FinTech – Payments

Financial Services

Investment Thesis

We recommend an overweight position for the FinTech payments industry, especially in the mobile payments market. As governments around the globe all race for a cashless economy, huge FinTech investments are pouring in, resulting in technological evolution. Moreover, the technology-savvy Millennial generation who are taking over the workforce and gaining purchasing power is expected to further boost the expansion of this industry. In conclusion, the FinTech payments industry, especially the mobile payments segment, is well positioned to benefit from the trends and has poised to acquire greater revenues in the near future. Therefore, we believe that the industry represents an attractive investment.

Drivers of Thesis

- Governments around the globe are actively pushing for a cashless economy and modernizing countrywide payments infrastructure to promote FinTech revolution.
- The global payments industry expects to see continued strong growth in transaction revenues, with a CAGR of 5% over the next five years.
- The severely under/unserved needs for financial services and the absence of an established banking infrastructure in many of the emerging markets are contributing to technological leapfrogging in these markets.
- With at least 23% of them already using cashless payments more than once per week, the technology-savvy Millennial generation is demanding more developments in contactless real-time payments.

Risks to Thesis

- Security vulnerabilities in the current technologies and possible payments crimes could cause customer confidence to slump, thereby hindering the industry’s expansion.
- Public inertia to transact in cash, especially in the developing markets, may not be easily overcomable in the near future.
- Complexity of using the technologies could be a significant deterrence to first-time users.

Industry Rating

February 8, 2017

Overweight

Market Cap (B)

Visa (V) $180.18
PayPal (PYPL) $48.30
Vantiv (VNTV) $12.98

Beta

Visa (V) 1.05
PayPal (PYPL) N.A.
Vantiv (VNTV) 0.59

Key Statistics (Average)

<table>
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<tr>
<th></th>
<th>Shares Outstanding (M)</th>
<th>PE Ratio (TTM)</th>
<th>EPS (TTM)</th>
<th>EV (B)</th>
<th>EBITDA (M)</th>
<th>Current Ratio (mrq)</th>
<th>EV/Revenue</th>
<th>EV/EBITDA</th>
<th>Price/Sales (TTM)</th>
<th>Price/Book (mrq)</th>
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<td>Visa (V)</td>
<td>670.77</td>
<td>38.82</td>
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<td>4732.04</td>
<td>1.23</td>
<td>6.82</td>
<td>17.28</td>
<td>6.46</td>
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<tr>
<td>PayPal (PYPL)</td>
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<td></td>
<td></td>
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<td>19.06%</td>
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<td>Vantiv (VNTV)</td>
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<td></td>
<td></td>
<td></td>
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<td>16.56%</td>
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Profitability (Average)

<table>
<thead>
<tr>
<th></th>
<th>Operating Margin</th>
<th>Profit Margin</th>
<th>Return on Assets (TTM)</th>
<th>Return on Equity (TTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visa (V)</td>
<td>32.93%</td>
<td>19.06%</td>
<td>6.72%</td>
<td>16.56%</td>
</tr>
<tr>
<td>PayPal (PYPL)</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Vantiv (VNTV)</td>
<td></td>
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</table>

12 Month Performance

A payment system refers to any system through which monetary value is transferred between parties to complete financial transactions. Though traditionally serviced by banks and other financial institutions, this industry seems to be gradually taken over by companies specializing in financial technology. It consists of various sub-segments, including merchant acquirers, merchant processors, card networks and issuers, and payments gateways.
EXECUTIVE SUMMARY

The world payments industry is currently going through an era of fundamental transformation where financial technology (FinTech) is poised to completely revamp where, when and how payments transactions are performed. The FinTech Payments industry has witnessed huge technological advancements, including the advent of crypto-currency solutions, development of real-time payments technologies, as well as growing adoption of mobile wallets and payments.

Four major trends are observed in the global FinTech industry landscape during the past two years. First, this industry is seeing a vast number of non-traditional financial services providers across diverse player categories rushing into the level field. Second, customers’ needs and preferences are constantly evolving and more challenging to satisfy. Third, governments around the globe are building supportive regulatory framework. Finally, all industry players are placing an increasing emphasis on system security.

The global payments industry, especially in developing markets, is forecasted to witness continued strong growth in transaction revenues, with a CAGR of 5% over the next five years. This, coupled with the favorable “Millennial Impact”, we recommend an overweight position for this industry. Finding promising companies, especially those competing in the mobile payments sector, that are best able to capture the growth opportunities in this booming FinTech payments industry presents a good investment strategy for the Henry Fund.

