The Henry Fund
Henry B. Tippie College of Business
Yun-Hsin (Jocelyn) Liu [yun-hsin-liu@uiowa.edu]

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Data and Payment Processing

February 5, 2020

Financial Services

Industry Rating **Overweight**

Investment Thesis

The data and payment processing industry is expanding through growth in consumer spending, non-cash transactions worldwide, and transformative merger and acquisitions (M&A). There are continued strong indications of growth in the international market as many companies try to broaden their customer base globally. The security concern on this industry might be looked at in 2020, but the regulatory should not be a huge impact on this industry as most of the e-commerce industry depends this industry to facilitate.

In particular, we found Visa to be the best positioned in this industry with its performance in industry profitability metrics, low exposure to customer default risk, and high card acceptance. However, Discover is the weakest company of this industry with high credit card loan risk, low acceptance in stores, and low profitability. For these reasons, we recommend an overweight rating for this industry.

Drivers of Thesis

- **Growth in consumer spending index**: Consumer spending is expected to increase by 2.1% (see the table below) in the U.S. in 2020, and the vast majority of U.S. customers now use electronic payment methods for purchases.
- **Growth in non-cash transactions worldwide:** Non-cash transactions make up at least 70% of the total transactions, while cash transactions only make up of 30% [29]. In addition, the non-cash transactions' five-year Compound Annual Growth Rate(CAGR) is expected to be 12.7% (due to increased demand in Emerging Asia and CEMEA as both regions are expected to increase at an annual rate of 20.3% and 28.8%.) [1]
- **Transformative M&A**: Companies are pursuing M&A strategies to build out payment strategies.

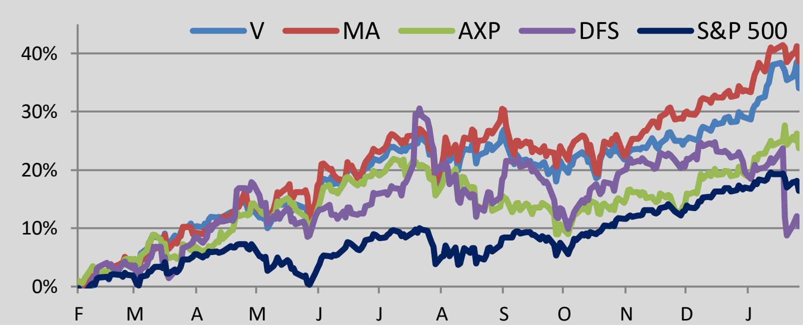
Risks to Thesis

- **Decrease barrier to entry:** traditional business models for non-cash transactions are at risk due to new entrants in the payment categories.
- **Anti-trust regulation could be forced on the industry:** Security issues and data breaches are expected to continue to challenge the growth of the industry.

Consumer Spending Estimate[2]

Year	2017	2018	2019	2020E	2021E	2022E
$ billion	12,566	12,944	13,278	13,562	13,829	14,101
growth	*2.6%*	*3.0%*	*2.6%*	*2.1%*	*2.0%*	*2.0%*

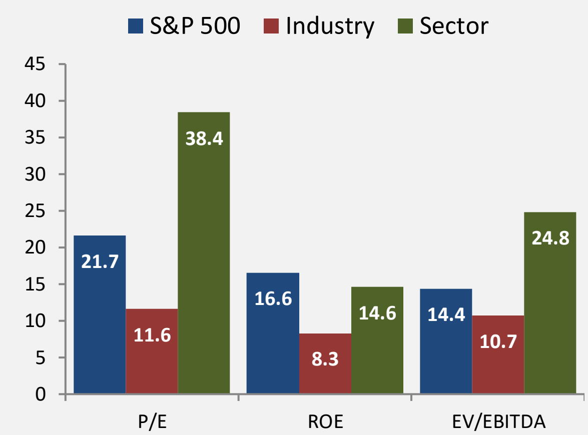
12 Month Performance



Source: Yahoo! Finance

Key Industry Statistics

Industry Ratios	
Est. 5yr Growth of Revenue	9.08%
Price/Earnings	38.4x
Price/Book	6.6x
Industry Profitability	
Profit Margin	12.6%
ROA	4.5%
ROE	14.6%
ROIC	7.4%
EV/EBITDA	24.8x
Market Cap (in billions)	
Visa(V)	$435.6
Mastercard(MA)	$330.6
American Express(AXP)	$108.2
Discover(DFS)	$24.0
PE Ratio (TTM)	
Visa(V)	31.1x
American Express(AXP)	14.6x
Mastercard(MA)	35.8x
Discover(DFS)	1.4x



Source: NetAdvantage

Industry Description

The payment processing industry offers financial transaction processing, reserve and liquidity services and check or other financial clearinghouse services. With an increasing trend toward e-commerce, the demand for data processing clearinghouse has been accelerating. Companies within this industry offer patented cashless networks that connect their clients, including merchants, issuing banks, and consumers to other merchants, clients, issuing banks, and government entities on an electronic platform.

EXECUTIVE SUMMARY

With strong growth in the data and payment processing industry, in 2020, the industry will mainly concentrate on transforming companies through M&A activities with tech companies to mitigate security concerns.

