eligibility determinations. There's an enormous amount of information, as other people have alluded, that's captured in transactions at the point of sale. There's no particular reason why the processing infrastructure that's used to clear, settle and monitor those transactions in real time couldn't be used to help more efficiently administer healthcare costs.

Now, of course, we live in a nation which has decided to erect serious obstacles to the distribution and efficient access to healthcare information. If we could clear up some of those obstacles, maybe we could see considerably more bang for our healthcare dollar buck.

So that's Product.

Now, Places to Pay. Of course, gas prices have been high of late as we all know, but I did take a road trip this summer. I don't know if any of you did.

I pulled up in my car to In and Out, like a good Northern California boy that I am. I was able to buy the double-double with cheese, fries and milkshake for me and my daughter that costs about $12.95, and I didn't have to fish through the cushions in my car or rummage through the glove department box to find the money to do it. I was able to pay them with a piece of plastic, which at least everybody in this room can identify as something different in how we use and complete transactions that's changed just over the last five years.

The key to the change was a recognition on the part of the networks and financial institutions that make up these networks, that the risk associated with the use of plastic in quick service restaurants was sufficiently small that we didn't really need to worry about the perpetual retention of signatures to avoid fraud on those transactions. If somebody obtains information and they want to use it in such a way as to generate a fraudulent transaction, the thing that they're going to use, the thing they're going to buy, probably not a double-double with cheese, fries and a shake.

So there's enormous benefit that can be captured by making sort of slight changes in how the transactions are administered, and you might think it was sort of obvious. Well, we'll just eliminate the signature associated with these transactions. But it took almost 50 years to get to that point. This then takes me to the last bit.

Obviously, Visa, MasterCard and American Express have many, many triumphs over the course of their history to which they can point, but I'm going to ask for a show of hands. I do this in my class back at Boalt. I'm curious how many of you have ever used this new payment thing called PayPal.

That's pretty impressive. To think that even 10 years ago PayPal, as a payment network, didn't exist. So what's the secret to their success? This takes us to this other word, Processing, and it's going to connect up at the end to the role that public authorities can usefully play in regulating this industry.

But this is the old way of completing a payment card transaction, so when I took my Diners Club card to the merchant and handed them the card. Pretend this is a Diners Club card. I give them the card. I get the goods and services. The merchant actually takes a copy of the information and then relays it on up to the network.

Maybe I'm comfortable with that when it's the Four Seasons or Wal-Mart or even In and Out. But on the internet, the notion of passing on my card information to someone that I've never met and whose name I can't pronounce when I'm buying what is purportedly a perfectly legitimate replica of a Daniele de Rossi's Roma jersey -- I don't know if any of you are soccer fans, but A.S. Roma -- from Thailand for pennies compared to what I could buy it through other vendors, I'm a little uncomfortable with the idea of giving that person my card information.

So PayPal recognized that and developed a new way of thinking about how to execute a transaction where the consumer, me buying my Daniele de Rossi jersey, and the vendor, the person who made the jersey, don't actually exchange information associated with that transaction. Instead, we pay via instruction. I instruct PayPal to pay them, and PayPal then credits money to that person's account after having received communications independently from each of us that this is a legitimate transaction.

That trick of eliminating the exchange of information unlocked an entire segment to PayPal, and so all of us have found this an enormously attractive way to make payments over the internet. It came from what now, in retrospect, seems like a relatively simple switch, the elimination of the exchange of information that we recognize to be valuable.

So we have an industry, incredibly dynamic, grown by leaps and bounds over the last 50 years, driven by innovations in 3 key areas: product, the ways that we can pay and the places that we can use them, and these little changes that many of us as consumers don't recognize on a day to day basis which is how these transactions are processed.

Why does then matter to the question of what role government should play in the regulation of payments? Well, as a small government liberal, many of us have little voices that we carry around in our mind. Professor Prelec apparently worries about the cost of a bill at the end of a meal. Maybe it's because I've had too much wine before I get to that point. I'm not so worried about that.

But I carry this little voice with me who bears a strong resemblance to Richard Epstein. If any of you know Richard Epstein, he's a force of nature and believes to his core in a vision of small government liberalism. That is a world in which we limit the role of government to those places where it can do the most good, recognizing that the margin on which government regulations plays is a relatively small one.

And so, when Richard Epstein talks about how it is that the government should think about the role that it plays, he thinks about defining property rights, and then he thinks about protecting the opportunity for contract from interference by fraud and physical force.

Wow, fraud and physical force. There's not a lot of room for many of the pieces of legislation and government intervention that we think of as being critical to our regulatory state. But this is the world in which Richard Epstein lives, and I carry a little bit of him with me.

So the first question we should ask ourselves is: Given how dynamic and productive this industry is, do we need government to be involved at all? If you're Richard Epstein, you're at least tempted to say that the answer is no.

Well, I'm unfortunately going to have to tell Richard, and he's aware of this -- we've had this conversation -– that it's not right just as a legal matter.

This is an image of our Constitution. I found it difficult to read, so I called out one of the key quotes. The power to coin money is given to the federal government by our Constitution. It's, as you can see at the bottom, Article I, Section 8.

If you're looking for Supreme Court cases that refer to the coinage clause, it will be a short look. There are none.

But, interestingly enough, this clause was borrowed from the Articles of Confederation, that other founding document that most of us no longer go back and read. So it's clear that the federal government is going to play some role in the regulation of the exchange of value in this society. Right?

So we have that one. It's not right as a legal matter.

It's not realistic either because the federal government administers the two systems that account for the majority of the exchange of value in the economy. I'm using all of these numbers that people throw about, about how big the payment industry is, what share is cash and check. We're all sort of generally working from the same fact base, but the number that I have at least for 2006 is about two-thirds. Cash and check account for two-thirds of what we would define as personal consumption, the exchange of value between consumers and merchants for goods and services.

Clearly, the federal government is going to play some role, but to say some role doesn't necessarily mean every role. What I want to offer you, using a particular example, is some thought about where the government's productive capacity lies and where the limits are.

