Equity Research Association

Mastercard

(NYSE: MA)

12 October 2020

As one of the largest players in the global payments industry, Mastercard has historically delivered consistent revenue growth which has been driven by a well-established core network. Building upon strong fundamentals, Mastercard has a healthy balance sheet and an incredibly high profit margin. Growing globalisation, digitalisation and consumerism has continued to propel the entire global payments industry, which is predicted to only accelerate post-COVID. Mastercard supplements this by maintaining industry leadership through constant investment in technology and acquisitions such as Nets and Finicity among others. With the predicted success of these strategies, Mastercard will continue to play a large role, however, it is unlikely to monopolise this industry, due to heavy regulation and Mastercard's inability to materially differentiate itself from VISA.

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Company Data

Price (as at 01/10/2020)	$343.70
Currency	USD
Market Cap	345.51B
Outstanding Shares	992.54M
52 weeks range	$199.99 – $367.25
Sector	Information Technology
Industry	Payments Network

Key Financials

USD (mil)	2018A	2019A	2020E	2021E	2022E
Revenue	14,950	16,883	15,388	18,365	21,022
% growth	*19.63%*	*12.93%*	*-8.85%*	*19.34%*	*14.47%*
EBITDA	7,849	10,477	8,882	10,583	12,012
% growth	*10%*	*33%*	*-15%*	*19%*	*14%*
Net Profit	5,859	8,118	6,651	7,738	8,834
% growth	*50%*	*39%*	*-18%*	*16%*	*14%*
EPS	5.84	8.09	6.62	7.71	8.80
P/E	33.24	32.77	46.98	42.71	39.52
EV/EBITDA	24.82	25.39	35.18	31.23	29.06

NYSE:MA vs S&P 500

Highlights

- **Current strategy**: To increase their market share by investing in new technology operations, to complement and strengthen their pre-existing core network of payment systems. Riding the wave of fintech and globalization, Mastercard does this primarily through acquisitions and the development of new payment channels.
- **Evolving Payments Industry**: The global payments landscape is rapidly evolving with consumer tendencies favouring contactless digital solutions, changing global demographics such as the accelerating growth of emerging markets such as Asia-Pacific as well as the rapid adoption of e-commerce technology and blockchain.
- **Outlook Amidst Covid-19**: With travel bans and lockdowns in place, cross-border volume will take the largest hit in 2020 and undergo a slower recovery, whilst other revenues will rebound in 2020 and 2021, largely due to the shift in payment behaviours during the pandemic and sustained increase in digital penetration.
- **Financials**: Mastercard consistently delivers high ROI, outperforming its industry peers. Its high debt to equity ratio relative to its competition reflects its strategic direction. All forms of financing are reinforced by a sound management and robust interest coverage and cash to debt ratios.
- **Key Concerns**: Emergence of alternative payment methods (revenue growing at 20%) and the continuing downtrend of credit card payments (revenue dropping at 10%) poses a challenge on Mastercard's traditional business model.

Valuation

Our estimate of Mastercard's intrinsic value through the base case DCF is **$302.48/share.** Share price on 01/09 is $343.70, traded at a **13.6% premium** to the estimated intrinsic value. In accordance with our results from relative valuation of P/E (46.98x) and EV/EBITA (35.18x) Mastercard is currently overvalued. Taking into consideration its established market standing as a leader in the payment network as well as its expansionary policies in latest technologies, and the short-term headwinds Mastercard will be facing, we hold a neutral outlook for Mastercard.

Risks

- **Regulations:** Compliancy to increasing regulations of payments systems, new restrictions and obligations in multiple countries can prove to be challenging, given the company's international and cross-border business.
- **Cyclical impacts**: Mastercard's business model are directly proportional to consumer expenditure and the volume of payments or transactions. An economic downturn can severely affect Mastercard's operation and will likely result in a reduction of revenue.

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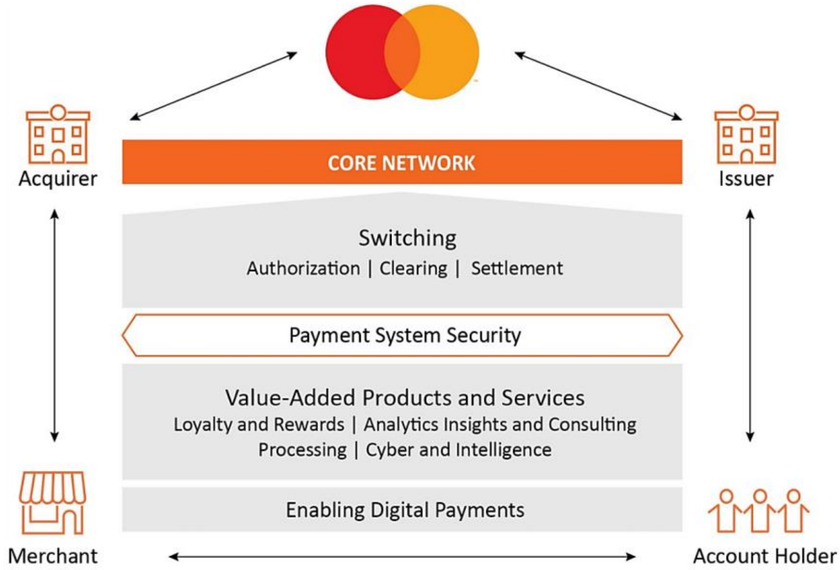
Company Overview

Mastercard Inc. (NYSE: MA) is a technology company in the global payments industry that connects consumers, financial institutions, merchants, governments and businesses across the world, enabling them to use electronic forms of payment.

Mastercard Inc. is the second-largest payment processor in the world and processed $4.8 trillion in purchase transactions in 2019. It operates in over 210 countries and processes transactions in over 150 currencies.



Source: Mastercard 2019 Annual Report

Business Model

Mastercard connects consumers, financial institutions, businesses, governments and other entities along its extensive, global network, allowing these institutions to make and receive electronic payments in ‘typical transactions’. During a ‘typical transaction’, an account holder makes a purchase from a merchant. The account holder and the merchant each have their own banks that hold and manage their funds, referred to as issuer and acquirer respectively.

As money is sent from issuers to acquirers, Mastercard uses its global payments network (referred to as the core network) to conduct the transaction, charging a small fee proportional to the value of the purchase, also known as Gross Dollar Volume (GDV). These fees are categorised as either domestic assessments or cross-border volume fees depending on whether or not the merchant and issuer countries are the same. Cross-border volume fees tend to be higher than domestic assessments, partially due to the exchange of currency. This is MasterCard’s primary revenue stream, accounting for 50% of gross revenue.

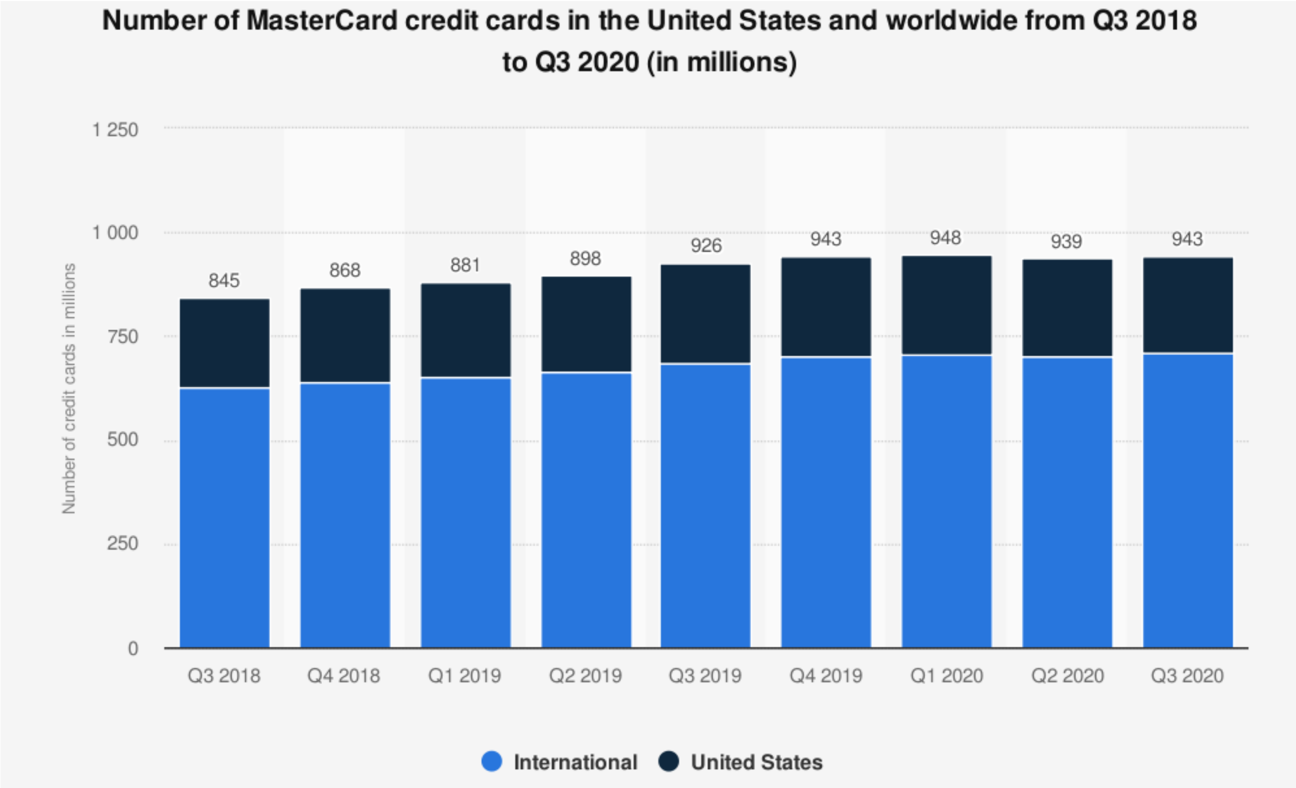
Additionally, revenue is generated in the processing of the transaction. The main processing fee is switching; the authorisation, clearing and settlement of the transaction. That is, to ensure that the transaction is valid, the correct funds are available, and that the accounts are debited and credited appropriately. Connectivity fees are charged when issuers and acquirers use the core network to transmit information (as opposed to funds), such as authorisation or settlement messages. Other processing fees include payment gateways and processing solutions among others. Processing fees comprise approximately 34% of gross revenue.

The fees per transaction are quite small (~0.5%), requiring an extremely large gross dollar volume (GDV) to make significant revenue. This is supplemented by the relatively low costs resulting in a high operating profit margin of 57.2%.

To support its primary products, Mastercard offers additional Value-Add Products and Services to create an ecosystem for their customers. These include Cyber and Intelligence, Loyalty and Rewards, Processing, and Data Analytics and Consulting. Although these services account for the smallest proportion of their revenue to date, the growth rate for this revenue stream is the highest at 23%. This, however, is not attributable to volume growth, rather due to acquisitions undertaken during 2018/19.

The customer base for Mastercard is well diversified across multiple sectors. They offer solutions for consumers, businesses, governments/public sector, merchants, issuers and other sectors. Consumers make up the large proportion of their transactions with over US$5.5 trillion in GDV in 2019. Mastercard services 210 countries and territories across the world, experiencing moderately high growth in domestic transactions in all regions, as well as growth in cross-border transactions and processing fees.

Since its brand and its core network are the company’s greatest assets, increasing users is exponentially beneficial for Mastercard. Hence, Marketing is one of the most important value chain activities. Mastercard has had several successful marketing campaigns that increased exposure and elevated the status of the brand. This includes the iconic Priceless advertisements, and more recently, developing a brand flavour. Further, Mastercard offers rebates and incentives to attract customers, costing US$8 billion in 2019, growing 18% annually. This is approximately 28% of gross revenue, a relatively high proportion relative to VISA whose rebates are 16% of gross revenue.



Source: Statista

The business model is sustainable, and more importantly, sustainably competitively advantageous. The main value drivers for Mastercard is its core network and its brand. This network has been growing since its inception in 1966. It is the second largest electronic payment network globally. Thus, Mastercard has had a significant head start against the majority of its competition, with the exception being VISA.

Mastercard's competitors all maintain very similar business models; facilitating the interactions between account holders, issuers, merchants and acquirers. VISA, MasterCard's main and largest competitor, in fact has an almost identical business model; primarily facilitating interactions between issuers and acquirers via their extensive network while also providing value-add services to their customers.

Looking forward, Mastercard aims to strengthen their secondary services. This has primarily been achieved through acquisitions of various technology companies whose products and services are complementary to Mastercard's core network. These will act to increase the security and efficiency of transactions, increasing Mastercard's value as a service provider.

