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UNDERSTANDING THE APPLE PAY ECOSYSTEM

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RBC Wealth Management™

Understanding the Apple Pay Ecosystem

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Late last month, Apple Inc. (AAPL) launched its much-talked-about new payment service, Apple Pay. In essence, Apple Pay is an integration of all the existing payment infrastructure/ technology/legacy players (i.e., credit card networks, banks, and processors). In this report,, we look at how and why Apple Pay could be the much-needed positive catalyst for mobile payments adoption, while concurrently a win for collaboration between technology, regulated payment leaders, and incumbents to provide a secure solution. While greater adoption of mobile payments over the long term is not without significant hurdles, we believe the introduction and subsequent adoption of Apple Pay is positive for the payments ecosystem.

Apple Pay: Facilitator of Mobile Payments in the U.S.

Many issues need to be resolved before we see widespread adoption of mobile payments. However, the launch of Apple Pay could be a catalyst for a number of reasons.

Security

This is perhaps the most important aspect of Apple Pay that appeals to all stakeholders involved (i.e., consumers, retailers, banks, network providers, etc). In short, Apple Pay affords consumers greater security versus payments via cash or credit card.

To understand why this is the case, let's have a look at how Apple Pay works.

Credit and debit cards will be stored in Apple's existing Passbook iOS application and added by 1) porting over the card stored separately in iTunes, or 2) taking a photo of a different card, which Apple then verifies for eligibility with the issuer and saves on the device. Apple Pay will automatically select the default card when in proximity of a near-field-communication (NFC) in-store terminal.

In supporting stores (and there are many including Bloomingdale's, Walgreens, Whole Foods Market, McDonald's Corporation , and Apple retail stores), users who have an iPhone 6 model or Apple Watch will be able to wirelessly pay for goods simply by approaching the payment terminal that supports NFC connectivity. At this point, the default credit card will appear on the screen (the user will be able to choose a different one if needed). On both the iPhone 6 and Apple Watch, a simple touch would approve the transaction with a tactile feedback that confirms the payment.

Apple is employing various layers of security such as:

1. **Traditional card information will not be stored or used in Apple Pay, as tokens will be used instead**. In other words, financial information is stored locally on the device, in its secure element, and does not reach Apple's servers. Instead, a distinct device account number (DAN or token) is assigned and encrypted and stored in a dedicated chip in the iPhone 6/6+/Watch. During transactions, instead of the device transmitting card numbers to the receiving terminal, it will only send over a DAN for each card and a "transaction-specific dynamic security code." In addition, Apple will not store purchase history on any devices or in the cloud, and it will only provide the user with a recent transactions list for convenience purposes.

2. **Biometric identification is used**. On Touch ID-enabled devices such as the new iPhone 6 models, users will have to approve the purchase by placing their finger on the scanner. On the Apple Watch, a PIN number has to be entered every time the device is removed from the user's hand—continuous skin contact means the device does not have to be authorized a second time by the user via a PIN security code.

3. **Card data is stored on the device** and, as a result, the user will not actually share the physical card with store employees, and those employees will not have access to the card data.

4. **The "Find My iPhone" app will help users disable Apple Pay functionality on lost or stolen iPhones**.

Simplified User Experience and Sizeable Installed Base in a Demographic Sweet Spot

Our research sources argue that Apple Pay offers a simplified user experience (i.e., tap the point-of-sale (POS) and authenticate fingerprints through the Touch ID sensor), superior to that of several other mobile wallets already available (where the typical user experience involves unlocking the phone, opening a mobile wallet app, and inputting a PIN or password). This, overlayed with Apple's 40% U.S. market share and database of 800 million cards on file (iTunes) made up of a younger, higher-income demographic, suggests that iPhone 6/6+ owners may be more inclined to use Apple Pay for future purposes.

