

## FinTech Machine Learning Leaders

### Summary

Today our colleague Abhey Lamba published a report called “*Self-Driving Business on the Horizon? A Look at Enterprise AI*”. Out of our coverage, we believe Square has telegraphed the biggest commitment to machine learning (ML). Square applies ML to manage risk when underwriting a merchant, in marketing to target prospective clients, in support to upsell value-added services, in account management to reduce call center activity, and in its Square Capital lending unit to make better credit decisions. Visa and Mastercard are making investments in ML, particularly to curb transaction fraud.

### Key Points

**Square committed to, and already benefiting from, Machine Learning applications.** Machine Learning (ML) has allowed Square to provide access to card acceptance to a broader base of merchants, often smaller merchants, that otherwise did not have access to the important payments rails of Visa and MasterCard. ML has also automated processes that historically required much more human intervention. For example, Square processes approximately 3 million transactions each day, and ML has allowed for fewer than 2,000 transactions to be manually reviewed. ML has also allowed Square to become very efficient in direct mailing efforts - Square was able to scale their direct mail by 3x without compromising their conversion rate, subsequently driving their total cost of new client acquisition by 50%. Square has extended the application of ML to improve sales efforts, including when it is an opportune time to up-sell an existing client new value-added services. Square’s internal models trigger staff to call or email a client when the data suggests the client would be most receptive to a new value-add service. Management views ML as so critical, that they have created a course for all of their engineers to learn how to start programming ML. The course is mandatory and is being extended to other areas of the company outside of engineering talent. Square’s objective is to approach every business challenge through the lens of ML.

**Large amounts of data aid ML process.** To leverage data science, large quantities of data are necessary and we note there have been 254 million unique cards used on Square during the last 12 months, there were ~1 billion transactions on Square in 2016, and the company has over 2 billion data points collected and updated daily on Square’s sellers. Square’s 10-K notes that the company’s machine learning efforts enables the company to capture and analyze over a billion transactions per year and automate risk assessment for more than 99.95% of all transactions.

Company	Symbol	Price (7/12)	Rating		PT
			Prior	Curr	
Mastercard Incorporated	MA	\$125.28	-	Neutral	\$125.00
Square, Inc.	SQ	\$26.21	-	Buy	\$28.00
Visa Inc.	V	\$96.18	-	Buy	\$115.00

Source: Bloomberg and Mizuho Securities USA

**Thomas McCrohan**  
Manager Director, Americas Research  
+1 212 205 7857  
Thomas.McCrohan@us.mizuho-sc.com

**Leonard DeProspo, CFA**  
Vice President, Americas Research  
+1 212 209 9486  
Leonard.DeProspo@us.mizuho-sc.com

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**Speaking of large amounts of data, Visa and Mastercard are also ramping up activity in ML.** At Visa’s recent Investor Day on June 22, the company noted: “With advances in computing and hardware, we can store massive data sets efficiently, while machine learning systems and neural networks are dramatically improving our ability to interpret the data and to develop new products and services that are entirely data driven...we are embracing these trends as we focus on transforming our technology and championing security.” Visa collects over 6 billion daily “events” that gives the company insight into what’s occurring on the company’s network. Visa can then combine this large data set with its machine learning capabilities to identify any anomalies that exist. Visa’s customized cybersecurity system utilizes this data and is the central system that monitors Visa’s network. Meanwhile, Mastercard has also highlighted its intention to utilize ML to more efficiently authorize transactions and catch identify fraud, noting their Decision Intelligence services use artificial intelligence and machine learning to strengthen the layers of security involved in a transaction. To this end, Mastercard recently acquired NuData, Security, a company that utilizes machine learning to predict and prevent fraudulent transactions. Mastercard’s analyst day is coming up on September 7, and we expect them to discuss ML in more detail as part of their presentation.

## Price Target Calculation and Key Risks

### *Mastercard Incorporated*

#### **Valuation**

Our \$125 price target represents 25.2x our FY18 EPS estimate of \$4.95 per share. This compares to a 3-year average forward P/E of 24.3x, although growth rates over the past three years were adversely impacted by macro-factors, such as FX headwinds, lower gasoline prices (gas purchases = ~10% of total volume), and muted worldwide economic growth.

