

ETA – Goldman Sachs Merchant Acquirer and ISO Survey: Spring 2015

Equity Research

Volume trends, mobile payments adoption, and Bitcoin are key themes

ETA – Goldman Sachs Merchant Acquirer and ISO Survey

This report presents key findings from the Electronic Transactions Association-Goldman Sachs (ETA-GS) Merchant Acquirer & ISO Survey – Spring 2015, which collected insights from 64 merchant acquirers and ISOs of all sizes across the United States on emerging payments trends.

Business trends: Most expect acceleration in volumes

64% of respondents expect consumer payment volumes to grow at an accelerated rate in 1H15 vs. 1H14, with just 6% citing decelerating volume trends. The constructive outlook on payment trends is consistent with our analysis of US retail data, which points to sustained volume improvement. Most frequently cited drivers of lost business were new entrants (Square, Intuit, etc.) and smaller merchant acquirers & ISOs. It appears that smaller acquirers & ISOs may be gaining share, potentially with lower pricing.

Mobile: Apple Pay is still a low priority for small merchants

Despite significant market expectations around Apple Pay, there is still limited inbound interest from small merchants. Separately, our data suggests novelty and “cool factor” is the main driver of merchant interest. Although there is still significant uncertainty among merchant acquirers & ISOs as to whether new entrants in payments represent threats or potential partners, Google is increasingly seen as a viable partner vs. prior surveys.

Digital currencies: Significant uptick in Bitcoin adoption

Digital currencies like Bitcoin have shown a significant uptick in adoption among merchant acquirers/ISOs relative to our prior survey, in part driven by perceived lower cost of merchant acceptance. We note that 11% of merchant acquirers/ISOs now support Bitcoin payments (versus 2% in Fall 2014), and 23% expect to support Bitcoin payments within three years.

Integrated payments: Adoption gains further momentum

Integrated payments technology solutions are seeing increased adoption relative to our prior survey, with a variety of technology solutions being adopted by merchants. We note 61% of respondents indicated that 15% or more of their merchants are using iPOS solutions today (vs. 43% prior).

EMV: Expected to reach 45% adoption in the US exiting 2015

EMV terminal adoption remains consistent with respondents' prior expectations, with approximately 45% of merchant locations expected to be enabled by the end of 2015. Our survey noted no meaningful change in expectations around EMV adoption following the launch of Apple Pay.

James Schneider, Ph.D.

(917) 343-3149 james.schneider@gs.com
Goldman, Sachs & Co.

S.K.Prasad Borra

(917) 343-7293 skprasad.borra@gs.com
Goldman, Sachs & Co.

Jordan Fox

(917) 343-9157 jordan.fox@gs.com
Goldman, Sachs & Co.

Margarite Halaris

(801) 741-5443 margarite.halaris@gs.com
Goldman, Sachs & Co.

Jeffrey Chen

(917) 343-2456 jeffrey.j.chen@gs.com
Goldman, Sachs & Co.

Goldman Sachs 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. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html. Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

Contents

Volume trends, mobile payments adoption, and Bitcoin are key themes	3
General industry trends: Volume outlook remains healthy, while small merchant acquirers/ISOs gain share – but at a price	4
Mobile payments and new entrants: Apple Pay is still a low priority for small merchants; ambivalence around the role of new entrants	5
Digital currencies: Notable uptick in Bitcoin adoption	8
Integrated payments (iPOS) adoption gains further momentum	9
EMV: Expected to reach ~45% adoption in the US exiting 2015	11
Respondent overview	13
Disclosure Appendix	14

Volume trends, mobile payments adoption, and Bitcoin are key themes

This report presents key findings from the Spring 2015 Electronic Transactions Association – Goldman Sachs (ETA-GS) Merchant Acquirer & ISO Survey, which asked merchant acquirers and independent sales organizations (ISOs) for their insights on key trends in payments.

We collected 64 survey responses from merchant acquirers and ISOs of various sizes and across the United States. The survey addressed industry volume and attrition rates, mobile payments adoption and new entrants, expectations for digital currencies, trends in the adoption of integrated payments and the pace of EMV adoption.

Key findings from our survey include: (1) Payments volume growth remains healthy, with lost business being attributed to a mix of new entrants like Square/Amazon/Intuit/others, smaller acquirers/ISOs, as well as integrated payments resellers and distributors; (2) Despite significant market expectations around Apple Pay, there is limited inbound interest from small merchants, and Google is increasingly seen as a viable commercial partner relative to prior surveys; (3) Digital currencies like Bitcoin have shown a significant uptick in adoption among merchant acquirers and ISOs relative to our prior survey, driven in part by the perceived lower cost of merchant acceptance; (4) Integrated payments technology solutions are seeing more meaningful adoption relative to our prior survey, with a variety of technology solutions being adopted by merchants; (5) EMV terminal adoption remains consistent with respondents' prior expectations, with approximately 45% of merchant locations expected to be enabled by the end of 2015. Our survey noted no meaningful change in expectations around EMV adoption following the launch of Apple Pay.

Who is the Electronic Transactions Association?

The Electronics Transactions Association (ETA) is the leading international trade association for the electronic transaction processing community. The ETA has more than 500 member companies worldwide, including leading financial institutions, transaction processors, ISOs and equipment suppliers.

Why did we survey merchant acquirers and ISOs?

Merchant acquirers and ISOs play a critical role in electronic transactions as they enable merchant adoption of electronic payment methods. On a daily basis, they actively engage merchants on various payments topics – and they are responsible for negotiating the price to merchants for accepting electronic payments (the merchant discount rate, or MDR). Given their merchant relationships, acquirers and ISOs also serve as a distribution channel to retailers, including point of sale (POS) vendors and providers of loyalty solutions. Although large retailers have substantial bargaining power and often make payments-related decisions unilaterally, merchant acquirers and ISOs can play an influential role with small-and medium-sized (SME) merchants.

