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Investment Management
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Fundamental Perspectives: Why We're Paying Close Attention to Digital Payments

As a consumer, you may not spend much time thinking about the series of connections and interactions that take place within a few seconds after you swipe your credit card, click "complete purchase" on a screen, or tap your smartphone on a sensor. But as investors, we believe that what goes on behind the scenes comprises a compelling opportunity that deserves your attention.

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Why We're Paying Close Attention to Digital Payments

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Hugo Scott-Gall, Partner

At William Blair, we are focused on finding opportunities for sustainable value creation for our investors. So, when we find an industry that is experiencing double-digit growth driven by clear, long-term secular trends, with high profit margins and a potential market size of $30 trillion (or more), our interest is piqued, to put it mildly. We created this special report to explain why we believe that opportunities in the payments industry are so compelling.

The shift from cash to noncash payments around the world—while occurring at different rates and in different forms—is indisputable and underpins what we believe is a unique growth opportunity. This trend is supported by secular shifts that include the growth in e-commerce, as well as services, such as ridesharing and buying tickets to a concert on the secondary market, that are made possible by the ubiquity of smartphones.

Although earnings multiples for many global payments companies are high, we believe those multiples are warranted based on the exceptional outlook for growth that we feel is durable and still underappreciated. We also believe that concerns about "disruption risk" in the industry are largely overstated. While we focus on a total potential market for the payments industry of more than $30 trillion in volume[1], that is a conservative estimate based only on the business-to-consumer (B2C) market. If the untapped potential of the business-to-business (B2B) market is viewed as a "free" option for investors, the growth opportunity is nothing short of staggering.

The global payments industry is both highly complex and highly attractive, with growth opportunities and risks that differ by segments within the industry and by geography. This complexity creates opportunities for us as disciplined, fundamental managers to identify the aspects of the value chain that are best positioned to capitalize on the growing and shifting pools of profitability across payments. Within each segment, our rigorous, bottom-up approach—which focuses on aspects such as return on invested capital and a company's ability to use its excess cash flow to drive growth and strengthen its competitive advantage—can help us to identify the companies with the potential to outperform over the long term.

After reading this report, we think you will have a new appreciation for how much value and investment opportunity is being created each time you—and billions of fellow consumers around the world—make a purchase in the rapidly expanding noncash economy. We are confident that you will find the industry as compelling as we do.

D.J. Neiman   Hugo Scott-Gall

D.J. Neiman, CFA, Partner, and Hugo Scott-Gall, Partner

CO-DIRECTORS OF RESEARCH, GLOBAL EQUITY TEAM, WILLIAM BLAIR INVESTMENT MANAGEMENT

1 PayPal. 2018.

Compelling Trends in the Digital Payments Industry

As active managers, William Blair explores every segment of the global economy for ways to generate alpha. We are especially attracted to industries that feature sticky revenue, durable growth, healthy profitability, and strong free cash flow.

While we sometimes find these attributes in an obscure corner of the market, occasionally we discover a truly exceptional investment opportunity by looking closely at something that is an integral part of our everyday lives. Such is the case with the global digital payments industry, the multifaceted and complex financial transaction ecosystem that allows individuals around the world to pay for goods and services without using cash.

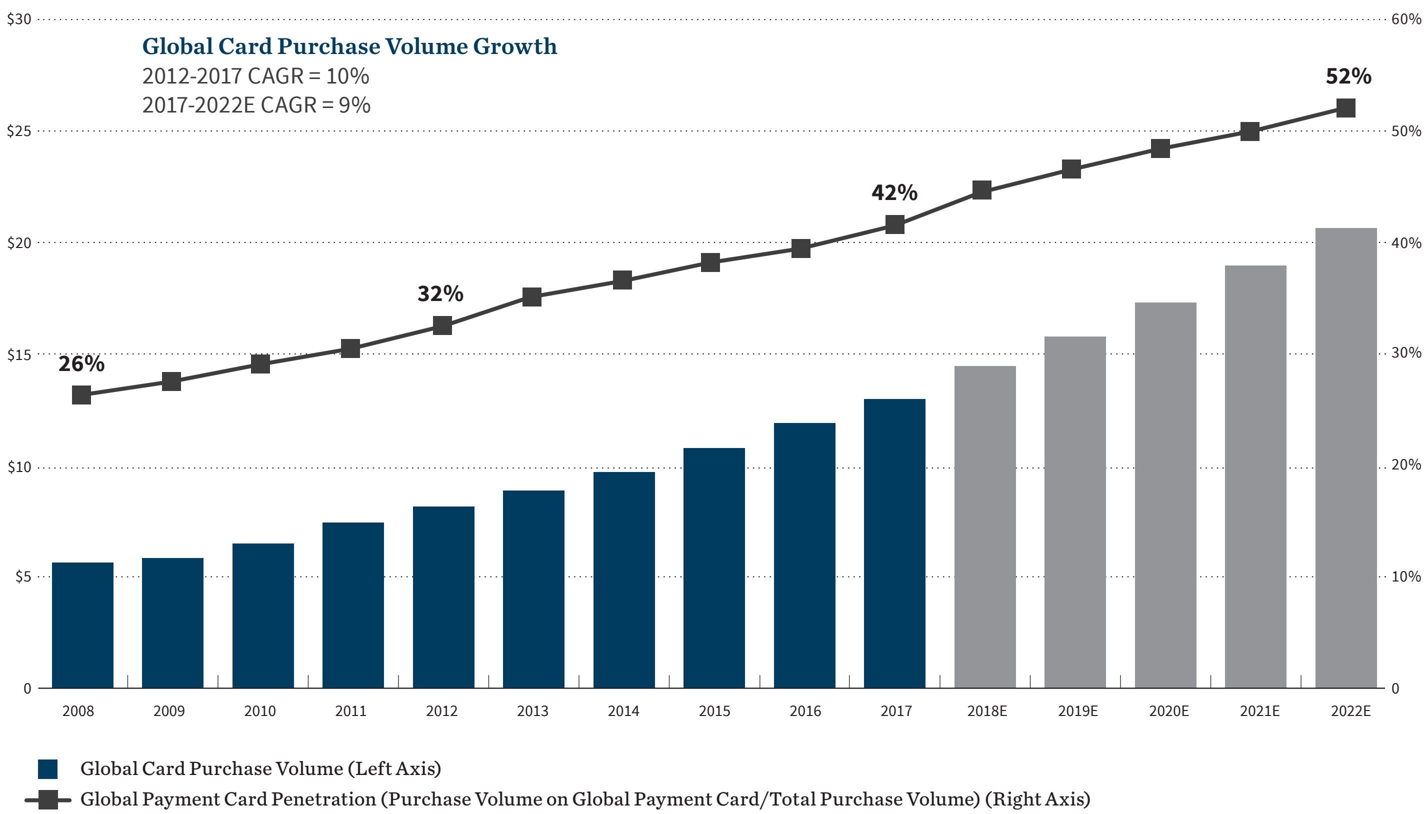
The global payments ecosystem consists of three primary components:

- Merchant acquirers: the entities that enable merchants to accept credit cards and other forms of digital payments
- Issuers: the banks that issue credit and debit cards and the issuer processors that are either internal functions within banks or are banks' external partners
- Networks: the "pipes" or "rails" through which all transactions flow, connecting merchants and issuers

EXHIBIT 1

Global Card Purchase Volume and Card Penetration (ex-China, Nominal, in Trillions, Constant Currency)

Driven by forces such as increased internet access and mobile phone adoption, the growth of e-commerce, government policy, as well as globalization and demographic trends, the ongoing shift toward noncash transactions benefits all segments of the global payments industry.



Source: WEO, World Bank, Nilson, corporate reports, Bernstein estimates, as of 2017.

Before we dive into assessing the various components and business models of the payments ecosystem—most notably merchant acquirers, networks, and issuers—we highlight several aspects of the payments industry that we believe make the investment opportunity particularly compelling for fundamental managers focused on finding sustainable sources of value creation.

Massive Addressable Market with Sustainable Growth

The digital payments industry represents a truly enormous addressable market that continues to expand due to strong, durable secular tailwinds. Many analysts estimate global B2C digital payments volumes to be more than $30 trillion.

Trends driving the growth of the payments industry include:

The shift away from cash benefits players across all segments of the payments industry: The global shift away from using cash is a rising tide that is lifting all boats within the payments industry. As exhibit 1 illustrates, from 2012 to 2017, the volume of global payments using credit or debit cards (which represent the vast majority of digital, or noncash, payments) grew at a 10% CAGR, and the percentage of transactions conducted via cards increased from about 32% in 2012 to 42% in 2017.[2] In addition to the expansion of e-commerce and increased internet access in emerging markets, digital payments volume growth is also supported by in-store retail purchases that increasingly rely on cards and "digital wallets." Other secular trends supporting the growth in digital payments include the penetration of mobile phones globally; a younger, more tech-focused consumer population; online gaming with in-app purchases; growth in domestic and global travel; ridesharing services (as well as pay-per-minute scooters and motorized bicycles); and peer-to-peer payment systems (e.g., Venmo).

E-commerce is one of the strongest drivers of volume growth: E-commerce is driving digital payments volume growth in two ways: consumers make more purchases because of the convenience of buying online or via mobile apps, and, relative to in-store purchases, a significantly higher percentage of e-commerce transactions is completed using a credit or debit card. While e-commerce benefits all segments of the payments industry, it is especially important for merchant acquirers. When evaluating merchant acquirers, we pay close attention to a company's exposure to e-commerce, as we believe that it represents one of the most powerful and durable growth drivers in digital payment volumes.

Small and midsize businesses (SMBs) offer opportunity to add more value: In addition to the growing volume of transactions, merchant acquirers can drive revenue by providing higher-margin, value-added services. These opportunities are especially prevalent when serving SMBs. Merchant acquirers can bundle ancillary services—such as inventory management software, working capital loans, faster payment receipts, targeted marketing, and loyalty programs—into systems designed to meet the needs of SMBs.

International markets provide ample white space: Digital payments penetration in most international markets trails the levels seen in the United States. This is especially true in emerging markets, providing significant room for volume growth as countries such as India shift to a digital economy.

Governments support digital payments: By and large, governments are supportive of the transition to digital payments because it improves tax collection and reduces the size of the black market economy that depends on cash. Furthermore, governments support efforts to extend banking services to under- or unbanked populations.