As more startups and various fintech companies are joining the industry, the barrier to enter the industry is lowering. Nonetheless, five-year CAGR of non-cash transactions is expected to grow at a rate of 12.7% as companies continue to develop global markets including Emerging Asia, and CEMEA [1]. The U.S. economy is also expected to continue to increase with the consumer spending index growth rate at 2.6% in 2020[2].

U.S. Long term consumer spending and global non-cash transactions are also forecasted to continue to expand in the next five years. According to Smithers, global non-cash payment growth is forecasted at the rate of 10.5% from 2019 to 2029.[5] Moreover, e-commerce sales will grow at a rate of 20.1% through 2019-2024 [3] which will stimulate the payment processing industry in the next five years.

In 2020, regulators may enforce new rules in order to address security risk concerns in the payments industry. However, financial institutions were granted more flexibility with the use of capital with the deregulation of the Dodd-Frank Act. This has allowed banks and card networks to strengthen.

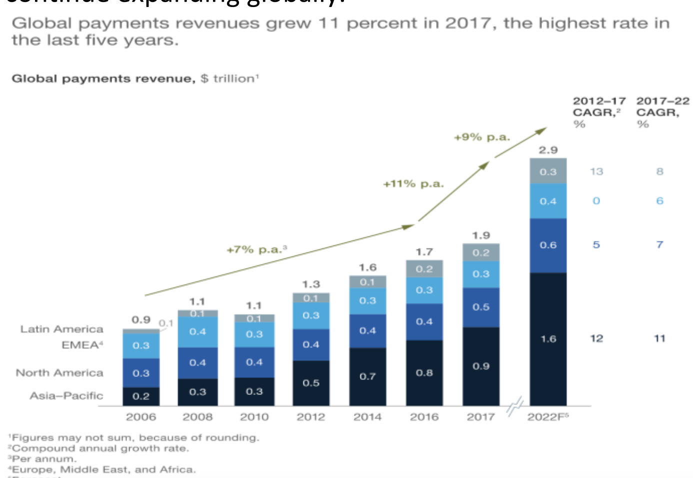
Even though the industry is exposed to regulatory risks with potential new regulatory rules in 2020, and lower barriers to entry with growing competition within the industry, the strong U.S. economy, growing M&A activities, expanding global market non-cash transactions, and the deregulation of the Dodd-Frank Act collectively provide a promising opportunity for the industry to grow further.

The key players in the U.S. industry include Visa, MasterCard, American Express, and Discover. We believe Visa is the most well-positioned company since it has actively sought international market opportunities, transformative M&As, and wide acceptance in its card usages.

INDUSTRY DESCRIPTION

E-commerce has become a popular and convenient way for consumers to purchase products. Online payment services require a clearinghouse for customers and business owners to process online transactions. Data payment processing has been increasing over the trailing few years due to the rise of non-cash transactions. In 2014 and 2015, non-cash transactions only made up 46.7% of the total transactions in the U.S.[30] Now, non-cash transactions have risen to 70% of the total transactions in the U.S., while the cash transactions only make up around 30%. Global non-cash transactions have grown too in China, 80% of total transactions come from mobile payments, and Canadian credit card transactions per capita is 82.5% [29].

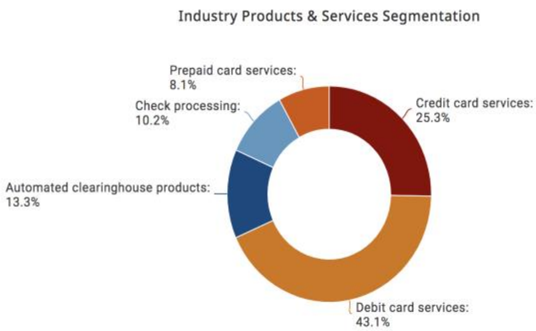
Specifically, the global industry has exhibited significant growth in the Asia-Pacific region with ongoing initiatives in cross-border transactions. The graph below shows global payment processing from 2017 to present. Looking forward to the next five years, industry size is expected to continue expanding globally.



Source: McKinsey & Company[7]

At present, data payment processing key players in the U.S. include Visa, American Express, MasterCard, and Discover. Their main services include automated clearing house products, debit/credit cards, and check processing.

The graph below shows each service's percentage of the industry total revenue of $ 78.8 billion in 2019:



Source: IBIS World [8]

Credit Card Services

Industry operators offer credit card transaction processing services between banks, consumers and business vs. merchant account holders. For example, industry players (e.g. Visa, MasterCard, and American Express) settle funds through bank associations including depositing card services fees to the merchant account.

The use of credit cards has been accelerating because customers can delay payment and essentially borrow from their servicing banks to purchase products. In the past, credit cards were only issued to middle-class and high-income individuals with a solid credit score. However, now nearly every customer has a credit card. Customers are granted different level of credit based on their income and FICO credit score.

In the coming years due to regulation restrictions, the number of transactions might fall. For example, the Dodd-Frank Act's Durbin Amendment allows all merchants to impose a purchase minimum up to $10 per transaction for credit cards. [11] The Amendment only allow a purchase minimum on credit cards but not debit cards, making debit card carriers like Visa , and MasterCard well-positioned companies. Therefore, consumers will prefer to use debit cards instead of a credit card for small purchases. [31]

The 2020 U.S. presidential election is approaching; credit card services will also be affected by whether the Republican Party gets elected. If the Republicans get elected in 2020, there is more chance that they will unravel many of the controls and protections stated in the Dodd-Frank Act. The unraveling of the Dodd-Frank Act would benefit the key players in the industry in the U.S., Visa , and MasterCard as they have operations in credit and debit cards. Customers would then be able to choose to use credit or debit card services provided by Visa or MasterCard, while other key player such as American Express, and Discover only provide credit card services. Therefore, with or without the repeal of the Dodd Frank Act, Visa, MasterCard would still hold large advantages in this industry.