	For the Years Ended December 31,			Increase (Decrease)	
	2019	2018	2017	2019	2018
			($ in millions)		
Domestic assessments	$ 6,781	$ 6,138	$ 5,130	10%	20%
Cross-border volume fees	5,606	4,954	4,174	13%	19%
Transaction processing	8,469	7,391	6,188	15%	19%
Other revenues	4,124	3,348	2,853	23%	17%
Gross revenue	24,980	21,831	18,345	14%	19%
Rebates and incentives (contra-revenue)	(8,097)	(6,881)	(5,848)	18%	18%
Net revenue	$ 16,883	$ 14,950	$ 12,497	13%	20%

Products and Services

Mastercard provides a wide variety of integrated products and services that support payment products that customers can offer to their account holders. These offerings facilitate transactions on the company's core network among account holders, merchants, financial institutions, businesses, governments and other organizations in markets globally. Mastercard primarily provides electronic payment options for various governments, financial institutions, businesses, consumers and other entities.

Core offerings

The four 'core products' are credit, debit, prepaid and commercial. GDV for each program (excluding Cirrus and Maestro, which both contribute to debit) are listed below. While the first three solutions are targeted towards issuing banks and consumers, commercial solutions are aimed at companies and businesses of all sizes and government entities.

	Year Ended December 31, 2019			As of December 31, 2019	
	GDV			Cards	
	(in billions)	Growth (Local)	% of Total GDV	(in millions)	Percentage Increase from December 31, 2018
Mastercard-branded Programs[1,2]					
Consumer Credit	$ 2,670	10%	41%	882	8%
Consumer Debit and Prepaid	3,059	16%	48%	1,207	9%
Commercial Credit and Debit	732	14%	11%	85	15%

Additional platforms are also provided to supplement the core products. This includes platforms for ACH, B2B, and international banking transactions.

Value-added offerings

Value-added products and services are also used to increase Mastercard's' value to customers and give a strong hold to the company's profits due to their high margins. Mastercard's value-added products and services can be broadly classified into Cyber and Intelligence, Loyalty and Rewards, Advisory, Data Analytics and Consulting.

With the likelihood of a cyber-attack increasing, the demand for cyber securities are on the rise. In response, Mastercard offers integrated cyber and intelligence products and services to prevent, detect and respond to frauds and cyber-attacks. This is done using a multi-layered safety and security strategy to ensure the safety of billions of electronic payments wherever and whenever they occur.

Moreover, Mastercard has built a scalable loyalty and rewards platform that enables financial institutions to provide consumers with a variety of benefits and services, such as personalized offers and rewards, access to a global airline lounge network, insurance services, etc. For merchants, Mastercard provides campaigns with targeted offers and rewards, management services for publishing offers, and accelerated points programs for co-brand and rewards program members.

The advisory team at Mastercard provides recommendations and solutions to a variety of companies within industries such as defence, telecommunication, finance, and banking. These solutions act as a pathway for companies in building their clientele and increasing operational efficiency. Recent developments include Microsoft and Mastercard coming together to develop a new solution for Cloud communication which would create a safe path of data storage for its client.

Amongst the rapid advancement of technology, blockchain and data analytics have had arguably the most support. In terms of data analytics, Mastercard provides proprietary analysis, data-driven consulting and marketing services solutions to help clients optimize, streamline and grow their businesses, as well as deliver value to consumers. Mastercard also provides a range of tools for data analytics which enable its client to store, analyse and observe patterns among its consumers. Recently, Mastercard enabled Starbucks to set up its various outlets by using consumer preferences and unique consumer footprints.

What's next?

Blockchain

Mastercard may not be a company many people associate with blockchain, but it serves as a solid example of companies investing in applications of blockchain outside of the crypto scene. It has quietly staked a claim as a blockchain leader, filing the third-most blockchain patents in the world, only behind Alibaba and IBM. Mastercard is exploring applications of blockchain in which it will complement its existing business offerings and strategies. Blockchain eliminates the need for intermediaries, as it establishes a direct connection between banks and verifies the existence of the funds being transferred, enabling faster and more transparent cross-border payments. Eventually, blockchain-based financial networks will also become the platform for retail and other consumer transactions.

Artificial Intelligence (AI)

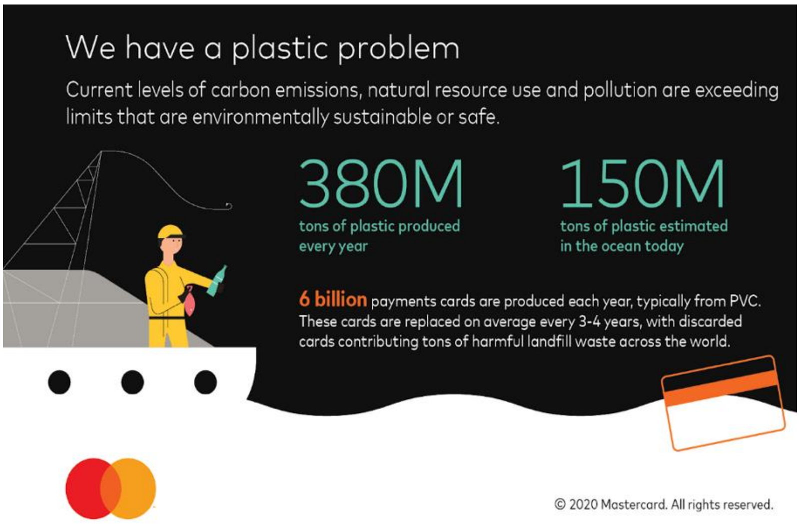
Mastercard has been successful in constructing its own decision-making artificial intelligence for curbing the frauds and malpractices in online transactions. Through its Decision Intelligence and AI Express platforms, Mastercard has used predictive analytics powered by machine learning to cut the rate of fraud activities by 50%. This technology that has the ability to both detect fraud and reduce false declines was integrated by Mastercard after the acquisition of California-based AI specialists, Brighterion in 2019. In addition, Mastercard's machine learning algorithms have also proven to be incredibly efficient, processing 75 billion transactions per year from 45 million global locations.

Environmental, Social and Corporate Governance (ESG)

Mastercard has always been most associated with credit and debit cards, made of plastic which we now accept to be detrimental to the environment. However, Mastercard is doing much to reduce the negative impact that it and its associates are having on the environment and replace it with a positive one. Mastercard has released a Sustain: Green Card in association with Commerce Bank which reduces carbon footprint for each dollar spent. Thus, it incentivises users by benefiting the wider environment rather than themselves. Other rewards include reforestation and carbon offsetting.

They have also dedicated advertising campaigns to increase awareness of the harmful effects of plastic consumption, even plastic consumption from credit cards. In response to this problem, Mastercard is offering cards made with sustainable materials to limit single use plastic items. This product is available at 60+ vendors around the world.

Mastercard also has programs for community involvement, inclusivity in recruitment and corporate governance, although they are less pronounced than the work they do for the environment.



Management

Board of Directors

Mastercard's board of directors are relatively experienced with an average age of 60 years and an average tenure of 6.6 years. 13 out of 14 of Mastercard's director nominees are independent, with 10 having prior CEO experience and all 14 having prior experience as directors on public boards.

CEO

Mr Ajay Banga has been the Chief Executive Officer (CEO) of Mastercard since 2010. Before that, he was the President and Chief Operating Officer (COO) of Mastercard for a year. His primary education was completed at the Hyderabad Public School in Begumpet. Banga went on to graduate with a Bachelor of Arts (Honours) degree in Economics from St. Stephen's College, Delhi University followed by PGP in Management (equivalent to MBA) from the Indian Institute of Management, Ahmedabad.

Before joining MasterCard, Mr. Banga served as CEO of Citigroup's Asia Pacific Region. In that role, he was responsible for all of the company's business lines in the region, including institutional banking, alternative investments, wealth management, consumer banking and credit cards. He held a variety of positions of increasing responsibility in Citigroup. These included Chairman and CEO of the International Global Consumer Group; President of Retail Banking North America; business head for CitiFinancial and the US Consumer Assets Division and division executive for the consumer bank in Central/Eastern Europe, Middle East, Africa and India.

Mr Banga was also the Vice Chairman of the board of trustees of the New York Hall of Science and a board member of the National Urban League. He was formerly a business sponsor of Citi's African heritage network in New York City.

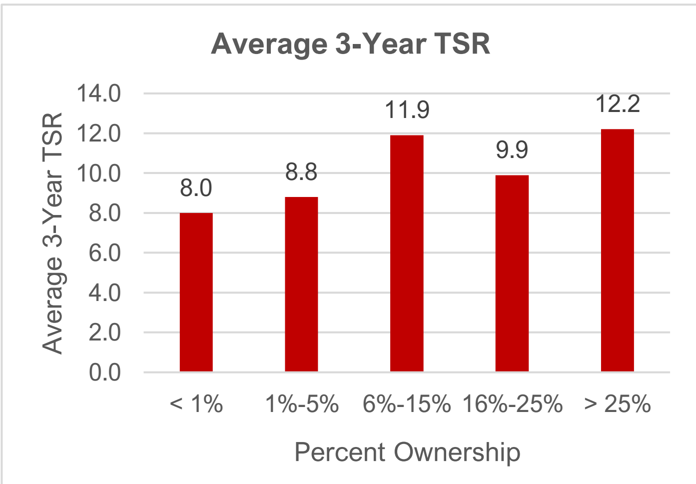
Communication with Shareholders

Mastercard has maintained a robust relationship with its shareholders. As a high market cap company, Mastercard fulfils all their shareholder obligations in terms of communication. Management and directors engage with shareholders throughout the year in a variety of forums, newsletters, statements, governance conferences and general meetings. This is particularly prevalent in regard to sustainability matters where management has regularly welcomed and engaged the views of shareholders in order to identify their key areas of impact.

Executive Ownership

As of 14/09/2020, Ajay Banga (CEO of Mastercard) owns a 0.04% stake of Mastercard worth US$132.4 million. Michael Miebach (President of Mastercard) owns a 0.0021% stake, worth $US69.5 million and Richard Haythornthwaite (Chairman of Mastercard) owns a 0.0009% stake worth US$2.98 million. Companies where robust executive ownership exist tend to generate a consistent total shareholder return due to incentivisation. On average, the three-year total shareholder return for companies where CEOs hold less than a 1% stake is around 8%. This is less than other companies with higher CEO ownership.

However, according to the Harvard Law School Forum on Corporate Governance, 88.62% of CEO's for firms with a market cap of 50 billion USD or larger own less than 1% of the firm's total equity. Hence, the executive ownership for Mastercard would not be considered 'low' or 'surprising'. High market cap companies such as Mastercard generally have fewer executives or directors who are also founders of the company, which partially explains such a low executive ownership. Companies where executive ownership is low also tend to offer higher compensation packages which may be relevant in the case for Mastercard.

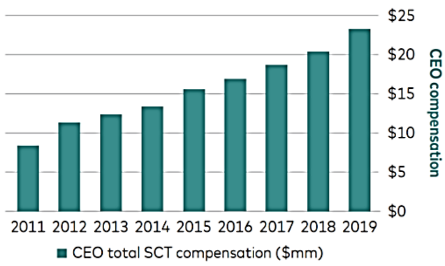


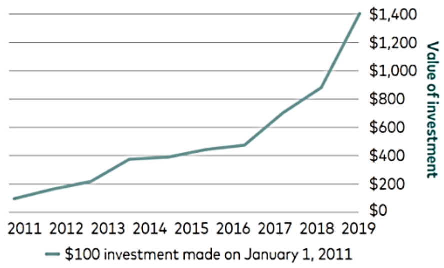
Overall Compensation

Board members are paid a base salary and bonus incentives. Mastercard relies on a say-on-pay proposal which reflects a purely performance-based compensation package. This system received an approval rating from 95% of voting shareholders and continues to be voted in place each year. Management receives a guaranteed remuneration of only 4-6% p.a., with their remaining compensation tied to the overall performance of the firm.

