



# The heart of the matter

*Cryptocurrency: media sensation and investment fad? The issue is no longer whether cryptocurrency will survive, but rather how it will evolve. Each of the five key market participants—merchants and consumers, tech developers, investors, financial institutions, and regulators—will play a critical role in this process. Learn more about this exciting new technology, as well as the strategies to best aid its growth and harness its potential.*

It has been called one of the “greatest technological breakthroughs since the Internet.”<sup>1</sup> It also has been called “a black hole” into which a consumer’s money could just disappear.<sup>2</sup> The subject at hand is cryptocurrency—a medium of exchange created and stored electronically, and using encryption techniques to control the creation of monetary units and to verify the transfer of funds. Bitcoin, perhaps the most widely known example, has been a media sensation and an investment fad. But so far this new way of storing and spending value has inspired more debate than actual commerce.

For more than two years now, various teams at PwC have been monitoring the emerging cryptocurrency market. In response to what we identified as cryptocurrency’s potential to disrupt various markets, we assembled a cross-functional team of PwC professionals from around the globe to analyze cryptocurrency and assess its impact. In addition, we launched the 2015 PwC Consumer Cryptocurrency Survey (based on a representative sample of US consumers) to better understand the consumer side of the market.

<sup>1</sup> Gertrude Chavez-Dreyfuss and Michael Connor, “All the rage a year ago, bitcoin sputters as adoption stalls,” *Reuters News*, December 11, 2014, accessed on Factiva on June 16, 2015.

<sup>2</sup> Karen Freifeld and Gertrude Chavez-Dreyfuss, “New York regulator issues final virtual currency rules,” *Reuters News*, June 3, 2015, accessed on Factiva on June 16, 2015.

Of course, not all media coverage surrounding cryptocurrency has been positive, with several high profile situations noting Bitcoin’s use in a variety of illicit contexts. Clearly this gives potential stakeholders reason for concern. However, it is our view that this simply highlights the need for constant vigilance and is not necessarily representative of the industry as a whole. We also anticipate that this will change as the industry matures.

The goal of this paper is to provide an overview of what cryptocurrency is and how much consumers know about it. In addition, we discuss potential positive uses of this new instrument. We attempt to dispel some of the myths surrounding cryptocurrency, while providing perspective on the promise and positive impact of the blockchain public ledger technology behind it. We also discuss some potential disruptive impacts of blockchain in other areas across the financial services industry.

We hope this paper provides a strong foundation for those who are new to the cryptocurrency market, as well as a useful perspective for those more familiar with it. We believe this is just the beginning of a greater discussion on the merits of cryptocurrency, blockchain technology, and the strategies that can best aid this market’s potential.

# *An in-depth discussion*

In recent years, cryptocurrency—and in particular, Bitcoin—has demonstrated its value, now boasting 14 million Bitcoins in circulation.<sup>3</sup> Investors speculating in the future possibilities of this new technology have driven most of the current market capitalization, and this is likely to remain the case until a certain measure of price stability and market acceptance is achieved. Apart from the declared price of

cryptocurrency, those invested in it appear to be relying on a perceived “inherent value” of cryptocurrency. This includes the technology and network itself, the integrity of the cryptographic code, and the decentralized network. This instills confidence that this new form of value carries attributes in common with other longstanding stores of value, as well as some attributes unique to this new technology.

## *What is cryptocurrency?*

A cryptocurrency is a medium of exchange such as the US dollar. Bitcoin, the first cryptocurrency, appeared in January 2009 and was the creation of a computer programmer using the pseudonym Satoshi Nakamoto.

Like the US dollar, cryptocurrency has no intrinsic value in that it is not redeemable for another commodity, such as gold. Unlike the US dollar, however, cryptocurrency has no physical form, is not legal tender, and is not currently backed by any government or legal entity. In addition, its supply is not determined by a central bank and the network is completely decentralized, with all transactions performed by the users of the system.

The term cryptocurrency is used because the technology is based on public-key cryptography, meaning that the communication is secure from third parties. This is a well-known technology used in both payments and communication systems.

Source: US Congressional Research Service, “Bitcoin: Questions, Answers, and Analysis of Legal Issues,” January 28, 2015.