A word on comparisons

Throughout this report we compare results from the current survey with results from our prior surveys (see our October 2014, March 2014 and January 2013 publications: ETA-GS Merchant Acquirer & ISO Survey). We make these comparisons for illustrative purposes, highlighting when sentiment on a particular topic shifts significantly. However, because responses are anonymous, we cannot ensure whether respondents remain the same across multiple surveys.

General industry trends: Volume outlook remains healthy, while small merchant acquirers/ISOs gain share – but at a price

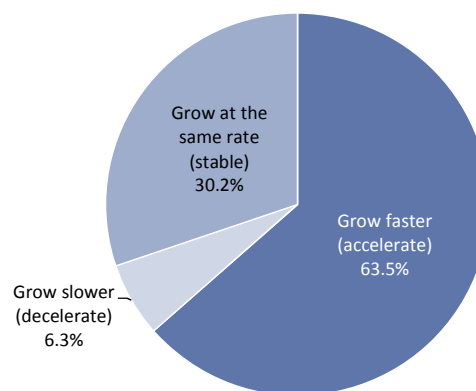
Most respondents in our survey remain constructive on the prospects for accelerating payment volume growth in 1H 2015, consistent with the sentiment in our October survey. Similarly, merchant acquirers/ISOs continue to view new entrants in the payments market (including Square, Intuit, Amazon, etc.) as key drivers of lost business. However, smaller merchant acquirers/ISOs are now appearing to gain market share, representing a notable shift in the competitive outlook highlighted in our prior survey. Respondents share an optimistic view on AmEx’s OptBlue program.

Volume trends: Most expect accelerating growth to continue in 1H 2015

Our survey suggests that payment volume trends in the United States are likely to accelerate further in 1H 2015. 64% of respondents in our survey expect industry volume growth to grow at a faster rate than last year (accelerate), 30% expect volume growth to remain constant (stable), and just 6% expect volume growth to decline or decelerate (Exhibit 1). The constructive outlook on payments volume is consistent with our October reading. More broadly, the results support our own analysis of retail data in the United States, which points to sustained health in demand. We also note that we expect lower gas prices to translate to incremental discretionary spending over the course of 2015, which should support improving volume trends.

Exhibit 1: Based on your in-house view of the domestic/global economy, do you expect electronic payment growth to grow faster (accelerate), grow slower (decelerate), or remain stable relative to the first half of 2014?

64% of respondents expect payment volumes to accelerate



Source: ETA, Goldman Sachs Global Investment Research.

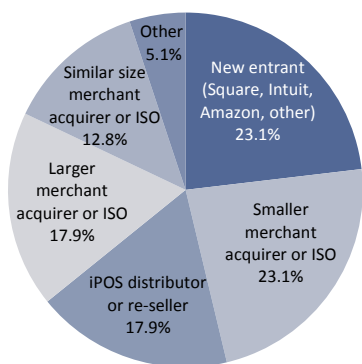
Merchant attrition: Smaller merchant acquirers gaining share – but at a price

Sources of merchant attrition (lost business) for merchant acquirers/ISOs responding to our survey remained varied, but the results highlighted a notable shift in the competitive positioning of larger vs. smaller merchant acquirers/ISOs relative to our prior survey. In our October 2014 survey, about 55% respondents surveyed saw most business lost to traditional merchant acquirers/ISOs of similar or larger scale. This view was consistent with our industry outlook that suggested larger merchant acquirers may be using their scale

advantage to compete more aggressively on price. However, our latest results suggest that only approximately 31% of respondents now see similar or larger size merchant acquirers/ISOs as being responsible for lost business. Somewhat surprisingly, smaller merchant acquirers/ISOs, were cited by 23% of respondents as a significant source of attrition, up significantly from just 4% in our prior survey. We believe these results suggest that smaller merchant acquirers/ISOs may be gaining share – despite competitive headwinds from larger scale players moving down market – but potentially at the expense of pricing. We note that new entrants in the market (Square, Intuit, Amazon, etc.) were also cited by 23% of respondents as key drivers of merchant attrition – which was consistent with our previous survey. iPOS distributors, resellers, and VARs were cited by 18% of respondents, an uptick from 12% in our prior reading (Exhibit 2). Separately, we highlight that the majority of merchants (72%) are optimistic that the AmEx OptBlue program will incrementally benefit their business (Exhibit 3).

Exhibit 2: Regarding merchant attrition, to whom do you believe you have lost more business over the past 12 months?

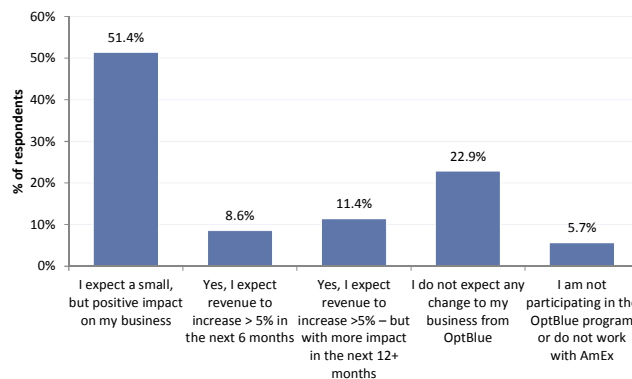
Most respondents see new entrants and merchant acquirers/ISOs of smaller size as responsible for lost business



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 3: Do you expect AmEx’s OptBlue program to make a significant impact on your business?