Name and principal position	Year	Salary ($)	Bonus ($)	Stock awards ($)	Option awards ($)	Non-equity incentive plan compensation ($)	Change in pension value and non-qualified deferred compensation earnings ($)	All other compensation ($)	Total ($)
(a)	(b)	(c)	(d)[1]	(e)[2]	(f)[3]	(g)[4]	(h)	(i)[5]	(j)
Ajay Banga Chief Executive Officer	2019	1,250,000	–	8,650,134	7,450,079	5,664,063	–	235,701	23,249,977
	2018	1,250,000	–	6,750,004	6,749,972	5,288,090	–	341,287	20,379,353
	2017	1,241,667	–	6,250,006	6,250,027	4,712,500	–	230,268	18,684,468
Sachin Mehra Chief Financial Officer	2019	562,500	–	1,309,549	1,250,102	844,523	–	59,699	4,026,373
Michael Froman Vice Chairman and President, Strategic Growth	2019	600,000	750,000	1,517,636	1,499,901	1,125,000	–	79,587	5,572,124
Michael Miebach[6] President and CEO-elect	2019	583,750	–	1,628,912	1,399,992	1,197,509	–	760,032	5,570,195
Craig Vosburg President, North America	2019	620,833	–	1,750,305	1,499,901	1,224,844	–	66,927	5,162,810
	2018	600,000	–	1,350,046	1,350,027	1,361,536	–	57,556	4,719,165
	2017	591,667	–	1,150,011	1,149,987	975,000	–	52,519	3,919,184
Martina Hund-Mejean Former Chief Financial Officer	2019	568,182	–	2,807,661	2,375,108	844,521	–	62,750	6,658,222
	2018	750,000	–	2,375,140	2,374,981	1,921,064	–	73,400	7,494,585
	2017	741,667	–	2,125,040	2,125,038	1,582,033	–	67,800	6,641,578

The median CEO compensation from similar firms with a market capitalization of US$8 billion dollars or more is around US$11 million. Observably, Ajay Banga is paid a lot more than the median CEO pay at large companies, in the same market. However, this has not raised any concerns amongst Mastercard shareholders and does not necessarily mean Mastercard Inc. is paying too much. Mastercard has boasted shareholder returns of 158% over the past three years. Therefore, some may believe the CEO should be paid more than is normal for companies of similar size. A closer look at the performance of the underlying business alongside CEO compensation shows a relation of proportionality.





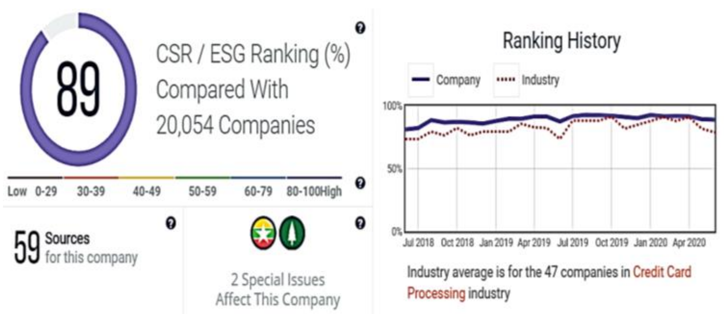
The monetary value of such incentives is calculated via a two-step method to give a certain corporate score:

Step 1: Financial score: calculated based on corporate performance against rigorous financial performance goals aligned with the annual business plan. Mastercard believes that adjusted net income and adjusted net revenue are the most important indicators of the successful execution of their strategy and correlate with long-term stockholder value creation.

Step 2: Strategic performance adjustment: based on performance against their strategic objectives established in early 2019. While these objectives do not immediately translate into current year financial results, Mastercard believes that success against these metrics positions the company for future, sustained growth.

Corporate Social Responsibility (CSR)

According to CSRHub, Mastercard has a rating of 89 in their approach to CSR. This is a good long-term indicator of a company's prospects especially in the context of management. Its ranking is considered very high amongst the 20054 companies measured by CSRHub. This score is driven by Mastercard's consistent spending to improve the community, environment and innovation. A high CSR rating allows Mastercard to attract top talent and it may enhance its business performance.



Industry

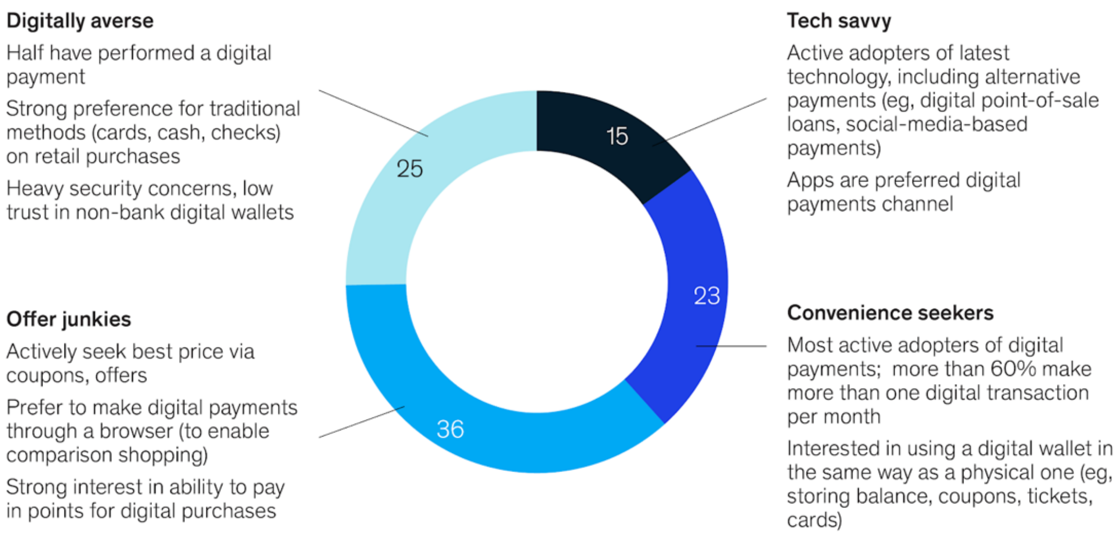
The global payments landscape is in a state of fundamental transformation, comparable in significance to the advent of streaming services for the video rental business. Key factors influencing these changes will be the impact of technology, changing consumer tendencies (contactless digital solutions), changing global demographics, shifts in global trade flows and currency markets, security and the growing impact of regulation. These factors will cause significant shifts in the way we pay for goods and services.

Consumer Tendencies

The overall base of consumers that are willing to adopt a variety of emerging e-commerce techniques have risen exponentially – from shopping via social media to paying in instalments with new businesses. Australia's business to consumer e-commerce market is worth AU$33.1 billion and consumers are getting accustomed to faster and more digital experiences across every touchpoint on their journey with the businesses they interact with. E-commerce merchants must make sure they can provide simple, fast, seamless shopping to meet the needs of this sophisticated audience. With electronic payments transactions growing at a staggering rate—upward of 15% annually, a clear shift toward online payment and especially quick and easy confirmation payments are underway.

Consumers can be classified based on their attitudes and preferences towards digital payments.

Share of respondents per segment

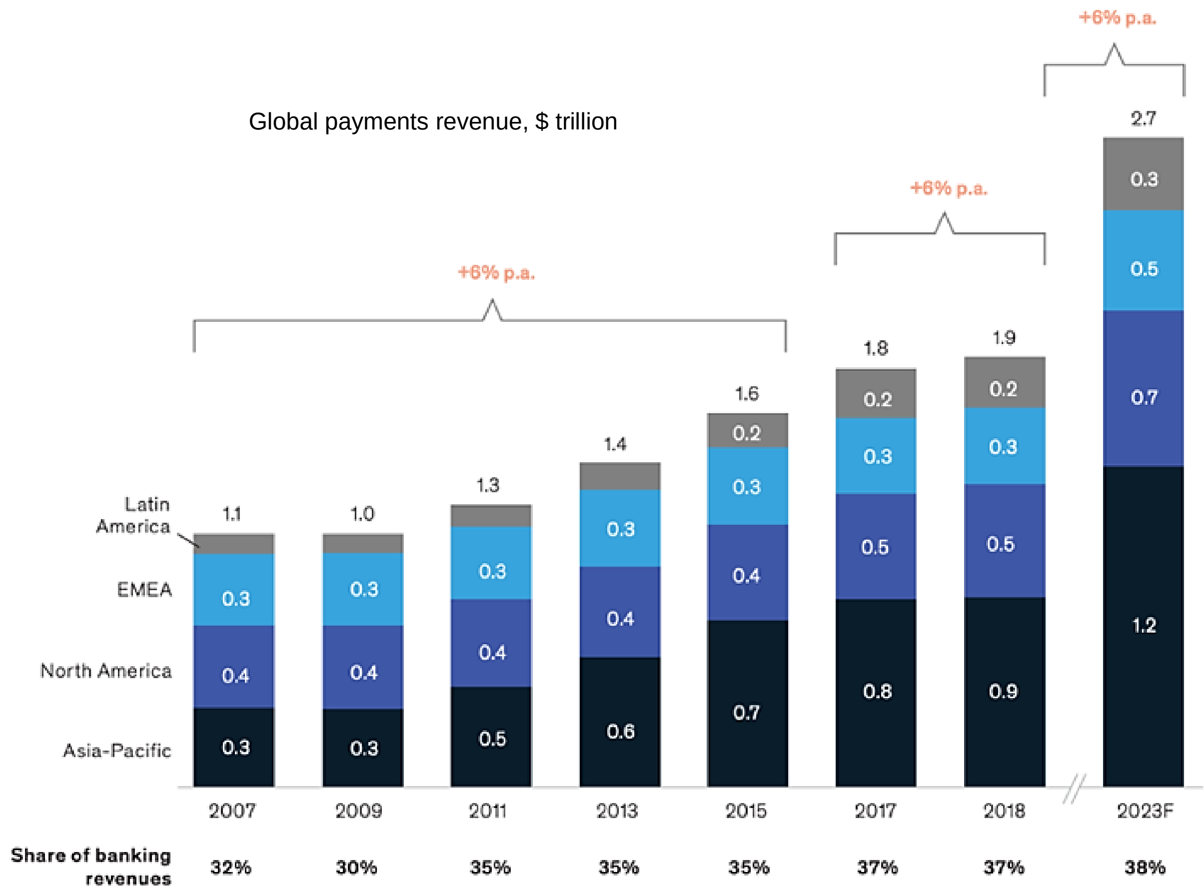


Source: McKinsey 2019 Digital Payments Survey

Global Demographics

Global demographics plays a vital part in shaping payment flows. The world's middle-class population is expected to grow by a staggering three billion over the next two decades; an increase predominantly originating from Asia. The accelerating growth of young, educated and affluent middle classes in emerging markets such as the Asia-Pacific, Middle East and Africa will in turn fuel payment flows from these countries. For developed markets, the search for investment opportunities will increase investment outflows. These shifts in demographics, combined with the changes in wealth distribution and capital and trade flows, should drive infrastructure improvements, further fuelling trade to the emerging markets.

Leading the global payments revenue growth is Asia-Pacific and more specifically, China. At roughly US$605 billion of revenue, China is the single-largest contributing country to global payments revenues, surpassing the United States by more than US$100 billion and comprising two-thirds of overall APAC revenue. Despite the size and strong underlying momentum of China's payments market, it is not easy for non-domestic competitors to play a role in it. Keen to expand its operations in Asia-Pacific, in July 2020, Mastercard and Bank of Shanghai entered into a partnership to facilitate cross border transactions in China with almost no transaction cost as well as a predefined exchange rate.



Source: McKinsey Global Payments Map

Regulation

The cross-border nature of the payments business requires greater oversight, and the wider scope of payment flows across currencies (and across differing political objectives and geopolitical interests) will further inhibit the ability to implement globally agreed standards. The significant and growing regulatory pressure (including monitoring and reporting requirements) will only increase through 2020. It has been suggested that these increasingly material and costly demands, however necessary or legitimate, will increase compliance costs of payment systems, slowing their abilities to develop client-facing solutions and enhancements to existing propositions.