<sup>3</sup> “What is Bitcoin? How digital cash works,” *The Australian Financial Review*, June 6, 2015, accessed on Factiva on June 16, 2015.

For most cryptocurrencies, these attributes include the following:

- The code's resistance to counterfeiting.
- The network's ability to prevent "double-spending" (that is, spending money you do not own by use of forgery or counterfeiting) by verifying that each transaction is added to a distributed ledger or a blockchain.
- The limited supply, and the market's ability to divide single units into smaller fractions on a practically unlimited basis.
- The nearly instantaneous and irreversible transmission of value that takes place over the Internet, without the need for a trusted third-party intermediary.

- The decentralized network, which provides network security and transaction verification.
- The incentives embedded in the network protocol, which encourage participants to contribute computing resources for network support.
- The publicly available knowledge that a transaction has been posted to a global public transaction ledger.
- The personal data security enabled by public-private key cryptography.

The dedicated core team of developers and miners who continually support and improve the code, help secure the network, and validate transactions.

### *What is blockchain technology?*

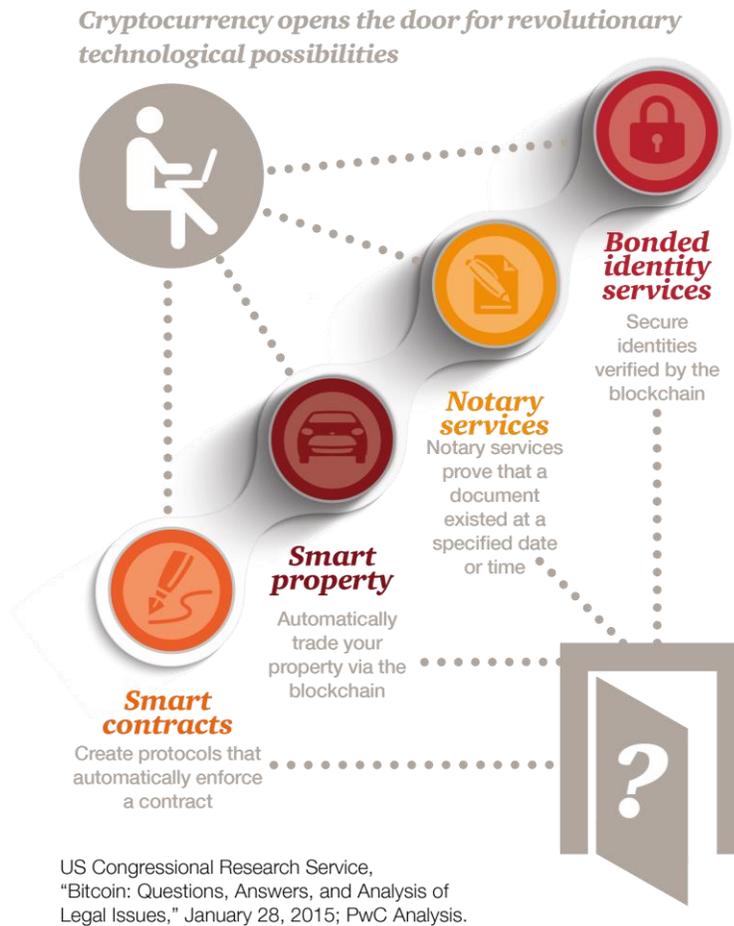
The blockchain is a ledger, or list, of all of a cryptocurrency's transactions, and is the technology underlying Bitcoin and other cryptocurrencies. This decentralized public ledger keeps a record of all transactions that take place across the peer-to-peer network. Users can contribute to the network by providing computational power to assist with the verification of transactions in real time (known as "mining").

This technology allows market participants to transfer assets across the Internet without the need for a central third party. Specifically, the buyer and seller interact directly with each other and there is no need for verification by a trusted third-party intermediary. Identifying information is encrypted, and no personal information is shared. However, a transaction record is created. For this reason, transactions are considered pseudonymous, not anonymous.

