Technology & Banking

November 2, 2014

Authors
Ali Khayrallah, Ericsson
Jason Hickey, Google Inc.
Jasvinder Singh, Synopsis
Nimish Radia, Ericsson
Vicky Xu, VMware
Table of Contents

Introduction
Lending
   Peer-to-peer (P2P) lending
   Risk assessment
   Regulation
   Threats and opportunities
Payments
   Credit card (VISA) payment model
   Threat: New Payment Enablers
   Threat: Payment model is replaced
Customer Engagement
Customer money management - Mobile money
   Opportunity and threat
Customer money management - NeoBanks
   Threat to banking
Future trends - Bitcoin
   What is Bitcoin?
   Benefits of using Bitcoin
   Challenges associated with Bitcoin
Future trends - Explosion in company valuation
   Threat to banking
Conclusion
   Threat summary
   Banking response
Introduction
The banking industry has been around for millennia. Some institutions now in existence were originally chartered in the middle ages\(^1\), and the word “bank” itself has biblical origins. Banks keep our deposits, they provide us credit, they facilitate payments, and they are an integral part of our social, economic, and political systems.

Yet, banks are now facing disruption in all areas, mainly driven by innovation in information technology (IT). Peer-to-peer lenders provide efficient alternative markets for lending and saving. There is a frenzy of new competition in the payments industry, driven as IT corporations, both large and small, act to transform the industry. Neobanks offer highly accessible, yet purely online services that compete directly with retail banks. In the developing world, nearly 3 billion people look to mobile telecom operators to manage their money, rather than chartered banks. Beyond all of this, new distributed currencies like Bitcoin compete with governmentally-issued fiat money.

Traditional banks have developed their operations over decades or centuries, and find it difficult to respond to these new, highly agile competitors. Chartered banks also have a regulatory burden that the new competitors are skirting, and political processes have not yet stepped in to level the playing field.

In this paper, we focus on the disruption facing retail banks, in particular. There are many other kinds of banks -- commercial, investment, central banks, etc. -- that are also facing disruption. However, the challenges to retail banks are particularly vivid and have broad impact. Generally, when we use the term “bank,” we’re referring to traditional chartered retail banking institutions, e.g. Wells Fargo, Bank of America, etc. New competitors may eventually find it in their interest to form chartered banks, despite the regulatory burden; this is still a disruption between the new IT-oriented players, and the traditional businesses.

There are tremendous opportunities in this disruption. It has already begun, and the outcome will impact our lives, our economies, and our political systems. We discuss it in several parts, including lending, payments, neobanks, money management and mobile banking, and Bitcoin. We begin with lending.

\(^1\) Banca Monte dei Paschi di Siena, Italy, chartered in 1472.
Lending

Lending is a core bank service, with a history going back several thousands of years. Banks receive deposits from investors, and lend some portion of those deposits to borrowers, charging interest to the borrowers and returning interest to the investors. Credit has become easily accessible, cheap, and ubiquitous. In fact, US household debt as a share of income increased to nearly 130% during the housing crisis, although it has decreased somewhat since then.

This is big business. In absolute numbers, total household debt in the United States is now about $12 trillion\(^2\). This includes about $9 trillion in mortgages and other housing related loans. The remainder includes revolving credit accounts, auto loans, student loans, and other sources. Current (Q4 2014) interest rates for borrowers range from 4% for mortgages, to 16-22% for credit cards. Rates for investors are much lower, 1% or lower for CDs, money market, and savings accounts.\(^3\)

**Peer-to-peer (P2P) lending**

Banks are facing scrutiny since the financial crisis in 2009, which was brought on by poor risk management practices. As a result, banks have taken a conservative position, and it has become difficult for consumers to find loans. In addition, traditional banks operate using

---


\(^3\) [bankrate.com](http://www.bankrate.com)
well-established, but inefficient, practices that place many layers between borrowers and investors. Borrowers go through an extensive application process, and then once loans are granted, they are packaged, securitized, and sold to investors through a variety of investment vehicles.

Each of these layers adds some overhead, consuming part of the margin between the borrower and lender.

Peer-to-peer (P2P) lenders, also called “marketplace” lenders, compete directly with banks by offering better rates and a streamlined experience using a shared marketplace.