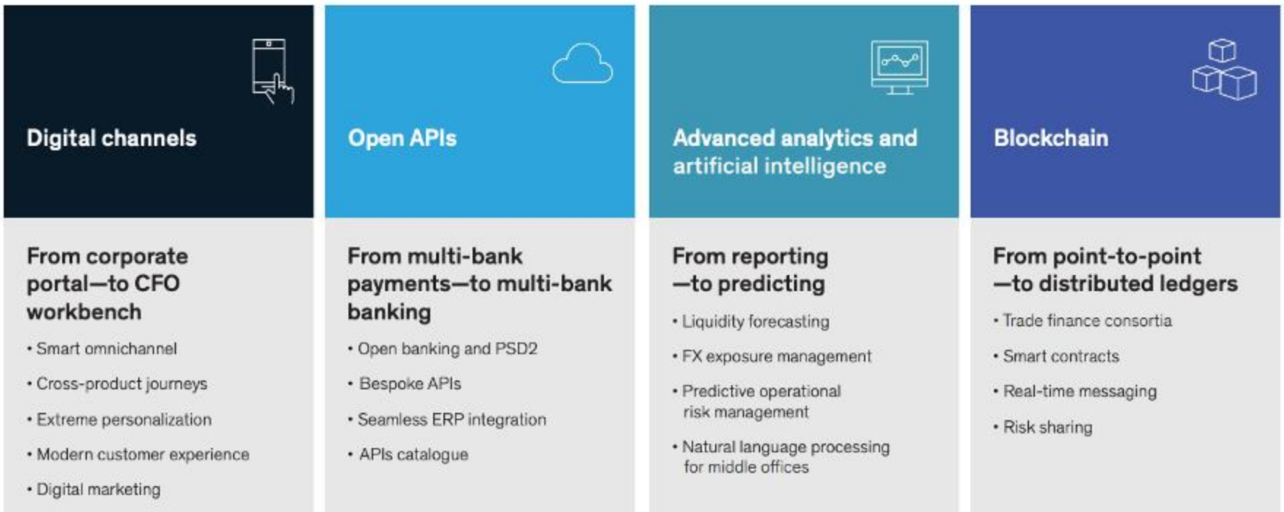
Impact of Technology

Due to the simple core business of the payments industry, the industry can be transformed by technology at a faster pace than many other areas of business. The rapid acceptance and adoption of such advances is central to the payments industry's fast-paced evolution, particularly (but not exclusively) in the consumer sphere.

With the COVID-19 pandemic acting as a catalyst, the shift to electronic forms of payments has accelerated with much greater adoption of digital and contactless solutions. Digital forms of payments are expected to sustain beyond the pandemic, growing at an annual rate (CAGR 2020-2024) of 17.9%, resulting in a total projected amount of AU$150 billion by 2024. Key trends include a preference for contactless transactions, rapid adoption of e-commerce and an increased aversion to cash, merchant requirements for omnichannel acceptance and a need to automate business-to-business payments.

However, as payments become increasingly effortless, new types of fraud are threatening data security and privacy. The global average total cost of a data breach in 2020 amounts to US$3.86 million. Of the breached organizations, the Business sector accounted for 67% of reported breaches, followed by Medical (14%), Government (12%) and Education (7%). This provides an opportunity for Mastercard's business to expedite the shift to digital forms of payment as well as a market for its value-added products and services.

In addition, the rise of the Fintech industry which consisted of companies offering disruptive alternatives for the delivery of financial services has changed the way that people and institutions transact and interact.



Source: McKinsey Payments Practice

Focusing on distributed trust technology such as blockchain, it is apparent that a large shift will occur following the adoption of such technology. An opportunity for growth in the digital payments sector, with Gartner's report predicting that the market for blockchain would bring the same revolution as the computer and internet did. According to Gartner, by 2030, blockchain is predicted to generate US$3.1 trillion in new business value globally, with the industry expected to grow at a compounding rate of 30% for next 10 years.

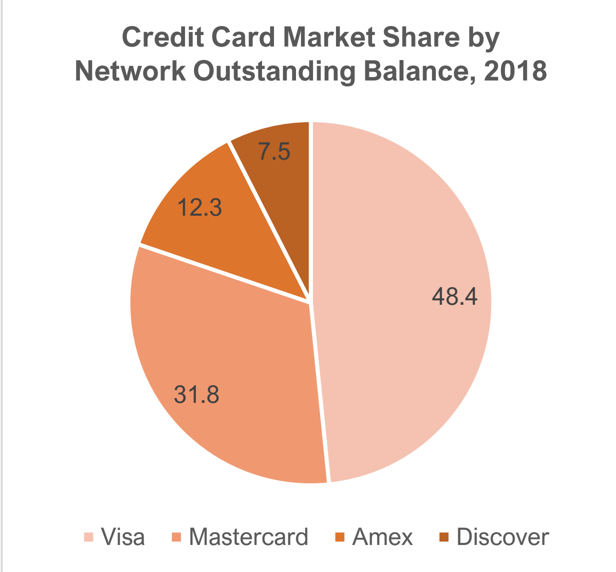
Competitors

MasterCard competes worldwide with payment networks such as Visa, American Express and Discover, among others. In certain countries, other domestic payment networks have a leading position. For example, the JCB (Japan Credit Bureau) network has a leading position in its domestic market in Japan and Paytm has a significant market share in India, but the global industry is dominated by the big four:

Visa is the largest of the four major card networks. At the end of 2019, Visa's payments volume was $8.8 trillion, up from $8.3 trillion in December 2018. There were 3.4 billion Visa cards in circulation in the world at the end of 2019, up from 3.3 billion in December 2018.

Mastercard's payments volume was $6.6 trillion at the end of 2019, up from $5.7 trillion the previous year. There were 2.2 billion Mastercard cards in circulation in the world at the end of 2019, up from 1.9 billion the previous year.

American Express and Discover also saw growth from year to year, with payments volume in 2019 being $1.2 trillion and $376 billion, respectively. Both American Express and Discover are closed-loop payment processors whilst Visa and Mastercard operate in an open-loop payments network.



Mastercard vs. Visa

On top of being the two major credit card processing companies in Australia, Visa and Mastercard are perhaps the most globally recognised names in the duopolistic card network. Visa and MasterCard are the only network payment processors that are involved in all three areas of the payments market (B2C, C2C and B2B). Working exclusively as network processors, these two companies have a unique edge but operate differently.

Main network differences

Merchant acceptance – Both types of cards are accepted widely around the globe, at tens of millions of merchants and in more than 200 countries. On rare occasions, certain merchants will strike deals with certain networks, such as Costco's deal where it only accepts Visa cards.

Merchant costs – arguably the biggest difference between networks for merchants and retailers as it determines how much each network costs to support. Each time a customer uses a credit card to make a purchase, the merchant is charged a small fee by the credit card network to process the credit card transaction. The size of the processing fee varies by network and can be a primary factor in whether a merchant accepts certain cards. In this case, Mastercard generally charges between 1.55% and 2.6% per transaction with Visa on par charging 1.43% to 2.4% per transaction.

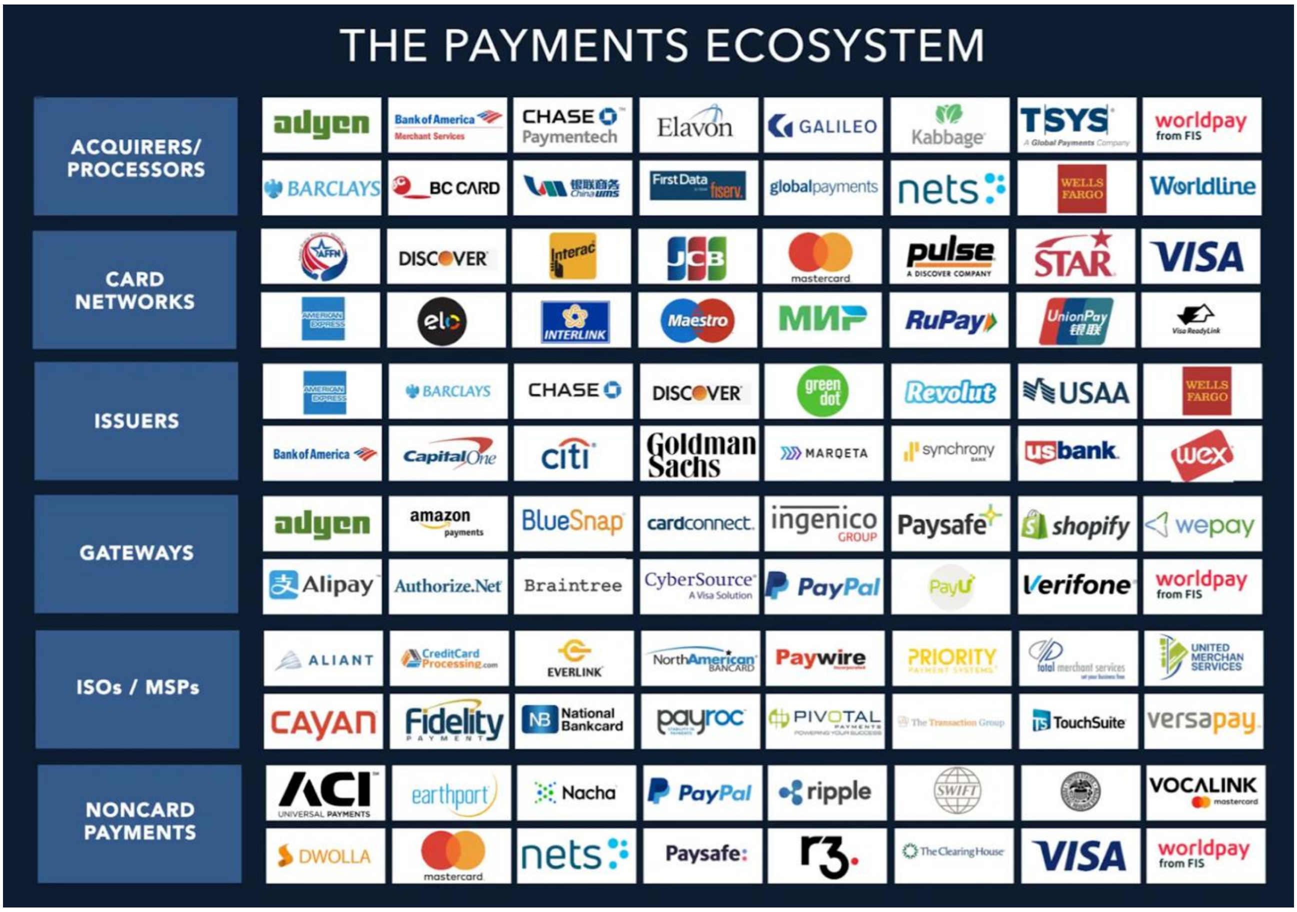
Fringe benefits – provided to cardholders by the network. For instance, cardholders who use a World Elite Mastercard® gain access to a 24/7 concierge service, as well as special travel upgrades and savings. Specific networks may have exclusive benefits which may be the deciding factor for consumers.

Transformational and Disruptive Players

The relative ease of understanding the payments industry, continuing boom of the payments industry and low barrier to entry contributes to the entry of transformational and disruptive players into the payments landscape. New entrants, especially from big tech and fintech, will potentially lead a boom in viable payments choices for users. Companies such as Google, Apple, Uber and Amazon all are getting payment, e-money or even banking licenses, injecting further pressure into the competitive landscape.

Technology companies have made huge advancements into payments for a variety of reasons: assessing new revenue streams and protecting core products, improving margins of existing revenue streams, acquiring new customers, and deepening loyalty of existing customers. These factors combine to create a true threat to current market leaders. In response, the giants, Visa and Mastercard, have bypassed their own plastic cards and allowed disruptors to connect to their network in order to maintain the relevance of their legacy infrastructure.

In March 2019, the Apple card was announced promising breakthrough features such as no fees of any kind and an AI software that would actively encourage users to avoid debt and provide recommendations to pay it off quickly. Sharing space on the back of the card are the logos of Goldman Sachs, the underwriter, and Mastercard.



Source: Business Insider

Major companies such as PayPal, Square, Samsung Pay, Google Pay, Facebook Credits, Stripe, and even Coinbase, a cryptocurrency upstart, are all working alongside Visa and Mastercard. The major breakthrough here is the realization that a product's best feature will never be invented in-house. Strategically, Visa and Mastercard allow others to discover new uses for the existing system and co-opt whatever third-party application when it becomes significant enough.

Both Visa and Mastercard are launching "tokenization services," which generate a unique token for each individual credit card, rather than using conventional credit numbers, in order to prevent hackers from accessing important information. Both networks are vying to become the standard-setting organization for the entire payment sector. Despite industry observers likely giving a lot of credit to Apple, Google, Facebook, and other start-ups for coming up with great mobile payment methods, Visa and Mastercard are the ones with the foundations set.

Even if plastic cards become obsolete, Visa and Mastercard will still be ubiquitous, making all the hard-complex parts of sending and receiving money around the world look easy.

Strategy

Mastercard plans to grow, diversify and build their business through a combination of organic and inorganic strategic initiatives. Their ability to grow is largely influenced by:

- personal consumption expenditure ("PCE") growth
- shift towards electronic forms of payment
- increasing their share in the payments space

Source: Mastercard 2019 Annual Report

One of Mastercard's major advantages over up-and-coming payments systems is its capacity as a multi-rail network, covering domestic, cross-border, card-based, and account-to-account transactions. Moving forward, Mastercard aims to develop and strengthen each one of these channels.

In terms of Mastercard's traditional credit, debit, prepaid, and commercial products, the company will continue to offer consumers and financial institutions a greater variety of options, both in terms of the products themselves as well as in payment plans and systems. In addition to that, integrated value-added products and services and enhanced payment capabilities will be able to capture new payment flows, such as business to business ("B2B"), person to person ("P2P"), business to consumer ("B2C") and government payments.