Global Industry Defined by Distinct Regional Trends

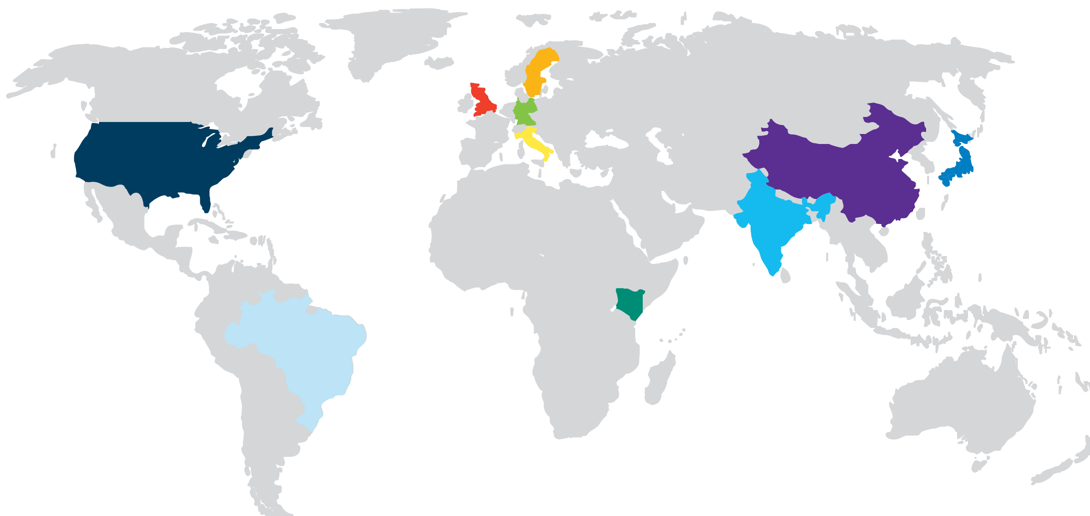
While digital payment penetration exceeds 40% globally, it varies significantly across regions and countries. The United States is a more mature market with high penetration levels, while usage in Europe varies drastically by country. In emerging markets, penetration is typically low, providing a long runway for growth. Country-specific differences, shown in exhibit 2, provide insights into the nature of various opportunities around the world.

2 WEO, World Bank, Nilson, corporate reports, and Bernstein estimates.

EXHIBIT 2

Assessing a World of Opportunity

Major variances in penetration rates, as well as marketplace, regulatory, and cultural differences, mean that the digital payments industry faces different growth trajectories and risks around the world.



Country	Digital Payments Penetration	Interesting Characteristics
United States	61%	Credit issuers charge high fees that help fund rewards and loyalty programs that are much more generous than what are offered in Europe.
Brazil	30%	Credit cards are extremely popular among Brazilian consumers, but merchants must wait up to 30 days to receive their payments.
Italy	26%	Cash is predominant, often as a means to avoid taxes. The government wants to accelerate digital payments penetration, but at a low cost to merchants.
Sweden	62%	Digital payments penetration in Scandinavia is among the highest in the world, a result of early adoption and the region's culture.
United Kingdom	60%	The U.K. government, along with the broader European Union, has implemented interchange limits on issuers that are much lower than in the United States.
Germany	16%	Despite having a highly advanced economy, digital payments adoption is low because of consumer behavior and the fact that one of the largest payment methods isn't available online.
Kenya	15%	Nearly 50% of Kenya's GDP is processed via the country's mobile-based M-Pesa payments system. This has helped push the percentage of Kenya's population with access to formal banking services up to 83%.[3]
India	6%	India is a sleeping giant in terms of digital payments, with a huge unbanked population. The government's investment in building a real-time payment infrastructure has attracted major investments from the world's largest fintech players.
China	47%	Alipay and Tenpay, which use a closed-loop system, currently capture more than 90% of China's digital payments market.
Japan	20%	Cultural aversion to borrowing limits the current use of credit cards, but the government is pushing digital payments, targeting 40% penetration by 2025.

Sources: For Brazil, China, and Kenya, Edgar, Dunn & Company, as of 2017. For other countries, company reports, MoffettNathanson estimates and analysis, Visa Investor Day, Nilson, IMF, World Bank, OECD, U.S. Bureau of Economic Analysis, U.S. National Health Expenditure Accounts, as of 2016.

3 CNBC Africa. "M-Pesa has Completely Changed Kenyans' Access to Financial Services." April 3, 2019.

High Earnings Multiples Reflect Attractive Business Models and High Expectations—And May Be Too Conservative

The payments industry has been valued at high multiples in recent years, reflecting durable, growing revenues and profit margins. We believe this is a prime example of how high multiples don't necessarily equate to high valuation.

The following industry attributes support his view:

- High-quality, visible, and sticky revenues are the result of broadly stable pricing and persistent growth. Even during the 2008-2009 global financial crisis, noncash payments *increased* by the mid single digits.

- Profit margins that are already attractive can grow further due to high operating leverage derived from a largely fixed cost base. Scale is key in the industry. We expect the industry's overall profit pool to increase, offering attractive returns to shareholders.

- Attractive business models can generate solid free cash flow with low capex requirements supporting dividends, buybacks, M&A, and low-volatility returns.

- Markets have supported these high multiples given the industry's strong business models and because management teams tend to be conservative when providing guidance regarding future growth expectations.

Why Blockchain and Libra Won't Be a Threat Any Time Soon

While digital currencies and blockchain are lauded by their ardent supporters as game-changers for many industries, their potential to significantly disrupt the payments industry is low—at least in the near and medium terms.

First and foremost, the technology simply isn't capable of handling the bandwidth needed to support any sort of systematic shift. Estimates of the number of transactions that Bitcoin and its competitors can handle ranges from as low as five to a few hundred per second—a fraction of what existing networks such as Visa and MasterCard can handle.[4]

Facebook's planned digital currency, Libra, is primarily targeted at consumers in emerging markets with high inflation, where a large percentage of the population is under- or unbanked. However, most governments are not keen on the idea of an alternative currency that could interfere with their control of monetary policy. While Visa, MasterCard, and PayPal were members of the original Libra consortium, all three have recently announced they are withdrawing in the face of government pushback.

4 Hacknoon. "The Blockchain Scalability Problem & the Race for Visa-Like Transaction Speed." October 14, 2019. Blockchain.com.

EXHIBIT 3

Analyzing the Payments Revenue Model

Revenue		Volume		Payment Take Rate
Expected revenue growth: • **6%–12%:** Traditional payments companies • **20%+:** Online-focused payments companies	=	Growth drivers: • **4%–6%:** nominal personal consumer expenditure growth + • **5%–10%:** growth in noncash penetration + • Market share gains/losses	X	• Total take rate typically ranges from 0.5% to 3.5% depending on transaction type, country, and other factors • Total take rate is distributed among the payments providers (merchant acquirer, network, and issuer) in unequal shares

Source: William Blair. For illustrative purposes only. Not intended as investment advice. Forecasts of financial market trends are based on current market conditions and are subject to change without notice.