With all that's happening in the financial services world, I will confess to you that it's tempting to come from California and say, we need more government scrutiny of the payment industry. As somebody who thinks a lot about the payment industry and somebody who works on cases in the payment industry, more law would mean more work for Tom, right, and more people taking my class, all of which is a good thing.

But I'm not convinced that it's a good thing for society as a whole, and so I want to use a couple of examples going back to this notion of preventing force and fraud and referring back to the trust that we all have to have in payment systems to define the limits of productive government intervention.

I don't mean to pick on my friends at MasterCard, but I want to give you a sense of how a data breach works. I could have put any network there. I just picked MasterCard. I don't know what came over me.

AUDIENCE: (Inaudible.)

MR. BROWN: Wow, I hear voices all of a sudden. It must be Josh Brez. He's very upset with me.

So how is it that a payment system works? I take my card. I take it to TJX. I swipe my card. I walk out with stuff. As far as I -- the consumer -- am concerned, I don't really care so much what happens after that. However, there are people who do care.

This is the little symbol that we use for the Russian and Romanian mafia, all those out of work KGB agents who spend all of their time looking for ways to hack into the files and servers of good U.S.-based companies. So they steal the card data, and then they use it at some place like Wal-Mart.

Then, honestly, all hell breaks loose, right, because there's an enormous amount of fraudulent transactions. We have to figure out where the money goes. We have to figure out the source of the breach. Wow, big problem, and it's fraud.

So that little voice that we carry around with us named Richard Epstein says: Hey, wait a second. Maybe there's a role for the federal government. Maybe there's something that they can help do about this.

And, there is. Earlier this year, in fact just a couple months ago, Attorney General Mukasey announced indictments to the people who had perpetrated the fraud at TJX, and it was breathtaking in its scope: 9 merchants, 5 years, $40 million debit and credit card numbers.

Prosecution is equally breathtaking: 11 defendants from 5 countries –- 5 countries –- arrested in 3 other countries and prosecuted by 3 separate U.S. attorneys.

Why does this matter and why is this a useful thing for the government to do? Well, as many have mentioned and as I've tried to reinforce, these payment instruments are built on trust. We have to be confident as a society that they're going to work. Knowing that the power of the federal government to investigate and prevent fraud of this type helps to provide us all with confidence that these little plastic cards are going to work.

But where does this end? To say that there is some use for government in finding, preventing and prosecuting fraud is not to suggest that every intervention that follows something like the breaches at TJX is useful. So where's the limit?

Now there are lots of things on this slide that are scary. Some of you might be scared by the little image of optimal precaution model. I recognize that, and I don't have time to explain to you how all of that part works, but that's not the scary part.

The really scary part is Minnesota Statute Section 325E.64. That's the really scary part, and it's really scary because following the TJX breach, at the request of some smaller financial institutions, mostly credit unions and independent community banks, there was a push to make merchants like TJX responsible for all of the losses that follow from a credit card breach.

We know, again listening to that little voice inside of us named Richard Epstein, that strict liability rules for consequential damages are almost always a bad idea. When are they mostly a bad idea? They're mostly a bad idea in situations in which there are multiple people who have the opportunity to prevent fraud.

If we go back to that model of TJX, we know that although TJX is doing bad things and holding people's cardholder data and making its network open to possibility of theft, even after that data is stolen, other people in the chain have an opportunity to prevent fraud.

So should bad things happen to TJX? Well, sure, right?

But should they be liable for all of the potential consequential damages that follow from that breach? No, because it would eliminate the incentive on the part of other participants to prevent the fraud that can arise, and we just don't want to do that.

What's the lesson that we observe? Good for the Department of Justice to prosecute the people who are committing the fraud; bad for state legislatures and other government actors to interfere with the distribution of benefits and burdens associated with the use of a payment system.

So where does this lead? It leads to the cross of gold.

AUDIENCE: (Inaudible.)

MR. BROWN: No, you don't.

We all know the cross of gold speech. We all know that William Jennings Bryan, when he accepted the Democratic nomination, or actually the speech that got him the Democratic nomination for President in 1896 has this great quote: "You shall not press down upon the brow of labor this crown of thorns. You shall not crucify mankind upon a cross of gold."

Cross of gold, wow! Exciting! We think it has something to do with silver and the Wizard of Oz, and that's pretty much all we think about it.

So what was he actually talking about? He was talking about banks being in the business of creating a means of exchange known as the checking account, and he was campaigning against the fact that at that point in time, when checks were deposited, the depositing bank took a discount off the face value. This proved to be an incredible irritant to Midwestern farmers who were being paid checks written by Eastern banks, and so the great campaign issue of 1896 was the elimination of discount fees on checking accounts.

He didn't win the presidency, I'm sad to report. But we decided, even though he failed in his bid for president, to take up this campaign -- that is we as a society -- following the great banking crisis of 1907 and the creation of the Federal Reserve, which has done many great things for the U.S. economy particularly over the last months as we watch the credit business in the United States unwind.

But the Fed was launched in the teens in part to complete a quixotic quest to eliminate discount fees on checks. That quest didn't end until 1970, and by that time of course a new payment instrument had appeared on the field, which again featured this thing that had gotten William Jennings Bryan so riled up to describe the cross of gold upon which mankind would be crucified. That payment instrument, of course, is the payment card -- American Express, Visa, MasterCard, Discover, PayPal.

Now interchange isn't on the formal agenda, and I'm going to restrain myself in taking on all of the slings and arrows that have been directed upon it. But we've tried this before, and it doesn't work. It leads to enormous social dislocation. When we have things that the government can productively do, we should restrain from attempting to intervene in ways that we know will lead to no particular benefit.

And I leave you with this: This is an industry that delivers enormous value to U.S. consumers, merchants and financial institutions, and the benefits that we all derive are extraordinary. The Department of Commerce has estimated that moving people who currently use cash into the banking system via things like the prepaid card has the potential to add 1 percent to GDP. The Department of Commerce the transaction cost savings of moving from cash and check and other paper-based system to electronic payments has the potential to increase GDP by another percent.

In this time of financial trouble and turmoil, wouldn't we really all like those 2 percent of GDP?

Thank you.