Category of payment	Examples	Size of transactions	Key considerations
Business to business (B2B)	Supplier payments	Low	• Real time authorisation/clearing • Intra-day availability of funds • Intra-day interbank settlement • Late-day interbank settlement
Business to consumer (B2C)	• Legal settlements • Insurance claims • Employee wages	Medium to high	
Consumer to business (C2B)	• Bill pay • Hospital co-pay • Pay at POS	Low to medium	
Domestic peer to peer (P2P)	Repayments to friends/family	Low to high	
Cross-border peer to peer (P2P)	Remittances to friends/family	Medium to high	

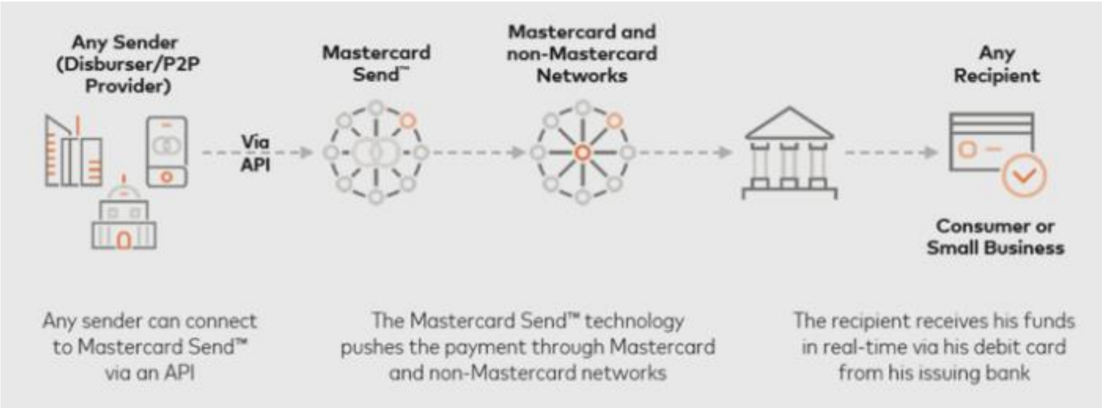
Source: Deloitte analysis

Strengthening Core Activities

For B2B transactions, the pilot version of Mastercard Track has been implemented in select countries and will be fully implemented for payment cards, ACH payments and cross border transactions by 2021.

Following the recent growth in digital wallets for electronic payments, Mastercard has introduced Mastercard Send, a push payment rail which offers real time payments for P2P, B2C, B2B and certain government payments. It is also available as an app in certain countries (like Beemit). Its API is currently utilised by many payment processors including GooglePay, Paypal, Uber, Lyft and it is still being adopted by new processors including AptPay. The main advantages of this method over ACH transactions are the instantaneity of the payments and its 24/7 operation. However, this does not contribute to the sustainability of its competitive advantage as many competitors have implemented similar products, most notably Visa's alternative, Visa Direct.

To target Government transactions, Mastercard is creating a platform to help central banks virtually test how digital currencies can be developed and used. The platform enables the simulation of issuance, distribution and exchange of central bank digital currencies between banks, financial service providers and consumers. Central banks are still in early stages of looking at potential digital currencies, with the Bank of England calling for global rules to be put in place before stablecoins are launched.



Source: Mastercard 2019 Annual Report

Diversification Across New Markets

Key to Mastercard's growth is its diversification across new markets. In 2018, Wirecard and Mastercard made 'Pay by Bank', an application that provides a fully digital payment solution available to all Wirecard merchants in the UK. The application is being developed in France, Canada, and ten other countries as well. The company is also working on scaling capabilities and businesses into new geographies, including a growing acceptance in markets with large middle/low income populations, where electronic payment services are minimal. Hence broadening financial inclusion for the unbanked and underbanked.

In 2019, Transport for NSW partnered with Mastercard to build a framework that supports an "open loop" contactless payment system for Sydney Ferries, Heavy Rail and Light Rail. This provided simpler access and convenience to consumers on public transport across Sydney. In order to implement contactless Mastercard payments on public transport, Mastercard had to reduce payment transactions from 1-2 second (a standard retail contactless purchase) to 400 milliseconds. Mastercard has international experience at solving such challenges. For example, while developing solutions for London's Oyster contactless payment system (essentially the same technology as Sydney's Opal card), Mastercard found a way to leverage secure contactless payment technology, greatly speeding up the process.

Acquisitions and Alliances

Over the years, Mastercard has used acquisitions and strategic partnerships to supplement its organic growth as well as diversify its revenues segments. Most of the acquisitions are focused in data analytics, cyber and intelligence, loyalty, and costs in developing multi-rail solutions for its customers. This has helped expand its addressable markets, drive new revenue streams and strengthen core product solutions. In 2019 alone, Mastercard acquired a number of businesses for a total consideration of US$1.5 billion.

Some of the recent acquisitions made by the company are Vyze, Nets, RiskRecon, Finicity among others. These acquisitions were fuelled by

Source: Medici Research

company synergies and complementing existing strategies and technologies. During the six months ending June 30, 2020, the company further acquired businesses worth US$185 million in cash. Mastercard expects acquisitions to contribute about 1% to revenues for the ongoing year.

Companies are not just turning to Mastercard to issue cards on its payment network but contracting for a variety of other services as well. In 2019 and 2020, Mastercard was also a part of many notable strategic alliances.

In August 2019, Westpac (ASX: WBC), one of Australia's "big four" banks transitioned from Visa to Mastercard, making Mastercard the sole issuer of Westpac's debit cards as well as consumer and business credit cards. In addition, Westpac subscribed to Mastercard’s Advisors and Loyalty programs. At the same time, Mastercard finalised a deal with Network International (LON: NETW), the leading enabler of digital commerce and a payment processing firm in the Middle East and Africa (MEA) region. Under the deal which will see Mastercard inject US$35 million into its business over the next five years, both companies aim to drive adoption of digital payments in the MEA.

In March 2020, Archa, an Australian neobank and fintech company teamed up with Mastercard in order to offer neo-corporate credit cards to the small business and start-up community. Mastercard aims to tackle the barriers faced by local merchants through this strategic partnership. In June 2020, Splitit (ASX: SPT), a BNPL Australian fintech partnered up with Mastercard, in a deal that would allow more retailers to offer its services around the world. By integrating its product with Mastercard’s suite of technology, this would let merchants offer Splitit payments at in-store checkouts and online. At the same time, EedenBull, a Norwegian fintech company extended their strategic partnership with Mastercard from Europe to the Asia Pacific region. Mastercard will support the rollout of Eedenbull’s new commercial cards platform to banks looking to tap into vast opportunities in the Asia Pacific business-to-business payments market.

Competitive Advantages

Mastercard has considerable strengths as a player in the electronic payments market. However, the most important strengths for any company are those that are inimitable and also sustainable, allowing the company to not only get ahead of its competition, but to stay ahead in the foreseeable future. Mastercard does possess sustainable and inimitable competitive advantages over its competitors in some regards, however, it should be noted that VISA possesses many similar strengths. Listed below are the competitive advantages of Mastercard that allow it to be one of the market leaders in the digital payments space.

Mastercard’s Ecosystem

Mastercard’s ecosystem continuously draws customers which makes it that much more ‘stickier’, making it much more difficult for financial institutions to leave the fold. For instance, will a bank that issues Mastercard debit and credit cards switch to a competitor if it relies on Mastercard for fraud prevention? This advantage is becoming increasingly more prevalent as Mastercard invests in improving their supporting activities such as consulting, security and data analytics.

Network Effect Moat

An economic moat is a company's competitive advantage over business rivals that would look to take away the company's profitability and market share. While there are different types of economic moats, Mastercard has one of the most powerful: the network effect, which means a service or product gains in value the more it is used. In Mastercard's case, the more consumers who hold a Mastercard product, the more merchants will be compelled to accept Mastercard-branded cards as a payment method. Conversely, the more merchants that accept Mastercard products, the more consumers will be willing to have and use Mastercard products. This network effect moat only stands to strengthen as we get closer to becoming a cashless society.

Strong International Operations

International markets provide growth and diversification benefits to Mastercard. A major part of the company's revenues is generated from international regions such as the Asia-Pacific, Canada, Europe, Latin America, Africa and the Middle East. Strategic alliances with governments, banks and corporations in these regions along with the developed nations of Germany, the UK, Australia, and Japan bode well for expansion into e-commerce in the emerging e-money sector. These markets have the potential to generate growth in the coming years, led by a shift toward card usage and higher consumer spending.

The company also received the preliminary approval for its license application to operate in China, which will allow it to set up a joint venture in the region. China is a vital market for the company and should drive long-term growth.

The company’s strong international business led to an increase in cross-border volume growth for the past several years. For 2020, however, cross-border business is expected to remain under pressure due to COVID-19-related disruption in customer spending. Nevertheless, this downtrend is a temporary blip and the company should return to reaping cross-border revenues once the pandemic subsides.

Continuous Investment in Technology

The company has been making significant progress in its digital strategy and continuously investing in technology. Some of the company’s digital innovations are MasterPass, investment in tokenization technology with its Mastercard Digital Enablement Service, which supports contactless payments and Digital Secure Remote Payments. The company also plans to offer token services on all of its cards by 2020, allowing consumers to store credentials with merchants without exposing their actual card details. Recently, the company rolled out its solution named Mastercard Identity Check globally, which uses data rich EMV 3D secure authentication standard, and applies AI and behavioural biometric capabilities to verify the consumer with a single touch or click. It also launched its Secure Remote Commerce framework in the second half of 2019, which provides a safe, streamlined and standardized online checkout experience for all the key stakeholders.

Key Challenges

Although Mastercard is a dominant giant player in the global payments services industry, it nonetheless faces significant challenges due to its business model and position in the market.

Maintaining the Mastercard Appeal

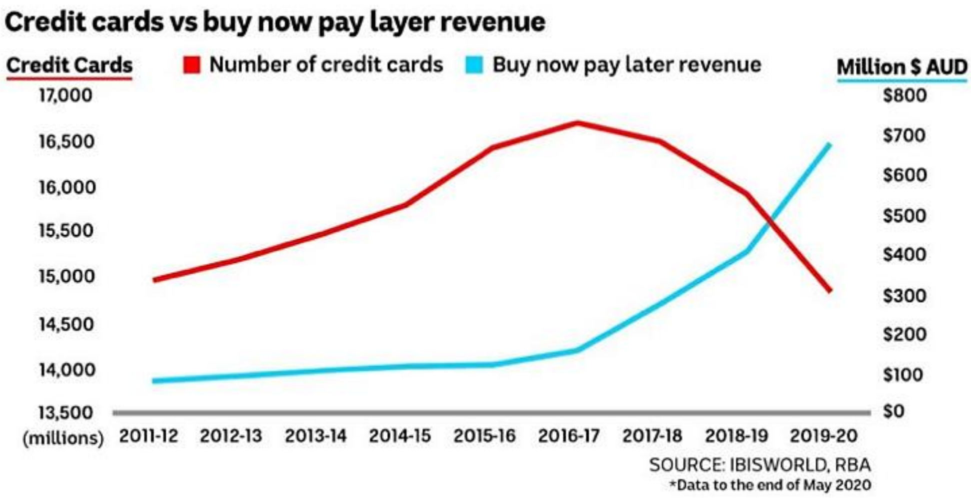
Mastercard must continue to provide an enticing and worthwhile set of products to each segment of its transaction ecosystem. Financial institutions must continue to believe that it is in their best interest to issue cards with the Mastercard logo, while merchants must be prevented from charging surcharges on products in order to offset fees. In addition, cardholders must find the entire process to be simple, efficient, and competitive when compared with other payment systems. Finally, given the intense competition from well-established rivals, as well as new technologies and companies, Mastercard must ensure that its offerings are at least on par with the competition, if not superior.

Diversification of Business Model

As one of the major card schemes and industry players, Mastercard and its payment program are competing against not only traditional payments systems, but also e-payment platforms, fintechs, ACH services and other payment platforms. This intense competition in the payments industry poses a challenge on Mastercard's traditional business model - the main source of revenue.

The emergence of alternative payment methods and the continuing trend of local and alternative payments overpowering credit card payments became the driving force of Mastercard's efforts to seek expansion of its payment capabilities. Despite having acquired several payments businesses and their technical assets as well as partnering up with many other start-ups and fintechs over recent years, Mastercard's existing competitors and other new entrants in the market can still derive competitive advantages from either their more developed alternative and e-payment platforms or their wider range of related programs and products.

