

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

PLEASE REFER TO PAGE 5 OF THIS REPORT FOR IMPORTANT DISCLOSURE AND ANALYST CERTIFICATION INFORMATION. Mizuho Securities USA LLC does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

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.

IMPORTANT DISCLOSURES

The disclosures for the subject companies of this report as well as the disclosures for Mizuho Securities USA LLC entire coverage universe can be found at <https://msusa.bluematrix.com/sellside/Disclosures.action> or obtained by contacting EQSupervisoryAnalystUS@us.mizuho-sc.com or via postal mail at Equity Research Editorial Department, Mizuho Securities USA LLC, 320 Park Avenue, 12th Floor, New York NY, 10022.

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

Ownership Disclosures and Material Conflicts of Interest or Position as Officer or Director

As of the date of this report, the research analyst listed on the cover page of this report or household member beneficially owns or has a financial interest in None of the Mastercard Incorporated/Square, Inc./Visa Inc..

Receipt of Compensation

Mizuho Securities USA LLC and or its affiliates makes a market in the following securities: Mastercard Incorporated, Square, Inc. and Visa Inc.

Mizuho Securities USA LLC and or its affiliates has received compensation for investment banking services for Mastercard Incorporated in the past 12 months.

Mizuho Securities USA LLC and or its affiliates has managed or co-managed a public offering of securities for Mastercard Incorporated in the past 12 months.

Mizuho Securities USA LLC and or its affiliates have provided investment banking services for Mastercard Incorporated who is or was a client in the past 12 months.

The compensation of the research analyst writing this report, in whole or part, is based on MSUSA's annual revenue and earnings and is not directly related to any specific investment banking compensation. MSUSA's internal policies and procedures prohibit research analysts from receiving compensation from companies covered in the research reports.

Regulation Analyst Certification (AC)

I, Thomas McCrohan, hereby certify that the views expressed in this research report accurately reflect my personal views about any and all the subject companies. No part of my compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report.

Rating Definitions

Mizuho Securities USA investment ratings are based on the following definitions: Anticipated share price change is based on a 12-month time frame. Return expectation is based on the stock's total return. For disclosure purposes (for purposes of the FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Buy, Neutral, and Underperform. (effective July 1, 2017).

Buy: Stock's total return is expected to appreciate above the average total return of the analyst's industry coverage universe, on a risk-adjusted basis, over the next 12 months.

Neutral: Stock's total return is expected to be within the average total return of the analyst's industry coverage universe, on a risk-adjusted basis, over the next 12 months.

Underperform: Stock's total return is expected to depreciate below the average total return of the analyst's industry coverage universe, on a risk-adjusted basis, over the next 12 months.

RS: Rating Suspended - rating and price objective temporarily suspended.

NR: No Rating - not covered, and therefore not assigned a rating.

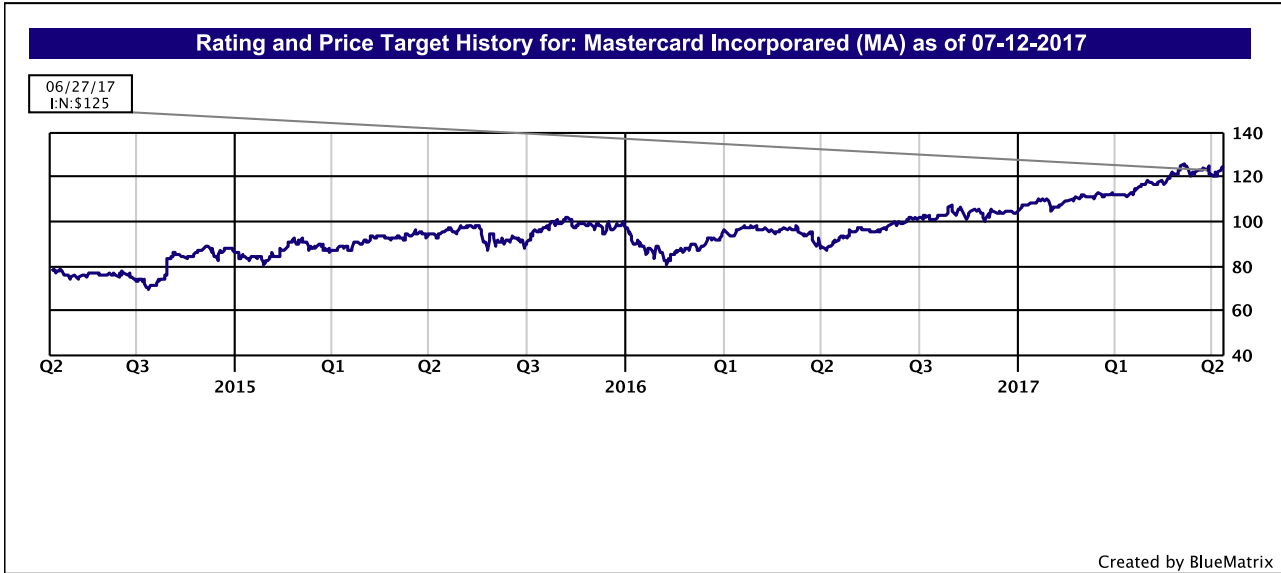
Mizuho Securities USA LLC investment ratings are based on the following definitions. Anticipated share price change is based on a 6- to 12-month time frame. Return expectation excludes dividends (prior to July 10, 2017).