Most merchants expect to benefit from AmEx OptBlue



Source: ETA, Goldman Sachs Global Investment Research.

Mobile payments and new entrants: Apple Pay is still a low priority for small merchants; ambivalence around the role of new entrants

We expect 2015 to be a critical year for mobile payments. Following the Apple Pay launch, we believe the introductions of MCX’s CurrentC, Samsung Pay and a potential response by Google later this year will help promote consumer adoption over the long run. But for now, interest in mobile payments among small merchants remains relatively limited. Our survey results suggest merchants’ interest in current mobile payment solutions like Apple Pay is limited, while optimism around new mobile payment networks such as MCX is predictably low. Notably, there is still significant uncertainty among many merchant acquirers and ISOs as to whether new entrants like Apple, Google, and Amazon represent significant threats or potential partners.

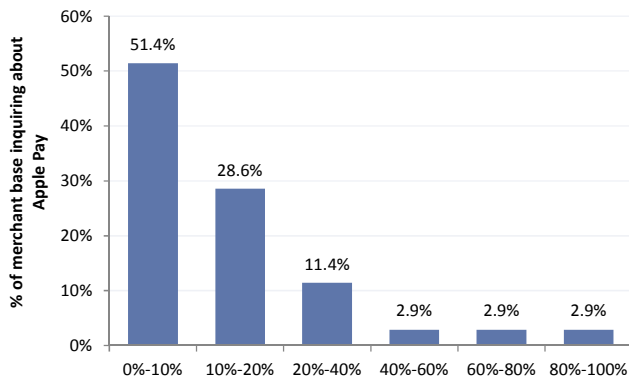
Novelty and “cool factor” – not security – is the main merchant driver for Apple Pay...

Our survey results suggest that merchants’ interest in Apple Pay remains limited. 80% of our respondents indicated that only 0% - 20% of their merchant base have inquired about

Apple Pay to date. We believe this low reading reflects a lack of economic incentive on behalf of merchants to upgrade legacy POS infrastructure (Exhibit 4). Separately, our survey results suggest that merchants with interest in Apple Pay cited novelty and “cool factor” as the predominant reason driving their interest (43%), well above other factors including customers asking for it (20%) and competitors starting to use it (14%). Notably, no merchants cited added security benefits as a motivating factor (Exhibit 5).

Exhibit 4: From what portion of your merchant base are you fielding incoming queries regarding Apple Pay?

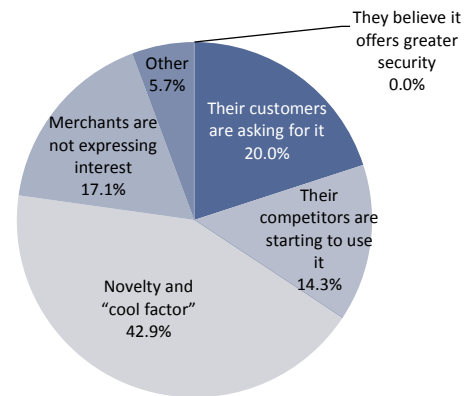
Merchants’ inbound interest in Apple Pay is relatively low



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 5: What is cited by your merchants as the reason for interest in Apple Pay?

Novelty – not security – is the main driver for Apple Pay



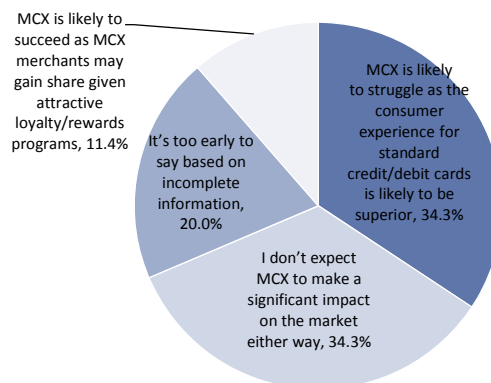
Source: ETA, Goldman Sachs Global Investment Research.

Skepticism remains predictably high regarding the outlook for MCX

Our data suggests that merchants remain skeptical around the commercial viability of MCX. We note that MCX (Merchant Customer Exchange) is a joint venture among leading U.S. retailers (including Wal-Mart, Best Buy, Target and many others), which plans to launch CurrentC (a QR code-based mobile wallet solution with loyalty and rewards) in 2015. Despite the consortium of retail companies behind the program, 69% of respondents expect MCX/CurrentC to struggle to gain traction with the consumer or make a significant impact on the market (Exhibit 6).

Exhibit 6: Based on your industry knowledge, what impact do you expect from MCX/Current C when it launches?

Respondents expect MCX to struggle in gaining market traction



Source: ETA, Goldman Sachs Global Investment Research.

Significant uncertainty on the potential role of new entrants persists

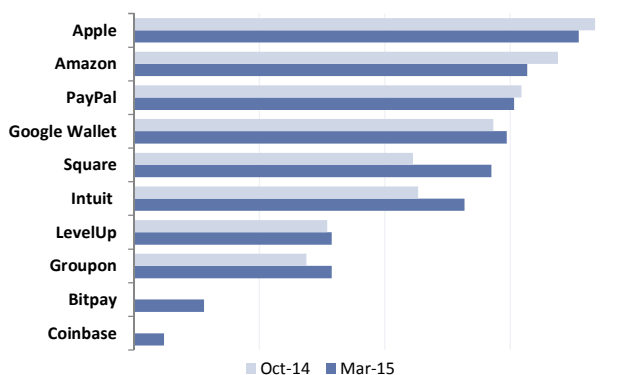
We asked survey participants to rank new entrants in the payments landscape – including Apple, Amazon, Google and others – as threats and potential partners. Once again, merchant acquirers/ISOs are ambivalent as to whether new entrants represent threats or partners. We note that Apple, Amazon, Google and PayPal were cited as both the top four threats and potential partners among respondents surveyed (Exhibits 7 and 8). However, we find it somewhat surprising that merchant acquirers/ISOs still cite Apple as a significant threat given Apple Pay’s reinforcement of existing economic structures among incumbent players in the payments landscape. We believe this suggests that industry participants expect that Apple’s business model in payments could evolve over time.