#### **Risks**

- 1) Regulatory authorities around the world continue to challenge the level of fees paid by merchants for accepting cards. Any downward pressure on interchange fees could influence the behavior of MasterCard issuers (e.g. drop rewards), which in turn could change consumers' willingness to use a MasterCard branded card/payment device.
- 2) Recent sanctions in Russia led to new Russian laws requiring payment networks like MasterCard to establish "on-soil" operations in the country. The longer term impact of this new law is still being determined, and while this appears to be an isolated incident, the creation of country-specific networks could pose a threat to MasterCard.
- 3) Lastly, the US and Europe combined represent a majority of MasterCard's payment volume and therefore a prolonged reduction in consumer spending patterns in any of these two geographies poses a risk

### *Square, Inc.*

#### **Valuation**

Our DCF model assumes EBITDA margins expand 500 bps per annum, in line with management's guidance, to the mid-high 30% range by 2022 (5-years). We also assume net revenue growth slows materially from the current 32% growth rate, to mid-teen growth by 2022 (5-years). We estimate a 21.6% and 21.2% CAGR in gross payment volume (GPV) and net revenue, respectively, leading to a ~2.1% market share, versus ~0.9% today. With US\$49.7 billion of GPV in FY16 Square ranks as a top-20 merchant acquirer in terms of total volume processed, and we expect GPV to grow an additional 30% this year. We estimate Square will be a top-10 acquirer within five years. Of note, the 10th-largest acquirer today generates \$121 billion of volume with a material drop-off to #11 (\$62 billion).

#### **Risks**

- 1) The company's main merchant category is micro-merchants, which carry the highest fraud rates of any size category. We believe this leaves the company open to potentially large one-time loss events that could negatively affect financials.
- 2) In addition, any sluggish macroeconomic environment that results in slowing of growth small to mid-sized (SME) businesses could prove negative to financials. Also, as a merchant processor, the company stores valuable credit and debit card information that makes the company a target of cyber criminals.

### *Visa Inc.*

#### **Valuation**

Visa's unique secular tailwinds (cash to electronic), high barriers to entry (acceptance network, two sided market dynamics), massive addressable market and revenue

visibility all support a premium multiple. Our \$115 price target represents 27.9x our CY18 EPS estimate of \$4.11/share. Visa has a Sept. fiscal year end.

**Risk**

- 1) Regulatory authorities around the world continue to challenge the level of fees paid by merchants for accepting cards. Any downward pressure on interchange fees could influence the behavior of MasterCard issuers (e.g. drop rewards), which in turn could change consumers' willingness to use a MasterCard branded card/payment device.
- 2) Recent sanctions in Russia led to new Russian laws requiring payment networks like MasterCard to establish "on-soil" operations in the country. The longer term impact of this new law is still being determined, and while this appears to be an isolated incident, the creation of country-specific networks could pose a threat to Mastercard.
- 3) Lastly, a cautious U.S. consumer (US is >50% of Visa payment volume) could continue to create a mixed economic growth backdrop as U.S. consumers direct excess cash to debt reduction as opposed to consumption.

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**Investment Risks and Valuation Methods can be located in the following section of this research report - Price Target Calculation and Key Risks.**