As shown in Figure 1, the blockchain public ledger technology has the potential to disrupt a wide variety of transactions, in addition to the traditional payments system. These include stocks, bonds, and other financial assets for which records are stored digitally and for which currently there is a need for a trusted third party to provide verification of the transaction.

Source: US Congressional Research Service, "Bitcoin: Questions, Answers, and Analysis of Legal Issues," January 28, 2015.

**Figure 1: The combination of blockchain technology and cryptocurrency has the potential to open the door to other revolutionary possibilities.**



## Nascent cryptocurrency market *Critical mass*

The inherent value of cryptocurrency as an alternative method to store and transmit units of value has gained acceptance from a critical mass of investors, technologists, regulators, merchants, entrepreneurs, and consumers. It's clear that cryptocurrency is more than a passing phenomenon. In fact, in our view, cryptocurrency represents the beginning of a new phase of technology-driven markets that have the potential to disrupt conventional market strategies, longstanding business practices, and established regulatory perspectives—all to the benefit of consumers and broader macroeconomic efficiency. Cryptocurrencies carry groundbreaking potential to allow consumers access to a global payment system—anywhere, anytime—in which participation is restricted only by access to technology, rather than by factors such as having a credit history or a bank account.

The discussion is no longer one of whether cryptocurrency will survive, but rather how it will evolve, and when it will reach maturity.

Growth within the cryptocurrency market has been driven largely by venture capitalists investing in technology infrastructure, and other investors seeking to profit from price fluctuations, rather than by consumers actually using cryptocurrency. This carries with it uncertainties: According to one estimate, the volatility of bitcoin against the dollar on a bitcoin exchange is about five to seven times the volatility of traditional foreign exchange trading.<sup>4</sup> Figure 2 shows the relative exchange rate between Bitcoin and the US dollar from January 2013 to May 2015. It appears that the full potential of cryptocurrency may be realized only when the market makes the leap from the hands of investors into the hands of consumers.

**Figure 2: Cryptocurrency volatility, from 2013 to the present.**



Source: "Bitcoin Price Index," Coindesk, <http://www.coindesk.com>, accessed June 12, 2015.

<sup>4</sup> Danny Bradbury, "Can Bitcoin's Price Ever Be Stable," *CoinDesk*, December 6, 2014, <http://www.coindesk.com>, accessed on June 17, 2015.

## *Fragile market*

Despite the vast potential of this new technology, and its proven ability to survive several formidable tests of its legitimacy, the current state of the market remains fragile. This is due in large part to the serious threats exposed by the Liberty Reserve<sup>5</sup> and Silk Road money laundering schemes<sup>6</sup>, and the more recent cybertheft that swiftly drove the Bitcoin exchange Mt. Gox into bankruptcy.<sup>7</sup> And these are only the first threats to have surfaced. In the coming years, we expect more threat-based challenges, such as tax evasion, bribery payments, terrorist financing, and financing counterfeit products, may follow. There have already been glimpses of interest from terrorist groups discussing its uses in chatrooms. Simply put, the technological innovation of cryptocurrency, with its positive attributes, has brought with it a “dark side” in which its most fundamental innovations—speed, secure transfer and store of value, and limited personal data exposure—are exploited by hackers and criminals.

In our view, the cryptocurrency market will develop at a pace set by the key participants, characterized by likely growth spurts of legitimacy from one or more of these participants in what we call “credentialising moments.” For the market to reach the next phase in its evolution toward mainstream acceptance and stable expansion, each of the five key market participants—merchants and consumers, technology developers, investors, financial institutions, and regulators— will play a role.

Next, we examine the roles of each of these participants, the state of their current sophistication with cryptocurrency, and how they may be involved in the future.

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5 Department of Justice, US Attorney’s Office, Southern District of New York, “Manhattan US Attorney Announces Charges Against Liberty Reserve, One Of World’s Largest Digital Currency Companies, And Seven Of Its Principals And Employees For Allegedly Running A \$6 Billion Money Laundering Scheme,” May 28, 2013.

6 Department of Justice, US Attorney’s Office, Southern District of New York, “Manhattan US Attorney Announces Charges Against Bitcoin Exchangers, Including CEO of Bitcoin Exchange Company, For Scheme to Sell and Launder Over \$1 Million in Bitcoins Related To Silk Road Drug Trafficking,” January 27, 2014.