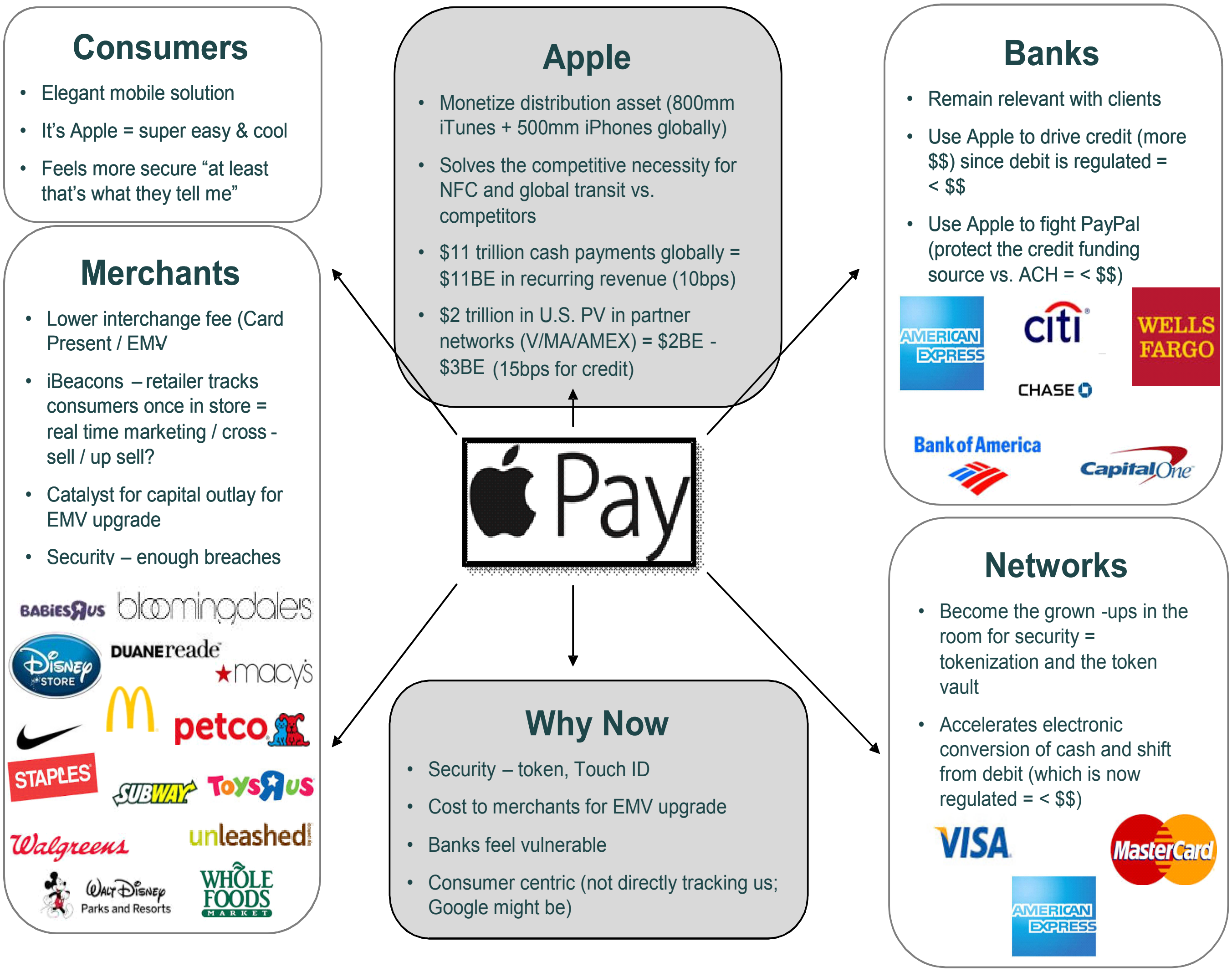
Apple Pay Partnering With Issuers (Banks) Representing 83% of U.S. Credit/Debit Card Volumes

Apple Pay is a credit-centric product that works within the existing payments ecosystem. Indeed, we believe banks will push for Apple Pay adoption given that a larger percentage of transactions on Apple Pay are likely to be credit-based and have higher fees for banks. Also, there is potential for Apple to shift retail sales from debit to credit, which is more profitable for banks. More broadly, Apple Pay is effectively an enabler of the prevalent shift in payments to cards and away from cash. Lastly, security improvements offered by Apple Pay, better than those of existing mobile wallet offerings, are another reason banks will likely push for adoption.

We note that at the launch of Apple Pay, Apple had already successfully partnered with many of the leading issuers including Bank of America, JP Morgan Chase, Citigroup, and Wells Fargo More recently, a second wave of card issuers began letting customers add their cards to their iPhones to use Apple Pay including the Navy Federal Credit Union, U.S. Bancorp (USB), and PNC Bank (PNC). In contrast, Google launched its NFC wallet with one issuing partner (Citibank), and SoftCard had three issuing partners (Chase, American Express, and Wells Fargo) which effectively limited the reach these products had with consumers.

Fortuitous Timing Given POS Hardware Upgrade Cycle

Based on Apple's estimates, there are only 220,000 merchant locations in the U.S. that support contactless payments—a penetration rate of less than 5%. NFC adoption rates have been low, owing to high costs associated with terminal upgrades coupled with a lack of consumer adoption. However, greater adoption of Apple Pay by consumers could be a catalyst for retailers to upgrade or activate NFC capability in their devices.



Source - RBC Capital Markets estimates and company data

By the Same Token, Adoption Will Not Happen Overnight

Several Roadblocks Remain

Availability: Apple Pay will be available only to iPhone 6/6+ users, given that an NFC chip is required for the payment app to function. Hence, consumer adoption will be restricted initially.