According to Wall Street Journal[12], the average credit card interest rate is 17%, which is near its highest level over the past two decades. In addition, banks are planning to increase Annual Percentage Rate (APR) to offset the expenses in launching the care reward programs, offering free travel and other perks. Admittedly, the increase in interest rates might lower customer demand to borrow or pay through credit card, but banks have developed other perks to credit card holder in order to keep customer interests in the card services. For example, many banks provide one-time waiver/reduction in late fees if the customer account is in good financial standing or setting up autopay.

Thus, there might be some challenges ahead in the credit card services, the promising prospects is expected to outweigh the potential challenges in 2020.

Debit Card Services

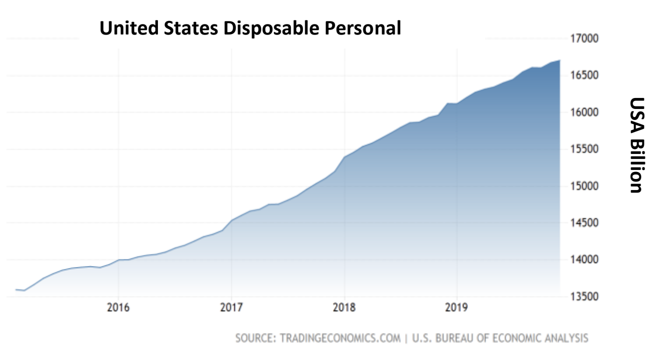
Credit card associations, such as Visa, MasterCard, and American Express provide banks and other financial institutions with credit and other fee basis financial services. The services include cobranding credit and debit cards, e-pay services for high volume merchants, automatic bill payer services and cash back services. Today, most debit cards are associated with credit card servicing companies, such as Visa or MasterCard, allowing customers to use debit card similar to the use of credit cards.

As a result, credit and debit card usage has been accelerating by 8.9% over the past few years, according to the Federal Reserve. [32] In fact, debit cards are easier to obtain than credit cards and are more convenient to withdraw cash especially when people are giving preloaded gift cards as holiday or occasional presents. Within the overall industry, debit card services make up 43.1% of the total revenue.

Card usage heavily depends on disposable personal income because when customers have more income, they tend to spend more.[33] This is beneficial for the card servicing companies because when the number of transactions increases, companies get more processing fees. Credit card issuance relies on creditworthiness. Companies that don't require a high credit score such as Discover can approve more customers during the time when disposable income is high. This will lead to a higher chance of default as the low credit score users might not be able to pay off their credit card debt. However, companies like Visa, and MasterCard primarily act as intermediaries for financial institutions for payment processing. Therefore, the default risk on cards is not carried by Visa or MasterCard, but by the financial institutions, leading Visa and MasterCard to be well-positioned in this industry.

On the other hand, Visa ,MasterCard, and American Express(prepaid debit card) will benefit from increased disposable income as people deposit more on their debit cards for purchasing.

The monthly annualized growth rate of Disposable Personal Income is 6.90% from January 2020, compared to a long-term average annualized growth rate of 5.35% [34]. This means disposable personal income is increasing. The below graph shows that the Disposable Personal Income is expected to grow in 2020 and 2021 [13]:



Automated Clearinghouse (ACH) Products

The ACH system is an electronic interbank payments system. Its function is primarily to handle small-dollar hardware and software designed to deliver and settle large volumes of electronic payment transactions and related information. ACH is commonly used by corporations to make their recurring supply payments to another corporation. Moreover, 1999 Electronic Funds Transfer initiative by the US Department of the Treasury, increasing U.S. labors use of direct deposit using ACH system. [14]

During the past five years, ACH transactions have increased particularly credit payments, direct deposits and online and mobile payments. [8] In the next five years, we expect e-commerce sales to continue to grow and international markets to expand. ACH services are forecasted to make up 45% of the payment processing industry. [15]

The peer-to-peer (P2P) payments platform Zelle is expanding its risk solutions to provide safer payment processing for customers[15]. Microsoft is also partnering with Mastercard to create a payments platform that would reduce inefficiencies in global e-commerce transactions. Overall, ACH services are expected to grow over the next few years because of the security adjustments made by existing payment processing companies and their partnerships with other tech companies.

Check Processing

Check usage has declined greatly, but checks will likely remain an important payment instrument as some consumers and businesses remain resistant to change. [8] Checks are easy to originate and widely accepted. However, when ACH service and debit/credit card services came on to the market, checks became less convenient than the other available alternatives.

Nonetheless, in 2004, electronic check presentment(ECP) changed the way that checks are processed, cost were reduced, and process were simplified. [16] ECP allows the collecting banks to send check information electronically to the paying bank without sending the actual check. Prior to ECP, banks had to mail paper checks from one institution to another in order to complete transactions, costing more money and time. Now, with ECP, banks process checks more cheaply than before.