In this case, borrowers and investors interact pay fees to the market, but otherwise interact directly, eliminating much of the overhead. Zopa, a peer-to-peer lender in the UK, were operating in 2012 with a spread of 3%, in comparison with 10% for traditional banks.4

The largest P2P lender in the US is LendingClub, with $4B in loans issued in 2014. A snapshot of rates in Q4 2014 includes the following rates, where the letters A through G are used to denote risk categories, with progressively higher expected default rates. Investors have full control over which loans they choose to fund. The minimum investment per loan is $25, allowed investors to spread their risk over a large number of loans.

LendingClub charges an origination fee when loans fund, but does not charge interest; borrowers pay interest directly to the investors. A large majority of the loans issued are for “debt consolidation.” Borrowers are attracted by rates that are lower than their credit cards, and investors are attracted by rates that are much higher than they can achieve from banks.

**Risk assessment**

Risk and P2P lenders differ substantially in how they assess and manage risk. In the case of banks, the **bank** assumes the risk, meaning that if the borrower defaults on a loan that the bank holds, the bank loses the money, not the depositors.

For example, average credit card interest rates are currently 14%, and defaults are currently around 4%, so the effective yield for credit card lending is 10%. 10% is a reasonable rate of return. However, should the economy experience a downturn that causes the default rate to rise, the banks assume the losses. In fact, the 2009 financial crisis was caused by unexpectedly high default rates (due to poor risk assessment) causing cascading losses through the industry. Since then, banks have become more conservative, perhaps excessively so, limiting access to credit.

P2P lenders generally operate on a different model where the **investor** assumes the risk. Investors fund individual loans directly, and if a loan defaults, the investor’s money is lost. If default rates rise, investors will suffer, but the P2P marketplace itself is not directly affected. As a consequence, investors will choose marketplaces where risk can be effectively assessed and managed. In fact, one of the attractions of P2P lending is that investors can hand-pick the loans that they fund, bringing the knowledge of the crowd to bear on risk assessment.

Traditionally, risk is assessed through the FICO credit rating system, which is based on a history of behavior, including debt load, delinquent payments, and other factors. The predictive power of FICO scores is questionable; increasing reliance on credit scores has led to deterioration in loan performance even as FICO scores have increased over time.⁵

---

⁵ *Credit Scoring and Loan Default*, Bhardwaj and Sengupta, Federal Reserve Bank of St. Louis, 2011.
As a result, P2P lenders are using new technologies to help assess risk.

- **Neo Lending** assesses applicants’ LinkedIn network, both for quality of the contacts, and to assess employment stability.
- **Lenddo** calculates its own credit score of 1 to 1,000 after looking through 100 databases and social networks for such things as an applicant’s location and number of connections. In addition, Lenddo notifies the customers’ Facebook friends if they haven’t paid, and friends’ Lenddo scores could suffer if the customer fails to repay the loan.\(^6\)

**Regulation**

Regulation is another way in which P2P lenders and banks do not operate the same. In the US, banks are required by law to maintain 20% cash reserves. This was originally motivated to reduce the risk of bank runs, but it also dampens monetary expansion. For example, when $100 is deposited in a bank, only $80 can be lent by the bank. If these are subsequently resulting in $80 of deposits, another $64 can be lent. This progression leads to a money multiplier of 5 --- that is, for each $100 of deposits results in a maximum of $500 of money being created.

P2P lenders do not have reserve requirements. All the money being deposited can be lent, leading to a possibly unbounded creation of money, and possibly catastrophic consequences as the result of defaults.

At present, P2P lenders make up a small (but quickly increasing) part of the lending industry, so the economic risk is small. In addition, P2P lenders are targeting only unsecured loans, not mortgages. However, should the industry grow to include mortgages, or other exert a large effect on the economy, it is unavoidable that regulation would be applied, driven both by national monetary policy, and banks, which would want to level the playing field.

This is not to say that P2P lending is not a threat to traditional banks. Should a bank charter become a requirement, it is well within the power of the marketplace to partner with a banking institution, or for the marketplace to form a bank of its own.

**Threats and opportunities**

Banks are threatened by new lenders in several ways.

- Highly efficient online marketplaces for unsecured loans. These offer far better rates to borrowers and investors both.
- More effective risk assessment and management practices, increasing the quality of a lending portfolio.
- Non-bank lenders are not subject to the full set of banking regulations.
- Banks are risk-averse, limiting access to credit, which has the effect of urging consumers to turn to other markets.

---

\(^6\) *The ‘Social’ Credit Score: Separating the Data from the Noise*, Wharton School of Business, UPenn, 2013.
This poses a significant threat in the area of unsecured loans. The following chart demonstrates the growth rate for LendingClub loans.