7 Recent press coverage has led to some confusion around the collapse and bankruptcy of Mt. Gox, the Tokyo-based Bitcoin exchange. Mt. Gox has publicly blamed so-called “transaction malleability” attacks for the loss of over 850,000 bitcoins. However, core developers, as well as the Bitcoin Foundation, have rejected the assertion that the code is flawed and say the flaw was in Mt. Gox’s implementation.

When a transaction is submitted to the Bitcoin network, a mathematical function is applied to the data in the transaction to produce a cryptographic hash, a type of electronic fingerprint for the transaction. Until it is included in a completed block, it is possible for an attacker monitoring the network to change certain extraneous data in a transaction

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(but, importantly, not the essential data of who is paying how much to whom). Such an alteration produces a completely different cryptographic hash, and it is possible that the transaction, so altered, will be what the network ultimately accepts. Such an attack could not alter the sender, recipient, or amount of bitcoins sent—but if successful, it would result in the transaction having a different identifying hash.

Based on our research, it appears that when sending bitcoins to withdrawing customers, Mt. Gox’s accounting systems relied exclusively on tracking the original hash of a transaction to verify that said transaction had been properly processed by the Bitcoin network. As a result, when attackers successfully altered the hash of a processed withdrawal transaction, the exchange’s systems erroneously interpreted the absence of the original hash as evidence that the transaction had never been processed; the exchange would therefore resend the same amount of bitcoins a second time (and, perhaps, repeatedly if the second transaction was itself subject to a successful attack) to such customers. Using this tactic, the cyberthieves drained Mt. Gox’s bitcoin holdings until the issue was finally discovered and withdrawals were suspended.

## Keys to market development *Consumers and merchants*

For consumers, cryptocurrencies offer cheaper and faster peer-to-peer payment options than those offered by traditional money services businesses, without the need to provide personal details. While cryptocurrencies continue to gain some acceptance as a payment option, price volatility and the opportunity for speculative investments encourage consumers not to use cryptocurrency to purchase goods and services but rather to trade it.

Consumers will accept and adopt cryptocurrency on a broad scale only when they gain better knowledge of it and see improved availability, reliable cash exchange, and an affordable level of effective consumer protection. This level of acceptance will be more likely when consumers have access to innovative offerings and services not otherwise available through traditional payment systems.

One limiting factor for better cryptocurrency adoption is consumer awareness. As shown in Figure 3, only 6% of respondents to PwC's 2015 Consumer Cryptocurrency Survey say they are either "very" or "extremely" familiar with cryptocurrencies. Moreover, there's a very confined user base: Only 3% of survey takers reported having actually used cryptocurrencies within the last year.

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**Figure 3: Knowledge of cryptocurrencies remains limited.**

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*Please describe the extent to which you are familiar with cryptocurrencies*



Source: 2015 PwC Consumer Cryptocurrency Survey.

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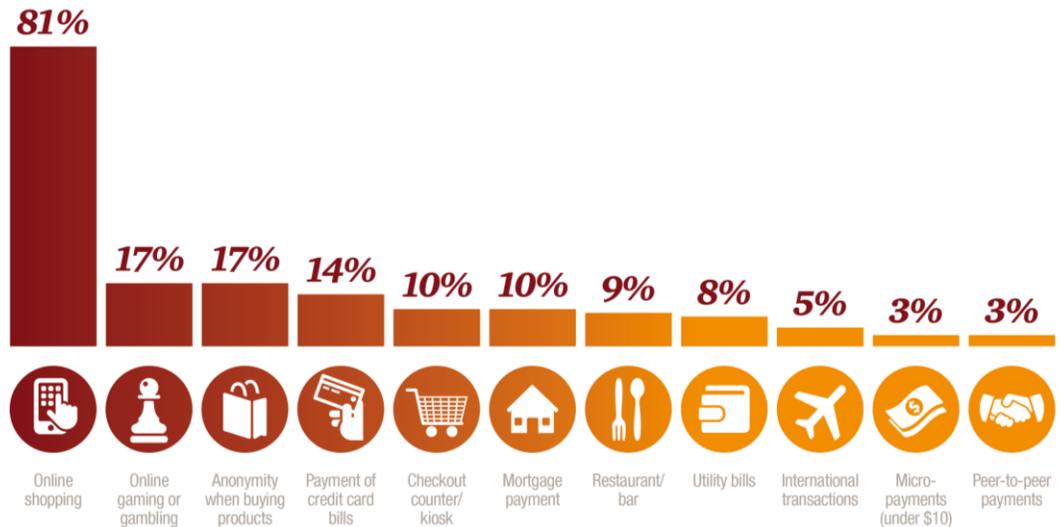
A common misconception about cryptocurrencies is that the transactions are completely anonymous. Rather, what cryptocurrencies offer is merely the ability for consumers to complete transactions without having to provide merchants with personal information for the purpose of verification or storage. From a law enforcement perspective, the transaction can be traced to the person/entity (if illegal activity is suspected) using a combination of procedures that includes identifying the destination of the transaction through the publically available transaction ledger. Nevertheless, amid rising concerns of identity theft and data privacy, this “pseudo-anonymity” does offer advantages to consumers.