Differentiation from the newly emerged competitors and the diversification of its current business model become the crucial factors for Mastercard to maintain revenue growth and secure its current market position. The difficulty of integrating alternative payment networks and platforms into the existing system in the short term, however, could reveal the risks of failure to compete against the foregoing threats efficiently in the long run.



Risks

Mastercard is exposed to several key risks which may negatively impact its operations, via increased costs or reduced revenues, and its participation in the markets.

The inherent or external risk factors generally fall into two categories: operational risks and legal & regulatory risks.

RISK HIGHLIGHTS

Legal and Regulatory	Business and Operations
Payments Industry Regulation	Competition and Technology
Preferential or Protective Government Actions	Information Security and Service Disruptions
Privacy, Data and Security	Stakeholder Relationships
Other Regulation	Settlement and Third-Party Obligations

Source: Mastercard 2019 Annual Report

Regulations in the Payments Industry

With regulators increasingly establishing and expanding their authority to seek regulation of payments systems, new restrictions, obligations and regulations enacted by jurisdictions and their oversights of the industry may result in not only increased compliance costs of payment systems, but also an adverse impact on the services and products that Mastercard provides. The company has already faced numerous anti-trust suits throughout its history, and regulation continually changes in many of the regions in which Mastercard does business. Additionally, regulatory activities regarding interchange rates can also indirectly affect the transaction volume on Mastercard's payment products, particularly given the company's international and cross-border business.

Government Actions

Protective government actions in several countries may displace Mastercard from participating in their markets and competing against national switching and payment service providers. This will directly affect Mastercard's capability of maintaining its current revenue and expanding its global brand.

Security

With the emergence of new technologies and payment systems in recent years, payment companies are inevitably subject to information security risks and attempted cyber-attacks. As Mastercard's operation relies on continuous processing and storage of payments-related information, a leakage of information from its payments value chain, payments system or from systems or devices of Mastercard's customers or third-party providers may lead to material impacts and reduced brand reputation.

Cyclical Risks

Mastercard's business model and revenue generation are directly proportional to consumer expenditure and the volume of payments or transactions. An economic downturn can severely affect Mastercard's operation and will likely result in a reduction of revenue. Most notably, the unprecedented COVID-19 pandemic has hit the payments industry and brought uncertainties regarding how long its impacts will last. Mastercard is warning of a potential slowdown of revenue growth at the start of 2020, as cross-border travel, transaction volume, and to a lesser extent, e-commerce growth, are impacted by COVID-19. Driven by the impact, a decrease in GDV, cross-border volume and Mastercard's switched transactions is reported in the first half of 2020 and has led to a 19% drop in Q2's revenue versus the year-ago period's result.

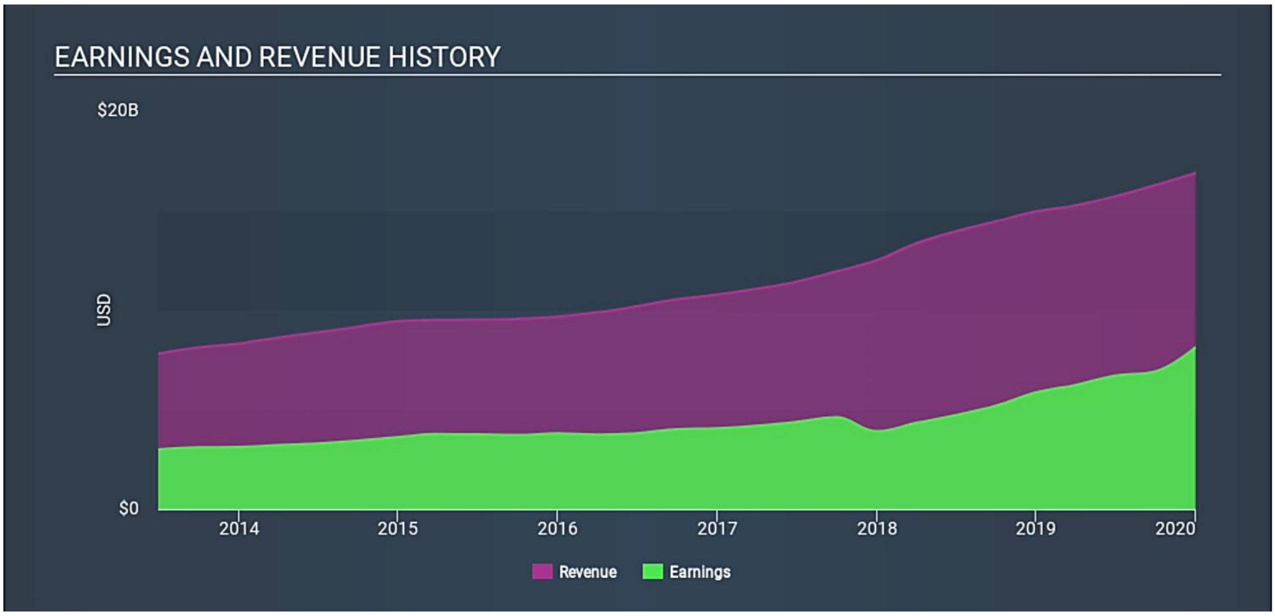
Despite the signs of recovery, we cannot rule out the possibility of a permanent change in payments and consumption behaviours which will have a prolonged impact on Mastercard's growth.

Foreign Exchange Risks

Mastercard is subject to the risk of fluctuations in foreign exchange due to its exposure to potential transaction gains or losses resulting from foreign currencies' fluctuations against its reporting currency (USD), and due to its daily settlement activities.

Review of Financial Performance

Historical Price and Factors



NYSE:MA Income Statement (17 April 2020)

Mastercard's stock price increased from $91.64 (start of 2016) to $303.39 (start of 2020), a dramatic increase of 207%. Since then, the stock price has grown upwards of 13%. A key factor behind this gain is the roughly 57% growth in Mastercard's revenues between 2016 to 2019, coupled with improving margins translated into an almost 100% growth in Net Income. However, EPS grew at a higher rate of 116%, driven by share buybacks. Specifically, the company has invested about $15 billion in repurchases in the last three years, resulting in about 7.4% lower outstanding shares. While Mastercard did have about $8 billion in cash as of the last report, it will likely be challenging to sustain the same level of buybacks.

Financial Spotlight

High Rebates and Incentives

The company has been incurring quite high levels of cost under rebates and incentives (it is a contra revenue item), over the past many years, in order to gain customers and new business. The same was up 5.7% in the first six months of 2020. The company expects rebates and incentives as a percentage of gross revenues to increase sequentially, reflecting increased deal activity in Q3. Increasing client incentives may put pressure on the company's net revenues.

High Expenses

Mastercard continues to face a rise in total expenses. The company is accelerating investments in strategic areas such as safety and security, digital and B2B (business-to-business) products. The company is also witnessing increased operating costs related to higher revenues, particularly to some of its services such as loyalty. We expect growth in operating expenses, driven by investments in digital solutions, safety and security products, data analytics, geographic expansion, and platforms to address new payment flows. The company's continued investments in digital, analytics and security products and platforms to address new payment flows will keep operating expenses at elevated levels.

Strong Cash Generation

Mastercard has been successfully generating cash flow from operations over the years. Its cash flow generated from operating activities has been increasing since 2009 except in 2014. The same was up 16.5% year over year in the first six months of 2020. This cash flow enables capital management by way of share buyback and dividend payouts. In December 2019, the company increased its quarterly dividend by 21.2% and also authorized a share repurchase program of $8 billion. We believe the company will continue to generate favourable cash from operations on the back of its growing business volumes. Its strong capital position also enables it to pursue acquisitions, which have driven inorganic growth.

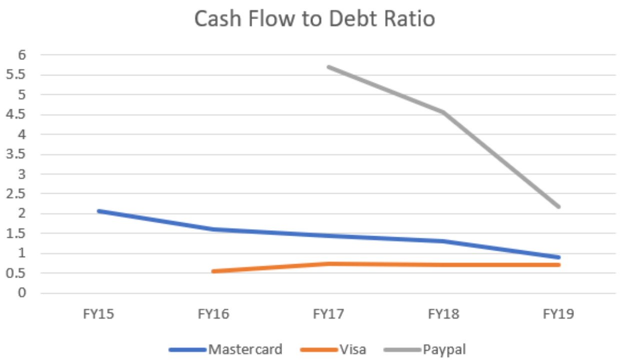
Strong Solvency Position

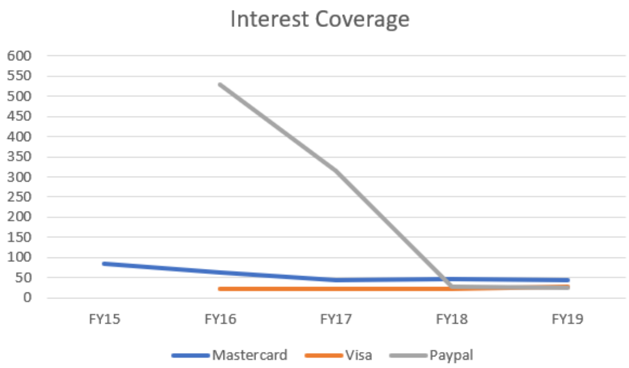
The company's long-term debt as of Jun 30, 2020 was $12.5 billion, unchanged sequentially. However, its cash balance of $10.7 billion along with $6 billion in credit facility is enough to service its debt. The company has significant capacity to take on additional debt. Moreover, its interest earned of 30.3X is sufficient enough to cover its interest obligation and is higher than the industry average of 21.6X. The company's strategy is to migrate to a more normalized mix of debt and equity over time. Given its ability to generate positive cash flows, a spike in debt should not be a matter of concern for investors.

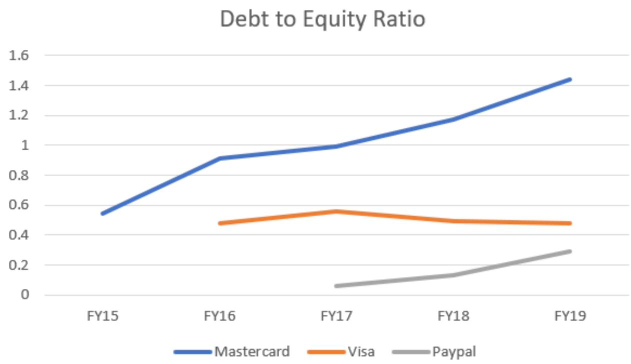
Revenues Set for Long-Term Growth

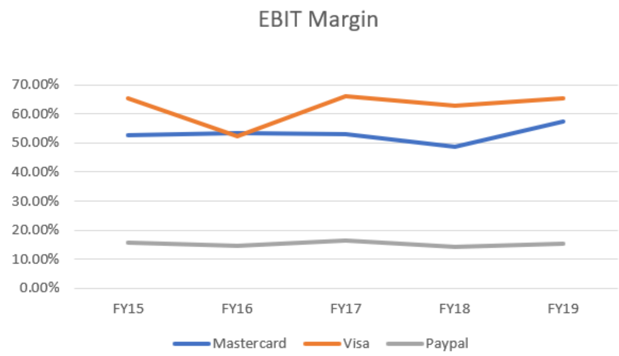
Organic growth remained a key factor at Mastercard as evident from a revenue CAGR of 13% from 2010-2019. It was, however, down 8.2% in the first six months of 2020 due to a decline in transactions and volumes due to the effects of border restrictions and social-distancing measures. Despite this temporary downside, we believe, the company's revenues are set for strong growth given its solid market position and an attractive core business that continues to be driven by new deals, renewed agreements and an expansion of service offerings. Ongoing initiatives including digital strategy and continued widening geographic footprints create further optimism.

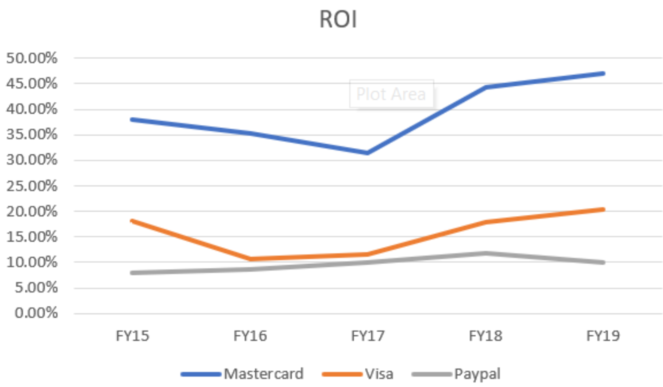
Financial Metrics











Over the past five years, Mastercard produced a slightly lower EBIT margin compared to its main competitor, Visa. An increase in EBIT margin of 8.5% over FY19 is most likely attributable to a higher total revenue and only a slight increase in operating expenses relative to past financial years. Mastercard heralds extremely impressive ROI figures compared to its peers. We believe that a part of this is caused by a highly rated management team that carefully selects value-adding projects and business prospects making Mastercard a better overall investment for shareholders when compared to Visa over the past few years. Both companies, however, boast respectable ROIs.