INDUSTRY DESCRIPTION

A payment system refers to any system through which monetary value is transferred between parties to complete financial transactions. Though traditionally serviced by banks and other financial institutions, this industry has witnessed the spawning in of companies specializing in financial technology and it seems to be gradually taken over by them. For example, technology and social media giants including Google and Facebook are all seeking entry into the market. Meanwhile, newly-invented payments methods and crypto-currencies like Bitcoin are threatening to render cash obsolete.

As demonstrated by Figure 1, the FinTech payments market is made up of various sub-segments, including merchant acquirers and processors, card networks and issuers, and payments gateways. Yet, none of the abovementioned segments have undergone a level of development and expansion comparable to that experienced by the mobile payments sector. The largest FinTech company, PayPal, is a payment company. Conventional financial services providers have lost the most market share in the payments sector. Take the Chinese market for instance. The two mobile payments giants, Alipay and WeChat Pay, have processed more than 88% of 2015 China’s total mobile payments transactions. In conclusion, mobile payments is unquestionably the sub-sector within the FinTech payments industry that commands the most of our attention and needs to be discussed further in this section.

Figure 1: The Payment Processing Ecosystem

Source: BI Intelligence

Mobile Payments

Most of the excitement in the payments industry is currently surrounding mobile payments, and this payments segment is generating new transaction volumes instead of cannibalizing credit or debit card-based payments. Mobile payments can be defined to consist of mobile wallets, mobile commerce and mobile acceptance. The hike in mobile payments users demonstrates the natural shift in customer preference towards electronic payments. As can be seen in Figure 2, total revenue of the global mobile payments market is forecasted to attain more than $1 trillion in 2019, translating to a CAGR of 19.14% during the five-year period from 2015 to 2019.
However, in view of the fact that cash and cards are still the two dominant methods in today’s payments market and are hard to defeat in terms of worldwide acceptance, familiarity as well as trust, mobile payments providers must move beyond simple payments but to emphasize user experience, offers and rewards so as to boost both loyalty and fees of consumers and merchants. And the business model of the vast majority of the existing service providers is expected to remain card-based or continue to leverage such card networks as Discover, MasterCard and Visa, other than reinventing their own authorization, clearing and settlement (ACS) systems.

**Mobile Wallets**

As the name suggests, a mobile wallet is a smartphone application that store all payments information, including payment credentials and loyalty programs, in digital formats. The global mobile wallet market is currently valued at nearly $594 billion and is projected to grow at a CAGR of 32% over the next six years, reaching almost $3.14 trillion in 2022 (refer to Figure 3).

![Figure 3: Global Mobile Wallet Market Revenue](source)

This industry is crowded with a wide range of providers, with the most noteworthy vendors listed in Table 1.

**Table 1: Mobile Wallet Schemes**

<table>
<thead>
<tr>
<th>Wallet Brand</th>
<th>Parent</th>
<th>Niche</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Wallet</td>
<td>Google</td>
<td>NFC-based and compatible both in-store and online, linked with Google’s loyalty programs.</td>
</tr>
<tr>
<td>Samsung Pay</td>
<td>Samsung</td>
<td>Mobile payment application leveraging acquired LoopPay technology designed to work with existing point-of-sale terminals, Visa Mobile Secure Transaction as well as NFC.</td>
</tr>
<tr>
<td>MasterPass</td>
<td>MasterCard</td>
<td>Wallet of wallets, can be white-labeled, leverages MasterCard PayPass acceptance.</td>
</tr>
<tr>
<td>Apple Pay</td>
<td>Apple</td>
<td>API layer to support payments on Android for online, app and offline purchases. Launch pending.</td>
</tr>
<tr>
<td>Chase Pay</td>
<td>Chase</td>
<td>Bank-centric mobile wallet accepted at Chase Pay enabled merchants. Launch pending.</td>
</tr>
<tr>
<td>LevelUp</td>
<td>LevelUp (private)</td>
<td>QR code-based, campaigned focus model with 2.5M users and 144 businesses participating. LevelUp is a payment tender and merchant of record model.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobile Wallet Schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: Company Reports and J.P. Morgan Estimates</td>
</tr>
</tbody>
</table>

However, public concerns over security and privacy issues remain to be the primary barriers to mass adoption as exhibited by Figure 4.

![Figure 4: Primary Reasons for Consumers in the U.S. not to Use Digital Wallets](source)
Mobile Commerce

E-commerce activities conducted using mobile devices are defined as mobile commerce or m-commerce. There has been a clear trend of convergence of m-commerce and e-commerce over the past few years and it is forecasted that, by the year of 2020, 48.5% of the U.S. overall retail e-commerce sales will be transacted through mobile terminals (refer to Figure 5). With retail e-commerce sales projected to grow at a CAGR of 21.26% till 2020 (refer to Figure 6), there opens up immense opportunities for the mobile payments business globally.