Amazon, Google, and Apple were also cited as the three most likely industry partners. Although Amazon and Apple had ranked highly in prior surveys, Google’s rise to #2 in our ranking (from #6 previously) is notable. We think these results reflect Google’s recent efforts to expand its presence in the payments ecosystem as a legitimate competitor to Apple, given the company’s recent acquisition of SoftCard (a mobile wallet solution previously owned by AT&T, Verizon and T-Mobile). We believe the extensive overlap between potential threats and partners in our results underscores the significant uncertainty around the potential role of new entrants in the market.

Loyalty and analytics solutions viewed as driving “stickier” merchant business

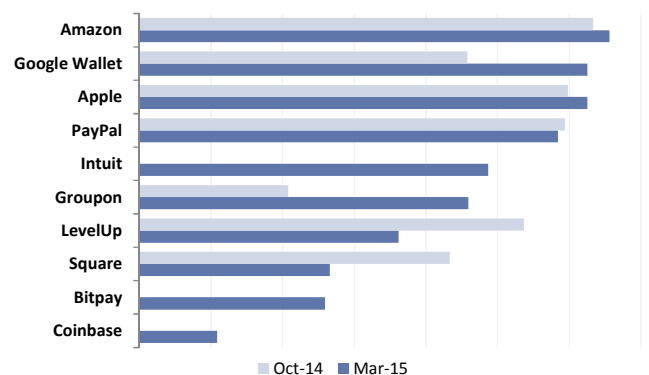
New customer loyalty and analytics solutions have long been viewed as ways for merchant acquirers/ISOs to enhance the “stickiness” of existing merchant business, and to provide supplemental revenue streams for traditional processing business. Most respondents in our survey cited loyalty and analytics solutions as providing the ability to help drive lower merchant attrition, defend from price competition, or differentiate in competitive bids. But a significant number also suggested that they view loyalty and analytics solutions as an incremental revenue source (Exhibit 9).

Exhibit 7: Which of the following do you view as the biggest potential threat to merchant acquirers and ISOs?
Ranked in order of biggest threat to merchant acquirers/ISOs



Source: ETA, Goldman Sachs Global Investment Research.

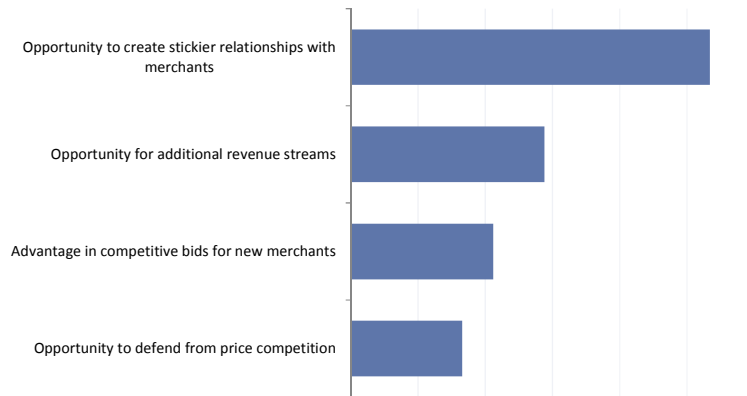
Exhibit 8: Which of the following do you view as the most likely partner for merchant acquirers and ISOs?
Ranked in order of most likely to partner with merchant acquirers/ISOs



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 9: How would you rank order the benefits you expect to see from offering loyalty and other valued-added services?

Ranked order of benefits from offering loyalty solutions or other-value-added services to merchants



Source: ETA, Goldman Sachs Global Investment Research.

Digital currencies: Notable uptick in Bitcoin adoption

The integration of digital currencies (such as Bitcoin) into the traditional payment ecosystem remains in its earliest stages. However, our survey indicated a notable increase around acceptance for digital currencies relative to our prior reading – although many respondents still highlight that significant challenges remain for Bitcoin in the merchant acquiring space.

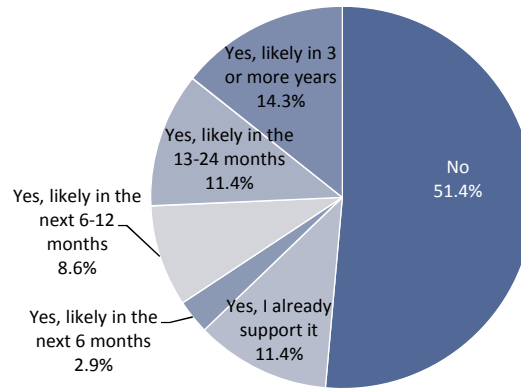
Bitcoin adoption, while still low, has notably increased relative to prior surveys

In the context of our October 2014 survey, which indicated only 2% of merchant acquirers/ISOs surveyed accept Bitcoin (up from nil in our March 2014 survey), 11% of merchant acquirers/ISOs now support merchant acceptance of Bitcoin. Also, 12% of respondents now expect to enable Bitcoin in the next year, which is consistent with expectations in our prior survey (13%). 23% of merchant acquirers/ISOs expect to enable Bitcoin acceptance within three years (Exhibit 10). We see the continued traction for Bitcoin adoption to be largely a result of lower cost of merchant acceptance relative to traditional credit/debit payment forms.