(Applause.)

MR. LITAN: Thank you to all of the speakers, and now going to be open for questions. There is one or more microphones around.

Somebody, get us started. Yes, over there.

QUESTIONER: My question is directed to Professor Prelec.

You mentioned the result of the sort of cognitive disconnect between payment and consumption, and you said there's kind of a paucity of research in this area. But what I was curious about is do you notice any generational effects or generational trends?

The reason I ask this is my anecdotal evidence from people in my generation is that we tend to use credit cards a lot more than our parents do and also that we tend to run up higher credit card debts, some of which aren't payable, than our parents do. So I mean do you see any evidence of this being a generational shift as we start to use less cash, that this will continue or is this an across the board trend?

MR. PRELEC: In the use of credit cards?

QUESTIONER: Well, in sort of this idea of disconnect. I mean is someone in my generation likely to have more of a disconnect between payment and consumption than, say, someone in my parent's generation?

MR. PRELEC: There is survey evidence on how frugal people are and whether they think they overspend and underspend, and there are generational effects there that generally older people claim to be tighter with money and feel more anxious if they're spending.

I don't know of evidence that directly bears on the credit card question. I would suspect credit card use would follow that in the same way.

And, people who are tight with money would preferentially favor debit cards over credit cards because they're spending their own money; they're not spending somebody else's money. That's the way they might think of it.

I would also expect, again I don't have evidence, but I would expect them to prefer to own rather than rent. I think there have been generational changes in attitudes to renting. I think older people find that more disagreeable.

But specifically to you question, whether there's hard evidence, I'm not aware of studies on the adoption of credit card use.

MR. LITAN: The audience is running out of questions. Let me try a couple.

Nick, let me ask you.

MR. ECONOMIDES: Either that or they're over it.

MR. LITAN: Either that or they're hungry. It's not time yet, so we've got to wait a little.

We've had several presentations that have looked at the benefits of credit cards and all that kind of thing. Your concern was not so much that they weren't benefits, but this industry was not competitive. Can you talk a little bit about the evidence that you might have there?

Then I'd ask maybe Tom if he wants to respond.

First of all, comments about there being a lot of credit card providers out there of different kinds. I mean most merchants, a Nordstrom or a Wal-Mart, can or many of them do create their own credit cards. So I wonder if that's more competition than you were suggesting.

Then the example of Australia which you used, but other people have sort of said -- I think Dick Schmalensee said, well, they can give these discounts or they can differentiate, but in practice they don't do that. So what does that suggest?

You've suggested it's not competitive. Other people have said, well, we don't see much effect from that or it's more competitive than you think. I'd like you to sort of comment on what evidence you would bring to bear on that.

MR. ECONOMIDES: Right. Well, first of all, I mean there's no doubt that there are significant benefits from the existence of credit cards, and I'm not underestimating them or saying they don't exist or anything like that. This is an issue or the one I touched on was an issue of the way markets work right now and how they can work better. I mean I hope that this came across.

Now the Australian experience, the way I understand it, was there were two parts. I focused more on the second part rather than the first. The first part was that the actual fees were reduced and regulated, and I didn't propose that. I hope people understood that. Right?

I didn't say you have to cut the fees, and here is the government that should do it, and I hope that this does not create any objection from my friend here. So I didn't propose that.

But the second part was that they allowed surcharging and allowed the merchants to charge different fees to the same consumer for the same transaction if he used different cards, if the cards imposed different fees on the merchant. So if MasterCard and Visa have different fees, they allow for different fees.

Now what happened as a result of that, I believe a percentage of the merchants, if I remember correctly –- I am saying this from memory –- something like 10 percent did that, not everybody. Not everybody started offering this kind of discounts or this kind of surcharges, but 10 percent did.

The interesting thing is that because of this 10 percent who did, there was sufficient competition among the brands that in the end the fees that they charged were lower than the regulated rates. So that's an interesting experiment there. That's what I thought was interesting.

Then there are some other studies because you know we shouldn't see just the fees to the merchants because obviously the issuers have some incentive to give to the credit cardholders, some benefits to sign them up. You get miles. Some people offer percentages, cash back and stuff like that. So you have to look at both, okay, both what the merchants pay and what the customers receive.

So there are studies in the Australian case that showed that the total of cost plus benefits, which is the net cost, went down after the regulation. Now these are not my studies, so I'm not going to vouch for them. I read them, and I'm reporting them to you. I mean I'm not going to take a position on if they're absolutely correct and so on.

But I believe that there is a potential for improvement there, and the main improvement I can see is in interbrand competition, competition among the brands -- among MasterCard, Visa and American Express. A second tier would be competition within the network so that you get acquirers and issuers to set up different charges to each other rather than a single charge, at least that's the way I see it at this moment.

MR. LITAN: Let me give Tom just a quick opportunity to respond in terms of how competitive is this industry and to what would you point to show. You guys have 42 percent. That's not dominant necessarily, but it's a pretty big market share.

MR. BROWN: I'll say two things. First, I now work for O'Melveny and Myers, and I can assure you we don't have 42 percent of any market. I wish that we did, and we'd be a much bigger law firm.

In terms of competition in the payment services industry, I think it's important to distinguish two terms that often get interchanged. One is competition; the other is commodity.

If you look at the distribution of the exchange of value across competing networks, you see that there are a number of robust networks in the United States and around the world -– Visa, MasterCard, American Express, Discover, ACH, check, cash, just to name seven –- and the distribution across those networks is pretty significant. So you wouldn't ordinarily think that there's something wrong with the number of firms, the financing of those firms, the ability of those firms to vie with one another.

But the fact that there are a lot of people in an industry doesn't mean that it's commodity. Right?

There's a really wonderful paper by a professor at Boston University named Mark Reisman who looks at the relationship between where cards are accepted and where consumers choose to use and the degree to which acceptance affects usage. One of the results that he uses to build the results and the conclusion is it turns out that consumers are extraordinarily loyal to particular cards.

That is if you look at how we all behave in the marketplace, we choose to put almost 100 percent of our card spending on just 1 card in our wallet which means that consumers are driving the choice at the point of sale, which then drives how it is that revenue gets distributed in this industry.