On the other hand, the comparatively more cumbersome checkout process on mobile devices poses as a considerable obstacle faced by m-commerce. Therefore, only those m-commerce vendors who can simplify their checkout procedures and concurrently ensure the security and privacy of customers’ confidential information can eventually take the lead in this wallet war.

At the same time, one comScore survey has found out that 52% of the survey participants prefer to make purchases using a digital wallet both online via an application or Internet browser and at a physical store, while only a mere 9% is interested in using it solely at a brick-and-mortar store (refer to Figure 7). This definitely bodes well for payments incumbents like Visa and PayPal, provided these e-commerce giants are able to efficaciously tie on and offline commerce.

Mobile Acceptance

Mobile acceptance is the terminology used to define the technology that converts mobile devices to a point-of-sale (POS) terminal or system, thereby enabling merchants to accept mobile payments from customers. According to a study conducted by Boston Retail Partners, more than 36% of the U.S. merchants today have already accepted at least one mobile payment platform, with around another 22% planning to adopt mobile payments terminals within the next twelve months and an additional 11% expressing innovating to integrate the payment stack, simplifying the whole money-movement process to provide everything from gateway services to payment design. As a matter of fact, the payment system currently employed by Uber and LevelUp is conjointly developed by entities including Authorize.net, Braintree (PayPal), CyberSource (Visa), MasterCard, PayPal and Stripe.

![Figure 5: The U.S. Mobile Retail Commerce Sales as Percentage of Retail E-Commerce Sales](source: Statista)

![Figure 6: Retail Ecommerce Sales Worldwide ($ in Trillions)](source: eMarketer)

Such a trend of m-commerce converging with e-commerce has also spurred the wave of payments services providers
interests to come on board in the next one to three years. Figure 8 displays the current acceptance rates of the seven major mobile payment platforms among merchants.

Figure 8: Acceptance Rates among the U.S. Merchants by Mobile Payment Platform

There are three sub-categories within this market that show immense innovation opportunities, namely dongles, mobile checkout and mobile POS.

Dongles

A market invented by Square, dongles have allowed the approximately 20 million small business providers in the U.S., who do not have the means to cost-effectively sustain a merchant account to take card payments, to use dongle to convert mobile devices into card readers to accept payments. This market presents huge profit opportunities for both card networks and merchant acquirers.

Mobile Checkout and Mobile POS

Commonly known as the next generation cash register application, mobile POS is designed to eliminate traditional POS systems and checkout counters by taking advantage of tablets as well as such complex proprietary software as Enterprise Resource Planning (ERP). Already being implemented in Apple stores, mobile POS offers merchants mobility, thereby greatly reducing customer waiting time and enhancing customer in-store experience. Square Footage Productivity (SFP) would be increased at the same time as floor space is freed up to be allotted to more profitable activities. In addition to Apple, retailers including Nordstrom, Urban Outfitters and JCPenney have all embraced this payments technology.

RECENT DEVELOPMENTS

Crypto-Currency Solutions

The traditional payments industry is currently being significantly disrupted by the rising adoption of digital or crypto-currencies as well as the underlying blockchain technology. As can be observed from Figure 9 and 10, the total number of bitcoins in circulation, rising at a CAGR of 388.75% over the past eight years, has already reached more than 16 million in April 2017 and the number of blockchain wallet users is increasing at a CAGR of 265.55% over the past four-year period, passing the 13 million mark in January 2017.

In contrast to the conventional non-commodity-backed “fiat” currency, digital currencies, such as the Bitcoin, are receiving growing popularity because, first of all, the fees that are incurred by the payments infrastructure involved are very much lower compared to that charged by the typical credit card-based transactions. Moreover, such cyber-currencies can be exchanged freely between parties on any person-to-person (P2P) payments platforms, eliminating the need for intermediary third-party payment processors while adding the benefit of bypassing governmental currency controls. And most importantly, the blockchain system guarantees an extremely high transparency and security level. When payments are
made and Bitcoins exchanged, new blocks, with the ownership changes of the Bitcoins recorded on them, would be added to the blockchain. All transaction records are permanent, irreversible and visible to everyone on the network4.

However, this digital payments technology is not without faults. For example, as explained above, every Bitcoin transaction is saved publicly in the system and this could result in a lack of user privacy. Moreover, the notorious volatility of Bitcoin (refer to Figure 11) and other cryptocurrencies5, due to such factors as their markets being relatively illiquid and the changing governmental regulations on their usage, is also a major barrier to a faster adoption6.