Overall, this segment's share of revenue has declined over the last five years, although ECP did increase the use of checks. We expect check processing services to decline going forward as non-cash transactions rise.

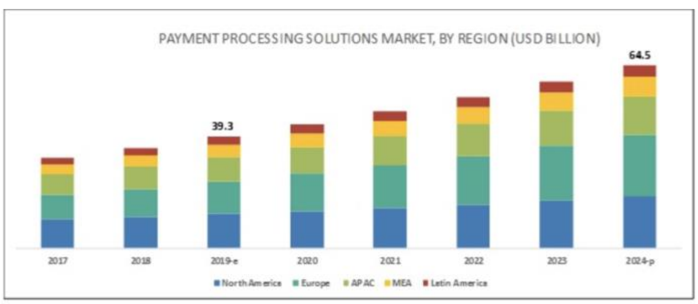
RECENT DEVELOPMENTS

International entry, rising fees for e-commerce, and accelerating contactless payment techniques are shaping the data payment processing industry.

International Entry

The market size and opportunities to grow presented by international markets continue to attract companies to the industry. U.S. non-cash transactions make up 70% of the total transactions, while the global market makes up around 53.3% in 2020. [35] The Asia-Pacific area has the most growth in non-cash transactions, and with the convenience of mobile payments, China has the most use of non-cash transactions in Asia-Pacific area. Some key mobile payment companies including Alipay, Union Pay, TenPay, WeChat Pay, are all popular ways Chinese people use to purchase items. [36]

The global market is expected to keep growing during 2020 to 2024. For example, the graph below shows significant growth in the Asia-Pacific area, and Europe. [17]

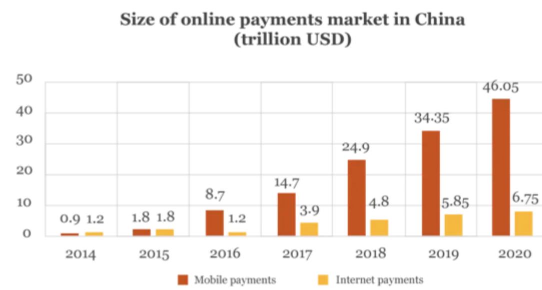


e - estimated year; p - projected year

Source: MarketsandMarkets

For this reason, some companies have already started initiatives in Asia-Pacific in 2019. For example, Paypal first entered the Chinese market by buying a 70% equity stake in Chinese GoPay. [18] This year, in January 2020, Paypal began a partnership with UnionPay to continue expand its Chinese market and worldwide. UnionPay has 130 million users outside of China, and it could benefit not only from China but from the other 177 countries that also accept UnionPay by partnering Paypal.

Notably, American Express became the first U.S. card network to gain permission to set up card-clearing services in China in November 2018. In 2020, Visa, Mastercard, Japan's JCB, and Singapore's Diners Club cards are partnering with Alipay, and WeChat Pay so that tourists in China can use popular mobile payment systems (Alipay, and WeChat Pay) with their international debit or credit cards. [19] As the graph below shows, mobile payments make up 46.06 trillion in the Chinese market share. For this reason, by partnering with Alipay, and WeChat Pay which are considered mobile payments, Visa and MasterCard are the best positioned companies in this industry.



Source: PwC India

Last but not least, the recent Trade War between the U.S. and China has resulted in a deal in which China could open its market to foreign investment.[20] One of the key objectives for the Trump administration officials during the U.S. and China trade war deal was to secure long-delayed China market access for Mastercard, Visa and American Express. [38] This would encourage payment processing companies to continue expanding their footprint in the Chinese market. Therefore, in the long term, growth in the international market is ongoing and promising, and Visa, Mastercard, and American Express will benefit most of the key players with the approval of the Chinese financial regulators.

Rising Fees

In the past, retailers have spent more than $100 billion in the U.S. each year to solely accept electronic payments. However, payment processors are updating their systems and merchants are facing new rate adjustments accordingly.

Mastercard, and Discover raised their processing fees in 2019[22], and even smaller market capital holding companies, such as Square raised its processing fees to small businesses. Following its peers, Visa has recently announced an increase in processing rates for card-not-present transactions. These transactions include e-commerce, online, and mobile payments. For traditional Visa cards, the fee on $100 transactions will climb to $1.99 from $1.90, according to Bloomberg news.[21] Visa is set to roll out the new structure this year in two phases, one in April and other in October. [39]

The trend for non-contact card use has risen, so many companies are taking the opportunity to rise their processing fees to increase their profits. Therefore, in the long run, we expect as e-commerce, non-contactless cards, and virtual payments to continue to rise, processing fees would continue to grow. For this reason, we also expect the industry to grow its profits in the next few years.

Accelerating Contactless Card Issuance

Payment processing companies have been developing ways for customers to pay without using physical cards. Apple Pay, UnionPay, Alipay, PayPal, and Venmo continue to serve as new ways for customers to pay.

