

# Increasing Connectedness and Consumer Payments: An Overview Commentary

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I have a series of more or less unrelated comments about Dr. Katz's paper. Since I am from Silicon Valley, I think Dr. Katz is a little too conservative. He is from that conservative part of the country—the East Bay. In Silicon Valley, we think of ourselves as much more forward-looking than those conservative people in Berkeley.

Let's start out by looking in our pockets: What is in your pocket? You have your wallet and what does your wallet have in it? Well it has some measures of persistent identity—like your driver's license, maybe your AAA card, maybe a faculty ID, an auto insurance card, a medical insurance card. These verify persistent identity. They say that I am a member of some group of people licensed to drive or to use certain facilities.

My wallet also has temporary identities. I might have a boarding pass or a ticket to a play stuck in my wallet and that shows that I have a right or access to certain facilities.

Of course, there are general purpose payment mechanisms such as credit and debit cards.

Then there are a lot of specific payment mechanisms. I have a card for the Bay Area Rapid Transit system and receipts that show what I paid for lunch in the airport.

Finally, there are those personal things—your photos, your notes, your reminders, and so on. But then you also have keys, not in your wallet but in your pocket, that are also a form of identity verification and access control—permanent keys for your car and your home and temporary keys for your hotel room and rental car. Airbnb, is a company that allows people to rent out in-law units or apartments to

temporary visitors. They have a system where you can just go up to the door of the apartment, punch a number in your smartphone, and the door will unlock. You can use your smartphone as a key. That is a very attractive mechanism.

Of course, all of these payment systems, identity systems, access systems and so on can be replaced by a phone. That is, replacing these capabilities with a phone is *technologically* feasible. Dr. Katz is absolutely right that there are a lot of institutional and inertia reasons why they may not be replaced in the near-term future. But the fact you can do all those things from one device is something that is potentially quite exciting.

Also, one thing that has not been mentioned very much in the discussion is the idea of payments within a social system. It amazes me that Zynga generates about 12 percent of Facebook revenues—12 percent. Remember this is the hot company in Silicon Valley these days. The Zynga revenue comes from virtual currencies, which are used to buy animals in FarmVille and other types of virtual goods in online games. It is remarkable to me that you have this whole virtual currency system generating such a large part of Facebook's revenue.

And you think about how social networks are evolving, they certainly intend to be part of an identity verification system. And as soon as you have identity verification, you have a good chunk of the payments mechanism problem licked, because I have some way to verify that I am who I am, some way to verify the merchant is who he is, and the rest of it is just accounting, making some transactions that move from one side of the ledger to another. That identity verification business is going to be a really key role. It is possible—I will only say it is *possible*—that social networks will play a role in that identity verification,

Clearly, the password authentication we use now is very, very primitive. There are much more secure systems easily available. Google offers, for example, two-factor authentication to everybody for free. By that I mean you have a mobile device and it will generate one-time passwords for you to use to get into different services. So there are plenty of systems available now. It is really just social acceptance and the hassle of using them that prevented people from having much more secure authentication.

Another thing that is worth mentioning, and Dr. Katz alluded to this in passing, but it would be good to say a little bit more about it, is that controlling the payments system can confer a significant competitive advantage. For example, Amazon and Amazon Prime have your credit card on file, so you have one-click shopping. It is very easy to buy things on Amazon, once you have enrolled in their payment system. Of course, that is why merchants are very eager to join the Amazon Marketplace. They view this as a really important place to be, because Amazon has basically internalized the whole payment system. They have a private payment system within Amazon that gives them a strong competitive advantage against other players.

The same thing occurs with Apple iTunes. They have 150 million credit card numbers on file; this allows consumers to buy content on iTunes very quickly and easily. This is a major reason why content providers want to put their content on iTunes. So just building a special-purpose payments system is really a huge source of competitive advantage.

Conversely, I would say, if you have a general-purpose payment system, which is as easy to use as a special-purpose payment system, then it makes it a lot easier for new entrants to start selling things.

Talking a little bit about the industry dynamics for these private payment systems would be interesting. Of course, multihoming is perfectly feasible. I can be a member of Amazon and on iTunes and other systems, but only up to some limit. I probably do not want to be the member of 15 or 16 or 20 different private payment systems. A few of them, however, can easily coexist.