![Total Issued Loans in USD for Lending Club since 2007](image)

However, P2P lenders are not currently targeting mortgages, which form the majority of lending (about 75% of total debt is housing related).

**Payments**

Payments are important part of the banking system revenue. In 2012 account-related and transaction-banking revenue comprised one-quarter of global banking revenue. In 2012 Banks handled $337 trillion in non-cash transactions, which is estimated to grow to $712 trillion generating $1.1 trillion in revenue by 2022.

Payment revenues are generated by transaction cost associated with every non-cash transaction. In order to understand the payment disruptions it’s important to understand the business models for various types of payments. Credit cards are the most apparent form of non-cash transactions and we will explore VISA business model to show the transaction cost breakup, the players and steps involved in completing the transaction.

**Credit card (VISA) payment model**

VISA is a Technology company providing global payment solutions to the banks. Its payment product platforms are used by the banks to develop credit and debit card programs for their customers. VISA does not issue credit cards nor does it extend credit to the consumers. Instead, it operates an “Open-loop payments Network” to manage the exchange of information between different financial institutions.
The diagram above explains what happens when a cardholder presents a card for payment to a merchant. The payment request is forwarded to the acquirer (the merchant’s bank). The acquirer contacts the issuer (the client’s bank) through the VISA network. The issuer shares the information on whether sufficient balance is available to carry out the transaction. The information is then routed to the merchant. In case sufficient balance is available, the payment is accepted. Else, it is rejected. The issuer bills the cardholder on a monthly basis. The cardholder pays those bills then.

The diagram also tells us how VISA and banks make money in the process. They make money from the transaction fees charged to merchants. Typical merchant fee is 2.4%, which would get unevenly split between issuer 1.8% and acquirer 0.6%. Issuer gets to keep more of the merchant fee because of a higher risk of payment default from the cardholder. VISA makes money on payment volumes, transaction processing, and value-added service.

**Threat: New Payment Enablers**

New payment providers are emerging to enable customers make easy to use, fast, secure anywhere to anyone payments. These IT competitors threaten to take an increasing part of issuer/acquirer fees and negotiate to come up with different business models. This results in lower costs, decreased fees for the banks.
A more revolutionary threat is from IT companies (e.g. Amazon, Apple) becoming retail banks and replace issuer/acquirer bank completely.

The below diagram shows new players like Apple Pay, Google Wallet, Paypal Beacon emerging in this space.

**Threat: Payment model is replaced**
Credit card payment network (VISA, MasterCard) infrastructure powers everything from bank transfers to cutting-edge payment companies like Square. As shown in the diagram below, there are many steps and hefty interchange fees are levied in the traditional payment networks.

There are startups like Dwolla which are radically altering the fabric of digital payments by building its own alternative to the credit card networks. Creating its own network from scratch helps avoid the hefty interchange fees levied by the credit card companies and can also offer instantaneous transfers.

The below diagram shows how Dwolla network helps bring direct customer-to-merchant payments by bypassing conventional network with multiple layers and bring fundamentally lower transaction cost structure like No charge for <$10 transactions and $0.25/transaction otherwise.
Customer Engagement

Customer engagement is critical to growth and survivability of banking business model. It includes:

- Acquisition of customer
- Sales of product and services
- Relationship management including conflict resolutions
- Brand and loyalty management

Traditionally banks have used its branch networks for strong and profitable customer engagement. Banks leveraged the mainframe to client-server technology driven transformation to strengthen the engagement model driving improved convenience for the customers while improving its top and bottom line. Branch network remained central to that transformation.

The early days of Internet led transformation augment this trend. It never really disrupted the engagement model and core value propositions of the customer engagement model. Investment in branch networks (e.g., $50B/yr to operate branch networks by 25 top banks in US) continued to provide attractive ROI. However, as shown in the following figure, more recent mobile
broadband based Internet and changing demographics (baby boomers and millennials) and their behaviors are disrupting the customer engagement model.

Customers are expecting financial services to be available at any place, at any time, and in any way they want it. They are also expecting banks to be proactive in anticipating their needs and provide them personalized services. The engagement model is transforming from “how do I find/acquire and most profitably serve my customers?” to “how do customers find me and use my services in real-time where, when, and how they want them?”
As shown in the above figure, customers continue to use branch bank networks for basic banking services such as checking, savings, CDs, and high touch issue resolutions. Branches continue to help build brand and trust. However, many other providers started to offer high-margin products on the Internet decoupled from the banks and its branch networks. Customers’ comfort with Internet and changing behaviors (millennials) have started to disrupt sales of the higher-margin products impacting banks’ top and bottom line.