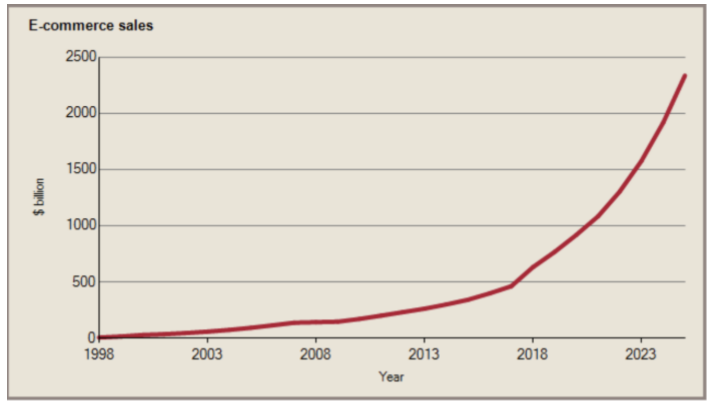
To further enhance the security and efficiency of the payment systems in order to combat trust concerns among customers, many companies are now working with tech companies on non-contactless card payment techniques. For example, according to the Wall Street Journal, Amazon recently began working with Visa to test its new palm-scanning payment technique which customers use to pay instead of their phones or cards. Amazon is also in discussion with Mastercard, JPMorgan Chase, Wells Fargo, and Synchrony Financial to try this system at terminals. [23]

Contactless development will continue to grow over the next five-years, and we expect the industry to grow as more advanced technologies are developed. Contactless revenue is likely to grow faster than contact cards, at a 5.2% CAGR between 2018 and 2025, compared with contact card revenue growth at 3% CAGR, according to Business Wire. [40]

INDUSTRY TRENDS

E-Commerce Transactions growth

Customers have gradually changed to online shopping and transferred to non-cash transactions as a result. E-commerce is expected to grow at a rate of 20.1% to reach $1,916.2 billion (estimated) by 2024. Consumer spending is also expected to trend upward over the next five years. Therefore, data payment processing companies will benefit from the rise of e-commerce, evidenced by recent increases in non-cash transactions processing payment rates.



Source: IBIS World

Startups Entrance Growth

According to CrunchBase news, businesses, ranging from the local barber to Walmart, pay on nearly $96 billion in processing fees. [41] Merchants try to avoid these fees by partnering with startup companies that provide low to zero fees in order to compete with large processing companies such as Visa, and Mastercard. For example, PayStand is one of several startups focusing on merchant payments, using an e-payment system that will not only eliminate the inconvenience of card minimums, set under the Dodd Franks Act, but also lower and stabilize the merchant's swipe fee rates. Other startups such as GoCardless, Snapcard, and Dwolla all charge zero fees to merchants by investing in the technology of decentralized networks without penalizing merchants for receiving their funds. [41] Not too long ago, Square was spending because small businesses couldn't access large payment processors without registration. [42] Also, Venmo was developed because of the need to have a non-contact system for customers to pay without cash. Many more startup companies are using either low to zero swipe fees, non-registration card use privileges, and other perks that large payment processing companies cannot provide to attract merchants and customers. The growth in startup companies in the payment processing industry could lead to healthier competition. However, we do not believe large key players will be affected too much by these rising startups since many key players in the U.S. have already developed strong relationships with financial institutions and merchants and hold patented payment networks that outperform startup company securities.

Massive Collaboration and M&A with Tech companies

Some major players in the industry have made several merger and acquisitions with technology companies to enhance their competitive advantages. Recently, M &A actions have been accelerating. For example, in 2020, Visa acquired Plaid, an API software that allows start-ups connecting to users' bank accounts and compatible with Venmo [24], to increase payment efficiency and secure user accounts. Furthermore, Fiserv acquired First data, FIS acquired WorldPay, and Global Payments and TSYS[25]. The growth in M&A activities in the industry has been and continues to accelerate due to an increase in e-commerce, online payments, and mobile payments whose transactions have strong dependencies on data security. With these mergers and acquisitions, payment processing companies are expected to grow further.

The table below shows recent M&A in payments processing industry in order to increase payment efficiency:

M&A DEALS - DATA PROCESSING & OUTSOURCED SERVICES COMPANIES, 2015–2019
(transactions valued above $500 million, as of April 30, 2019)