As shown in Figure 4, of the survey takers who had used cryptocurrencies within the last year, 17% claim “anonymous transactions” as one of the top advantages. The most popular use (81% of survey respondents) is “online shopping.” Other top uses include “online gaming” (17%) and “payment of credit card bills” (14%).

Of those consumers who had used cryptocurrency in the past year, 86% indicate that they expect their use of it to significantly increase in the next three years.<sup>8</sup>

**Figure 4: Usage of cryptocurrencies in the past 12 months.**

*In which of the following situations have you used cryptocurrencies in the past 12 months?*



Source: 2015 PwC Consumer Cryptocurrency Survey.

<sup>8</sup> PwC's 2015 Cryptocurrency Consumer Survey.

From the perspective of businesses and merchants, cryptocurrencies offer low transaction fees and lower volatility risk resulting from nearly instantaneous settlement, and they eliminate the possibility of chargebacks (the demand by a credit card provider that a retailer make good the loss on a fraudulent or disputed transaction). In the future, we may see these benefits diluted by new regulations covering items such as chargeback rules or consumer protection. The greatest opportunity for business here is not in business-as-usual, but rather in providing innovative and disruptive products, services, and business models driven by global consumer needs, especially those that target tech-savvy consumers.<sup>9</sup> This approach must not only meet consumer demand but also lessen merchant risks associated with payment settlement, cybersecurity, and regulatory requirements.

Another challenge for merchants is the volatile price of cryptocurrencies. Currently, the market for even the most popular cryptocurrencies is illiquid, fragmented, and highly volatile—much more characteristic of a thinly traded commodity than of a broadly accepted currency. The lack of liquidity leads to significant costs associated with exchanging fiat currency into cryptocurrency, and vice versa, in the form of large bid/ask spreads, significant fees, or both. Price volatility also generates significant exchange-rate risk, which understandably discourages both merchants and consumers from holding cryptocurrency for any significant length of time. Fortunately, the two most popular US-based cryptocurrency payment processors have established a new level of maturity by adopting a business model in which they immediately convert cryptocurrency into US dollars at the spot exchange rate.

While the transfer of cryptocurrency itself across the peer-to-peer network is instantaneous and nearly cost-free, there are “toll charges,” such as exchange fees and price volatility, which apply at the exchange point between fiat currency and cryptocurrency. These toll charges produce additional costs for anyone not looking to take a net-long position in this new asset.

On the plus side, as the cryptocurrency market continues to grow and mature, we may see liquidity increase. This would lead to tighter bid/ask spreads and significantly reduced exchange fees. It also would reduce price volatility, which would decrease exchange-rate risk and lessen the pressure on risk-averse merchants and consumers to immediately convert cryptocurrency back into fiat currency. Broadly speaking, increased liquidity would help cryptocurrency develop characteristics that are more like widely accepted fiat currency, rather than those associated with a commodity.

Even with changes to the incentive structure over time, minimal transaction fees may help cryptocurrency dominate traditional payments and transfer methods.