Many disruptors are emerging in all aspects of financial transactions in customers’ lives offering digital channel alternatives in developed and emerging markets. They are disrupting the branch network based bundled customer engagement model to online digital channel based unbundled engagement model. This is disintermediating banks from its customers and revenue growth and profits. To counteract, banks will need rethink its customer engagement model and innovate and transform themselves at higher velocity than what they have been used to in the prior technology-driven transitions.

Customer money management - Mobile money

Mobile money refers to an emerging alternative banking service offered by mobile operators. It can be viewed as a natural extension of their billing system already in place. Without delving into technical details, it is easy to understand the key aspects of mobile money:

- Account billing services are generalized to handle banking transactions: payments and deposits etc.
- The communication infrastructure is already in place to transport those transactions, including security features such as encryption and authentication.
- Worldwide network interoperability enables international transactions such as remittances.

With some over-simplification: If you have a mobile account, you have a mobile money account; you just don’t know it yet.
Mobile money takes on a special importance in emerging markets, due to a confluence of factors:

- Government infrastructure, from transportation to police, is barely functional, especially in remote (rural, rugged) areas.
- Banks have low penetration, focusing on the rich and urban. Most people are “unbanked”, operate in a cash economy, and have practically no interaction with banks. Again, this issue gets more acute in remote areas.
- Mobile operators have very high penetration, and coverage well into remote areas. They are often the only reliable infrastructure around. There is already mutual financial trust between operators and customers due to mobile billing transactions, which extends easily to mobile money.

The numbers are staggering; in emerging markets, there are 4 times more mobile accounts than bank accounts. Some 2.5 B adults are unbanked, and 1.7 B of them have mobile accounts. The figure below illustrates the geographical disparity in banking penetration worldwide.

The unbanked issue is not just one of convenience. Operating in a cash economy under an absentee government has many pitfalls: People are discouraged from saving and investing in their future, which affects their resilience to financial setbacks. They are also in plain danger, as they become easy prey to extortion and theft.

The Gates Foundation has identified access to financial services as critical to lifting people out of poverty, by including them into the financial system, empowering them to weather crises and grasp opportunities. In particular, it highlights digital payment platforms as the tools to deliver financial services to the poor -- profitably and at scale. Mobile money clearly fits this description.

Opportunity and threat

Staying with emerging markets, there is a big opportunity for mobile money to address the unbanked segment. In the short term, the mobile industry is cooperating with banks, by reaching into an underserved population, and easing its access to banking services. In Peru for example, Ericsson is working with the banking association to deploy mobile money services.

This cooperation provides an opportunity for banking to increase its penetration in the short term. Thus the two systems could coexist and thrive in parallel. In the longer term, however, mobile money easily becomes a threat, by quickly filling the unbanked vacuum and choking off the growth prospects of banks.

---

9 Ericsson chosen by ASBANC to develop a new channel to enable financial inclusion in Peru, Ericsson, 2014.
In contrast, developed markets do not have a large unbanked segment, and one would be tempted to discount the threat of mobile money. But we should consider another scenario, where mobile money gets deployed in emerging markets, and has a few years to evolve into a highly efficient attractive service with huge scale. Then it comes into developed markets and competes head on with banks. Keep in mind that mobile networks are essentially the same throughout the world. So introducing mobile money would be “just a software upgrade”.

![Global distribution of unbaked. (Source World bank)](image)

**Customer money management - NeoBanks**

Neo-banks are an extension of the prepaid card business. They provide synthetic bank-like services with internet-only operations, skipping branches completely. A key aspect is the absence of credit, which removes risk and keeps regulation at bay, and also simplifies operations, enabling scaling.

The prepaid card business is very attractive; in the simplest form, the customer pays first, and the balance is kept on the card itself, requiring very basic back-end support by the issuer. Financially, it’s a great deal for the issuer. In addition to paying various fees, the customer provides an interest-free loan, and often forgives some or all of the principal as cards get lost. It is no wonder that the prepaid segment is growing quickly, quadrupling between 2007 and 2014. Also, by 2017, the US government will issue $120 B in benefits with pre-paid cards.