In terms of the most attractive features of digital currencies from a merchant acquirer/ISO perspective, the most common reason cited was low cost of merchant acceptance (29%), which represented an uptick from our prior reading (23%). Respondents also noted the lack of need for banking oversight (24%) and anonymity of user as reasons (21%) for adoption (Exhibit 11). We note that merchant acquirers/ISOs previously surveyed cited ease of cross-border transactions as the most attractive feature, but this option fell from 34% to 18% in our latest results. When asked about the biggest impediment they see to the acceptance of Bitcoin, most respondents cited the lack of value proposition as the primary reason (41%), representing a notable jump from our prior reading (23%). Respondents also cited lack of regulation or central bank oversight as impediments, which was largely consistent with our prior survey (Exhibit 12).

Exhibit 10: Do you plan to enable acceptance of Bitcoin for your merchants?

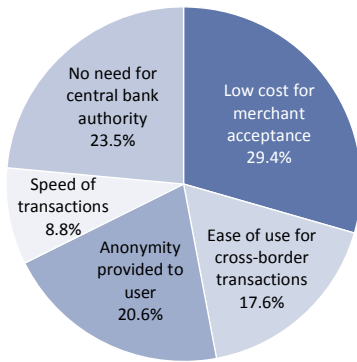
A majority of respondents have no plans, but adopters have meaningfully increased from our last survey



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 11: What do you view as the most attractive feature of digital currencies?

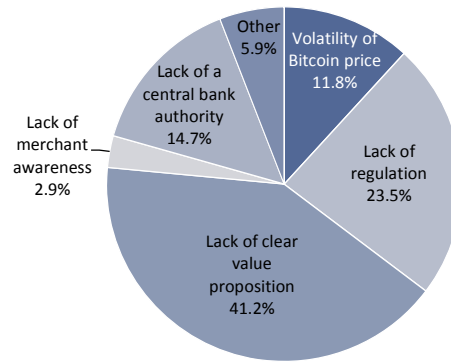
Low merchant costs and lack of central oversight were cited as drivers



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 12: What is the biggest obstacle to mass adoption of digital currencies?

Lack of value proposition cited as primary barrier to adoption



Source: ETA, Goldman Sachs Global Investment Research.

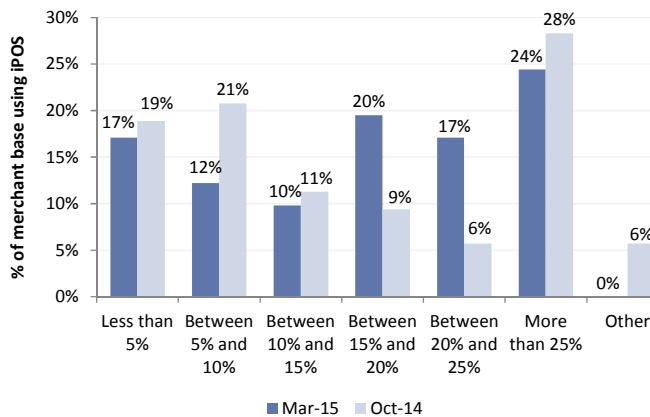
Integrated payments (iPOS) adoption gains further momentum

As we highlight in our sector launch report (Resume on Payments: *Cashless destiny is ahead, with a few minor bumps*, July 8, 2014), we believe merchant acquirers will increasingly seek to embrace integrated payment technologies in order to drive a “stickier” base of merchant business. As highlighted in our survey, more merchant acquirers have begun to offer integrated POS solutions, and we expect this adoption to remain a significant industry theme in the medium term.

Adoption of integrated payments (iPOS) gains further momentum

In the context of our October 2014 survey, which noted a significant bifurcation in adoption rates of iPOS solutions among survey respondents, our March 2015 reading suggests that adoption has increased further (Exhibit 13). Note that our definition of iPOS (integrated point of sale systems) includes tablet-based registers, smartphone-based card readers, and custom PC-based payment systems. 61% of respondents indicated that 15% or more of their merchants are using iPOS solutions today which compares to just 43% of respondents in our prior survey. We would note that this data is in line with our own industry estimate that suggests that about 15% of the total merchant base in the United States is currently enabled with iPOS systems.

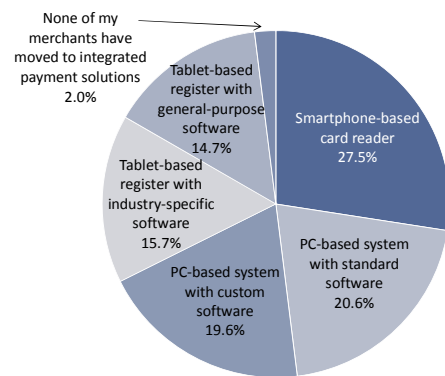
Exhibit 13: What percentage of your merchant base is currently using integrated payment technology?
61% respondents believe >15% of merchant base uses iPOS



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 14: What forms of integrated payment technologies are commonly used by your merchants today?

No "one size fits all" solution for integrated payments



Source: ETA, Goldman Sachs Global Investment Research.