Figure 11: Price of a Bitcoin in the U.S. Dollars

Source: Coindesk.com Bitcoin Price Index, January 2017

Real-Time Payments

Cash is an expensive asset. According to a study by Tufts University in 2013, the total cost of supporting cash in the U.S. amounts to $200 billion annually7. This, coupled with the increasingly ubiquitous smart devices and blooming e-commerce around the globe, is empowering worldwide consumers’ demand as well as speedy adoption of cashless and real-time payments. Countries that have introduced real-time payments solutions include Singapore, Saudi Arabia, South Africa, Nigeria, Brazil, Chile, Japan, India, the U.S., the U.K. and Switzerland.

Real-time payments systems enable payment transactions to be processed instantly, 24/7 and through diverse channels, including the web, tablets and smartphones. Such systems currently span across five main payments categories, which are Business to Business (B2B), Business to Consumer (B2C), Consumer to Business (C2B), Domestic P2P and Cross Border P2P8. In the P2P space for example, there are already more than twenty applications in the U.S. alone. According to a study by Forrester, P2P payments transactions will cross the US$17 billion mark by 2019.

Major drivers of the rapid development of real-time payments are elaborated in Figure 12 below.

Figure 12: The Tipping Point for Real-Time Payments

Source: Deloitte

Mobile Wallets and Payments

As described earlier, the world is becoming increasingly cashless. The unstoppable rate of worldwide penetration of smartphones and internet on mobile is further fuelling today’s revolutionary innovations in mobile wallets and payments, with smartphone penetration rates in Western Europe and North America forecasted to reach around 80% while that in the rest of the world attaining more than 50% in 2019 (refer to Figure 13).

Figure 13: Smartphone Penetration Rate as Share of Mobile Phone Users (Worldwide by Region)

Source: Statista
As advertised by Wells Fargo, mobile wallets provide every user with both “the benefits of his credit or debit card and the convenience of his mobile phone.” In addition to allowing users to make payments through the digitized versions of their credit or debit cards stored in the phones, many mobile wallets are now equipped with the capabilities of claiming discounts and loyalty rewards. Mobile wallets are now really the trending loyalty program. One of the most successful mobile wallets emphasizing on loyalty is the one designed by Starbucks, which has clearly differentiated the coffee giant among its competitors such that the application drives more than 6 million sales every month, representing nearly 22% of Starbucks total U.S. sales. As shown by Figure 14 and 15, the total number of mobile payments users and transaction value in the global mobile payments market are expected to grow at a CAGR of 25.77% and 67.32% respectively over the six-year period spanning from 2015 to 2021.

However, the wider adoption of mobile payments has exposed more of the vulnerabilities in the system and payment security has evolved to be the prime stumbling block to the technology’s mass adoption. Hence, to mitigate security risks in their payments systems has been the number one priority of FinTech payments companies when allocating their innovation resources. Important progresses, including the development of tokenization as well as biometric data, have boosted user confidence.

**INDUSTRY TRENDS**

**Entry of Non-Traditional Players**

The booming FinTech payments industry is seeing a vast number of non-traditional financial services providers across diverse player categories rushing into the level field. They now include mobile device manufacturers like Samsung and Apple, technology giants like eBay, Google and Alibaba, commercial vendors like Walmart and Starbucks, telecommunication firms like Orange and Vodafone, and not to forget the FinTech upstarts such as Square. The scale of the technological disruption will continue to escalate as over the last ten years, the number of FinTech startups has nearly tripled to 1,855 and funding grown seven times to approach US$20 billion in 2015 (refer to Figure 16).

FinTech companies focusing on the payments segment have attained the most innovations, ranging from mobile wallets and integrated POS terminals to P2P payments and cross-border transfers. Having pooled in the greatest share, 35%, of the total funding, many upstarts, such as First Data (U.S.), Ant Financial Services Group (China) and One97 Communications (India), in this sector are so successful that they have surpassed US$1 billion in valuation.
Evolving Customer Demands

The evolving payments solutions have pampered customers with superb end-to-end user experience. As a result, customer expectations have now moved away from simply delivering payments to also include features like Starbucks’ integrated rewards and Apple Pay’s biometric authentication. Customers today are demanding payments interface systems to be both intuitive and frictionless, together with the optimal use of smart devices and applications.

FinTech Regulatory Support

Regulations act as a deciding determinant of the success of the payments industry’s technological advances. Fortunately, governments around the globe are rigorously promoting FinTech revolution and modernizing countrywide payments infrastructure, thereby enabling payments service providers to deliver state-of-the-art payments processing platforms to customers.

This is especially true in emerging markets such as United Arab Emirates. The government of United Arab Emirates, with the goal to build a cashless nation, has recently mandated policies including using payroll cards for wages and establishing digital payments gateways for governmental payments.

Growing Emphasis on Security

Despite all the technological advancements taking place in the payments market, there remain security gaps yet to be closed. Based on the data from The Nilson Report, up to US$11 billion is lost to payment card frauds every year. Thieves take advantage of the current payments ecosystem’s security loopholes and steal customers’ card information to engage in illegal activities.