Neo-banks are an interesting study in contrast: On the customer side, they synthesize the look and feel of a traditional bank account, with checking and savings, bank cards, and even physical checks. They aim to have a low, clear fee structure, so customers know what they are getting. All transactions are immediately accounted for, and there is no credit or overdraft protection. Neo-banks claim to empower their customers in that way, by allowing them to track their

---


finances exactly. Although neo-banks do not have branches, they emphasize customer support, online or by phone.

On the operations side, neo-banks appear to be very different from banks. Clearly the absence of branches removes a whole layer of cost and complexity. Expanding from simple prepaid cards to bank accounts does require a sophisticated infrastructure, but we can guess that it is no worse than that of a traditional bank for the same function. Most importantly, the absence of credit removes risk, and we speculate that this has two crucial impacts:

- Neo-banks can maintain low costs -- By keeping regulators at bay, they avoid the requirements banks must satisfy, from keeping cash reserves to maintaining bureaucratic overhead.
- Neo-banks can scale -- By skirting complicated risk management, which is likely to involve significant human oversight, they can grow quickly by expanding their infrastructure capacity.

Indeed, today neo-banks are not legally considered to be banks; of the four current neo-banks in the US, Moven, Simple, BlueBird and GoBank, only the latter has a bank charter. Moven and Simple are partners with banks, and BlueBird is backed by American Express.

The combination of low cost operation and traditional bank-like customer experience seems to be working. Overall, neo-banks are already a reality, with a 9% market share of banking in the US.

**Threat to banking**

The emergence of neo-banks is happening at a time when banks are struggling with their branch deployments. Focusing on the US, the density of branches is excessive in comparison to similar economies, and their number is on a slow decline. Also, many branches are being reduced in size, as many services are moving to the internet. The figure below highlights the declining role of branches over time, with only 15% of transactions taking place at a branch in 2013. In this light, the lack of branches is not much of a handicap to neo-banks in terms of customer interaction, while the cost savings are significant.

With their efficient operations and familiar bank-like services, neo-banks appear to be a deadly threat to banks. We speculate that the wild card will be regulation; neo-banks will try to avoid it by steering clear of credit, while banks should push government for consistent regulation and an even playing field.
Future trends - Bitcoin

Bitcoin is a form of digital currency and its main advantage is to eliminate the third-party intermediary and thus significantly lower the cost of the e-commerce transactions, especially across the international borders. However, bitcoin faces many challenges to serve as a stable payment platform for the mainstream use.

What is Bitcoin?

Like the U.S. dollar, the Bitcoin is a fiat currency in that it is not redeemable for some amount of another commodity, such as an ounce of gold. Unlike the dollar, a Bitcoin is not legal tender nor is it backed by any government or any other legal entity, nor is its supply determined by a central bank. The Bitcoin system is private, but with no traditional financial institutions involved in transactions. Unlike earlier digital currencies that had some central controlling person or entity, the Bitcoin network is completely decentralized, with all parts of transactions performed by the users of the system.

Bitcoin is sometimes referred to as a cryptocurrency because it relies on the principles of cryptography (communication that is secure from view of third parties) to validate transactions and govern the production of the currency itself. Each Bitcoin and each user is encrypted with a unique identity and each transaction is recorded on a decentralized public ledger (also called a blockchain) that is visible to all computers on the network, but does not reveal any personal information about the involved parties. The public ledger verifies that the buyer has the amount of Bitcoin being spent and has transferred that amount to the account of the seller. The public
ledger is a unique attribute of Bitcoin (and other cryptocurrencies) because it solves the so-called double spending problem (i.e., spending money you do not own by use of forgery or counterfeiting) and the need for a trusted third party (such as a bank or credit card company) to verify the integrity of electronic transactions between a buyer and a seller.

The figure below shows a detailed transaction flow for bitcoin.\(^ {12} \)

Benefits of using Bitcoin

Bitcoin purportedly offers four potential benefits to users:

**Cheaper and broader payment system:** At the moment, many Bitcoin transactions are typically processed in a way where no fee is expected at all, but for transactions which draw coins from many bitcoin addresses and therefore have a large data size, a small transaction fee is usually expected. This is very significant to electronic vendor whose total margin is below 5%, where a normal credit card transaction costs somewhere between 2% and 3%. In addition,
transactions across the border is very difficult. Amazon doesn’t sell merchandise to other countries, mainly because credit card transactions rely on the underlying banking systems and each country has its own laws and regulations governing their banks. By using bitcoin, a merchant can reach customers in other countries, and significantly increase its market reach.