And the reason for raising William Jennings Bryan and the cross of gold, and I could actually talk about another example in which we've tried to regulate the price of payments, which was the effort to stamp out bank notes during the Civil War which was alluded to earlier. It never works.

It never works, and the reason that it hasn't worked reflects, at least for me, not a lack of competition but a fact that this is not a commodity service, that there is value that these networks and financial institutions provide to the person who is making the choice. So long as the customer remains king, that's the direction in which the revenue is going to flow.

MR. LITAN: There was a question there.

QUESTIONER: I guess my question -- this is Cary Whaley from Independent Community Bankers of America –- would be directed to Professor Economides.

You talked about competition within network and being able to, acquirers and issuers, negotiate amongst themselves. Does that, by nature, favor the larger institutions because they have the reach? Isn't that really stamping out competition and isn't that counterproductive?

MR. ECONOMIDES: Okay. Let me understand the question and let me try to repeat it. You're saying intra-network, within the network between acquirers and issuers. You are concerned that if that set fee between acquirers and issuers was abolished and it was set through bilateral negotiations between acquirers and issuers, you're concerned that some issuers have sufficient market power to put acquirers in a corner, something like that if I understand your question.

Maybe you didn't say it quite that like. Let me put my interpretation to your question.

QUESTIONER: Okay. My concern is two-fold. First thing, if you take away accept all, so that some cards might not be accepted. Second, that you move to a negotiated interchange. Do you really move in a situation where some cards are more equal than others and particularly where that's going to affect is the smaller institutions that, one, do not have the reach and, two, do not have the economies of scale?

MR. ECONOMIDES: Well, I am interested in that. That's a good question actually, and I think it's something that we should consider. I don't think that on top of your head you're going to have an answer for something like that.

But we have seen other setups, for example, ATM networks, in which small institutions facing large institutions like Citibank with millions of ATM machines in the middle eighties. The small institutions got together, formed various alliances and were able to do other things more and more effectively.

So I'm not saying that there is an obvious solution to that, but let me put it that way. My friend here believes in markets, and so do I. The market solution would be that. Okay? The market solution without intervention, and we're not talking about the Feds coming in and telling them what to do, the market solution would be these bilateral transactions. It's not what the present world is. The present world is not the market solution.

So, if you really believe in market solutions, you should come closer to my position, and you might be able to say –- and you're saying in some way –- that the market solution in that case might have some adverse consequences, which it might. I'm not completely saying it wouldn't, and we have to really think about it and think about people. If that market solution was put forward, what would happen?

But you cannot take both positions. On the one hand, you're saying, well, the free market is great. And, on the other hand, you're not allowing the free market solution to happen. Think about it. You have to take a side on this.

MR. BROWN: Can I add a point?

MR. LITAN: Sure.

MR. BROWN: So, in this conversation around paying for payments, the issue of bilateral exchange is often raised. Although you might have all thought that the slide of direct connections was sort of tongue in cheek with the cow as opposed to the network of direct exchanges, there is an enormous benefit in eliminating a network of direct connections.

There's a mathematical principle associated with the number of connections that you need in a network. Each additional link, if you're correcting by direct connections, requires you to lay N minus 1 links in the network, right, because you have to connect each of the people who is already there. It becomes enormously cumbersome as the number of participants grows.

If you look at the Visa system today, I think you've got some 17,000 financial institutions that are participating. That's a lot of connections if you're going to maintain a network of bilateral connections. There's enormous efficiency to be gained in moving to a single point of exchange. Right? The difference is you only need one connection to the hub as opposed to the N minus 1 factorial that you need to maintain the network of exchanges.

So I think of these things in terms of transactions costs, efficiencies and market participants responding to the needs and demands of their owners, customers, respectively.

MR. LITAN: Okay. Let's take some more questions. At the back, there you go.

QUESTIONER: Hi. I have a question for Professor Economides.

MR. LITAN: Could you just identify yourself?

QUESTIONER: Sorry, yes. Trish Wexler and I'm with Bach's .

You made an assertion that the price to cost differential for the interchange revenue and how that is set is significant in the Visa and MasterCard network, and I was wondering how you calculated the cost in that formula and if you took into consideration the risk-based components that interchange revenue pays for, like fraud and the cost of cash and those sorts of things, or if you were only restricting your cost calculations to the bricks and mortar of processing.

MR. ECONOMIDES: I don't have a number to quote to you. I think this question was posed this morning as well, and I think nobody was able to give a number on the cost of cash. I mean it would be great to have it to compare it.

I think it's extremely unlikely that it's as high as 2 percent, but I don't know. I mean I haven't done a study, and I haven't read a study on that issue.

MR. LITAN: Can I ask a question of Drazen?

Your presentation was wonderful. I greatly admire your work, but I'm wondering how important some of the things you identify with as opposed to more prosaic economic things.

You mentioned frequent flyer programs, that you would kind of prepay for a vacation and that that would be attractive.

Now there is another alternative which is that if I travel a lot on business, I get frequent flyer miles on my credit card account. Then I can take a free vacation and I don't pay tax on that form of compensation. So, in a prosaic sense, this is a little bit of a tax avoidance thing, and the psychic benefit I get from prepaying may be there, but the tax benefit is much more solid.

MR. PRELEC: Is real.

MR. LITAN: Is real.

MR. PRELEC: Yes. Yes, many of those arrangements have aspects that provide real benefits that we can measure and analyze economically, but they also provide a psychological benefit bundled with an efficiency friction or an efficiency cost. And so, the tricky thing is somehow can we arrive at a situation where we get the psychological benefit, but we don't have to pay with that friction?

I think frequent flyer miles are an excellent example if we abstract away from the tax benefit or abstracting away that often the company pays for the flight, and so the frequent miles are really free.

I think going back to the generational question, I think I've heard especially older people say, who are not thinking of the tax benefit, who are just looking forward to that one flight that they will get, that they will patiently accumulate that. Then you tell them. Well, you think you should tell them that it's not free, but then you say, I better not tell them that.

MR. LITAN: Yes, Bob.