With security concerns being the greatest barrier to the mass adoption of digital payments, the industry is gradually migrating to a chip-enabled payment card technology known as EMV as well as payment tokenization and encryption. And from October 2015 onwards, the party that has not deployed EMV would be entirely liable for counterfeit transactions.

The “Millennial Impact”

Moreover, the “Millennial Impact” has already poised to further drive up the expansion of the FinTech payments industry. Millennials, who are in the age of 18 to 34 and have grown up surrounded by all kinds of high-tech gadgets, are demanding a new way to do payments activities. They emphasis on user experience in all aspects of their life, including payments experience. Therefore, digital payments technologies that provide users the privileges of immediacy, control and customization are gaining widespread usage among the generation, with almost 80% of them expressing their interests in in-person mobile payments, compared with 67% of the Generation X, 38% of the baby boomers and only 14% of the Matures. As they gradually take over the workforce and their purchasing power improve, this generation of millennials will be more than ready to fully embrace the digital payments world and FinTech innovations.

Figure 17: The U.S. Consumer Interest in In-Person Mobile Payments, February 2015 (by Age Group)

<table>
<thead>
<tr>
<th></th>
<th>Millennials (18-37)</th>
<th>Gen X (38-49)</th>
<th>Baby Boomers (50-64)</th>
<th>Matures (65+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very or somewhat interested (NE)</td>
<td>39%</td>
<td>33%</td>
<td>19%</td>
<td>7%</td>
</tr>
<tr>
<td>Very interested in using my smartphone instead of cash or cards</td>
<td>15%</td>
<td>12%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Somewhat interested in using my smartphone instead of cash or cards</td>
<td>25%</td>
<td>22%</td>
<td>13%</td>
<td>0%</td>
</tr>
<tr>
<td>Not very or not at all interested (NE)</td>
<td>49%</td>
<td>35%</td>
<td>65%</td>
<td>67%</td>
</tr>
<tr>
<td>Not very interested in using my smartphone instead of cash or cards</td>
<td>26%</td>
<td>13%</td>
<td>14%</td>
<td>0%</td>
</tr>
<tr>
<td>Not at all interested in using my smartphone instead of cash or cards</td>
<td>30%</td>
<td>42%</td>
<td>53%</td>
<td>62%</td>
</tr>
<tr>
<td>Not at all sure</td>
<td>11%</td>
<td>12%</td>
<td>10%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: Statista

MARKETS AND COMPETITION

The U.S. Market

Being the top political and economic superpower in the world, the U.S. market is inarguably the place where the most exciting technological advances in the field of FinTech Payments take place.

The U.S. market has generated more than US$242 billion revenue in retail-payments, equating to almost one-third of the world retail total. In terms of the nation’s mobile in-store payments volume and transaction value, they are projected to expand at a CAGR of 80% and 100.19% respectively till 2020 (refer to Figure 18 and 19). Thus, it is no wonder that for the five-year period spanning from
2010 to 2015, North America has housed 60% of the global investment devoted to FinTech payments companies. Huge financial investments as well as the gigantic revenue-generating capability of the U.S. payments industry, this nation is the home to many FinTech giants, especially in the e-wallets market.

**Figure 18: U.S. Mobile In-Store Payment Volume**

![Graph showing U.S. Mobile In-Store Payment Volume from 2010 to 2015](image)

Source: BI Intelligence

**Figure 19: Proximity Mobile Payment Transaction Value in the U.S.**

![Graph showing Proximity Mobile Payment Transaction Value](image)

Source: Statista

### Apple Pay

Launched two years ago, Apple Pay has since gained a lot of attention and support from the U.S. card networks. By collaborating with the card companies and issuers, Apple Pay has encountered relatively little market resistance during its entry. It is also now closely keeping up with the new trend happening in the U.S. e-wallets industry and that is the convergence of payments and messaging. In fact, Apple has successfully filed a patent in December 2015, which will offer Apple Pay users the privilege to perform payments transactions over not only the text messaging service, but also such other iOS functionalities as phone calls, emails and even calendar invites.

**PayPal**

PayPal has entered the post-eBay era and is already worth US$50 billion, more than eBay. This P2P payments mammoth has processed roughly US$280 billion payments and acquired US$9.3 billion revenues in 2015 alone. PayPal has just closed a US$280 million deal to acquire Paydiant, signaling its high-profile entry into the e-wallets category to compete with Apple Pay and Google Wallet for the leadership role. PayPal is also vigorously innovating new features. For example, a PayPal conducted study has found that people around the world have potentially loaned each other close to an amount of US$51 billion, and this has led PayPal to introduce PayPal.Me so as to assist users to request money more effortlessly.