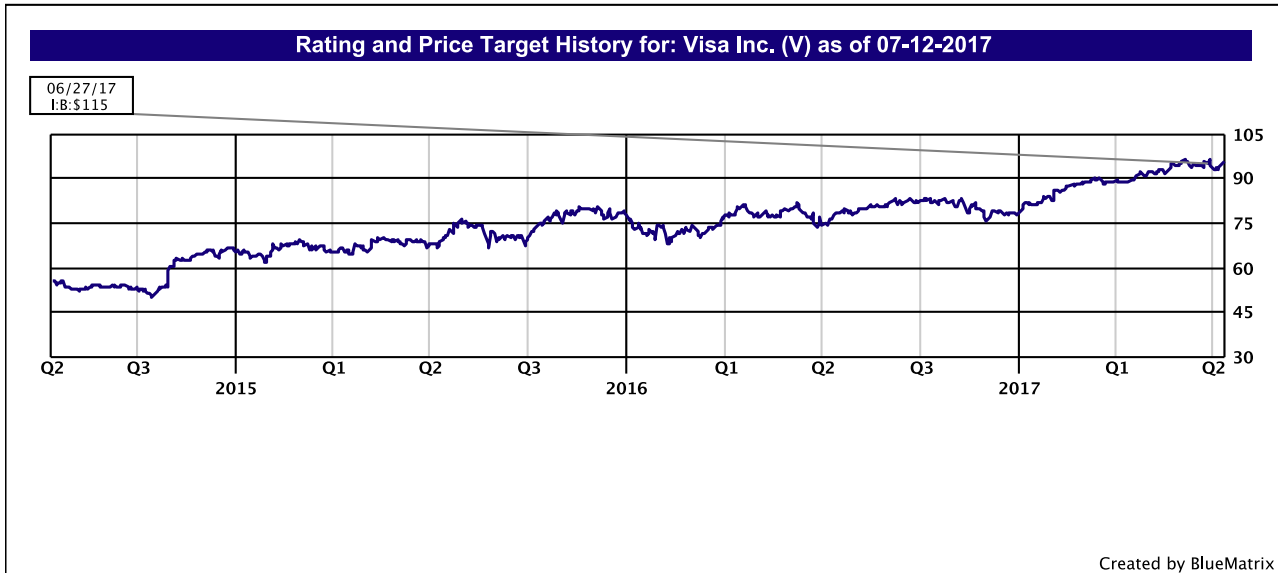
Buy: Stocks for which the anticipated share price appreciation exceeds 10%.
Neutral: Stocks for which the anticipated share price appreciation is within 10% of the share price.
Underperform: Stocks for which the anticipated share price falls by 10% or more.
RS: Rating Suspended - rating and price objective temporarily suspended.
NR: No Rating - not covered, and therefore not assigned a rating.

Rating Distribution

(As of 7/12)	% of coverage	IB service past 12 mo
Buy (Buy)	43.24%	52.68%
Hold (Neutral)	50.97%	33.33%
Sell (Underperform)	5.79%	46.67%

For disclosure purposes only (NYSE and FINRA ratings distribution requirements), our Buy, Neutral and Underperform ratings are displayed as Buy, Hold and Sell, respectively.





For additional information: Please log on to <http://www.mizuho securities.com/us> or write to Mizuho Securities USA LLC 320 Park Ave, 12th FL, New York, NY 10020.

Disclaimers

This report has been prepared by Mizuho Securities USA LLC (“MSUSA”), a subsidiary of Mizuho Americas LLC, solely for the purpose of supplying information to the clients of MSUSA and/or its affiliates to whom it is distributed. This report is not, and should not be construed as, a solicitation or offer to buy or sell any securities or related financial products.

This report has been prepared by MSUSA solely from publicly available information. The information contained herein is believed to be reliable but has not been independently verified. MSUSA makes no guarantee, representation or warranty, and MSUSA, MHSC and/or their affiliates, directors, employees or agents accept no responsibility or liability whatsoever as to the accuracy, completeness or appropriateness of such information or for any loss or damage arising from the use or further communication of this report or any part of it. Information contained herein may not be current due to, among other things, changes in the financial markets or economic environment. Opinions reflected in this report are subject to change without notice.