Merchant Customer Exchange (MCX) holding out (for now): The more than 70 merchants that constitute the MCX consortium (e.g., Wal-Mart, Target, Kmart/Sears, CVS, Rite Aid, Lowe's, Kohl's, Best Buy, and 7-11) are holding off partnering with Apple Pay in-store (though Apple Pay will be accepted inside the Target App). Its members are prohibited from accepting all third-party mobile wallets, in a bid to promote their own (yet to be launched) mobile payments solution—CurrentC.

Announced in 2012, CurrentC is designed to link directly to a customer's bank account or store-specific card instead of credit card. In bypassing credit card companies, merchants intend to avoid high fees they are required to pay on each credit card transaction. This raises the question as to whether MCX's refusal to allow Apple Pay is simple competition between digital wallets, or something larger i.e., major retailers pushing back on Apple Pay to maintain the possible leverage MCX gives them with banks over interchange fees. CurrentC would also give retailers the ability to track the shopping habits across the dozens of stores that belong to MCX, a data set that has traditionally been held by credit card companies, not merchants. If retailers gained access to such data, it could be used to drive relevant deals and loyalty programs to consumers, which could improve companies' bottom lines.

MCX member retailers have switched off NFC capability at their POS, which prevents customers from using Apple Pay in-store. If these retailers break their contracts, they could face considerable fines. However, such a stance by MCX could prove counterproductive should Apple Pay be popular. MCX member retailers still waiting on CurrentC to begin, not expected until 2015, could miss out on mobile payment transactions, while there is also the risk of customer resentment if those retailers continue to refuse Apple Pay. Contrary to recent press reports, Apple Pay versus MCX is not necessarily an either/or decision as retailers generally accept multiple forms of payment. At the end of the day, we believe it is likely that consumers will decide the form of payment that retailers will accept. Also, increases in overall aggregate retail sales generally require increases in consumer credit, which is provided by banks.

While CurrentC can be used on any smartphone, critics say it is not as user-friendly as Apple Pay. Instead of contactless payment technology, CurrentC will rely on quick response (QR) codes, a type of bar code that merchants scan to complete the transaction. It will also be an app that users must find and download from Apple's App store. In contrast, Apple Pay relies on NFC technology built into every iPhone 6/6+. Furthermore, it is not necessary for customers to open an app or even unlock their iPhones when using Apple Pay.

Most recently, MCX announced that unauthorized third parties obtained some e-mail addresses of pilot users or those requesting invites to try CurrentC. While the breach itself seems fairly benign, the timing is unfortunate as CurrentC attempts to build brand equity ahead of its launch as a safe alternative to other mobile payment offerings.

No loyalty solution (yet): Some skeptics have argued Apple Pay adoption will be hindered as there is no loyalty program attached to it. We view this argument as somewhat weak as we suspect a high proportion of Apple Pay users will be loading credit/debit cards that already have associated loyalty programs. Furthermore, although the first version of Apple Pay does not have a loyalty offering, we suspect there will be integration of loyalty programs into the app in future iterations of the product.

The Apple Pay halo effect: Who gains? Who loses?

Credit Cards—Positive

It would be a positive for **Visa Inc.** (V), **MasterCard Inc.** (MA), and **American Express Company** (AXP). As expected, Apple Pay is a card-friendly solution developed in collaboration with the networks and banks. Network standards such as NFC are peppered throughout the solution and make a strong case for tokenization. Tokenization has been discussed for some time as a means of eliminating the sharing of sensitive payment information for digital transactions (i.e., ensuring greater security). MasterCard and Visa are driving token standards, aiming to be token administrators, and MasterCard has already announced fees for provisioning tokens. Provided that such security is effective, we believe this will be beneficial for the both companies' valuations.

Furthermore, Apple Pay is positive for volumes as small-ticket mobile payments could accelerate share shift to electronic transaction from cash and keep fraud prevention standards under the control of the main networks. Finally, given that Apple has been emphatic that it will not store transaction information, the company is not positioning itself to monetize payment data at the expense of networks or banks.

MasterCard and Visa are on our *Guided Portfolio: Large Cap* and *Large Cap Grid*, respectively. These are names that we continue to like on a fundamental basis given continued strength in their organic growth outlooks, strong barriers to entry with defensible business models (underscored by the launch of Apple Pay), strong free cash flow generation (FCF conversion of close to 100%), and superior operating margins (over 50%). Both companies' stocks are trading modestly above their average historic valuations (over the last 10 years) of 19x-20x earnings on 2015 estimates. The consensus estimate is for earnings growth in the 15%-20% range over the next couple of years.