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<sup>9</sup> For example, the online media, especially newspapers, can consider using micropayments offered by digital currencies to allow users to pay per access to a single article.

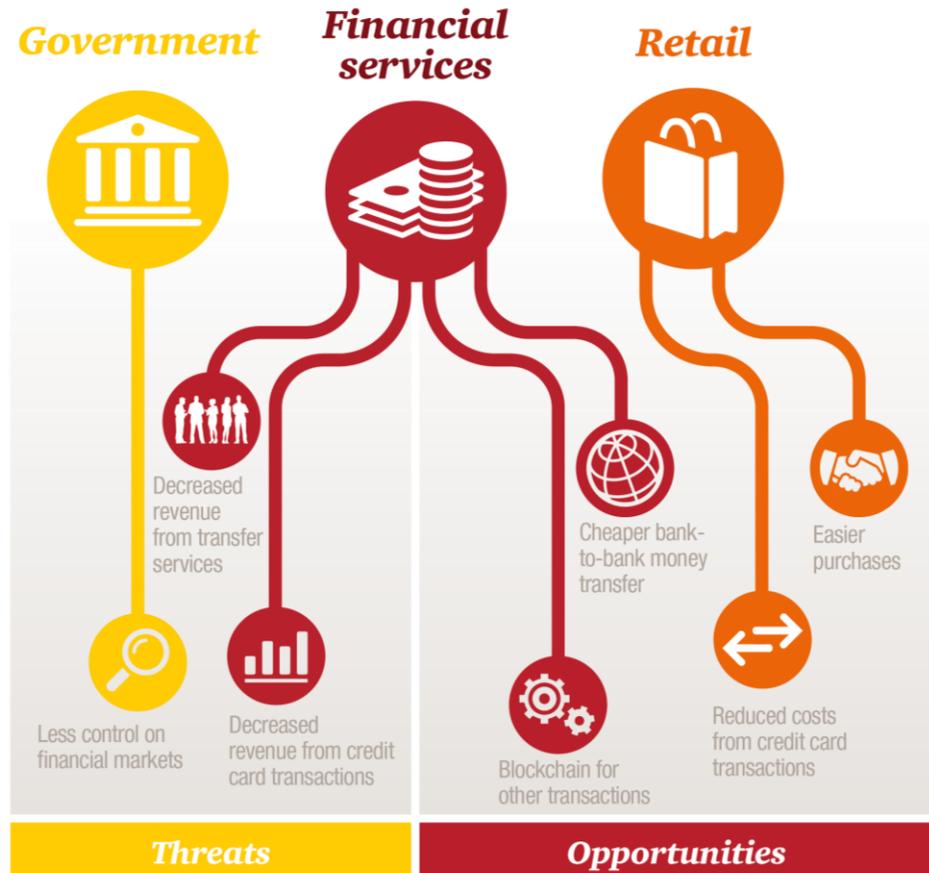
### Tech developers

Many talented technology developers have devoted their efforts to cryptocurrency mining, while others have focused on more entrepreneurial pursuits such as developing exchanges, wallet services, and alternative cryptocurrencies. In our view, the cryptocurrency market has only started to attract talent with the depth, breadth, and market focus needed to take the industry to the next level. For the market to gain mainstream acceptance, however, consumers and corporations will need to see cryptocurrency as a user-friendly solution to their common transactions. Further, the industry will need to develop cybersecurity technology and protocols.

There is also enormous market potential for developers who are able to create new applications based on the underlying technology.

As shown in Figure 5, the cryptocurrency protocol could introduce major changes across multiple industries, such as government, financial services, and retail. Examples include cheaper bank-to-bank money transfers in financial services and easier purchases in retail. In our view, any industry that relies on a trusted third-party clearing system could be impacted.

**Figure 5: Potential impact of digital currency on the financial services industry and other areas.**



# 86%

of respondents who have used cryptocurrencies in the last year expect their use of cryptocurrencies to significantly increase in the next three years.

Source: 2015 PwC Consumer Cryptocurrency Survey.