QUESTIONER: So, Drazen, I just want to continue. I thought your presentation and paper were fantastic. I have one example, then a question for you.

You could add as an additional example of your hedonically efficient kind of arrangement is broadband pricing. We pay fixed prices rather than per minute charges, and people would go nuts in this country if we had to pay per minute prices. That's another example of yours.

But at the end of your paper, you've got this tradeoff between hedonic efficiency and I guess, what, normal or economic efficiency or whatever, and you tantalizing basically suggest that maybe the future of payments is somehow to figure out a way to get the hedonic benefits and maybe capture more of the economically efficient benefits, but you sort of don't tell us how.

MR. PRELEC: That's because I don't know.

QUESTIONER: You don't know.

MR. PRELEC: But I can say something.

QUESTIONER: Do you have any initial morsels of thought, because I was just left hanging at the end of the paper? That's all.

MR. PRELEC: I think it's a great question to ponder.

QUESTIONER: That's your next paper.

MR. PRELEC: I think it depends if you want to do it with small tricks or you want to go for the root cause of the problem. I think the root cause of the problem is the consumers' anxiety about whether their consumption decisions are correct and whether they are spending at the right level. If you eliminate that concern and focus the consumer attention on how they will spend some amount of funds as opposed to whether they'll spend more or less, then many of these issues fade in the background.

Now it's easy to state, but it's very hard. It means you basically have to get people to make right decisions. That's a colossal undertaking, right?

We know, for example, in Ken Chenault's presentation, he mentioned that people use these different types of cards as informal budgeting devices. So certainly it would be good to understand how people do that and then think of ways whether we can actually streamline that process or assume some of the burdens of the process in more effective ways.

Especially, this is actually one area where technology might help if you move from a card to an iPhone, a mobile payment mechanism, that could become an advisor. So you would actually be buying something like an informal subscription to a certain rate of expenditure, and your job would be simply then to push it in different directions.

It would be sort of high-tech versions of what some consumers actually treat their spending limits as advice. Someone has advised me this is how much I can spend. Okay. That's been shown.

So is that the best advice that we can give them? There could be other better ways of providing that benefit if indeed people are treating the spending limits as someone's recommendation for how much they should go into debt.

The smaller scale kind of tactical things you could do would be things that have a similar flavor to these softer, isometric, paternalistic things that Richard Thaler and Cass Sunstein in their book, *Nudge*, and there's a lot of stuff around that. Generally, the idea there is to never make anything irreversible, create default suggestions but not prohibit any activities. That means that you could go into these prepayment plans but make it very easy for a person to opt out or to flip to some other arrangement if it's not paying off. So these are tactical things.

But the root problem is that people have a difficult time deciding when and how much to spend as opposed to whether to buy A or B or C.

MR. LITAN: Maybe one more question, yes.

QUESTIONER: Hi. My name is Whelan Greeney . I'm from Amherst, Massachusetts.

I have a college graduate. He received a lot of solicitations to sign up for credit cards since he started in college and then graduated.

So my question is this: It seems to me there is a lot of enticement for kids just graduated out of college and thinking that they are able to get a card and with some earning potential. But my thought is that given the nonpayment interest rates so high -- 18, 20 percent -- for the people who don't pay on time and yet there's so much enticement to get them to get a card while they are freshmen, first year in college, until they graduate, all that.

So, just from a consumer protection point of view, are you in favor of some kind of restrictions in terms of the amount of maximum interest rate can be charged against consumers who are unable to pay on time?

I know right now it's 18 percent. That's the going rate, and I think that's really too high, but there's a market to compete, who offers the lower penalty for the nonpayment.

Or, if not, does the government have a role to play in terms of regulating what's the maximum penalty that can be charged by the credit card companies?

MR. LITAN: Okay. Anybody want to take that one on?

MR. ECONOMIDES: If you're asking me, no, I wouldn't say. I wouldn't think that it's the government's job to do that. Here we see even the most guaranteed investments didn't work well last week and early this week. I don't think the guarantee of the government on something like that would be necessary.

I also think it's not unreasonable for everybody to be financially disciplined and look carefully at the terms and conditions. So what I would think would be great is if these terms and conditions are straight, are obvious, not hidden. But once they are there, I don't see why the government should intervene. People have to be responsible in what they choose and what they don't choose.

MR. LITAN: All right. Thank you very much. Thank you very much to our panelists.

(Applause.)

MR. LITAN: The logistics now?

AUDIENCE: There is lunch outside and come back at 1:30.

MR. LITAN: Back at 1:30.

(Recess)

MR. BAILY: As you know, the times are a little troubled and financial markets are being a little rocked. Secretary Paulson was not able to come today. I know he was – sent his regrets, and also, more to the point, he sent David McCormick, his Under Secretary for International Affairs, and we are very pleased, thank you so much for filling in.

David McCormick was sworn in as Under Secretary in August of 2007, and he has been a principal advisor to the Secretary on international economic issues. Before being in this role, he was Deputy National Security Advisor to the President responsible for U.S. international economic policy, and also the President's personal representative to the group of the – the G8 group.

He also served as Under Secretary of Commerce for Export Administration. And early in his career, he was President and CEO of Free Markets and President of Ariba. So he has had both a lot of government and a lot of business experience, and we are delighted to have you come talk to us. Thank you so much.

Oh, sorry, there's one more thing I wanted to say. The Under Secretary has – we would like the questions to come from the conference participants, not from the press. You will have – obviously, you have other opportunities to question. Thank you.

MR. McCORMICK: Great, thank you. Good afternoon, thanks for that kind introduction, Martin. And thanks to Bob also for the kind invitation to be here today. I'm pleased to be able to join you for the conference on the quiet revolution of money, the implications for our citizens, our economy and financial system of the dramatic changes in consumer payments.

Let me begin by passing along the regrets of Secretary Paulson. He's sorry he couldn't be here. He is focused on market developments today, and he asked me this morning to speak on his behalf.