This report does not constitute, and should not be used as a substitute for, tax, legal or investment advice. The report has been prepared without regard to the individual financial circumstances, needs or objectives of persons who receive it. The securities and investments related to the securities discussed in this report may not be suitable for all investors, and the report is intended for distribution to Institutional Investors. Readers should independently evaluate particular investments and strategies, and seek the advice of a financial adviser before making any investment or entering into any transaction in relation to the securities mentioned in this report.

MSUSA has no legal responsibility to any investor who directly or indirectly receives this material. Investment decisions are to be made by and remain as the sole responsibility of the investor. Investment involves risks. The price of securities may go down as well as up, and under certain circumstances investors may sustain total loss of investment. Past performance should not be taken as an indication or guarantee of future performance. Unless otherwise attributed, forecasts of future performance represent analysts’ estimates based on factors they consider relevant. Actual performance may vary. Consequently, no express or implied warranty can be made regarding future performance.

Any references in this report to Mizuho Financial Group, Inc. (“MHFG”), MHSC and/or its affiliates are based only on publicly available information. The authors of this report are prohibited from using or even obtaining any insider information. As a direct subsidiary of Mizuho Americas LLC and indirect subsidiary of MHFG, MSUSA does not, as a matter of corporate policy, cover MHFG or MHSC for investment recommendation purposes.

MSUSA or other companies affiliated with MHFG, Mizuho Americas LLC or MHSC, together with their respective directors and officers, may have or take positions in the securities mentioned in this report, or derivatives of such securities or other securities issued by companies mentioned in this report, for their own account or the accounts of others, or enter into transactions contrary to any recommendations contained herein, and also may perform or seek to perform broking and other investment or securities related services for the companies mentioned in this report as well as other parties generally.

Restrictions on Distribution

This report is not directed to, or intended for distribution to or use by, any person who is a citizen or resident of, or entity located in, any locality, territory, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to or restricted by law or regulation. Persons or entities into whose possession this report comes should inform themselves about and observe such restrictions.

United States: Mizuho Securities USA LLC, a subsidiary of Mizuho Americas LLC, 320 Park Avenue, 12th Floor, New York, NY 10022, USA, contact number +1-212-209-9300, distributes or approves the distribution of this report in the United States and takes responsibility for it. Any transaction by a US investor resulting from the information contained in this report may be effected only through MSUSA. Interested US investors should contact their MSUSA sales representative.

United Kingdom/European Economic Area: This report is distributed or has been approved for issue and distribution in the UK by Mizuho International plc (“MHI”), Mizuho House, 30 Old Bailey, London EC4M 7AU, a member of the MHSC Group. MHI is authorized and regulated by the Financial Services Authority and is a member of the London Stock Exchange. For the avoidance of doubt this report is not intended for retail clients. This report may be distributed in other member states of the European Union.

Japan: This report is distributed in Japan by Mizuho Securities Co., Ltd. (“MHSC”), Otemachi First Square Otemachi 1-chome, Chiyoda-ku, Tokyo 100-0004, Japan. Registered Financial Instruments Firm, No. 94 (Kinsho), issued by the Director, Kanto Local Finance Bureau. MHSC is a member of the Japan Securities Dealers Association, the Japan Securities Investment Advisers Association and the Financial Futures Association of Japan, and the Type II Financial Instruments Firms Association.

Singapore: This report is distributed or has been approved for distribution in Singapore by Mizuho Securities (Singapore) Pte. Ltd. (“MHSS”), a member of the MHSC Group, which is regulated by the Monetary Authority of Singapore. Any research report produced by a foreign Mizuho entity, analyst or affiliate is distributed in Singapore only to “Institutional Investors,” “Expert Investors” or “Accredited Investors” as defined in the Securities and Futures Act, Chap. 289 of Singapore. Any matters arising from, or in connection with this material, should be brought to the attention of MHSS.

Hong Kong: This report is being distributed in Hong Kong by Mizuho Securities Asia Limited (“MHSA”), a member of the MHSC Group, which is licensed and regulated by the Hong Kong Securities and Futures Commission.

Australia: This report is being distributed in Australia by MHSA, which is exempted from the requirement to hold an Australian financial services license under the Corporation Act 2001 (“CA”) in respect of the financial services provided to the recipients. MHSA is regulated by the Securities and Futures Commission under the laws of Hong Kong, which differ from Australian laws. Distribution of this report is intended only for recipients who are “wholesale clients” within the meaning of the CA.

If you do not wish to receive our reports in the future, please contact your sales person and request to be removed from receiving this distribution.

© Mizuho Securities USA LLC. All Rights Reserved 2017. This document may not be altered, reproduced or redistributed, or passed on to any other party, in whole or in part, without the prior written consent of Mizuho Securities USA LLC.