Mastercard's Debt to Equity Ratio has seen a gradual increase over the last five years. Mastercard's heavy investment in more diversified revenue streams and products are the main driver of its higher Debt to Equity ratio when compared to its peers. However, none of these figures are alarming and are widely seen as a good balance between equity and healthy debt financing.

Mastercard has a significantly higher interest coverage compared to its peers despite being much more heavily leveraged. This is seen as safe and responsible practice. Mastercard's Cash to Debt Ratio in FY19 does raise some concerns. At 0.90, Mastercard will not be able to meet all of its debt obligations with its cash. However, Mastercard defaulting on its debt is highly unlikely due to its sheer size and its reasonable number of receivables. Mastercard's largest competitor, Visa, has heralded a Cash to Debt Ratio of less than 1 for the last five financial years.

Valuations/Model Key Assumptions

Direct Impact of COVID-19

Mastercard derives around 22% of its revenues from International Fees and 34% of its revenues from transaction processing fees. With travel bans and lockdowns in place due to the Coronavirus outbreak, International Fees are expected to take a sizable hit. Further, lower consumer spending would result in lower transaction volume leading to lower transaction processing fees. While the company's result for the Q1 2020 saw some increase in revenues, Mastercard's Q2 results confirm the hit to its revenue. Mastercard's Q2 2020 results versus the year-ago period, net revenue decreased 19%, or 17% on a currency-neutral basis.

Q2 2020 Key Business Drivers	YTD 2020 Key Business Drivers
Gross Dollar Volume down 10%	Gross Dollar Volume down 1%
Cross Border Volume down 45%	Cross Border Volume down 24%
Switched transactions down 10%	Switched transactions down 1%

Key Model Assumptions

Valuation results take into account three different scenarios (i.e. base case, pessimistic and optimistic). Uncertainty in the pace of recovery from the direct impact by the COVID pandemic (from Q2 2020) and outlooks for Mastercard's future growth are considered.

We adopt a perpetual growth rate of 5% for the base case (BCG payments report 2020 estimated 2024-2029 CAGR of market revenue to be around 5.6%-5.0% based on different recovery scenarios: quick rebound vs. slower recovery). An 8.43% WACC is used.

Projected growth rates of revenues are decomposed into different drivers or impacts of growth, i.e. volume, acquisitions, currency impact and others (which Includes impacts from cyber and intelligence, data analytics, other value-added services and non-volume-based fees). The fee segments will be primarily impacted by changes in GDV and cross-border volume flows, while growth in other revenues is mostly related to Mastercard's value-added services and programs.

Looking at historical figures, we also assume fixed or minimally growing proportions of market share for Mastercard's domestic and cross-border fee segments, so growths are expected to be consistent with volume growth rates for the next five years.

Revenue estimates for 2020 take into account McKinsey's Global Payment Report (2020) projection of payments market performance (expecting a 7% drop by the end of 2020). We predict similar five-year trajectories for revenues from domestic assessment and transaction-processing segments based on Q1 & Q2's results and past figures. We expect cross-border segment to take the largest hit in 2020 and undergo slower recovery, while other revenues will maintain growth in 2020 and 2021, largely due to accelerated shift in payment behaviours during the pandemic and sustained increase in digital penetration. Steadier growths beyond 2023 are assumed (estimates are based on averages of past GDV and revenue growths).

Rebates and incentives are assumed as a fixed proportion (42%, based on Q1 & Q2 results) of total revenues from the fee segments for the next five years to reflect the impacts by volume, and this is higher than the 2017-2019 average (38%) due to Mastercard's renewed and newly signed deals.

There was a 20% increase in depreciation and amortization during the first half of 2020 vs. year-ago period due to capital investments and prior acquisitions, and we assumed this 20% increase to be maintained by the end of 2020. D&A in later years are taken as a fixed proportion of PP&E and Intangibles.

We expect the increase in Capex in Q1 2020 vs. year-ago period to be partially offset by COVID-19 impacts from Q2 onwards. Higher growths (but lower than 2019 level) in later years are expected.

Relative Valuation

Ticker	Company	Market Cap (M)	P/E	P/B	EV/EBITDA
MA	**Mastercard Inc.**	**$ 344,264.84**	**46.98**	**46.40**	**35.18**
V	Visa Inc.	$ 444,510.60	38.55	14.70	29.12
PYPL	PayPal Holdings Inc.	$ 228,335.87	89.28	12.94	48.73
AXP	American Express Corp.	$ 83,237.56	21.49	3.95	9.45
COF	Capital One Financial Corp.	$ 35,727.18	9.21	0.64	N/A
DFS	Discover Financial Services	$ 19,525.16	20.17	2.27	3.73
Comparable Averages			**45.14**	**16.18**	**25.24**

Mastercard's expected 2020 P/E (46.98x) and EV/EBITA (35.18x) are higher than that of its close competitor Visa. This implies that the market is positive about the future growth of Mastercard and is willing to pay a higher price relative to its earnings. Taking P/E and EV/EBITA, it indicates a relative overvaluation for Mastercard especially when compared to the US IT sector P/E (32.4x) and the US market P/E (18.5x). However, its strong balance sheet gives the company plenty of resources for extra growth, and it has already proven it can grow. Hence, it comes to no surprise that the P/E is above average.

This overvaluation may be explained further by the futuristic outlook and growth potential of technology on the payment network industry. The exclusion of American Express and Discover from the list would see Mastercard being undervalued by P/E and EV/EBITA. As for the P/B ratio, Mastercard's P/B (53.36x) indicates that the stock price is overvalued relative to its assets. This could also mean that Mastercard's high stock price is due to its future growth potential being priced into the stock.

Overall, Mastercard's relative valuation appears to be overvalued compared to its industry peers and the broader IT sector. This may be justified by its established market standing as a leader in the payment network industry as well as its expansionary policies in latest technologies.

Model Results

Our model projection in the base case indicates an overall 8.9% decline in Mastercard's net revenue by the end of 2020, with the largest drop by 30% in cross-border fees segments, partially offset by the increase in its other revenues (impacted by its value-added services). Domestic and processing segment growths are expected to recover to levels matching pre-COVID-19 expectations by the end of 2021, while its cross-border fee-based revenue is predicted to be recovering at a slower pace.

Under the model assumptions, we obtained a fair equity value of US$303.7 billion, corresponding to a fair value share price of $302.48/share in the base case ($331.9/per share in the optimistic case, $261.15 in the pessimistic case). 01/09's share price of $343.70 represents a 13.6% premium to intrinsic value.

		Sources
Levered Beta	1.1	*5-year (DJIA)*
Risk-free rate	2.50%	*past average of 10-year tresury yield*
Market risk premium	5.60%	*2020 average (Market Risk Premia)*
Corporate Tax Rate	25%	*past average*
Interest Rate on Debt	3.01%	*(using 2019-2018 book values of debt)*
	3.66%	
Market Value of Equity	329,000	
Debt (Book Value used)	12,498	
Cost of Equity	8.66%	
Cost of Debt (Net Tax)	2.26%	
WACC	8.43%	

DCF-valuation		
terminal year FCF	11,510	
terminal (perpetual) growth rate	5%	
terminal value	387,732	
%EV	89%	
PV(terminal value)	269,423	
Enterprise Value	304,079	
(+)Cash &Cash Equivalent	12,114	(Q2 balance sheet)
(-)Debt	12,498	(Q2 balance sheet)
Market Cap	303,695	
# Shares outstanding	1,004	
Price per share	**$ 302.48**	

					Q1 & Q2 *(Based on Q2 results)*					
	Historical Data				Projections					*CAGR (%) 2019-2024*
(in $ millions)	2017A	2018A	2019A	2020A	2020E	2021E	2022E	2023E	2024E	
Domestic Assessments	5,130	6,138	6,781	3,157	3,217	7,394	8,281	9,027	9,839	*7.7%*
%growth		19.6%	10.5%		-6.0%	16.0%	12.0%	9.0%	9.0%	
Cross-border Volume Fees	4,174	4,954	5,606	1,854	2,070	5,023	5,827	6,468	7,114	*4.9%*
%growth		18.7%	13.2%		-30.0%	28.0%	16.0%	11.0%	10.0%	
Transaction Proessing	6,188	7,391	8,469	4,101	4,029	9,431	10,751	12,042	13,487	*9.8%*
%growth		19.4%	14.6%		-4.00%	16.00%	14.00%	12.00%	12.00%	
Other Revenues	2,853	3,348	4,124	2,143	2,641	5,693	6,604	7,594	8,733	*16.2%*
%growth		17.4%	23.2%		16.0%	19.0%	16.0%	15.0%	15.0%	
Rebates and incentives	-5,848	-6,881	-8,097	-3,911	-3,913	-9,176	-10,441	-11,565	-12,785	
%total revenue	37.7%	37.2%	38.8%		42%	42%	42%	42%	42%	
Net Revenue	12,497	14,950	16,883	7,344	8,044	18,365	21,022	23,565	26,388	*9.3%*
%growth		19.6%	12.9%		-8.9%	19.3%	14.5%	12.1%	12.0%	
Operating Expenses	5,875	7,668	7,219	3,426	3,807	8,635	9,885	11,080	12,408	
%net revenue	47.0%	51.3%	42.8%		47.0%	47.0%	47.0%	47.0%	47.0%	
(non operating income (expenses) item is not shown, assumed expected future value of 100 annually)										
EBIT	6,676	7,390	9,955	3,968	4,288	9,830	11,237	12,585	14,080	
margin	53%	49%	59%			54%	53%	53%	53%	
Depreciation & Amortization	436	459	522	289	337	754	775	808	849	
EBITDA	7,112	7,849	10,477	4,257	4,625	10,583	12,012	13,392	14,929	
margin										
less: Tax	2,607	1,345	1,613	564	772	1,769	2,023	2,265	2,534	
%effective tax rate					17%	17%	17%	17%	17%	
less: CapEx	423	504	728	392	423	962	1,106	1,217	1,339	
%growth		19.15%	44.44%		12.00%	18.00%	15.00%	10.00%	10.00%	
less: Change in Net Working Capital		-529	591	606	-707	-496	-319	-409	-454	
FCFF		6,529	7,545	2,695	4,137	8,347	9,202	10,319	**11,510**	
discount period					0.5	1.5	2.5	3.5	4.5	
PV(FCFF)					3,973	7,394	7,517	7,774	7,998	

Source: Base Case DCF – prepared by ERA Research Analysts

Disclaimer

Appendix

Growth projection based on drivers/factors (base case DCF)

FY2019 Annual Report
Mastercard Quarterly Earnings Report and ERA estimate

growth (%) drivers of growth:

	domestic assessment (%)	volume	acquisitions	currency impact	others
2019	11.00%	13.00%		-3.00%	1.00%
2020	-6.00%	-4.00%		-2.00%	0.00%
2021	16.00%	18.00%		-2.00%	0.00%
2022	12.00%	14.00%		-2.00%	0.00%
2023	9.00%	11.00%		-2.00%	0.00%
2024	9.00%	11.00%		-2.00%	0.00%

	cross-border volume fees (%)	volume	acquisitions	currency impact	others
2019	13.00%	14.00%		-3.00%	2.00%
2020	-30.00%	-25.00%		-2.00%	-3.00%
2021	28.00%	30.00%		-2.00%	0.00%
2022	16.00%	18.00%		-2.00%	0.00%
2023	11.00%	13.00%		-2.00%	0.00%
2024	10.00%	12.00%		-2.00%	0.00%

	transaction-processing (%)	volume	acquisitions	currency impact	others
2019	15.00%	14.00%		-2.00%	3.00%
2020	-4.00%	-4.00%		-2.00%	2.00%
2021	16.00%	16.00%		-2.00%	2.00%
2022	14.00%	14.00%		-2.00%	2.00%
2023	12.00%	12.00%		-2.00%	2.00%
2024	12.00%	12.00%		-2.00%	2.00%

	other revenues (%)	volume	acquisitions	currency impact	others
2019	23.00%	(not applicable)	2.00%	-1.00%	22.00%
2020	16.00%		4.00%	-1.00%	13.00%
2021	19.00%		3.00%	0.00%	16.00%
2022	16.00%		2.00%	0.00%	14.00%
2023	15.00%		2.00%	0.00%	13.00%
2024	15.00%		2.00%	0.00%	13.00%