**Increased privacy:** Bitcoin is often referred to as pseudo-anonymous. Bitcoin transactions are largely not traceable. You don’t have to be afraid of any organization of being able to trace the source of your funds. This is a clear benefit in many areas of the world because governments that are supposed to guard against fraud are actually defrauding people by taking their savings partially or fully.

**Enable smaller content publishing via micro payment:** Bitcoin can be split into smaller payments without additional cost. This will make a big impact to the content industry. For example, a magazine can be broken into individual stories and each individual article can be sold online.

**No erosion of purchasing power due to inflation.** One of the biggest problems with our current dollars and other currencies used around the world is inflation. Over time all currencies lose purchasing power at a rate of few percents per year mainly because governments keep printing more money. This process is basically a small tax on your accumulated wealth. With Bitcoin you don’t have this problem because the system is designed to make Bitcoins to be finite. Only about 21 million Bitcoins will ever be released (mined). The release of new Bitcoins is slowing down and it will stop completely within a few decades. We have a slowing population growth which is projected to stop at around 10 billion by approximately 2050 which roughly coincides with the last Bitcoin to be mined. There will be roughly 1 Bitcoins for every 500 people.

**Challenges associated with Bitcoin**

**Can’t revert or track a transaction.** This is not completely true. Using public ledger and sophisticated computer analysis, transactions involving large quantities of Bitcoin can be tracked and claim that if paired with current law enforcement tools it would be possible to gain a lot of information on the persons moving the Bitcoins. But because of this perception, Bitcoin is often associated with illegitimate activities, such as money laundry across the borders. Some governments ban the use of it, such as Russia.

**When growing, could affect the Fed’s Conduct of Monetary Policy.** Bitcoin could have an impact on the conduct of monetary policy to the extent that it would (1) substantially affect the quantity of money or (2) influence the velocity (rate of circulation) of money through the economy by reducing the demand for dollars. This possible outcome highlights the likely importance of the economy’s principal currency being elastic, its supply increasing and decreasing to meet the
changing needs of the economy, and of the important role of the central bank in implementing such a monetary policy.

**Slow speed:** A Bitcoin transaction can take between 10 minutes to 1 hour for the transaction to happen. This could be an issue with many of the internet transactions.

**Easy to lose.** If your credit card is stolen or somebody hacks into your bank account there is a good chance you will not lose any money as banks will fix your balance. Even cash can be potentially recovered if the police acts fast. But with Bitcoin if you lose it you lost it for good. There is no mechanism to recover stolen or lost Bitcoins. If somebody hacks into your wallet where you store your Bitcoins you lost them for good. The best way to store your Bitcoins is on disk that is disconnected from the internet.

**Too Speculative.** Currently Bitcoin prices fluctuate like crazy. It's likely that the price will stabilize at around US$10 from the current US$400. Currently the price is going up so fast a webshop would have to adjust their prices almost daily if they wanted to accept Bitcoins. It's not very convenient.

In conclusion, Bitcoin or any digital currency has a huge potential to disrupt the banks as it completely bypasses the banking system and reduces the cost of sending money to almost zero. Therefore, Bitcoin takes the payment infrastructure of banks and turns it on its head. However, it still requires a few more years to grow into a mature payment system.

**Future trends - Explosion in company valuation**

So far, we have identified threats from several industries to banking. Most of those threats constitute a “clear and present danger”, with bitcoin perhaps being more of a future threat. Here we look further towards the future, and argue that there are clear signs of a trend towards increasing disruption to banking.

We conjecture that venture capital investment is a good predictor of future success, in the sense that VC’s will bet on a winning trend. One can argue that much of Silicon Valley is proof of VC prescience. Having adopted this conjecture, we look at companies in the transaction segment, and see an explosion in valuation.

There are many companies in varying stages of maturity in the transaction segment. We focus on three related companies to illustrate our point. First we establish the basic facts: Venmo was founded in 2007, raised $1.3 M in funding, and was acquired for $26 M in 2012. Venmo information page, Crunchbase, 2014. Braintree was founded in 2007, raised $69 M in funding, and was acquired by for $800 M in 2013. Braintree information page, Crunchbase, 2014.
probably the most prominent name in payment, was founded in 1998, raised $197 M in funding, and was acquired for $1.5 B in 2002.\textsuperscript{15}

The common thread among the companies is that Paypal acquired Braintree, which had acquired Venmo. The big news recently is that Paypal will be spun off as a separate company from Ebay in 2015. As a standalone company, Paypal’s value is estimated as high as $47 B, compared to the current market capitalization of $65 B for Ebay.\textsuperscript{16} We illustrate the explosion in valuation for the three companies in the Figure below, where the y-axis is on a log-scale to cover the huge value range.