## *Investors*

Investors generally appear to be confident about the opportunities associated with cryptocurrencies and cryptography. The “inherent value” of the underlying technology, discussed above, gives these investors good reason to be optimistic. As a result, only recently have some of the more established cryptocurrency companies attracted institutional investors and Wall Street attention.

To date, the cryptocurrency market has been driven overwhelmingly by venture capital. In short, venture capitalists—many with formidable experience investing in the technology sector—have been pouring capital into the market, betting that consumer demand will drive future growth. Some entrepreneurial examples include developing and mining cryptocurrency, and creating cryptocurrency exchanges, transaction processors, and cryptocurrency storage and back up.

There are key differences between traditional technology startups and cryptocurrencies that may fundamentally affect investment strategy. Traditional technology startups typically involve new ideas that function either outside of existing regulations or safely within their boundaries. By contrast, money is arguably the most highly regulated thing in the world, and cryptocurrencies face a host of complex regulations.

For this reason, cryptocurrency will not reach its true market potential unless and until it develops in harmony with applicable regulations.

## *Financial institutions*

Traditionally, banks have connected those with money to those who need it. But in recent years, this middleman position has been diluted, and disintermediation in the banking sector has evolved rapidly. This has resulted from the rise of Internet banking; increased consumer usage of alternative payment methods like Amazon gift cards, Apple Pay, Google Wallet, and PayPal; and advances in mobile payments. However, even the newest forms of mobile payments still ultimately rely on traditional financial institutions to process transactions.

Cryptocurrencies enable a fast, secure, low-cost opportunity for consumers to use, store, and transmit money over the Internet. However, what sets cryptocurrency apart from other recent payment innovations is its potential to dramatically limit the role of traditional financial institutions in clearing and settling payments.

Cryptocurrency transactions are processed using cryptographic code verification that clears and settles transactions within minutes, at zero or nominal cost. Theoretically, no traditional banking players are necessary. Traditional clearing and settlement services are required only at the point of exchange for fiat currency. For this reason, the more that cryptocurrency gains acceptance among merchants and consumers, the less there will be a need for traditional financial institutions to provide clearing and settlement services.

Although cryptocurrency will never replace banks, it carries great potential to transform them. Thus far, financial institutions have appeared reluctant to involve themselves in the cryptocurrency ecosystem, which is expected due to regulatory uncertainty, the costs of integrating new technology, and the lack of widespread consumer demand. However, as cryptocurrency continues to gain mainstream acceptance, financial institutions will become increasingly interested in exploring how best to harness this new technology.

### **International attitudes**

Government attitudes around the world toward cryptocurrency are inconsistent when it comes to the classification, treatment, and legality of this technology. Regulations are also evolving at different paces in different regions.

International regulatory attitudes vary widely. Those countries that have embraced cryptocurrencies have been cautious.

For example:

- Australia<sup>10</sup>, Canada<sup>11</sup>, and Singapore<sup>12</sup> have either released or are in the process of releasing tax guidelines on how to treat cryptocurrencies.
- The UK government, in its annual budget, announced a focus on building financial crime regulations for digital currency companies.<sup>13</sup>

- On a more global level, the inter-governmental Financial Action Task Force (FATF) is undertaking meaningful discussion of financial crime standards as they relate to cryptocurrency.<sup>14</sup>

### **Regulation in the United States**

In our view, the US Federal Government appears to have let this marketplace evolve, while others have chosen to heavily regulate and, in some cases, ban the use of cryptocurrency.

A January 2015 report from the Congressional Research Service explains the applicability of selected laws to cryptocurrency.<sup>15</sup> In brief, there are at least five key regulatory frameworks that cryptocurrency will have to navigate in the United States:

- Financial crimes-related regulations such as the Bank Secrecy Act (BSA), USA PATRIOT Act, and those issued by the Office of Foreign Assets Control (OFAC).
- State banking departments determining whether cryptocurrency should be regulated like traditional money transmissions.
- The Securities Exchange Act and regulations issued by the Securities and Exchange Commission (SEC).
- Regulations issued by the Commodity Futures Trading Commission (CFTC).
- The Internal Revenue Code and regulations and other tax guidance issued by the Treasury Department and the Internal Revenue Service (IRS).