NET WORKING CAPITAL, D&A AND CapEx projections (base case DCF)

	2017A	2018A	2019A	*end of Q2* 2020A	2020E	2021E	2022E	2023E	2024E
(in $ millions)									
Accounts receivables	1,969	2,276	2,514	2,147	2,353	2,808	3,190	3,576	4,004
receivable days	57.51	55.57	54.35		55.81	55.81	55.38	55.38	55.38
Restricted security deposits held for customers	1,085	1,080	1,370	1,548	1,232	1,470	1,683	1,887	2,113
Settlements due from customers	1,375	2,452	2,995	1,782	2,316	2,763	3,163	3,546	3,971
%net revenue	11.0%	16.4%	17.7%		15.0%	15.0%	15.0%	15.0%	15.0%
Prepaid expenses and other current assets	1,040	1,432	1,763	1,790	1,454	1,735	1,986	2,226	2,493
%net revenue	8.3%	9.6%	10.4%		9.4%	9.4%	9.4%	9.4%	9.4%
Current Assets (Cash Excluded)	5,469	7,240	8,642	7,267	7,355	8,777	10,023	11,235	12,581
Accounts payable	933	537	489	369	716	854	830	930	1,042
payable days	27.25	13.11	10.57		16.98	16.98	14.41	14.41	14.41
Settlement due to customers	1,343	2,189	2,714	1,527	2,127	2,538	2,906	3,257	3,647
%net revenue	10.7%	14.6%	16.1%		13.8%	13.8%	13.8%	13.8%	13.8%
Restricted security deposits held for customers	1,085	1,080	1,370	1,548	1,232	1,470	1,683	1,887	2,113
%net revenue	8.7%	7.2%	8.1%		8.0%	8.0%	8.0%	8.0%	8.0%
Accrued litigation	709	1,591	914	853	800	800	800	800	800
Accrued expenses	3,931	4,747	5,489	4,530	4,910	5,860	6,707	7,519	8,420
%net revenue	31.5%	31.8%	32.5%		31.9%	31.9%	31.9%	31.9%	31.9%
Other current liabilties	792	949	928	1,096	933	1,113	1,274	1,428	1,599
%net revenue	6.3%	6.3%	5.5%		6.1%	6.1%	6.1%	6.1%	6.1%
Current Liabilities	8,793	11,093	11,904	9,923	10,717	12,635	14,200	15,821	17,621
Net Working Capital	-3,324	-3,853	-3,262	-2,656	-3,363	-3,859	-4,178	-4,586	-5,040

Schedule for D&A and Capex	2017A	2018A	2019A	*end of Q2* 2020A	2020E	2021E	2022E	2023E	2024E
PP&E	829	921	1,828	1,872					
Intangible Assets	4,155	3,895	5,438	5,561					
					7519	7727	8059	8468	8958
Depreciation & Amortization	436	459	522	289	337	754	775	808	849
% PP&E and Intangibles		9.2%	10.8%			10.0%	10.0%	10.0%	10.0%
Capex	423	504	728	392	423	962	1106	1217	1339
% growth		19.1%	44.4%		12.0%	18.0%	15.0%	10.0%	10.0%

DCF Optimistic Case

DCF-valuation	
terminal year FCF	12,674
terminal (perpetual) growth rate	5%
terminal value	426,956
PV(terminal value)	296,679
%EV	89%
Enterprise Value	333,611
(+)Cash &Cash Equivalent	12,114
(-)Debt	12,498
Market Cap	333,227
# Shares outstanding	1,004
Price per share	$ 331.90

Q1 & Q2 (Based on Q2 results)

	Historical Data				Projections				
(in $ millions)	2017A	2018A	2019A	2020A	2020E	2021E	2022E	2023E	2024E
Domestic Assessments	5,130	6,138	6,781	3,157	3,353	7,682	8,757	9,895	11,182
%growth		19.6%	10.5%		-4.0%	18.0%	14.0%	13.0%	13.0%
Cross-border Volume Fees	4,174	4,954	5,606	1,854	2,351	5,382	6,243	7,117	8,113
%growth		18.7%	13.2%		-25.0%	28.0%	16.0%	14.0%	14.0%
Transaction Proessing	6,188	7,391	8,469	4,101	4,199	9,711	11,264	12,841	14,639
%growth		19.4%	14.6%		-2.00%	17.00%	16.00%	14.00%	14.00%
Other Revenues	2,853	3,348	4,124	2,143	2,641	5,836	6,770	7,853	9,110
%growth		17.4%	23.2%		16.0%	22.0%	16.0%	16.0%	16.0%
Rebates and incentives	-5,848	-6,881	-8,097	-3,911	-4,159	-9,565	-11,031	-12,538	-14,252
%total revenue	37.7%	37.2%	38.8%		42%	42%	42%	42%	42%
Net Revenue	12,497	14,950	16,883	7,344	8,384	19,045	22,003	25,168	28,792
%growth		19.6%	12.9%		-6.8%	21.1%	15.5%	14.4%	14.4%
Operating Expenses	5,875	7,668	7,219	3,426	3,966	8,955	10,346	11,834	13,538
%net revvenue	47.0%	51.3%	42.8%		47.0%	47.0%	47.0%	47.0%	47.0%
(non operating income (expenses) item is not shown, assumed expected future value of 100 annually)									
EBIT	6,676	7,390	9,955	3,968	4,468	10,190	11,757	13,434	15,354
margin	53%	49%	59%			54%	53%	53%	53%
Depreciation & Amortization	436	459	522	289	337	742	764	799	841
EBITDA	7,112	7,849	10,477	4,257	4,805	10,932	12,521	14,233	16,195
margin									
less: Tax	2,607	1,345	1,613	564	804	1,834	2,116	2,418	2,764
%effective tax rate					17%	17%	17%	17%	17%
less: CapEx	423	504	728	392	423	962	1,106	1,217	1,339
less: Change in Net Working Capital		-529	591	606	-763	-552	-363	-509	-582
FCFF		6,529	7,545	2,695	4,341	8,688	9,662	11,106	**12,674**
discount period					0.5	1.5	2.5	3.5	4.5
PV(FCFF)					4,169	7,695	7,893	8,368	8,807

DCF Pessimistic Case

DCF-valuation	
terminal year FCF	10,787
terminal (perpetual) growth rate	5%
terminal value	330,620
PV(terminal value)	229,737
%EV	87%
Enterprise Value	262,577
(+)Cash &Cash Equivalent	12,114
(-)Debt	12,498
Market Cap	262,193
# Shares outstanding	1,004
Price per share	$ 261.15

Q1 & Q2 (Based on Q2 results)

	Historical Data				Projections				
(in $ millions)	2017A	2018A	2019A	2020A	2020E	2021E	2022E	2023E	2024E
Domestic Assessments	5,130	6,138	6,781	3,157	3,149	7,252	8,123	8,854	9,650
%growth		19.6%	10.5%		-7.0%	15.0%	12.0%	9.0%	9.0%
Cross-border Volume Fees	4,174	4,954	5,606	1,854	1,790	4,737	5,684	6,253	6,878
%growth		18.7%	13.2%		-35.0%	30.0%	20.0%	10.0%	10.0%
Transaction Proessing	6,188	7,391	8,469	4,101	3,860	9,075	10,346	11,381	12,519
%growth		19.4%	14.6%		-6.0%	14.0%	14.0%	10.0%	10.0%
Other Revenues	2,853	3,348	4,124	2,143	2,517	5,406	6,163	7,025	8,009
%growth		17.4%	23.2%		13.0%	16.0%	14.0%	14.0%	14.0%
Rebates and incentives	-5,848	-6,881	-8,097	-3,911	-3,696	-8,847	-10,144	-11,125	-12,200
%total revenue	37.7%	37.2%	38.8%		42%	42%	42%	42%	42%
Net Revenue	12,497	14,950	16,883	7,344	7,621	17,623	20,171	22,388	24,856
%growth		19.6%	12.9%		-11.4%	17.8%	14.5%	11.0%	11.0%
Operating Expenses	5,875	7,668	7,219	3,426	3,607	8,287	9,485	10,527	11,687
%net revvenue	47.0%	51.3%	42.8%		47.0%	47.0%	47.0%	47.0%	47.0%
(non operating income (expenses) item is not shown, assumed expected future value of 100 annually)									
EBIT	6,676	7,390	9,955	3,968	4,063	9,437	10,787	11,961	13,269
margin	53%	49%	59%			54%	53%	53%	53%
Depreciation & Amortization	436	459	522	289	337	754	775	808	849
EBITDA	7,112	7,849	10,477	4,257	4,401	10,190	11,561	12,769	14,118
margin									
less: Tax	2,607	1,345	1,613	564	731	1,699	1,942	2,153	2,388
%effective tax rate					17%	17%	17%	17%	17%
less: CapEx	423	504	728	392	423	962	1,106	1,217	1,339
less: Change in Net Working Capital		-529	591	606	-636	-443	-306	-356	-397
FCFF		6,529	7,545	2,695	3,882	7,973	8,819	9,755	**10,787**
discount period					0.5	1.5	2.5	3.5	4.5
PV(FCFF)					3,728	7,061	7,204	7,350	7,496

Payments Market Total Revenue Projection (conservative)

	Historical Data				Projections				
in Billions	2017A	2018A	2019A	2020A	2020E	2021E	2022E	2023E	2024E
Rev. in Payments Market ($billions)									
cross border									
APAC	85.05	96.8	98.01		91.15	100.26	107.28	114.79	122.83
		13.82%	*1.25%*		*-7%*	*10%*	*7%*	*7%*	*7%*
North Am.	47	51.5	48.78		45.37	49.90	52.40	55.02	57.77
		9.57%	*-5.28%*		*-7%*	*10%*	*5%*	*5%*	*5%*
EMEA	64	69	66.78		62.11	71.42	74.99	78.74	82.68
		7.81%	*-3.22%*		*-7%*	*15%*	*5%*	*5%*	*5%*
Latin America	10.25	14.7	13.58		12.63	15.16	16.22	17.35	18.57
		43.41%	*-7.62%*		*-7%*	*20%*	*7%*	*7%*	*7%*
total domestic									
APAC	340.2	272.8	320.76		298.31	328.14	351.11	375.68	401.98
		-19.81%	*17.58%*		*-7%*	*10%*	*7%*	*7%*	*7%*
North Am.	333.7	360.5	379.4		352.84	388.13	407.53	427.91	449.30
		8.03%	*5.24%*		*-7%*	*10%*	*5%*	*5%*	*5%*
EMEA	172.8	193.2	204.05		189.77	218.23	229.14	240.60	252.63
		11.81%	*5.62%*		*-7%*	*15%*	*5%*	*5%*	*5%*
Latin America	127.1	113.4	114.46		106.45	127.74	136.68	146.25	156.48
		-10.78%	*0.93%*		*-7%*	*20%*	*7%*	*7%*	*7%*

Mastercard Branded GDV historical figures (prepared by ERA Research Analysts)

MA-branded GDV (in $billions)

	FY2017	FY2018	FY2019	Q1 2020	Q2 2020
APMEA	1596	1800	1951	472	409
Canada	157	173	181	40	39
Europe	1476	1738	1948	467	398
Latin-America	382	412	451	107	74
United-States	1613	1769	1937	478	464
Worldwide	5224	5892	6468	1565	1383
% growth vs. year-ago-period		12.79%	9.78%	6%	-14%
Debit and Prepaid Programs					
Worldwide less US	1654	1956	2262	558	484
US	833	923	990	251	280
Worldwide	2487	2879	3253	809	764
% growth vs. year-ago-period		15.76%	12.99%	9%	-5%
Credit and Charge Programs					
Worldwide less US	1956	2168	2268	528	435
US	780	846	947	227	183
Worldwide	2736	3014	3216	755	619
% growth vs. year-ago-period		10.16%	6.70%	2%	-22%

Additional information on volume growth (prepared by ERA Research Analysts)

revenues as proportion of GDV

	2017	2018	2019	2020 first-half
domestic assessment	5130	6138	6781	3157
%GDV	0.0982%	0.1042%	0.1048%	0.1071%
cross-border volume	4174	4954	5606	1854
%GDV	0.0799%	0.0841%	0.0867%	0.0629%
transaction processing	6188	7391	8469	4101
%GDV	0.1185%	0.1254%	0.1309%	0.1391%

cross-border volume growth

2017	2018	2019	2020 E
15%	19%	11%	-25%

Q1 2020 cross-border volume decline (vs. year ago period)
-3%

Q2 2020 cross-border volume decline (vs. year ago period)
-47%