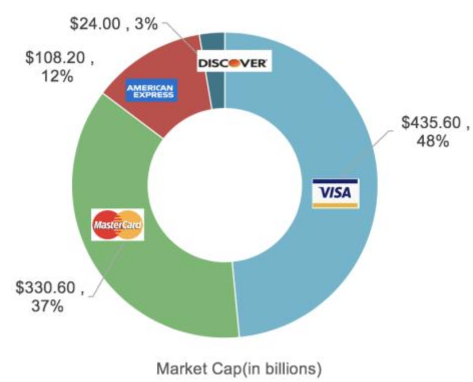
ANNOUNCED DATE	TARGET	BUYER	STATUS	CLOSED DATE	DEAL VALUE ($M)
5/28/2019	Total System Services	Global Payments	Announced	-	26,705
3/18/2019	Worldpay	Fidelity National Information Services	Announced	-	43,622
2/28/2019	SpeedPay	ACI Worldwide	Announced	-	750
1/16/2019	First Data Corporation	Fiserv	Announced	-	41,771
9/25/2018	Elan Financial Services, ATM and Debit Servicing business	Fiserv	Completed	10/31/2018	690
8/2/2018	AdvancedMD	Global Payments	Completed	9/5/2018	700
6/28/2018	Convergys Corporation	Concentrix Corporation	Completed	10/5/2018	2,744
5/17/2018	iZettle	PayPal	Completed	9/19/2018	2,200
1/11/2018	DST Systems	SS&C Technologies	Completed	4/16/2018	5,752
12/18/2017	Cayan	Total System Services	Completed	1/11/2018	1,050
12/11/2017	IO Data Centers	Iron Mountain	Completed	1/10/2018	1,340
10/20/2017	BluePay	First Data	Completed	12/1/2017	760
8/3/2017	Active Network	Global Payments	Completed	9/1/2017	1,207
7/5/2017	Worldpay Group	Worldpay	Completed	1/16/2018	11,992
6/13/2017	Flexential Colorado	Flexential Intermediate	Completed	8/1/2017	1,675
5/29/2017	CardConnect	First Data	Completed	7/5/2017	728
5/25/2017	Signet Jewelers, Credit Quality Accounts	Alliance Data Systems	Completed	10/23/2017	960
5/1/2017	Cambridge Mercantile	FleetCor Technologies	Completed	8/9/2017	675
4/25/2017	Paymetric	Worldpay	Completed	5/25/2017	543
3/13/2017	DH Corporation	Finastra Group	Completed	6/13/2017	3,502
7/21/2016	VocaLink Holdings	Mastercard	Completed	4/28/2017	1,147
1/26/2016	TransFirst Holdings	Total System Services	Completed	4/1/2016	2,419
12/15/2015	Heartland Payment Systems	Global Payments	Completed	4/22/2016	4,449
10/19/2015	Electronic Funds Source	WEX	Completed	7/1/2016	1,470
8/12/2015	FIS Data Systems	Fidelity National Information	Completed	11/30/2015	10,449
7/1/2015	Xoom Corporation	PayPal	Completed	11/12/2015	1,073
4/27/2015	Applied Predictive Technologies	Mastercard	Completed	5/31/2015	600
3/30/2015	Fundtech	DH Corporation	Completed	4/30/2015	1,250

Highlighted are deals above $10 billion in value.
Source: CFRA, S&P Global Market Intelligence

MARKETS AND COMPETITION

The major players in this industry include Visa, American Express, and Discover. The graph below shows market capital of each company. Among these Visa is the largest company in the market. MasterCard is second, and American Express ranks the third. These companies offer the same services including debit/credit card, automated clearinghouse, and check processing services. However, Visa and MasterCard have been more accepted in international markets than the others. American Express has recently expanded its Chinese market as Chinese Central Banks have started to open the region for foreign payments.

Major U.S. Industry Players

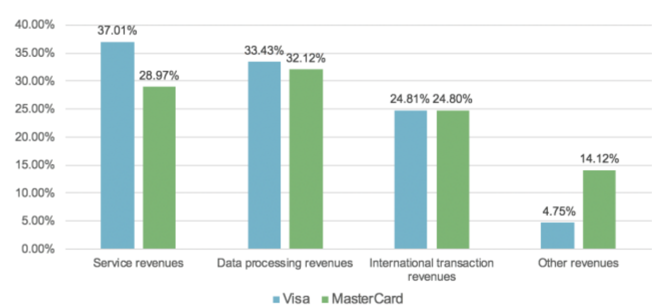


Source: FactSet

Peer Comparisons

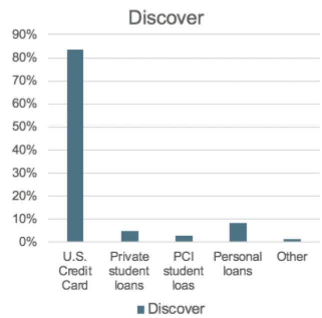
Competitive Service Segments

When comparing service segments for each key player, we divided them into two groups. Visa and Mastercard service segments include service revenue, data processing revenue, international transaction revenues, and other revenues. Because Visa has larger market cap, the service revenue, each service segment is slightly higher than Mastercard. Visa and Mastercard have the same amount of international transaction revenue.



Source: CSI Market

Discover and American Express have different revenue streams than Visa, and Mastercard. Discover and American Express's primary revenue comes from U.S. credit cards. Discover's remaining revenue comes from a variety of loans because its target consumers are people with low incomes or who haven't started developing strong credit scores such as students. American Express's remaining revenue comes from international market as it has many travel related perks and international customers. [44]



Source: CSI Market

We have also compared the top four companies in this industry including Visa, MasterCard, American Express, and Discover. The following segments represent profitability metric comparison.

Profitability Metrics

	ROE	ROA	ROIC	P/E multiple
Visa	24.87%	13.62%	18.60%	33.69x
MasterCard	90.2%	24.46%	47.17%	33.97x
American Express	25.68%	3.07%	8.31%	17.59x
Discover	22.09%	2.54%	8.47%	10.81x
Industry	**14.6%**	**4.5%**	**7.4%**	**38.4x**

Source: FactSet, NetAdvantage

The profitability ratios above show that top 4 companies outperform the industry margin. However, American Express and Discover underperform its industry average ROA whereas Visa and MasterCard outperform the industry benchmark. From the service revenue comparison, we can see that Visa and Mastercard share the same business model, while American Express and Discover hold a different model. Visa and Mastercard have higher P/E multiple and outperform every metric in the table because American Express and Discover hold credit card loan risks, while Visa and Mastercard do not.

Card Acceptance

American Express and Discover do not have wide acceptance as Visa and Mastercard have. [45] Some merchants do not accept while Discover or American Express because of their higher interchange fees compared to Visa or Mastercard [46].