### Walmart and Best Buy

Walmart has launched its own proprietary e-wallet mobile application, Walmart Pay. This application comes with both iOS and Android platforms, allowing its users to pay with any smart devices at Walmart checkouts. Payments would be charged to customers’ digitally stored credit or debit cards, Walmart credit or gift cards, or pre-paid cards. Users can also enjoy other functions including picking up reserved items, locating items, comparing prices and claiming discounts. Best Buy also recently announced its new payments policy to accept Apple Pay in both its U.S. stores and applications10.

### European Market

The European digital payments market has witnessed soaring growth in 2016. In previous year, 38% of the respondents surveyed by Visa’s Digital Payments Study stated that they “had never used a mobile device to make payments and had no plans to do so.” Only one year later, this figure has fallen to 12%. Today, 54% of the European customers identify themselves as regular users of the mobile payments technologies, compared to a mere 18% last year. Another interesting trend to note is that digital payments users are also turning more comfortable to pay for high-value purchases using mobile devices, with 43% of the UK consumers having paid for such expensive items as electronics and even holidays on devices11. Likewise, in 2016, it is for the very first time that more than 50% of all
European consumers across all age groups are active mobile banking users (refer to Figure 20).

**Figure 20: Mobile Banking Use is Increasing Across All Age Groups in Europe**

![Chart showing mobile banking use by age group in Europe](source: Visa Digital Payments Study, 2016)

However, the high level of market power of the local incumbents in the European digital payments industry presents notable barriers to entry. For example, iDeal, a platform introduced by a group of banks in Netherlands to enable both e-commerce and m-commerce payments transactions, has warranted a Netherlands-specific solution to aid digital payments. As a result, it is very difficult for new players like PayPal to enter the market.

**Chinese Market**

On top of its relatively underdeveloped traditional financial services sector, the exponential growth of both the Chinese economy and wealth of its population results in a massive underserved customer and small-to-medium-sized enterprise (SME) segment. And it is precisely this unsatisfied financial need that has driven China to attain its current leader position in today’s world’s FinTech industry.

The digital payments market of China is largely dominated by Alibaba’s Alipay and Tencent’s WeChat Pay. Created in 2004, Alipay has already captured 270 million active users and performed digital payments activities amounting to more than US$500 billion in 2015. Its functionality ranges from such cool features as “ask your boyfriend to pay for shopping” to flight bookings and paying for public transportations. WeChat Pay, a digital payments platform built into the messenger app, WeChat, has also experienced enormous success after its launch and, as of March 2016, has accumulated 700 million active users.

China’s ubiquitous wireless connectivity is undoubtedly one of the key contributing factors to the phenomenon. There are 710 million internet users (more than Europe and the U.S. combined), with 92.5% of them connected via smartphones, by June 2016 (refer to Figure 21). With such a level of digital connectivity, it is no surprise that the mobile online payments utilization ratio in China has already reached 57.7% by the end of 2015, representing a customer base of 358 million Chinese mobile payments users (refer to Figure 22).

**Figure 21: Internet Users and Internet Penetration Rate in China**

![Chart showing internet users and penetration rate in China](source: CNNIC, June 2016)

**Figure 22: Online Payment/Mobile Payment Users and Usage Rate in China**

![Chart showing online payment/mobile payment users and usage rate in China](source: CNNIC (Statistical Survey on Internet Development in China), December 2015)

Similarly, China’s e-commerce market has emerged as the largest and also most developed in the world, with its sales revenue reaching US$899 billion by the end of 2016 as illustrated by Figure 23. Out of this amount, already 55.5% is transacted using mobile technology.

**Figure 23: Share of Global Retail e-Commerce Sales**

![Chart showing share of global retail e-commerce sales](source: eMarketer, August 2016)
China’s technology giants are constantly pushing for FinTech innovations. Capital funding is pouring in, with US$8.8 billion FinTech investment successfully raised during July 2015 to June 2016, which commands the greatest share of capital investment in the FinTech sector globally. Meanwhile, the Chinese government is also diligently offering support to expand the industry through projects including the development of “Wireless Cities” and the nationwide Social Credit System initiative.

**Indian Market**

Having a population exceeding 1.3 billion, India certainly represents a market opportunity too immense to be neglected by the FinTech payments industry players. The nation is expected to see its internet users double during the five-year period from 300 million in 2016 to about 650 million in 2020 (refer to Figure 24) and half of them are to regularly engage in digital payments activities, leading to a transaction volume of US$500 billion at that time. As can be observed in Figure 25, the Indian society has seen its total number of digital transactions grow at a CAGR of 12.12% over the period from 2013 to 2015.