With regards to ISPs and payments, Dr. Katz is a little bit too pessimistic there. There are examples where ISPs provide payment systems now. So with Comcast and On Demand, I can buy movies and pay-for-view TV shows and buy other sorts of services. And of course I can buy subscriptions to premium channels like Home Box Office through my ISP/cable provider. It is absolutely true there is no good reason why competitors cannot do this as well, so iTunes can use my ISP and collect payments from me and Netflix and so on. But the network providers do some kind of nascent payment processing system that shows up on your cable bill.

If you look at other countries, it is much more common to see the mobile carriers offering you services, adding them onto your mobile bills—as a value-added service—or processing other third-party payments. It seems strange and you see this mostly in developing countries that have a very primitive infrastructure, but also in very highly advanced countries like Sweden, Japan, Finland, and Korea where you can buy services from third parties that then show up on your mobile phone bill. We do not see much of this happening in America, but we do see some of it.

I want to say a couple words about other approaches or what I would call creative approaches to payments systems. We are going to hear later from Square. I do not want to steal their thunder here, but I will give an endorsement to the system as I think it is a very clever and innovative way to manage payments. One is this little device you can get from Square for free, plug it into your iPhone, and then handle credit card payments. In the Bay Area, if you go to the farmers markets or the art shows, it is very common to see this mechanism being used. So it lowers a barrier to entry to use credit cards. It is quite a nice idea. They also have another system, which is quite ingenious. I do not know if this will take over the world, but it shows there are lots of possibilities for creative approaches here.

What are the key issues for success of a new system? You do not want to have a new device for consumers. That is one of the setup costs. You do not want to have a new device for the merchants. You do not want to have a new communications

network. And you do not want to have a new payment system. Those are all costs; these are all barriers to entry.

What you would like to do if you are trying to get a new system that you add on top of the existing systems, which after all work pretty well, you really have to have very, very low cost for all parties provided. The Pay by Square system is a good example of this. Here is how it works. The idea is you use the phone location system to keep track of your location. Your carrier knows where you are to a block or so, because it has to know that. So, you can find a merchant using this system, if you want. The first time you visit the merchant, you click “open a tab” when you walk in the door and you only have to do that once. Now it has a connection between you and the merchant: you are in the same general area. Once I buy my latte I go to the checkout counter and say, “Just charge it to Hal.”

The nice lady at the checkout counter types “Hal” into her laptop computer and up pops a photograph of me. She looks at me; she looks at the picture, and says, “Thanks, Hal. Here is your latte.”

That is it. That is the whole system. If you want to do it privately, you can use a PIN, or some made-up name, or something like that. You get the receipt on your phone showing this charge has been made. The only thing you use to verify the transaction is your face. If you want to get fancy about it, say, use biometric identification, but after all we have had a million years of evolution to try to recognize other people. By now we are pretty good at it. If you think about it, what is the difference between having this series of numbers embossed on a card and showing that to a person or showing your face to a person? It is still a way of connecting your financial identity with your personal identity with your agreement to engage in this particular transaction. It is a clever mechanism and there are a lot of other variations on it one could imagine.

Ironically, it brings us back to the Downton Abbey days when everybody maintained a tab with the merchants and was billed every few months. That is just the global village in action.

Finally, I do want to say a word about a part of the payments system that we have not really discussed that much. Who is the biggest wireless data carrier? It is a trick question, because my answer is Wi-Fi. Wi-Fi is a technology, not an organization but, if you look at the data, it carries at least half of all wireless data. And, if you throw in laptops, it is very substantially more than half. Wi-Fi was built on junk spectrum that nobody wanted. Some technologists got together and said, “Let’s use this for local area communication.”

All of these new innovations—the iPad, the iPhone, tablets, smartphones—they could not exist without Wi-Fi. They could not exist without Wi-Fi since the cellular network couldn’t carry all that data.

Right now, there is a battle shaping up in D.C. over these spectrum auctions, where they would like to repurpose some TV spectrum to mobile device use.

But telecommunication carriers and the technology industry are very concerned that there should be some *unlicensed* spectrum available for the same kind of experimentation and innovation we have seen in Wi-Fi. It is an “iffy” thing. Because given the budget situation, people say, “Why should we set aside some piece of this for unlicensed spectrum? Why don’t we sell it all off to the highest bidder?”

Our view is you need this wireless spectrum to really encourage the same kind of innovation we have seen in Wi-Fi. It can make a very big deal for all of us in this industry in particular. It is something that is quite important to pay attention to.