And as I was walking in this morning, I was reminded of my in-laws recently coming for a visit. We have young kids; whenever the in-laws come, they're always very excited and waiting because they bring presents with them whenever they come, and I made the mistake the other night of coming home early, they thought I was the in-laws with the presents, and when I walked in, the look of disappointment was palpable, and I felt a little bit the same way when I walked in today. I'm not Hank Paulson and I don't have presents, but I'm going to try to do my best today to share with you some thoughts on recent market developments. As you know, we're going through a very difficult period in our financial markets as we work through past excesses.

After years of unsustainable home price appreciation, we are undergoing a necessary, difficult, and prolonged housing correction. In addition, benign U.S. and global economic conditions, significant global imbalances, large international capital flows, flax lending standards, and aggressive appetite for higher yields extended beyond the U.S. housing market and have impacted our capital markets more broadly and globally.

We're working to minimize the impact of the housing correction on the rest of the economy, but we don't want to impede its progress, because the sooner we turn the corner on housing, the sooner we will see house prices stabilize, the sooner we will see more people buying homes, and the sooner housing will, again, contribute to economic growth.

Still, it will take some time to work through these stresses. Progress, as we've already seen, will not come in a straight line, and there will be bumps along the road as we make progress. The events of the last few weeks are evidence and are important and necessary steps to work through the uncertainty and turmoil in our markets and to minimize their impact on the rest of the economy.

This past weekend Secretary Paulson and the Treasury team worked with the Federal Reserve and the Securities and Exchange Commission to convene financial institution leaders from around the world to discuss particular areas of market weakness and how to work through managing the broader impact of those issues on financial market stability, something we all have a stake in.

The weekend culminated with a series of significant events to mitigate disruption surrounding the bankruptcy of Lehman Brothers. The SEC, the Federal Reserve, and major global financial institutions each took a set of necessary and extraordinary steps.

The Federal Reserve has broadened the eligible collateral of certain lending facilities, and the SEC has taken steps to protect customer accounts at Lehman Brothers. Moreover, in an important show of leadership, major market participants have stepped up their responsibility to support stable and orderly markets. The extraordinary commitments will be critical to facilitating liquid, smooth, functioning markets and to addressing potential credit concerns. This past weekend's regulators and market participants mitigated the systemic risk that might otherwise have occurred due to the bankruptcy of the fourth largest U.S. investment bank. And as Secretary Paulson said publicly yesterday, while what's happening is not easy, and significant challenges remain, the American people can remain confident in the soundness and resilience of our banking and financial system.

Healthy capital markets are the backbone of a vibrant U.S. economy, and they are critical to the well being of our families. Capital market stress continues to weigh on our economy, but the housing correction is at the root of the challenges facing our financial institutions and our financial markets.

These factors, along with high energy prices, present ongoing challenges. But we're also confident, we're confident in the resilience and diversity of the U.S. economy and that we will move through these difficulties, just as we have moved through these difficult periods in the past. We expect our economy to continue growing this year, although at a moderate pace, as these challenges persist. The current soft labor market reflects our slow rate of growth. The unemployment rate increased to 6.1 percent in August. And although Americans' average wages have increased, higher food and higher energy prices are absorbing those gains. Energy prices, still much higher than a year ago, have declined recently. A gallon of regular gas cost about 30 cents less than it did earlier this summer, even in the face of hurricane related disruptions, and this should help relieve some pressure on family finances and business costs.

But clearly the economic slowdown is hurting American families. The stimulus package proposed by President Bush and passed by Congress earlier this year has provided some relief. Ninety-three billion dollars in payments has been sent to American households. And we saw the impact of this in the second quarter, when the U.S. economy expanded at a solid 3.3 percent, supported by increases in trade and increases in consumer spending. And we expect that the stimulus package will continue to boost growth above where it would have been otherwise through the end of this year.

Secretary Hank Paulson, Chairman Bernanke and others have said from the outset over the last year, these challenges posed by housing are the biggest downsize risk to our economy and continue to drag in our growth. Yet there are signs of progress. Fewer new homes are being built, and this means the total number of new single family homes on the market is down 27 percent from a July, 2006 peak. And although it’s early, new and existing home sales show tentative signs of stabilizing.

Treasury has worked closely with lenders and key industry participants on an aggressive strategy to do everything possible to help avoid preventable foreclosures. We supported the creation of the Hope Now Alliance last October, which, to date, has helped over two million home owners avoid foreclosure through loan work-outs. But we have much further to go.

Turning the corner on the housing correction requires that prices stabilize and affordable mortgage financing be available so buyers can return to the market. And so while we are working to stabilize capital markets, it's also vital that government sponsored enterprises, the GSE's, Fannie Mae and Freddie Mac, continue to play their important role in supporting the housing market.

The GSE's have become the largest source of mortgage finance, touching 70 percent of all mortgages originated in the first quarter. Their continued activity is critical to turning the corner on the housing situation and removing the underlying uncertainty in our financial markets and our financial institutions. Not surprisingly, the prolonged housing correction weakens the financial condition of both of these enterprises, and they faced a significant loss of confidence among investors.

Fannie Mae and Freddie Mac are so large and so interwoven in our financial system that if either of them were to fail, it would be harder for Americans to get home loans, auto loans, and other forms of consumer credit. Business finance would be even harder to obtain, constraining job creation and our overall economic growth.

And so in July, Secretary Paulson asked the Congress for extraordinary authorities with regard to Fannie Mae and Freddie Mac in order to support our housing markets and the stability of our financial markets more broadly. Congress acted promptly and decisively.

In the days and weeks that followed, the Federal Housing Finance Agency, the new GSE regulator, Director Lockhart, Fed Chairman Bernanke, and Secretary Paulson conducted a rigorous analysis of the situation, which led to an unpleasant, but necessary decision to utilize these authorities. We had no choice but to act. Waiting for the precipitating event would have been far too late. We acted decisively to avert instability in our markets that would have harmed the overall financial well-being of Americans. And we acted to support the availability of mortgage credit and to protect tax payers to the maximum extent possible.

First, treasuries in the GSE's, under the control of a conservator, FHFA, the new regulator, have established contractual preferred stock purchase agreements. Under these agreements, the Treasury has committed up to $100 billion per institution to ensure that each GSE maintains a positive net worth.