Disruption Concerns May Be Overstated

Disruption is always a consideration when analyzing an industry, and this threat varies significantly across the segments of the payments industry. Incumbent merchant acquirers face a major threat of losing market share to new, technology-enabled providers. With networks, on the other hand, we believe that many investors are overestimating the near- and medium-term disruption risk facing the global duopoly of Visa and MasterCard.

The existing networks are firmly entrenched, efficient, inexpensive, safe, and reliable. In other words, there is nothing overpriced or inefficient about the current system that would make it ripe for disruption. Over the longer term, alternatives such as blockchain, real-time payments, and other models may have the potential to take volume from the existing networks, but many of the networks are preparing for this risk and using their powerful balance sheets to invest in alternative systems.

Another reason that near- and medium-term disruption risk across the payments industry is overstated is inertia. The methods individuals use to pay for goods and services tend to be firmly established, and consumer behavior is often resistant to change. Once people are accustomed to—and trust—their forms of payment, a disrupter would have to offer a truly superior alternative, not just a marginally better approach.

New entrants to the payments ecosystem in recent years have leveraged the existing system rather than attempting to replace it. Even if a superior approach that would bypass the existing system did emerge, adoption would likely be slow.

Technology and Data Analytics Underpin and Drive Growth

Leading payments companies are using increasingly sophisticated technology to create value—and justify their fees—for merchants and consumers through enhanced fraud prevention, increased acceptance rates (i.e., lowering the frequency of rejected transactions), more sophisticated targeted marketing, and improved omnichannel experiences.

The Power of Two-Sided Systems

When we evaluate technology companies, we are particularly attracted to ones that operate within systems that involve two mutually dependent and mutually beneficial components.

As each platform improves in functionality, the entire ecosystem becomes more appealing to consumers; as these platforms add more users, their infrastructure and development costs are spread over a broader base, driving the marginal cost of each additional transaction closer to zero.

Payments and mobile technology are a prime example of a two-sided system driven by the type of symbiotic relationship that we find so appealing.

Technology advancements continue to enable new services that improve consumers' lives, whether in the form of ridesharing, streaming video, or having food delivered to your door. Without digital payments, these services couldn't exist in their current forms. All parties benefit from ongoing improvements to other parts of the ecosystem and are willing to pay a fee or make the necessary investments to make it work.

Companies across all three segments of the payments ecosystem are using artificial intelligence and machine learning to enhance fraud prevention and detection. This is critical in encouraging trust in noncash payment methods, which is particularly important for app-based services and other forms of e-commerce. Merchant acquirers are using data analytics to enhance merchants' ability to conduct targeted marketing campaigns, develop more effective customer loyalty programs, and create a more seamless experience for consumers across in-store, online, and mobile environments. All of this is extremely valuable to merchants in helping to increase sales, driving volume for the payments industry.

A Complex Ecosystem Worth Understanding

Although digital payment transactions take only seconds to complete, there are different layers and numerous players interacting behind the scenes that make that phenomenon possible. To appreciate the investment opportunities in this space, it is important to understand the business models involved and how money flows through the system every time consumers swipe a credit card, tap a smartphone at a store, or enter their payment information online.

Three Distinct Segments—But Not Siloes

The global payments ecosystem consists of three primary components, as discussed earlier: merchant acquirers, issuers, and networks. While it is useful to think about these three components separately, they are far from being siloed. Many payments companies operate in more than one segment, and there has been a significant blurring of lines in recent years. Payments companies are looking for economies of scale as well as economies of data that can result from having access to data about transactions and consumers generated from more than one segment of the payments chain.

Follow the Money: A Simplified Example

To understand how a transaction flows through the payments system, it is helpful to look at a simplified example, illustrated in exhibit 4:

1. A consumer uses her credit card at a store to make a purchase.

2. The merchant acquirer's software and hardware allow the purchase to be initially accepted.

3. The merchant acquirer sends the transaction to the network, which authorizes the transaction and sends it to the issuer.

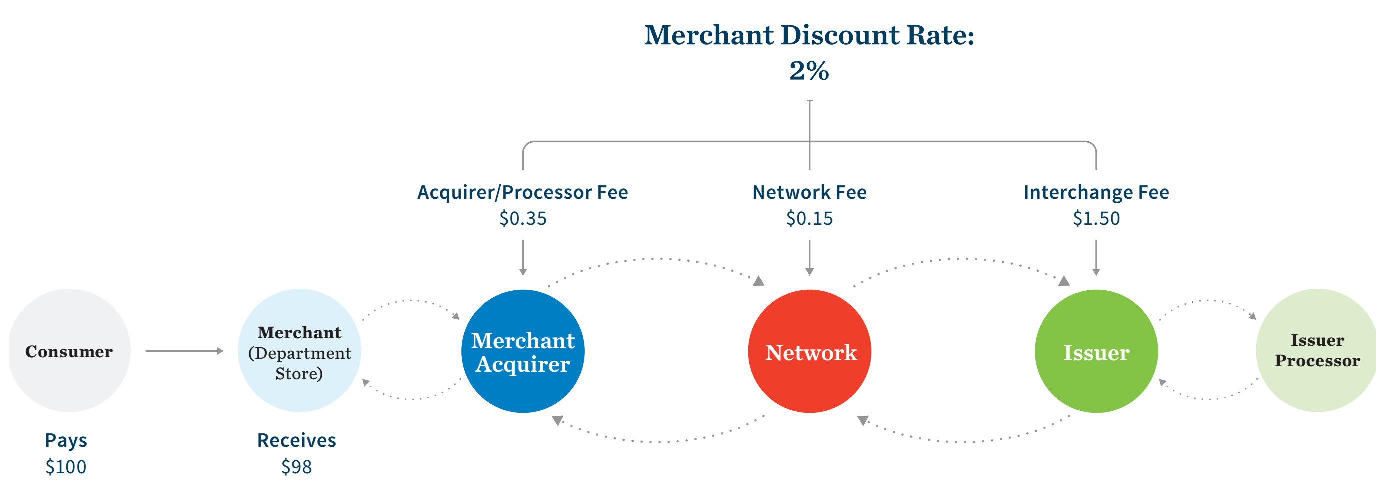
4. The issuer—either through an internal system or via a third-party processor—verifies that the consumer has sufficient credit available.