...and there is no "one size fits all" solution for integrated payments

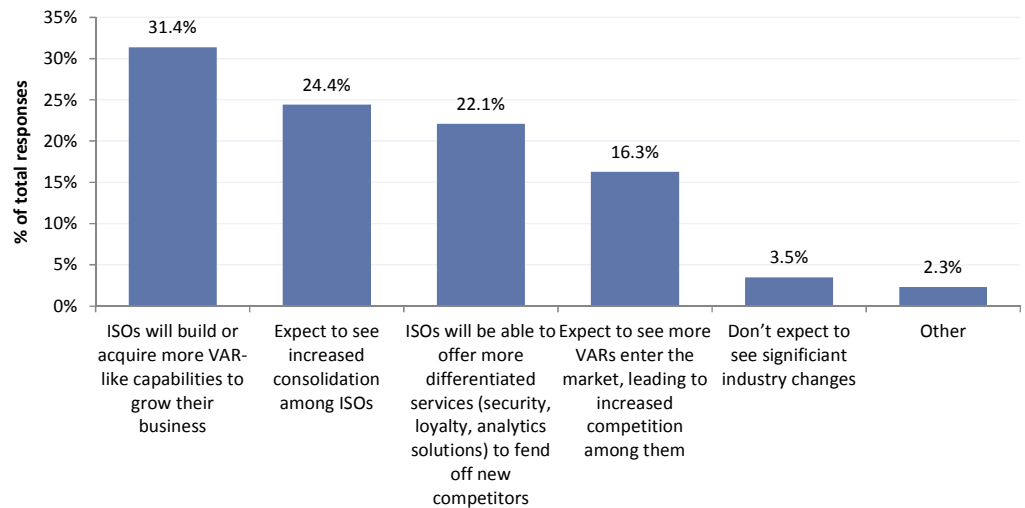
Our survey suggests that preference among merchants for a particular integrated payment solution is diversified across a variety of technology form factors. 40% of respondents indicated that their merchants use a PC-based system with standard or customer software, 30% of respondents indicated that their merchants use a tablet-based register with general-purpose or industry-specific software, and 28% of respondents indicated that their merchants use a smartphone-based card reader (Exhibit 14). Given the breadth of merchant-specific needs across the commercial landscape, it comes as no surprise that no single form of iPOS solution has become dominant.

ISO / VAR landscape likely to undergo meaningful change in medium term

We asked our respondents how they expect the ISO and VAR landscape will change, if at all, over the medium term. Although there was a general consensus that in light of increased market competition, ISOs and VARs (Valued-Added Resellers of hardware and software) would need to modify their current strategies in order to remain competitive, there was no consensus on a single strategy. 31% of our respondents believe ISOs will build or acquire more VAR-like capabilities, 24% expect to see increased consolidation among ISOs, 22% of our respondents see ISOs offering more differentiated services (including security, loyalty, and analytics), and 16% expect to see more VARs enter the market. Consistent with the mixed results of the survey, we expect significant flux in the ISO / VAR landscape, and we will be monitoring the situation closely.

Exhibit 15: Given your knowledge of the ISO and VAR (hardware/software reseller) payments sales channels, how do you expect the industry landscape to change over the next 2 - 3 years?

Respondents cited mixed industry changes over the medium-term



Source: ETA, Goldman Sachs Global Investment Research.

EMV: Expected to reach ~45% adoption in the US exiting 2015

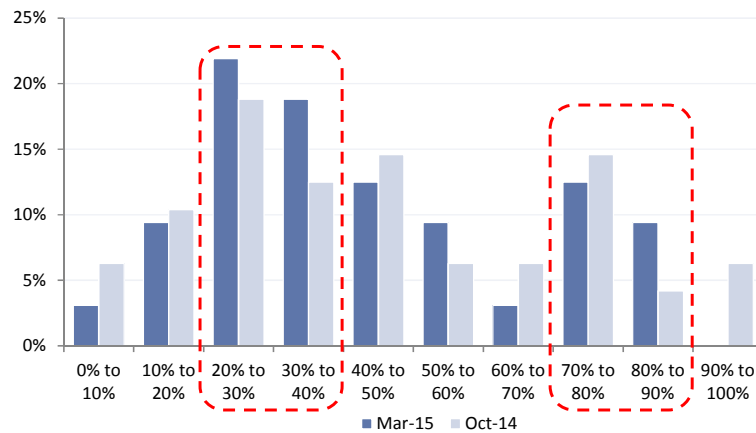
Following a series of high-profile merchant data breaches in 2013, cybersecurity has become a prominent topic in the payments industry. Our latest survey has expanded its emphasis on EMV adoption trends in the industry to get a more granular view ahead of the upcoming merchant liability shift in October 2015. Consistent with our prior survey, the results of our analysis suggest that EMV terminal adoption is faster among large national merchants and slower for small merchants. Despite this, taking a weighted average of responses suggests that approximately 45% of merchant terminals in the United States could be upgraded to EMV by the end of 2015, consistent with our prior reading (45%).

EMV adoption likely to be split between large and small merchants

Our survey attempted to gauge the level of EMV terminal adoption among merchants that is likely to occur ahead of the October 2015 liability shift. Respondents noted a wide range of expectations in terms of the percentage of merchant locations they expect to be enabled with EMV terminals by the end of 2015 (Exhibit 16). Of note, there were two clusters of respondents – one centered around 20% - 40% adoption, and one centered around 70% - 90% adoption. We believe this split may be due to the difference in mix between larger and smaller merchants among merchant acquirers and ISOs participating in our survey. A weighted average of respondents would suggest that approximately 45% of US merchant locations are expected to upgrade to EMV by the end of 2015 – which is consistent with our prior reading (45%).

Exhibit 16: Approximately what percentage of merchant locations do you expect to upgrade to EMV by December 2015?