In return, to protect the tax payers to the maximum extent, Treasury has received from the company's $1 billion worth of senior preferred stock and warrants providing an option to purchase up to 79 percent of the company's outstanding shares at a nominal price.

These preferred stock purchase agreements were made necessary by the ambiguities in the GSE congressional charters, which have been perceived to indicate government support for our agency.

Our nation has tolerated these ambiguities for too long. And as a result, central banks and investors throughout the United States and around the world who hold GSE debt and mortgage backed securities believe them to be virtually risk free. Because the U.S. government created these ambiguities, we have a responsibility to both avert and ultimately address the systemic risk now posed by the scale and by the breadth of the holdings of GSE debt and agency mortgage backed securities.

The terms of these purchase agreements provide significant tax payer protection. The existing shareholders of the GSE's will lose 100 percent of their investment before the American tax payers lose a penny.

Second, Treasury has established a new, secured credit facility for Fannie Mae, Freddie Mac, and the Federal Home Loan Bank to fund, if necessary, their regular business activities in the capital markets. This facility is intended purely to serve as an ultimate liquidity backstop that will be available until the temporary authority provided by Congress expires at the end of 2009.

And third, to further support the availability of mortgage financing for millions of Americans, Treasury is initiating a temporary program to purchase mortgage backed securities issued by the GSE's. This will provide additional capital to the mortgage marketplace. And there's no reason to expect taxpayer losses from this program, which will also expire in December of 2009. Together, Treasury and FHFA steps are the best means for protecting tax payers and our markets from the systemic risk posed by the current financial condition of the GSE's, and to provide the support for these enterprises, currently an important role in the housing market.

At the same time, we face some very fundamental decisions about the role and the structure of these enterprises in the future. Policymakers must resolve the inherent conflict in their charter. That requires both they serve the interest of private investors and the public mission.

Our recent actions have afforded a time-out, a time-out that provides the stability, time, and flexibility for Congress and the current and the next administration to address both the needs for affordable mortgage finance and the systemic risk presented by the scale and breath of existing GSE holdings. We will make a grave error if we don't use this time to permanently address these structural issues.

Now, as we work through these financial and housing market issues, let me speak for a moment on one of the most constant aspects of our economic life change and how this is evidenced in the topic of today's conference, consumer payments. This is evident in how we pay our groceries, our bills, our clothes, and our taxes. And between 2003 and 2006, Americans wrote seven billion fewer checks and made 19 billion more electronic payments.

Treasury is very interested in this transformation on a macroeconomic level. One study estimates, for example, that the growth in electronic payments added .5 percent to real GDP per year in each of the last 20 years, or the equivalent of 1.3 million new jobs.

The same study estimated that the increase in efficiency and velocity of electronic over paper based payments saved at least one percent of GDP or about $60 billion annually.

We have a long standing strategic vision which is becoming a reality thanks to years of hard work by many Treasury professionals to become an all-electronic Treasury Department. To put the scale of this in perspective, Treasury manages a daily cash flow of nearly $60 billion, and every year we collect more than 3.1 trillion and disburse nearly one billion payments worth 1.6 trillion. In 1996, 56 percent of federal benefit payments were made by electronic payment; today it's 82 percent.

Electronic payments provide real savings to the U.S. tax payer. It costs Treasury approximately ten cents to issue an electronic payment versus 98 cents to issue a check. And when you consider the millions of annual federal payments made, the savings are substantial.

And there are savings also on the collection side. Processing a tax payer's check cost $1.30 versus 73 cents for an electronic payment. We are encouraging more individuals to opt for direct deposit for their social security payments, because nine times out of ten, when there's a problem with the payment, it's with a paper check.

Treasury also works closely with financial regulatory authorities on issues of infrastructure and data integrity, so the consumers can trust that their information will be protected. Through a public-private partnership, we work with the intelligence community, for example, law enforcement, and financial institutions to provide the latest information regarding cyber-vulnerabilities and risk-mitigation tactics.

So just as all of you and this conference are looking forward, so are we. It will take time to work through the excesses that have been built up over a number of years, and the administration and the financial regulators remain vigilant. We are focused on measures and policies that address our short-term economic challenges and build a stronger, longer-term foundation. And the American economy has a record of innovation and adjustment to challenges, to risk, and to changing demands that is second to none.

That is the underlying spirit that has made the United States the economic envy of the world, even as we manage through our current problems, and it's this spirit that will keep us so in the years ahead. Thanks very much for your time, and I'd be happy to take a few questions. Yes, please.

SPEAKER: There are two – Dick – from MIT. There are two basic ways to – obvious ways to –

DR. BAILY: Can you pause for a second while the mic comes down?

SPEAKER: I was trying to shout. There are two basic ways to resolve the ambiguity that you mention; one is to make them private entities, and one is to make them government agencies. Can you say a little bit about the thinking within Treasury about the pluses and minuses of those two routes?

MR. McCORMICK: Yeah; thank you for that question. I think given where we were in terms of time and where we were in terms of the financial market, Secretary Paulson thought it was very important to create a window, a window of opportunity. This, as you may know, is an issue that's not without controversy, and it's going to be very important that a consensus is built among leaders in this administration, but also the next administration, as well as in Congress, and so we purposely not laid out a perspective on what the future model might be.

We have purposely said, I think with a fair amount of evidence, that the current model is not sustainable, and so what we've tried to do is, in a very agnostic and open-ended way, create a framework for that decision-making process, that consensus process that ultimately lead to a solution that will have the right balance in terms of some of the challenges that I mentioned.

So I really can't comment on Treasury's position, but I think having that window of opportunity is very important, and I think urgency around resolving some of these fundamental questions over the next 18 months is really a priority.

DR. LITAN: I apologize, this might be a stupid question, but I'm aware that, you know, that Treasury is going to provide financing to Fannie Mae and also going to purchase the mortgage backed securities, where does it get the money? I thought there was a federal debt limit, and the Treasury is not the fed; how does it pay for this?