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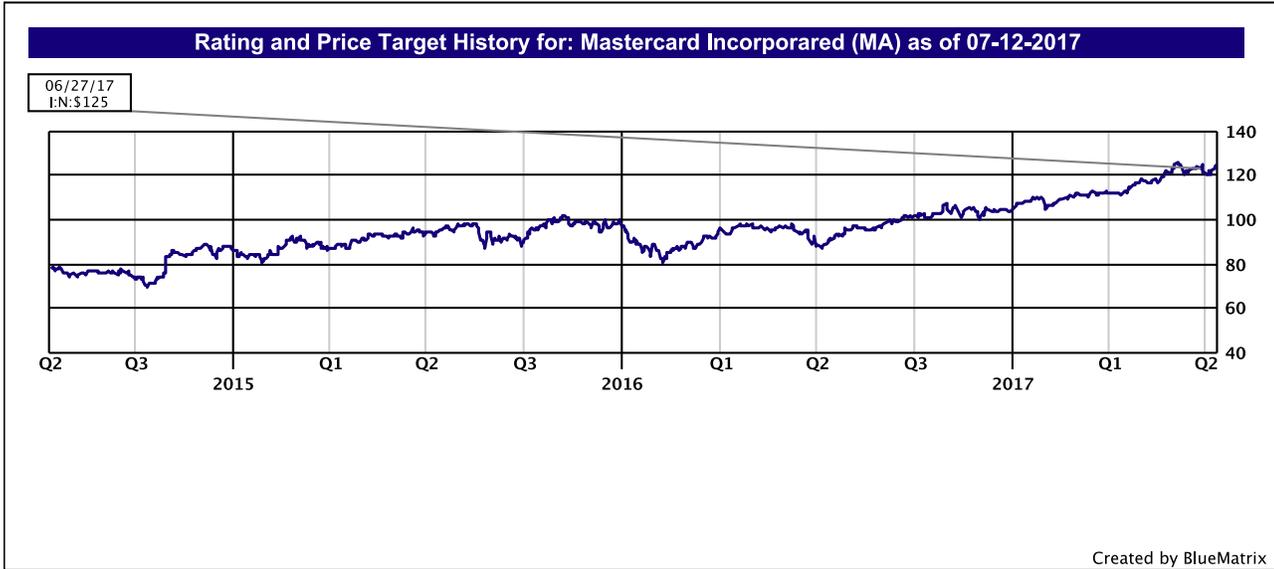
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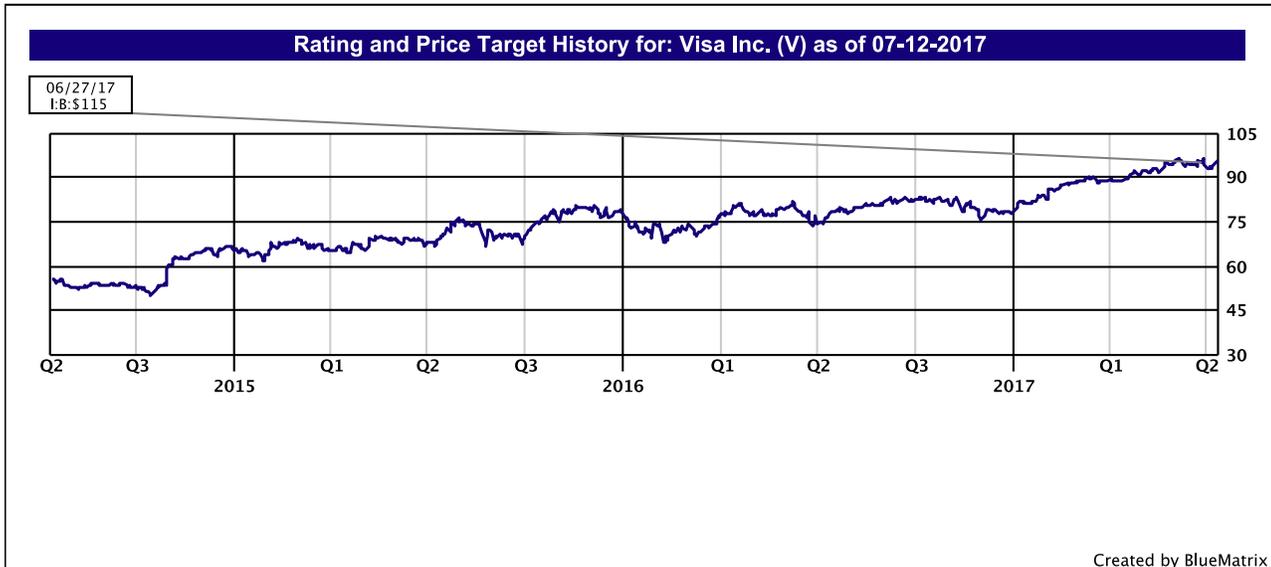
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(As of 7/12)	% of coverage	IB service past 12 mo
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Hold (Neutral)	50.97%	33.33%
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