Weighted average suggests about 44% EMV penetration of US merchants exiting 2015



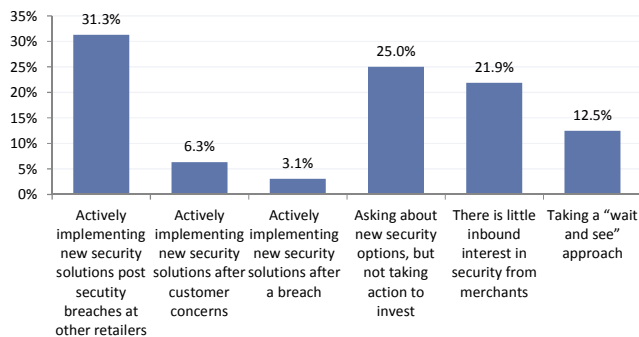
Source: ETA, Goldman Sachs Global Investment Research.

...while most merchants are also divided when it comes to upgrading security

Our survey explored merchants’ willingness to upgrade security solutions. We found that merchant activity around security upgrades is meaningfully split between merchants actively implementing new security solutions (41%) and those merchants not acting at all (59%) (Exhibit 17). We believe these results are consistent with merchant sentiment around EMV adoption, which is also split between large and small merchants. We see smaller merchants’ relatively low prioritization of security upgrades as primarily a cost issue. While greater security solutions may be not be a central priority for smaller merchants, we found that pricing ranked highest among all merchants’ prioritization. Merchants also highly prioritized “new POS devices with EMV/NFC capabilities,” which was followed closely by “security solutions” (Exhibit 18).

Exhibit 17: Which of the following best describes the inbound calls you are getting from merchants regarding security?

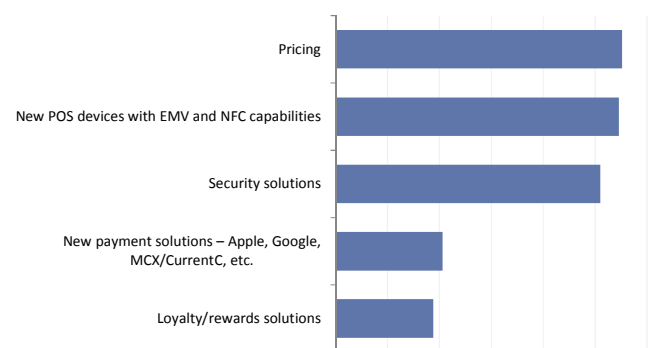
Merchants are split between implementing greater security



Source: ETA, Goldman Sachs Global Investment Research.

Exhibit 18: Rank the following in the order of priority in your discussions with your merchant base

Pricing ranks highest among merchants’ priorities



Source: ETA, Goldman Sachs Global Investment Research.

Respondent overview

This report presents key findings from the Electronic Transaction Association – Goldman Sachs (ETA-GS) Merchant Acquirer & ISO Survey – Spring 2015, which asked merchant acquirers, ISOs, and other industry participants for their insights on key trends in payments. Our survey collected responses from 64 merchant acquirers and ISOs of all sizes across the United States, reflecting the following demographics (Exhibit 19):

Exhibit 19: Merchant acquirer / ISO respondent demographics

By Company Type	By Title	By Active Merchant Outlets	By Price Controlled Merchants	By Share of Bundled Pricing
Merchant acquirer	18.8% C-Level executive	59.4% Under 10K	46.9% 0-25%	21.9% 0 - 25%
ISO	40.6% Marketing	6.3% 10K- 100K	31.3% 26%-50%	9.4% 26% - 50%
Super ISO	12.5% Sales Officer	6.3% 101K-250K	9.4% 51%-75%	12.5% 51% - 75%
Value Added Reseller (VAR)	15.6% Sales	9.4% Over 250K	12.5% 76%-100%	56.3% 76% - 100%
Other	12.5% Other	18.8%		9.7%

Source: ETA, Goldman Sachs Global Investment Research.

Disclosure Appendix

Reg AC

We, James Schneider, Ph.D., S.K.Prasad Borra, Jordan Fox, Margarite Halaris and Jeffrey Chen, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Investment Profile

The Goldman Sachs Investment Profile provides investment context for a security by comparing key attributes of that security to its peer group and market. The four key attributes depicted are: growth, returns, multiple and volatility. Growth, returns and multiple are indexed based on composites of several methodologies to determine the stocks percentile ranking within the region's coverage universe.

The precise calculation of each metric may vary depending on the fiscal year, industry and region but the standard approach is as follows:

Growth is a composite of next year's estimate over current year's estimate, e.g. EPS, EBITDA, Revenue. **Return** is a year one prospective aggregate of various return on capital measures, e.g. CROCI, ROACE, and ROE. **Multiple** is a composite of one-year forward valuation ratios, e.g. P/E, dividend yield, EV/FCF, EV/EBITDA, EV/DACF, Price/Book. **Volatility** is measured as trailing twelve-month volatility adjusted for dividends.

Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

GS SUSTAIN

GS SUSTAIN is a global investment strategy aimed at long-term, long-only performance with a low turnover of ideas. The GS SUSTAIN focus list includes leaders our analysis shows to be well positioned to deliver long term outperformance through sustained competitive advantage and superior returns on capital relative to their global industry peers. Leaders are identified based on quantifiable analysis of three aspects of corporate performance: cash return on cash invested, industry positioning and management quality (the effectiveness of companies' management of the environmental, social and governance issues facing their industry).

Disclosures

Coverage group(s) of stocks by primary analyst(s)

James Schneider, Ph.D.: America-IT Consulting and Outsourcing, America-Transaction Processors. S.K.Prasad Borra: America-ATM/POS and Self-Service, America-IT Consulting and Outsourcing, America-Transaction Processors.