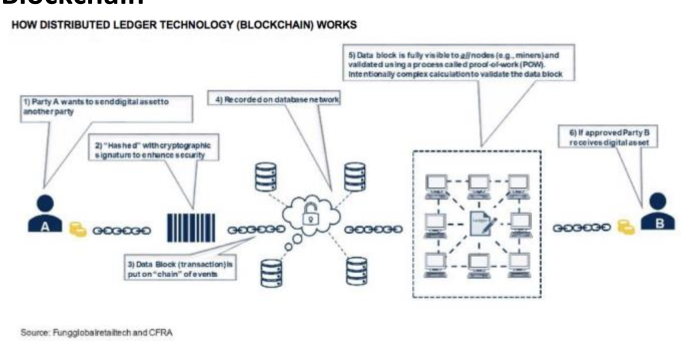
Credit / Debit Function

Banks partner with Visa or Mastercard to make debit cards available to customers [45], which gives Visa and Mastercard another source of income besides credit card services. Discover and American Express only have credit card services in the U.S. which have a higher risk of customer default, while Visa and Mastercard act as intermediaries which do not carry default risk by the customers.

After examining industry key players in the U.S., Visa, and Mastercard are the best positioned companies among the four. Looking at Visa and Mastercard current prices (MA: $256.48, and V: $161.78), with the same advantage positioning, Visa would be a more economic buy as it is cheaper but carry the same investment advantage as Mastercard. On the other hand, Discover is the weakest positioned among the four key players in this industry. Discover not only underperformed the industry benchmark and has low acceptance due to high swipe fees to merchants, but also most of its revenue comes from credit card loan which bear a high level of default risk.

Threats

Blockchain



Blockchain carries decentralized traits through a shared
Blockchain carries decentralized traits through a shared

ledger of transactions. Without a central authority, every transaction eliminates the need to trust one party. In addition, every transaction is time-stamped and protected by cryptographic signatures to provide full data integrity. So, if anyone tried to adjust transactions, it would be visible to every node in the network, essentially making transactions fully immutable once submitted. Thus, blockchain could become the trusted intermediary, as opposed to credit card networks in which security has been a concern.

However, we do not believe blockchain would eventually become a competitor of the credit card industry since there is no patent technology in processing payments like the existing payment processing industry have. Payment processing companies also have more customer exposure worldwide. Furthermore, we believe regulation would be a further challenge for the full deployment of blockchain technology as blockchain technology does not keep e-commerce record and would be difficult for the government to track. Until regulation set a common ground for blockchain, we believe the threat of blockchain would not be material enough to disrupt the payment processing industry.

Regulations

In 2020, SRC (Secure Remote Commerce) goes online and aims to provide online shoppers a more streamlined and secure guest checkout process through a common "buy" button rather than an array of checkout buttons. The button displays a Secure Remote Commerce payment icon paired with American Express, Discover, Mastercard or Visa logos, depending on which cards as merchant accepts. Therefore, SRC would be beneficial to the four key players in the U.S. including American Express, Discover, Mastercard, and Visa. The idea of SRC was to compete with Amazon Pay, Apple Pay, Google Pay, and PayPal that already enable one-click checkout. [47] Before SRC, when customers shopped online, they are presented with multiple payment buttons with different steps and information requirements, which can be confusing for customers and challenging for merchants. [44] Now, under SRC, customers would not have to repeat log in or set up payment account every time they shop. With the ease of using SRC for online payment, customers might feel insecure with their payment data being saved because SRC relies on a singly login that work across sites. This might lead to more trust concerns customers have with this industry.

Regulations on data protection and governance would also be taken into action in 2020. The threat of cyber-attack is the risk concern globally as the expansion of international markets will on the other hand put many companies at risk due to the intercorrelation between countries. However, with massive M&A with technology firms, companies in this industry are anticipated to take minimal shock to the regulation.

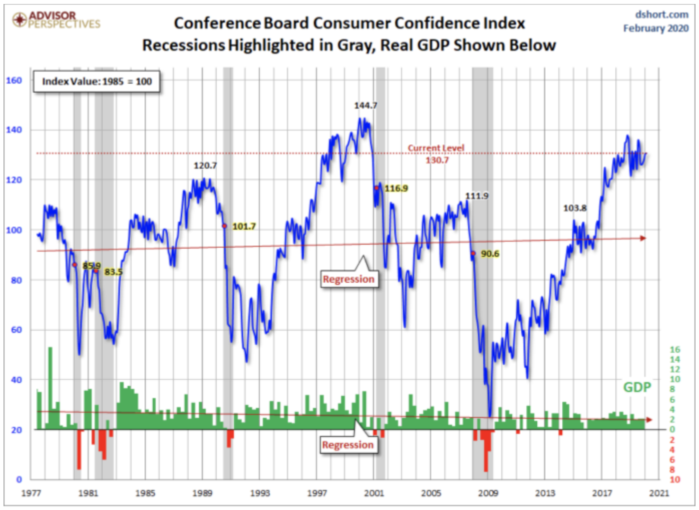
ECONOMIC OUTLOOK

The current state of economy and its outlook both have impact on the payment processing industry. Factors including consumer confidence, real GDP index, and personal disposable income have high influence on customers spending. As the spending increases, the probability of customers using one of the services offered by payment processing companies increases. However, even in a recession when people spend less, we will still see growth because of customer shopping preference shift from cash transaction to non-cash transactions.