A new wave of funding is starting up. Stripe, founded in 2010, has developed a payment platform, with links to Twitter, Facebook etc. Recently, VC firm General Catalyst has raised a $10 M fund specifically for seed stage startups that build applications on the Stripe platform.\textsuperscript{17} The first company to be funded is Baremetrics, with $0.5 M in September 2014. Even in the fast paced startup world, it is puzzling that a 4 year old company is considered to be a stable platform for future innovation!

**Threat to banking**

The high valuation of the companies in the transaction area is justified by their growth potential, rather than their current profitability. These companies can leverage this high valuation as a “license to print money” (pun intended); money they use to launch innovative services and applications without having to worry about immediate profitability. Such an approach would be too toxic to the banking culture for banks to even try. This creates a self-fulfilling prophecy with these companies diverting the growth from new services away from banks and further justifying their valuation.

\textsuperscript{15} [Paypal information page](https://www.crunchbase.com/organization/paypal), Crunchbase, 2014.
\textsuperscript{17} [General Catalyst Dedicates $10M for Startups Built on Stripe Payment Tech](https://wsjdn.wsj.com/articles/37402181), WSJ.D, 2014.
Valuation explosion of Venmo, Braintree and Paypal.
(For simplicity, the total funding is shown at the founding year.)

Conclusion
In short: Banks have the money; other industries want it. Our study identified a number of key external threats from various industries, each leveraging its core strengths to carve out some of banking’s territory. For instance, new lenders exploit social networks to assess credit worthiness, and crowdfunding to raise money. Neo-banks rely on internet infrastructure to provide a familiar bank-like customer experience. Mobile money uses the reach and the billing systems of mobile networks to serve the huge unbanked segment. Bitcoin relies on internet security technology to bypass normal currency altogether and handle transactions in an alternative currency.

Next we will summarize our findings about various external threats to banks, then briefly discuss how banks may react to those threats.

Threat summary

- Lending
  - Neo-lenders will significantly erode, but not replace, bank lending
  - Mortgages are not (currently) under threat

- Disintermediated Customer Engagement
  - Neo-banks take market shares from banks with reduced costs and good enough services
  - Customer engagement is unbundled; customer open to financial services from many channels when, how, and where she wants it; significantly impacting revenue and margins sustainability and growth

- Customer Money management
  - Mobile money already took off, especially in emerging markets

- Payments
  - Nimble, secure money transfer networks to enable instant transfers
  - Technology innovators own the digital experience/interface for payments

- Currency
  - Digital currency (bitcoin) further removes friction in the payment system, especially in the international transactions

- New company valuation
  - High valued new companies, unencumbered by current profitability, divert growth away from banks.
Note that taken together, many of these threats also result in customers becoming further and further removed from banks. Eventually, the customer relationship is not the banks’ anymore, making it very difficult to for banks to cultivate and exploit it.

**Banking response**

Finally, we take a brief look at how banks can respond to external threats:

- Ignore the threats, and lose revenue streams -- The banking sector has endured many crises, including devastating damage during the last recession, yet it comes back more or less the same. It may view the external threats as passing fads that will fizzle out, or find them so different from its business model that they can’t be emulated anyway. For instance, crowd-funded lending may be too foreign to banking to be considered for inclusion.

- Adapt to the threats, and find new growth opportunities -- Banks are eminently placed to recognize which threats are worth co-opting, and how to go about incorporating them into the business. If banks see an attractive revenue stream, they may be willing to make painful structural and cultural changes to take it over. For instance, mobile money may be a growth opportunity for banks by reaching out to the unbanked segment.

- Fight back against the threats, and keep the status quo -- Banks understand regulation, and they have the political clout and government lobbying capability to use regulation to blunt the threats. Many of the banking alternatives are too new, and regulators have not caught up yet. For example, neo-banks are not chartered as banks, and are being subjected to very little oversight thus far. But banks can demand an even playing field; should they succeed, it would put a bureaucratic burden on neo-banks and reduce their cost advantage.