![Figure 24: India is Becoming a Digital Country](source)

![Figure 25: Massive Growth in Digital Transactions](source)

The Indian government has been actively nurturing the local FinTech industry so as to achieve its vision of a cashless Indian economy, which can be managed less costly, better serve the underbanked citizens and combat financial crimes. Take the Unified Payments Interface (UPI) launched by the Reserve Bank of India (RBI) in early 2016 for example. UPI is a platform that permits the participation of all kinds of payments service providers, including e-wallets and payments banks. The elimination of the Know Your Customer (KYC) requirement for financial transactions less than US$150 per month has also pushed for e-wallets’ mass adoption in India. Moreover, the surprise attack by India’s Prime Minister, Narendra Modi, on 8th November 2016 against “black money” and counterfeit currency has resulted in a shortage of cash, which will inevitably further drive Indians to digital alternatives.

On the other hand, there are still significant challenges that need to be tackled in order to expedite the penetration rate of the digital payments technologies. Indian society has a very distinct culture and that is its citizens are habituated to both save and spend in cash, resulting in 78% of India’s overall payments transactions in 2016 are conducted in cash. Such a national preference is so deep-rooted in India that all dominant local and international e-commerce players offer “cash on delivery” as a payment option. Furthermore, as the Google-BCG market study has pointed out, complexity of the digital payments technologies that are currently on the market is another vital hindrance factor for the technologies mass adoption in India (refer to Figure 26).

![Figure 26: Key Barriers for Adoption](source)
Peer Comparisons

Merchant Acquirers and Merchant Processors

Though referring to two different functions, merchant acquirers and merchant processors are often used interchangeably. They can be provided by either the same entity or separate ones. Chase, Bank of America and First Data are the leading three merchant acquirers ranked by volume share (refer to Figure 27), while for merchant processors, the top three positions are occupied by First Data, Chase and Vantiv16 (refer to Figure 28).

Credit and Debit Cards and Issuers

For the global cards industry, the top three brands measured in terms of market share are Visa, MasterCard and UnionPay, which is the sole inter-bank network in China that connects each and every Chinese banking company’s ATMs and is accepted by vendors across more than 141 nations17 (refer to Figure 29). On the other hand, the U.S. card networks are entirely dictated by Visa, MasterCard, American Express and Discover, with Visa taking 48% and 70% of the domestic credit card and debit card market share respectively (refer to Figure 30 and 31).
Payment Gateways

PayPal is the absolute superpower in this market segment, seizing close to 80% of the market share as shown by Figure 32.

ECONOMIC OUTLOOK

GDP and Consumer Spending Power

Profitability of the global payments industry largely hinges the growth of consumer spending power, which is in turn heavily dependent on the world economic performance.

The global real annual GDP growth is forecasted to further pick up speed and sustain an average growth rate of around 3% to 4% until 2020 (refer to Figure 33).

Table 2 (Except for Market Cap, Total Assets and LT Growth Rate, all values are 5-year averages)

<table>
<thead>
<tr>
<th></th>
<th>V</th>
<th>MA</th>
<th>AXP</th>
<th>DFS</th>
<th>PYPL</th>
<th>VNTV</th>
<th>FDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Cap</td>
<td>2048</td>
<td>1198</td>
<td>728</td>
<td>278</td>
<td>528</td>
<td>128</td>
<td>14B</td>
</tr>
<tr>
<td>Total Assets</td>
<td>648</td>
<td>198</td>
<td>1598</td>
<td>928</td>
<td>338</td>
<td>78</td>
<td>40B</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>63.5</td>
<td>54.0</td>
<td>22.3</td>
<td>52.0</td>
<td>15.2</td>
<td>15.6</td>
<td>12.0</td>
</tr>
<tr>
<td>ROA</td>
<td>12.1</td>
<td>23.8</td>
<td>3.30</td>
<td>2.90</td>
<td>10.0</td>
<td>2.53</td>
<td>-1.74</td>
</tr>
<tr>
<td>ROE</td>
<td>17.4</td>
<td>53.2</td>
<td>26.2</td>
<td>22.4</td>
<td>8.79</td>
<td>14.6</td>
<td>N.A.</td>
</tr>
<tr>
<td>P/E</td>
<td>30.7</td>
<td>27.97</td>
<td>15.40</td>
<td>11.39</td>
<td>35.26</td>
<td>44.25</td>
<td>30.85</td>
</tr>
<tr>
<td>Asset Turnover</td>
<td>0.31</td>
<td>0.63</td>
<td>0.22</td>
<td>0.12</td>
<td>0.37</td>
<td>0.51</td>
<td>0.31</td>
</tr>
<tr>
<td>Total Debt/Total Assets</td>
<td>4.96</td>
<td>11.65</td>
<td>36.65</td>
<td>27.05</td>
<td>0.75</td>
<td>44.65</td>
<td>57.67</td>
</tr>
<tr>
<td>Total Debt/Total Equity</td>
<td>9.65</td>
<td>33.9</td>
<td>290</td>
<td>209</td>
<td>14.1</td>
<td>268</td>
<td>N.A.</td>
</tr>
<tr>
<td>LT Growth Rate</td>
<td>17%</td>
<td>15%</td>
<td>8.2%</td>
<td>7.7%</td>
<td>16%</td>
<td>11%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: FactSet

Important operating statistics of the main market players within the above three sub-categories, namely Visa, MasterCard, American Express, Discover, PayPal, Vantiv and First Data are presented in Table 2.