5. A message is sent back through the network to the merchant acquirer authorizing the transaction, and the consumer's purchase is completed.

EXHIBIT 4

How Money Flows Through the Digital Payments Ecosystem

This hypothetical example illustrates the flow of money when a consumer makes a $100 purchase at a department store using a credit card. The fees shown here represent typical amounts for U.S. in-store purchases.



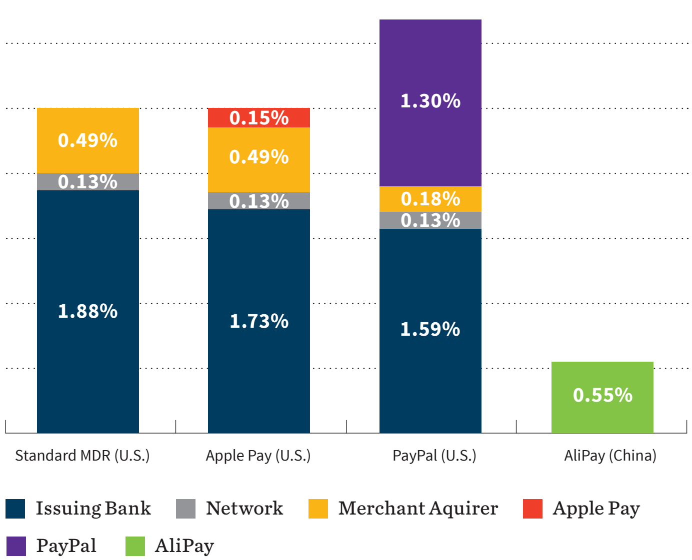
Source: William Blair. For illustrative purposes only.

Two of the most important concepts in understanding payments business models are the merchant discount rate (MDR) and the take rate. MDR refers to the difference between what the consumer spends and what the merchant ultimately receives, net of the payments providers' fees. Take rate refers to how the total MDR is divided among the various entities involved in the transaction.

Exhibit 5 illustrates how MDRs vary significantly, using four common payment methods. Comparing the MDR for a standard transaction in the United States using a credit card to the MDR for an Apple Pay transaction, note that the merchant acquirer and network take rates are the same; Apple Pay's 15 basis points (bps) reduces the issuer's take rate. With PayPal, the MDR is significantly higher, but merchants that accept PayPal (often smaller vendors) recognize the value PayPal provides in the form of increased acceptance rates and the trust that PayPal has built with consumers. The MDR structure for payments made in China using Alipay is drastically different. Alipay has a significantly lower MDR structure because it bypasses the other players in the ecosystem and because local regulations limit MDRs.

EXHIBIT 5

Comparing MDRs Across Various Payments Models



Sources: Morgan Stanley, Business Insider, Apple, medium.com, Cantor Fitzgerald Research, as of 2019.

Segment 1: Merchant Acquirers

Merchant acquirers serve as the initial gatekeepers in a digital transaction, allowing the merchant to accept various forms of noncash payments from consumers. Although innovative, tech-enabled merchant-acquisition platforms are able to justify higher take rates—especially within e-commerce and SMBs—competition within this fragmented space should ultimately drive fees lower.

What they do: Merchant acquirers approve or reject merchants' requests for payment authorizations, based on data obtained from the issuing bank and from the network during processing. The acquirer (which may be independent or bank-owned) deposits funds for approved transactions into merchants' accounts at regular intervals. Merchant acquirers control a key aspect of the entire payments industry by setting the MDR for each merchant. The top five merchant acquirers have more than 80% market share in the United States. In Europe, the landscape is fragmented and idiosyncratic, and payment methods can vary by country.

How they add value: Merchant acquirers allow merchants to accept various forms of payment, giving their customers flexibility and greatly reducing the friction involved in transactions. Acquirers also absorb merchant credit risk; if a merchant goes out of business before delivering a paid-for service (for example, if an airline abruptly ceases operations), the acquirer is responsible for refunding money to customers. Newer, tech-savvy merchant acquirers offer value-added services that merchants are willing to pay more for, such as enhanced fraud protection and improved acceptance rates.

These capabilities are especially important for e-commerce. Overall acceptance rates for e-commerce transactions average about 80%, compared to 98% for in-store, card-present transactions, so merchant acquirers that can help online retailers close this gap offer a tremendous value proposition. The development of new value-added services has helped the take rate remain stable or even increase slightly by preventing competition from eroding pricing power.

Risks: Competition—and its potential to cause take rates to compress—is by far the greatest risk facing merchant acquirers. The space is already highly fragmented and, thanks to relatively low barriers to entry, many new, tech-enabled entrants are rapidly gaining market share from legacy platforms. This threat is especially acute for less innovative merchant acquirers focused on traditional merchants in developed markets and in-store transactions, as growth is slower in these arenas. Innovative firms can counteract this threat of fee compression by offering more value-added services, and the opportunities to do so are significantly greater in e-commerce and for SMBs. (See sidebar.)

Some U.S. merchant acquirers have become more aggressive in using acquisitions to "buy growth" and reduce competition; there have been several recent large-scale acquisitions among merchant acquirers. This may reduce competition risk in the short term, but increased competition will likely drive take rates lower over time. Separately, unexpected regulation limiting fees could potentially reduce MDRs overall, affecting acquirers' profitability.