America-ATM/POS and Self-Service: NCR Corp., VeriFone Systems Inc..

America-IT Consulting and Outsourcing: Accenture Plc, Amdocs Ltd., CGI Group, CGI Group, Cognizant Technology Solutions, Computer Sciences Corp., ExlService Holdings, Fidelity National Information Services, Fiserv Inc., Genpact Ltd., Performant Financial Corp., Sabre Corp., West Corp., WNS (Holdings) Ltd..

America-Transaction Processors: Automatic Data Processing Inc., Blackhawk Network Holdings, Evertec Inc., FleetCor Technologies Inc., Global Payments Inc., Heartland Payment Systems Inc., Mastercard Inc., Paychex Inc., Total System Services Inc., Vantiv Inc., Visa Inc., Western Union Co., WEX Inc..

Company-specific regulatory disclosures

Compendium report: please see disclosures at <http://www.gs.com/research/hedge.html>. Disclosures applicable to the companies included in this compendium can be found in the latest relevant published research

Distribution of ratings/investment banking relationships

Goldman Sachs Investment Research global coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	33%	54%	13%	44%	38%	32%

As of January 1, 2015, Goldman Sachs Global Investment Research had investment ratings on 3,483 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by NASD/NYSE rules. See 'Ratings, Coverage groups and views and related definitions' below.

Price target and rating history chart(s)

Compendium report: please see disclosures at <http://www.gs.com/research/hedge.html>. Disclosures applicable to the companies included in this compendium can be found in the latest relevant published research

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs usually makes a market in fixed income securities of issuers discussed in this report and usually deals as a principal in these securities.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director, advisory board member or employee of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman, Sachs & Co. and therefore may not be subject to NASD Rule 2711/NYSE Rules 472 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

Distribution of ratings: See the distribution of ratings disclosure above. **Price chart:** See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the Goldman Sachs website at <http://www.gs.com/research/hedge.html>.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the issuers the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. **Brazil:** Disclosure information in relation to CVM Instruction 483 is available at <http://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 16 of CVM Instruction 483, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** Goldman Sachs Canada Inc. is an affiliate of The Goldman Sachs Group Inc. and therefore is included in the company specific disclosures relating to Goldman Sachs (as defined above). Goldman Sachs Canada Inc. has approved of, and agreed to take responsibility for, this research report in Canada if and to the extent that Goldman Sachs Canada Inc. disseminates this research report to its clients. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited. **Japan:** See below. **Korea:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. **Singapore:** Further information on the covered companies referred to in this research may be obtained from Goldman Sachs (Singapore) Pte. (Company Number: 198602165W). **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union: Disclosure information in relation to Article 4 (1) (d) and Article 6 (2) of the European Commission Directive 2003/126/EC is available at <http://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Ratings, coverage groups and views and related definitions

Buy (B), Neutral (N), Sell (S) -Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock's return potential relative to its coverage group as described below. Any stock not assigned as a Buy or a Sell on an Investment List is deemed Neutral. Each regional Investment Review Committee manages various regional Investment Lists to a global guideline of 25%-35% of stocks as Buy and 10%-15% of stocks as Sell; however, the distribution of Buys and Sells in any particular coverage group may vary as determined by the regional Investment Review Committee. Regional Conviction Buy and Sell lists represent investment recommendations focused on either the size of the potential return or the likelihood of the realization of the return.

Return potential represents the price differential between the current share price and the price target expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

Coverage groups and views: A list of all stocks in each coverage group is available by primary analyst, stock and coverage group at <http://www.gs.com/research/hedge.html>. The analyst assigns one of the following coverage views which represents the analyst's investment outlook on the coverage group relative to the group's historical fundamentals and/or valuation. **Attractive (A).** The investment outlook over the following 12 months is favorable relative to the coverage group's historical fundamentals and/or valuation. **Neutral (N).** The investment outlook over the following 12 months is neutral relative to the coverage group's historical fundamentals and/or valuation. **Cautious (C).** The investment outlook over the following 12 months is unfavorable relative to the coverage group's historical fundamentals and/or valuation.

Not Rated (NR). The investment rating and target price have been removed pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or strategic transaction involving this company and in certain other circumstances. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining, or there are legal, regulatory or policy constraints around publishing, an investment rating or target. The previous investment rating and price target, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this company. **Not Available or Not Applicable (NA).** The information is not available for display or is not applicable. **Not Meaningful (NM).** The information is not meaningful and is therefore excluded.

Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce equity research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; in Canada by either Goldman Sachs Canada Inc. or Goldman, Sachs & Co.; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman, Sachs & Co. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom and European Union.

European Union: Goldman Sachs International authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority, has approved this research in connection with its distribution in the European Union and United Kingdom; Goldman Sachs AG and Goldman Sachs International Zweigniederlassung Frankfurt, regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht, may also distribute research in Germany.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman, Sachs & Co., the United States broker dealer, is a member of SIPC (<http://www.sipc.org>).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and our proprietary trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, our proprietary trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage group as described herein.

We and our affiliates, officers, directors, and employees, excluding equity and credit analysts, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options disclosure documents which are available from Goldman Sachs sales representatives or at <http://www.theocc.com/about/publications/character-risks.jsp>. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data available on a particular security, please contact your sales representative or go to <http://360.gs.com>.

Disclosure information is also available at <http://www.gs.com/research/hedge.html> or from Research Compliance, 200 West Street, New York, NY 10282.

© 2015 Goldman Sachs.

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.