Such a health post-crisis recovery of the world economy can be expected to be very well sustained in view of the accelerated U.S. economic growth, which is all along the key driving force of other economies. Moreover, the newly-elected U.S. administration has initiated various measures to decrease regulatory burdens on both...
households and businesses, and also put forward fiscal stimulus proposals, including cuts in both corporate and personal income taxes and heavy investment in nationwide infrastructure, with the goal to further stimulate U.S. economy. This has fuelled optimism about the U.S. outlook among experts and incentivized the OECD to lift its forecast for the 2017 U.S. economic growth to 2.3% and for 2018 to achieve 3%. This has in turn led to the steady growth of the global consumer spending power, a major driver of payments transaction volume. As shown by Figure 34, the annual real growth rates of both the global consumer expenditure and disposable income have risen to 3.0% in 2016.

**Figure 34: Global Consumer Expenditure and Annual Disposable Income Growth**

![Graph showing annual real growth rates of global consumer expenditure and disposable income](image)

Source: Euromonitor International from national statistics/Eurostat/UN/OECD

Such a conducive macroeconomic environment is expected to propel the global payments industry to witness continued healthy growth in both transaction revenues and volumes 18. According to McKinsey Global Payments Map, the industry is forecasted to expand at a CAGR of 5% through 2020 19 (refer to Figure 35).

**Figure 35: Payments Revenue (Worldwide)**

![Graph showing payments revenue (worldwide)](image)

Source: McKinsey Global Payments Map

**Technological Leapfrogging in Emerging Markets**

As opposed to the FinTech payments technologies’ disruptive influence on the financial industry of the developed countries, such technologies are actually building the financial infrastructure in the developing world 20. In fact, the severely under/served needs for financial services and the absence of an established banking infrastructure in many of the emerging markets are the two critical contributors to technological leapfrogging in these markets. At the same time, the developing countries represent a huge opportunity for FinTech companies to rapidly increase customer base because most of the potential customers there will have to incur practically no switching costs since the vast majority of them remain unclaimed.

Africa is an excellent example. Even today, almost 80% of the African population, or approximately 330 million people, are deprived of access to formal financial services 21. Yet, the growth of FinTech in Africa is exploding, with nearly 30% of the overall funding acquired by its tech businesses went to FinTech companies in 2015, and many of them have achieved groundbreaking successes. MFS Africa, for instance, has built a completely new infrastructure and successfully connected more than 80 million mobile wallets, thereby allowing its African users to enjoy cross-network, cross-border and cross-currency payments activities. Traditional banks on the continent are now actively collaborating with the FinTechs in an effort to reach out to the young, lower income African customers in informal markets, which in turn helps the FinTechs to expand much faster.

**CATALYSTS FOR GROWTH**

- Continued fast technological progress as more companies entering the industry and investment resources poured in.
- Changing consumer payments needs and preferences being in favor of the industry expansion.
- Supportive regulatory changes being implemented around the world.

**INVESTMENT POSITIVES**

- The building of a cashless economy and modernizing of countrywide payments infrastructure by

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1. At fixed 2015 US$ exchange rates, for the entire time series.
governments around the globe to rigorously promote FinTech revolution.
• The enlarging technology-savvy Millennial customer sector’s demand for more developments in contactless real-time payments.
• The technological leapfrogging in emerging markets resulted from the severely un(der)served needs for financial services and the absence of an established banking infrastructure these markets.
• Continued healthy growth in both transaction revenues and volumes in the world payments industry.

INVESTMENT NEGATIVES

• Unexpected slowdown in the world economy, squeezing consumer spending and FinTech investment funding.
• Too many new entities joining the competition, causing the market to become saturated and each entity’s profitability to plummet.
• Customer confidence in new technologies being shattered due to incidents like severe payments crimes.
• Cash being hard to defeat in terms of worldwide acceptance, familiarity and trust.

KEYS TO MONITOR

• Global economic growth rates.
• Worldwide consumer purchasing power and payments trends.
• Related regulatory changes in different countries.
• Technological breakthroughs.
• Improvements in customer payments security.
• New investment funding raised and funding allocation.

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