Integrated Payments Systems: Analyzing the Value Proposition for SMBs

Merchant acquirers' opportunities to add value are especially great for SMBs. Smaller businesses are willing to pay higher fees because the ability to accept digital payments is often the difference between making and losing a sale. In addition to enhancing acceptance rates and improving fraud prevention, many of the most disruptive merchant acquirers are adding services that accelerate sales growth and simplify critical back-office functions. Merchant acquirers that embed their software into "integrated payments systems" with inventory management, payroll, accounting, marketing, lending, and other functions that SMBs need are seeing take rates three to four times higher than those that provide only just transaction processing. Many SMB-focused merchant acquirers are creating packages of services that are tailored to the needs of specific types of businesses, such as restaurants or beauty salons. This trend toward vertical-specific, integrated software is one of the prevailing themes across the broader financial technology industry.

Segment 2: Networks

As the rails that connect other aspects of the payments ecosystem, networks are firmly entrenched around the world. Disruptive payment models that would completely bypass the networks are potentially a long-term risk, but networks are already using their massive resources to participate in these trends.

What they do: Networks connect merchant acquirers and issuing banks. They are the "payment rails" that facilitate front- and back-end transaction processing, set interchange fees (issuers' take from the MDR), and create and enforce operating rules. They work with merchant acquirers to enable acceptance at more merchants and help issuers gain customers. The largest networks, namely Visa and MasterCard, serve all types of merchants, in all parts of the world.

How they add value: Networks are the most entrenched part of the payments ecosystem and a critical part of the infrastructure. Without the networks, card payment authorization wouldn't be possible. In addition to providing fast and reliable connectivity, they also provide a layer of fraud detection. Networks are investing in infrastructure to make it easier for consumers to shift payments away from cash. This includes investing in new types of rails to accommodate real-time/instant debit payments, which are seeing increasing demand from consumers and merchants, especially in emerging markets. The largest networks have been involved in smaller, bolt-on M&A to accelerate that trend.

Risks: Disruption in the form of alternative payment models that bypass the existing infrastructure—such as blockchain, certain types of digital wallets, Zelle, or real-time payment systems—potentially pose the greatest long-term threat to networks. While long-term disruption risk shouldn't be ignored, the threat is likely lower in the short and medium term. Networks are well-resourced (strong balance sheets and massive cash flow generation) and aware of the potential for disruption, so they are actively investing in innovative segments and working with governments and large corporations to develop new solutions. Furthermore, many of the so-called "disruptive" payment models, such as Apple Pay, are actually beneficial to networks because they use the networks' existing infrastructure and will likely accelerate the shift to noncash payments by offering consumers added security and convenience. Looking beyond the next decade, it is conceivable that truly disruptive models that bypass networks could gain momentum, especially in emerging markets. But networks are so well-capitalized and ubiquitous that they will likely find a way to participate in these alternative methods.

Regulatory pressure is always a risk in the payments industry, but it is unlikely that regulators would focus outsized pressure on networks, which have the smallest take rate of any part of the payments ecosystem (as illustrated in exhibit 4). Governments, by and large, see the networks as providing a "social good" by building critical infrastructure that enables commerce, brings service to the un-banked, and increases tax revenue by limiting the size of the underground economy.

Segment 3: Issuers and Issuer Processors

By assuming credit risk, banks that issue credit cards, as well as debit cards, justify earning the largest portion of the MDR. But issuers also must deal with greater regulatory risk and increasing cybersecurity threats.

What they do: Issuers are the banking entities that extend credit to cardholders and house the checking accounts that fund debit cards. Issuer processors handle incoming requests from the networks, connecting to the bank that approves (or declines) the transaction and sends that decision back to the network. Some banks handle processing in-house, but there is a strong trend toward outsourcing the processing work. The processing business is fairly commoditized, highly scalable, and lower-risk, so banks are increasingly turning to third parties to handle their processing as it lowers the bank's operating expenses.

How they add value: The interchange fee represents the largest share of the MDR because issuers accept consumer credit risk. In the United States, issuers use a portion of the fee to support generous loyalty/incentive programs. The EU limits interchange fees (credit interchange fees are capped at 30 bps, debit interchange fees at 20 bps), so loyalty programs are far less robust in Europe. A recent trend has seen issuer processors merge with merchant

Can China's Model Be Exported?

The payments duopoly in China consists of Alipay (owned by Ant Financial) and Tenpay (also known as WeChat Pay, owned by Tencent). Together, they capture about 90% of noncash payments in a country where mobile devices are used for virtually every type of purchase, from taxi rides to luxury goods.

These "closed loop" systems eliminate the need for a merchant acquirer and issuing bank by connecting directly to the user's account.

Industry observers are watching closely to see whether a closed-loop system, such as Alipay or Tenpay, can gain traction in India, which is viewed as a tremendous growth market for the global payments industry.

While China and India are both emerging markets with massive populations, they are vastly different in terms of the payments landscape. The Indian government created a fast ACH system, Unified Payments Interface (UPI), that has attracted major investments from Amazon, Ant Financial, and other tech giants looking to promote adoption of their digital wallets. Amazon now allows Indian consumers to pay their utility and cable TV bills through its smart speaker, Alexa.[5]

According to SensorTower, a research and marketing firm for the app industry, Google Pay was the most downloaded financial technology app worldwide last year, as Indian consumers use it to buy train tickets, pay bills, and even purchase food from street vendors.[6] While credit card penetration rates are low outside of higher-income Indian consumers, digital wallet usage is increasing rapidly, driven by players such as Paytm, Reliance Jio, PhonePe, and Google Pay. The industry is watching India closely as the competition heats up.