Merchant Acquirers/Processors—Positive to Neutral

We continue to like **Vantiv, Inc.** (VNTV). Apple's mobile payment system is based on existing infrastructure and, therefore, poses no risk to the current role of processors. In fact, it is possible that acquirers could benefit from higher volumes. However, over the very long term, to the extent that mobile payments are able to significantly increase the safety of electronic payments transactions through the use of tokenization and biometric authentication, acquirers' value-added offerings (e.g., security solutions) may be threatened.

Amongst the processors, Vantiv is our favoured name as we see several long-term drivers of revenue growth. The company continues to take market share by moving downstream to smaller merchants and expanding geographically. Vantiv has several competitive advantages, including: scale, a unified technology platform (which drives greater speed to market for new products), and a referral channel of 1,400 banks. VNTV shares trade at about 15x P/E on RBC Capital Markets' 2015 estimates with expected earnings growth in the mid- to high-teens range. Vantiv is on the *Guided Portfolio: Midcap 111*.

NFC Enablers—Positive

NXP Semiconductors N.V. (NXPI) is a key player. Research sources estimate the value of mobile payments through NFC will rise to almost $22B by 2016, from less than $5B last year. Concerns driven by data breaches at leading retailers such as Target and Home Depot (HD) have accelerated the EMV adoption cycle ahead of initial expectations and may also provide tailwinds for NFC as consumers learn more about enhanced security.

U.S.-based merchants are in the middle of a POS upgrade cycle driven by a liability shift expected to take place on October 1, 2015. This shift will make merchants that fail to upgrade their POS by the deadline liable for fraudulent transactions rather than issuers. This upgrade cycle may prompt merchants to order terminals with additional NFC functionality that are compatible with Apple Pay (and other NFC-based wallets) as this would add even more security. VeriFone has noted that the majority of terminals it has shipped over the past year have NFC functionality, although most have NFC turned off.

NXP remains a significant player in increasing NFC adoption, given its strong leadership positioning in controllers/secure element. Furthermore, it also has strong expertise in software- and payment-related IP/licensing places which we believe positions it well for top-line stability. While Apple remains secretive with respect to its NFC chip provider, there have been reports that NXPI will provide the secure NFC chips that will allow an iPhone to connect with payment terminals. Note that NXPI is already a supplier to Apple in other areas.

NXPI shares trade at 13x earnings on 2015E consensus EPS, and NXP is expected to grow earnings about 15% next year, according to consensus estimates, translating into a PEG of less than 1. Relative to peers, the shares trade at a discount on a P/E basis and a modest premium on an EV/EBITDA basis. That said, investors should recognize this is a high-beta stock that is up more than 60% year to date even with the recent market pullback. In addition, balance sheet leverage is high with net/debt to capital of about 55%.

Terminal Manufacturers—Positive

We expect names such as **VeriFone Systems, Inc.** (PAY) to benefit. RBC Capital Markets believes the launch of Apple Pay could drive an accelerated cycle in the U.S. Apple Pay could increase merchant appetite to upgrade to NFC as retailers do not want to turn away customers using it (or Apple Pay) to make payments. The aforementioned liability shift for fraudulent transactions from issuers to merchants is also a catalyst for merchants to order terminals that have additional NFC functionality and are compatible with Apple Pay. To this end, late last month, Vantiv and VeriFone announced the launch of their "Secure Your Future Today" campaign to ensure merchants are ready for current and future payment technologies, including Apple Pay.

Assuming that NFC/EMV adoption compresses the cycle so that the entire market reaches enablement by late next year, RBC Capital Markets estimates that PAY would generate $449M in incremental revenue and $1.34 in incremental EPS over the next five quarters or $1.07 in annual incremental EPS. PAY shares trade at 18x earnings on RBC Capital Markets' 2015 estimates, and have a 0.5 PEG.

PayPal—Negative

Apple Pay represents a strong competitor to PayPal. Although Apple Pay is only available on the iPhone 6, the ability to pay quickly using the device's Touch ID potentially removes a significant friction point to offline mobile payments, which could help Apple significantly challenge PayPal's nascent offline POS solution. In other words, Apple Pay has a first-mover advantage with respect to an offline payments solution. And because PayPal is not a credit-centric and bank-friendly product (i.e., it takes all the payment economics for itself), building crucial partnerships is a challenge.

Although Apple does not appear to be rolling out Apple Pay for desktop e-commerce or mobile browser transactions, there is the potential, in our view, for the product to become increasingly competitive with PayPal over time.

That said, from a security perspective, PayPal is reportedly just as secure as Apple Pay, if not more so. Furthermore, as it stands right now, relative to PayPal, Apple Pay is compatible with a small subset of merchants whereas PayPal has more ubiquity with respect to online merchants.

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