Consumer Confidence

Consumer confidence is a macro indicator that shows how confident the customers feel about the future economy. The consumer confidence index shows the highest reading in eight months on the January data. Consumer confidence climbed back from October 2019 due to the low unemployment, record gains in income and wealth, as well as new record low inflation and interest rates. The Fed intended to keep the interest rate as low as 1.50 – 1.75%. Also, the trade war between the U.S. and China has shown progress on reaching the agreement. With the investor continues to be bullish and invest money in the market, we believe the consumer confidence would keep this upward trend this year.

The payment processing industry is expected to grow in 2020 as the consumer confidence continue to rise in 2020.



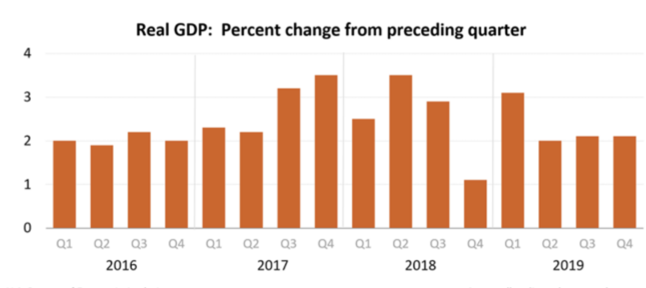
Source: Advisor Perspective

Real GDP

U.S. real GDP growth is expected to be around 2% in 2020 from 2.2% in 2019. [45] This projected slowdown in was a side effect of the trade war. However, we believe this event will not directly affect payment processing industry since we do not see the GDP change too much from 2019 real GDP.

In addition, we believe that the economy will continue to grow collectively contributing by low unemployment rate and interest rate. Thus, general positive macro will lead to positive effect on the payment processing industry.

The chart below shows real GDP had been changing on a constant basis, so we believe the change in real GDP going forward will not have a direct impact to this industry :



CATALYSTS FOR GROWTH

E-Commerce

E-commerce has been rapidly growing from the past, customers now prefer to shop online than going to a physical store for purchases. [49] In February 2020, Macy announced a massive restructuring that would close about 125 stores in 2020. The convenience of e-commerce has brought a greater demand for online payment. Essentially, payment processing industry is a key ingredient to the online payment experience as customers cannot pay online items in-person. Therefore, we believe as more retail and physical stores in 2020 are switching to online services, the payment processing industry would continue to grow.

International Market Entry

International market entrance for this industry has been trending upward. As the tensions from Trade War between the U.S. and China loosen up recently, we expect the entrance to be more feasible. The international market entry would not only add more geographic location of companies in this industry but also provide domestic card users confidence and benefits. In the long run, we believe the international market entry would give companies in this industry a boost in revenues.

Security Technology Development

2020 would be a crucial year that many companies in this industry are working on developing AI technology and non-contactless cards to increase security and efficiency. The technology would address the security concerns that many customers have begun to rise. Amazon has been working with Visa, and is in talk with Wells Fargo, and JP Morgan to test palm-scanning card on these payment terminals. If more technology breakthrough is made going forward, we believe the industry would continue to present organic growth.

INVESTMENT POSITIVES

- **Growth in consumer spending index**: Consumer spending is expected to increase by 2.1% (see the table below) in the U.S. in 2020, and vast majority of U.S. customers now use electronic payment methods for purchases, supporting business for industry operations.

- **Growth in non-cash transaction worldwide:** Non-cash transactions make up at lease 70% of the total transactions, while cash transactions only make up of 30% [29] In addition, non-cash transactions' five-year Compound Annual Growth Rate(CAGR) is expected to be 12.7% (contributed to by emerging Asia and CEMEA as both regions are expected to increase at an annual rate of 20.3% and 28.8%.) [1]
- **Transformative M&A**: Companies pursue M&A strategies to build out payment strategies

INVESTMENT NEGATIVES

- **Decrease barrier to entry:** traditional business models for non-cash transactions at risk due to new entrants to the payment categories
- **Anti-trust regulation could be forced to the industry:** Security issues and data breaches are expected to continue to challenge the growth of the industry

KEYS TO MONITOR

Some key things to monitor throughout the year are:

Regulation Announcement

In the year of 2020, the regulation for payment processing would be strongly enforced. It is crucial to monitor on what level the scrutiny is. If the regulation includes items that have not been considered by the companies in this industry, then the revenue growth would be affected. But, if the regulation includes items such as user data protection that many companies have already been working with fintech companies to respond, then the regulation would not have that much of impact on this industry.

2020 Presidential Election

The presidential election in 2020 would be critical to this industry because if the Republic Party gets elected, then they would have higher chance to roll more section of the Dodd-Frank Act back, which would continue to benefit the payment processing industry. However, if the Democratic Party gets elected, there would be chances that they would raise tax on affluent individuals that would affect their spending and affect the payment processing industry.

In general, the industry is expected to grow going forward, we reached an overweight recommendation for the payment processing industry. We believe that the consumer confidence index would continue to grow, and the coronavirus would not have direct effect on this industry. On the other hand, with the continued growth in international market entrances, Five-Year CAGR is expected to be 12.7% in both Asia and Emerging Markets. With the transformative M&A to respond to the data security concerns, we remain an optimistic view for this industry.

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