5 TechCrunch. "Amazon Users Can Now Pay Their Utility, Mobile and Cable Bills with Alexa." October 16, 2019.
6 The Wall Street Journal. "Cash May be King in India, but Google is Prince of Mobile Payments." September 19, 2019.

acquirers, as the data obtained at both ends can allow the provider to improve acceptance rates for online transactions and reduce fraud risk.

Risks: Because the interchange fee is the largest portion of the MDR, it is natural to assume that it could attract the most scrutiny and pressure from regulators looking to clamp down on the fees consumers pay. Issuer banks in the United States and elsewhere could face regulatory action to reduce fees, such as the cap on interchange fees imposed by EU regulators. Separately, hacking and financial penalties associated with violations of consumers' data privacy rights, including the EU General Data Protection Regulation (GDPR), are an ongoing concern. Banks must also think about how to fend off potential disruption from technology companies that are looking to move into banking. In March 2019, for example, Apple introduced its credit card and in November 2019, *The Wall Street Journal* reported that Google plans to launch checking accounts.[9]

Retailers Respond to the Influence of Chinese Tourists

In 2017, China's international tourism expenditures totaled $258 billion, nearly twice as much as the second-highest spending country, the United States.[7] This is driven not just by the growing number of Chinese tourists, but their propensity to spend while abroad. Chinese tourists spend, on average, about 30% more during international trips than American tourists do.[8]

Retailers around the world, particularly those selling luxury brands but also many mainstream brick-and-mortar retailers, are responding to the enormous spending power of Chinese tourists. By adding the ability to accept Alipay and Tenpay/WeChat Pay, retailers (and hoteliers) allow Chinese tourists to pay for purchases as they do in China. Many retailers are also adding Chinese-speaking sales representatives to create a more welcoming shopping experience and facilitate transactions.

7 United Nations World Tourism Organization.
8 Euromonitor.

How do Digital Wallets Affect the Payments Value Chain?

While Apple Pay, Google Pay, and other digital wallets are garnering much attention, their ultimate impact on the payments value chain is questionable.

Digital wallets, which enable fast, convenient purchases by storing various payment methods on a mobile phone, can be funded with a credit card or debit card, or by linking directly to a bank account. Most digital wallets use the existing global payments infrastructure, and the additional convenience and security for consumers are likely to drive more noncash volume, which is a positive for networks and merchant acquirers.

From the issuer's perspective, digital wallets take a cut from the interchange fee, but the overall impact is likely to be minimal. This is especially true considering how slow consumer adoption of digital wallets has proved to be in developed markets.

Tech giants are investing significantly to promote their digital wallets in developed markets, but the primary business reason is to collect and sell data about customer purchasing patterns or combine the digital wallet with other services to further integrate the consumer into the company's ecosystem. Digital wallets don't have a clearly defined path to profitability, and many of the largest players in the space are still trying to determine what their revenue model should be.

In emerging markets, where there is less of a tradition of using credit cards, digital wallets could play an important role in accelerating the conversion to noncash transactions. This is especially true in India, where the government-supported, real-time, account-to-account payment infrastructure is particularly well-suited for digital wallets. Consumers in developing countries also use digital wallets to receive funds from friends and family outside of the country.

9 The Wall Street Journal. "Next in Google's Quest for Consumer Dominance: Banking." November 13, 2019.

Ranking the Business Models

We believe the shift from cash to noncash payments presents a compelling, durable growth story for all three of the major components that comprise the payments industry. Nonetheless, business models differ across these three segments and for terminal providers, which are a fourth part of the ecosystem. We believe it is critical to understand these differences when seeking to identify the companies that are best positioned to capture this growing profit pool and deliver sustainable value creation for investors. Exhibit 6 ranks payment business models.

EXHIBIT 6

Our Ranking of Payments Business Models

Ranking	Business Model	Key Attributes	Concerns
1	Networks	High, expanding margins; low volatility; organic growth from all payment types; firmly entrenched and highly trusted	Potential long-term disruption from alternate payment methods
2	Merchant acquirers	Attractive margins; opportunities to add value through tech-enabled, bundled services; strong growth in e-commerce and SMBs; highly scalable	High competition and fragmentation will pressure take rates; growth forecasts depend on size, customer mix
3	Issuer processors	Highly scalable; benefit from trend toward increased bank outsourcing	Low levels of differentiation; lower growth in developed markets
4	Terminal providers (the hardware)	Periodic surges in demand around conversions to new cards and point-of-sale technology	Lower growth; lower pricing; need scale

Source: William Blair. The chart shows general attributes and concerns that we have observed for the business model in each segment. These attributes and concerns do not necessarily apply to every company within each segment.

Networks[10]

The networks, outside of China's closed system, enjoy what amounts to a global duopoly consisting of two large incumbents, with a handful of additional players.

They continue to experience organic growth in the low teens, which is quite impressive for a mature industry of massive scale, along with high operating margins (around 55% and more).

Because of the "network effect," margins are likely to increase as the market size increases with the ongoing conversion to noncash transactions. Firmly entrenched, ubiquitous, and scalable, networks face a very low probability of disruption over the intermediate term.

The large incumbents are looking to stave off long-term disruption by using their ample free cash flow to acquire and invest in new fintech companies or alternative payment systems that have shown promise. Low interest rates, consistent revenue growth, and low-volatility returns have provided support for the high earnings multiples seen for these entities.

Merchant Acquirers[10]

Profitability and market share in this segment of the industry depend on scale, the ability to innovate with technology, and the firm's mix of merchant customers (e-commerce vs. brick-and-mortar, and large vs. SMB).

In our view, winners are likely to be larger entities that benefit from scale and tech-focused players that can grab market share by offering innovative features. This is a highly competitive segment where firms are likely to experience organic growth ranging from as low as 6% to 30% or more.