MR. McCORMICK: Well, the statute that Congress passed required that the Secretary exercise his authorities within the debt limit. And so the funding would be provided by issuing treasuries, which then could be allocated as needed to the MBS purchase program or potentially the stock purchase program.

As you probably know, the stock purchase program does not have a specific target or number that it's based on, a specific set of conditions with each institution that ensures a positive net worth.  So on an ongoing basis, the Treasury would provide the necessary equity to ensure those conditions remain.

DR. BAILY:  Can I abuse my position and ask you a question?  In the blueprint of financial regulatory reform, you pointed to some of the advantages of the UK system of principals based regulation, you also pointed to Australia.  Given that those countries are now experiencing some difficulties of their own, I wonder if you've had any sort of further reflections or second thoughts about the lessons from those countries?

MR. McCORMICK:  You know, I don't think I could call on any specific lessons from either.  I think what we certainly can say with some confidence is that the blueprint was a very conscience and focused straw man of the outlines of a potential regulatory structure which address some of the underlying holes and conflicts within our current system, and I think that what we've seen develop over the last 12 months has only reaffirmed the importance of moving expeditiously on that new regulatory framework and highlighted some of the challenges in the current regulatory structure.

So in many ways, for example, the authorities that Secretary Paulson requested to include a much strengthened GSE regulator were, in part, a reflection of the current market conditions and challenges, but also a reflection of some of the current shortcomings in the existing regulatory model. So I think the blueprint continues to be a very productive starting point for the discussion.

DR. BAILY: Okay.

MR. ECONOMIDES: I'm Nicholas Economides from New York University. Given the situation, how difficult it is right now, I think the Treasury did the best it could. But the crisis at the sector, for example, at Lehman, was well known for many months, almost a year. And I wonder, you know, why there were no measures to try to figure it out, to try to figure a solution earlier, because when you gave people two days to look at the books, they weren't so – they couldn't really do the job in a couple of days. If they were given a week, maybe they could, and maybe Lehman would be still around.

I wonder what you think of, in general, of the idea of trying to take steps to avoid the crisis rather than, you know, trying to deal with the crisis when it's at its full strength?

MR. McCORMICK: Thanks for the question. I think, just to go back to something I said in my remarks, which is the context I think with all of these specific institutions and their challenges needs to be viewed within is the significant decline in the housing market. So that is at the root of the challenges that we see across institutions, the challenges we see within the financial markets, that combined with a number of the excesses that I mentioned earlier, so it's not solely that, but certainly that is at the heart of this. And as I think Secretary Paulson and the other regulators think through the policy response, they're very mindfully trying to balance two very significant objectives.

One, as in the case of the GSE's, was to promote and take steps to reinforce the importance of systemic stability and ensuring that we are addressing risk to that; and the second is ensuring that the underlying focus of institutions and market participants and market discipline remains intact, and that's I think an important balancing act that this group of policy makers has tried to strike throughout recent events and I suspect will be the focus on going forward.

So I don't want to refer and talk about any specific institution, but I think that's the framework and the mind set that is the basis for how we've thought about these issues.

DR. BAILY: Yes, a question in the back.

MR. YU: Thank you – with China Press. In a context of the soft credit crisis and U.S. government taking over the Freddie Mac and Fannie Mae, when you talk to Chinese official in the future, how will you persuade them to liberalize the financial market more quickly and not to interfere in the market? Thank you.

MR. McCORMICK: Well, you know, I think as a starting point, we have had a great deal of focus on ongoing communications with key counterparts around the world, both in industrialized economies and emerging economies because our financial markets are more interdependent now than ever.

So what is happening here really does have implications for most major economies around the world and vice-versa. So I think I can say with some confidence that the key policymakers really do have a very good sense of the thought process and ultimately the actions we've taken and why they have been taken, and I think, for the most part, there has been a very favorable response to those steps.

In terms of justifying or laying the ground work for how we've thought about this process, I think I'd go back to my earlier point, which is, we have thought about the policy response within the context of systemic ability and systemic risk, as well as market discipline, and trying to strike a balance where we are ensuring that market participants feel the appropriate market discipline, but also taking steps to avoid systemic risk when we view a risk to the financial system. And so without getting into a case by case discussion of that, I think that's the overarching framework and that's the way policy makers have tried to think about events over the last 12 months. I think I'll take one more question, if you don't mind.

SPEAKER: Thank you. Whenever America is faced with any sort of recessionary activity, we've always relied on the resilience of the American consumer. But the American consumer has never really been faced with such high commodity prices or such a housing slope of this magnitude. So in light of all this, what exactly inspires your confidence or your optimism?

MR. McCORMICK: Well, you know, what I've tried to describe here is what I hope was a balanced presentation of some of the challenges we have, but also some of the underlying dynamics in the economy. I mean I think there's a couple things that I'd point to; one is that there is I think a pretty well demonstrated track record of innovation, challenges that, in some cases, have arisen in the past due to both innovation and excess, and a very deliberate and successful ability to deal with those challenges and emerge stronger by industry and within the global economy. So we've been here before in different contexts, and I think we have emerged as a stronger economy in the past, and that innovation ultimately has been very beneficial to the overall strength of the economy.

If you look at what's happened over the last two or three quarters, I think it's been very interesting to see that the economy has continued to grow when I think many expected that it wouldn't grow, both in the first quarter and the second quarter. As I cited in my remarks, the second quarter was 3.3 percent GDP, which I think probably surpassed just about everybody's expectations. That was driven, in large part, by exports, it was driven, in part, by consumption.

And, you know, I think we continue to see as corporate profits, because so much of them is global, continue to be strong, that there are very positive signs in the U.S. economy despite some very significant challenges on commodity prices and housing and capital markets.

So I think we see both good and bad in the U.S. economy, and I think it's also fair to say there's clearly challenges the remainder of this year and in 2009 that are going to ensure that, if we have positive growth, it's not going to be the kind of growth we'd aspire to. But the economy has been more resilient than many expected.

MR. BAILY: Thank you so much for stepping in.

MR. McCORMICK: Thank you very much.

MR. BAILY: And that concludes our conference. Thank you, everyone, for participating, and the presentations, so thank you very much.

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## CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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