Focusing on the type of merchants a merchant acquirer serves is essential. Our ranking of the client types, from most to least attractive:

10 Numerical ranges in this section reference the average ranges for companies within the payments universe on the William Blair eligibility list. The eligibility list is comprised of companies that meet our growth and quality thresholds.

1. E-commerce/online sales: This customer base offers the highest growth for merchant acquirers, and attractive and growing margins (EBITDA margins that are typically 25% to 50%). Success in e-commerce is highly dependent on technology differentiation.

2. SMBs, including integrated payment systems: Merchant acquirers that focus on enabling small businesses to accept noncash payments enjoy a take rate that is three to four times higher than for large business transactions and are forecast to see double-digit top-line growth for the next three to five years. The ability to offer bundled services, including inventory management, lending, and payroll, in addition to payments expands the value proposition.

3. Non-U.S.: Lower noncash penetration outside of the United States and certain other developed markets means higher growth potential internationally (generally 13%-plus revenue growth versus 8%-plus in the United States). The growth opportunity is especially compelling in emerging markets, with large numbers of small merchants and under-banked consumers eager to engage in the digital marketplace.

4. Off-line traditional: This segment of a merchant acquirer's customer base is highly competitive and typically offers lower growth (mid-single digits). Scale is key to profitability when serving traditional merchants.

Issuer Processors

With less opportunity for differentiation and lower growth in mature markets, scale is key to issuer processors. These firms typically enjoy low- to high-single-digit growth that is relatively low risk.

Although the growth story is not as dramatic as some other segments, the trend among banks to outsource noncore functions is a tailwind for issuer processors. Much of the large-scale M&A in the U.S. payments industry has come from merchant acquirers combining with issuer processors.

Customer data is a key driver of this trend, as merchant acquirers are looking to support their e-commerce business by combining their data with that of issuer processors to create a more robust offering that can improve acceptance rates for online transactions.

Terminals

These businesses are primarily involved in selling point-of-sale hardware and charging installation fees. As a result, revenue comes in waves when a new technology is introduced and merchants need to upgrade, rather than being recurring and predictable as is the case with other payments business models.

The current wave of hardware upgrades involves point-of-sale systems that can accept contactless payments for credit cards that can be tapped instead of swiped or inserted, as well as digital wallets on smartphones or smartwatches.

The episodic nature of the hardware upgrade cycle provides some investment opportunities, but over the long term, our view is that investing in terminal manufacturers is less attractive than payments models that are based on recurring revenue.

B2B: The Next Frontier

This analysis of the payments industry has focused exclusively on B2C transactions, where the vast majority of digital payments currently take place. As massive and attractive as the B2C payments industry is, it pales in comparison to the potential market for B2B payments.

Most estimates, which include both cross-border payments as well as domestic noncash payments among businesses, put global B2B volume at more than double current B2C volume. This represents an enormous, untapped opportunity for multiple entities across the payments ecosystem, as the vast majority of B2B transactions are still conducted via cash or check.

As B2B payments progress through the nascent stages of the digitalization trend, we will be monitoring the shift closely and leveraging our knowledge of B2C payments to help understand which types of companies will be best positioned to capitalize on this monumental opportunity.

Powering Financial Inclusion

The spread of mobile payments globally is having a powerful, positive social impact in emerging markets. This is particularly important for SMBs, and for consumers at the lower end of the income spectrum who aren't able to receive credit or live in regions that don't have physical banks.

Digital payments for micro-transactions enabled by mobile apps help small businesses manage their very limited working capital and reduce the friction involved in transacting in cash or paying cost-prohibitive fees associated with credit cards. Digital wallets that can be funded without credit cards allow small businesses—including micro-merchants such as taxi drivers and street vendors—in emerging markets to transact more frequently and seamlessly with their customers and pay their employees more quickly. Furthermore, digital payments avoid the security issues related to the lack of infrastructure for safely handling cash in emerging markets.

Why Active Management Matters in Global Payments

The payments industry has enjoyed impressive growth for years, and we believe that this will continue as the conversion to the digital, noncash economy progresses around the world. The industry has delivered enviable returns to investors, and we believe earnings multiples are justified by growth, profitability, and cash flow characteristics that are difficult to find in industries of this size and maturity.

Although the industry comprises distinct components with different services and business models, the companies in the industry often have exposure to multiple aspects of the payments ecosystem. We expect a continued blurring of lines, as many companies in the industry don't fit neatly into just one of the segments we have profiled.

As an investor, it is becoming increasingly difficult to invest in standalone merchant acquiring, issuer processing, or terminal manufacturing. There is a good chance a company will have exposure to more than one of those segments, which offers both diversification benefits and potential risks.

Understanding how all of the pieces and players interact is one of the ways our multisector, global approach to fundamental research and active management helps us to identify sustainable sources of value creation. As the pools of profitability in the payments industry shift and grow at different rates around the world, we are focused on using multiple lenses to uncover opportunities for our clients.

About the Authors

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Drew Buckley is a global equity research analyst. He covers small-cap technology, media, and communication services companies. Before joining William Blair in 2008 as a global research associate focused on technology, media, and telecommunications stocks, he spent two years as a senior associate in Ernst & Young LLP's investment management assurance practice. Drew is a member of the CFA Society of Chicago and holds the certified public accountant (CPA) designation. He received a B.S. in business from the University of Colorado–Boulder.

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About William Blair

William Blair is committed to building enduring relationships with our clients and providing expertise and solutions to meet their evolving needs. We work closely with most sophisticated investors globally across institutional and intermediary channels. We are 100% active-employee-owned with broad-based ownership. Our investment teams are solely focused on active management and employ disciplined, analytical research processes across a wide range of strategies. As of December 31, 2019, we manage $58.4 billion in assets. We are based in Chicago with resources in New York, London, Zurich, Sydney, Stockholm, and The Hague, and dedicated coverage for Canada.

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