<sup>10</sup> Australian Taxation Office, "Tax treatment of cryptocurrencies in Australia – specifically bitcoin," December 18, 2014, <http://www.ato.gov.au>, accessed July 10, 2015.

<sup>11</sup> Canada Revenue Agency, "What you should know about digital currency," December 03, 2014, <http://www.cra-arc.gc.ca>, accessed July 10, 2015.

<sup>12</sup> Inland Revenue Authority of Singapore, "Income Tax Treatment of Virtual Currency," May 15, 2015, <https://www.iras.gov.sg>, accessed July 10, 2015.

<sup>13</sup> HM Treasury, "Digital Currencies: response to the call for information," March 2015, <http://www.gov.uk>, accessed July 10, 2015.

<sup>14</sup> FATF, "Guidance for a Risk-Based Approach to Virtual Currencies," June 29, 2015, <http://www.fatf-gafi.org>, accessed July 10, 2015.

<sup>15</sup> US Congressional Research Service, "Bitcoin: Questions, Answers, and Analysis of Legal Issues," January 28, 2015.

Immediate hurdles for the cryptocurrency market include financial crime regulations issued by the Financial Crimes Enforcement Network (FinCEN) and OFAC as well as corresponding state financial crime laws. As the arrests surrounding the Silk Road scheme show, law enforcement will be quick to shut down and prosecute those who violate financial crime laws.<sup>16</sup> The stability of the cryptocurrency market relies on a trusted means of exchanging cryptocurrency for fiat currency and, therefore, market growth will suffer until a solution is designed that enables cryptocurrency exchanges to comply with BSA monitoring and reporting requirements in the same way as traditional money services businesses.

US Attorney Melinda Haag recently stated, “Digital currency providers have an obligation not only to refrain from illegal activity, but also to ensure they are not profiting by creating products that allow would-be criminals to avoid detection. We hope that this sets an industry standard in the important new space of digital currency.”<sup>17</sup>

Crafting a solution to prevent financial crime will be no small feat. It will require the creation of software, coupled with a toolkit of policies, procedures, and internal controls that achieve the level of reliance produced by financial crime programs at traditional financial institutions. Importantly, these must also interpret and analyze entirely new forms of data. Blockchain analytics, forensic technology, and financial crime compliance specialists will have to come together to form a solution that aligns with regulatory expectations.

<sup>16</sup> Department of Justice, US Attorney’s Office, Southern District of New York, “Manhattan US Attorney Announces Charges Against Bitcoin Exchangers, Including CEO of Bitcoin Exchange Company, For Scheme To Sell And Launder Over \$1 Million In Bitcoins Related To Silk Road Drug Trafficking,” January 27, 2014.

<sup>17</sup> Financial Crimes Enforcement Network, “FinCEN Fines Ripple Labs Inc. in First Civil Enforcement Action Against a Virtual Currency Exchanger,” May 5, 2015.

Beyond financial crime compliance, the second most imminent regulatory hurdle is asset classification. Cryptocurrency appears to fall into one of four competing asset classifications: currency, capital asset, security, and commodity. Until the US government issues further guidance, the asset classification issue is likely to prevent most market participants from adopting business models based on cryptocurrencies, due to the risks of being found in violation of SEC, CFTC, or IRS regulations.

The IRS provided some initial tax-related answers on March 25, 2014, when it issued guidance, concluding that “convertible” virtual currency (such as bitcoins) is treated as property rather than as foreign currency for US federal income tax purposes.<sup>18</sup> Clarity around this issue—and the potential for preferential long-term capital-gains treatment it provides to individual investors—may, at the margin, encourage the use of cryptocurrency as a long-term speculative investment and a store of value. At the same time, some have suggested that the recordkeeping and accounting burden on individual users may hinder the use and adoption of cryptocurrency as a true “currency.”

Nevertheless, many tax questions that stem from the “borderless” nature of cryptocurrencies remain unanswered, as do concerns that the pseudo-anonymity and mobility of cryptocurrencies could enable tax evasion. For example:

- Does the ownership of cryptocurrency—either in a private wallet or on an online wallet service—require the filing of a Foreign Bank Account Report (FBAR) by the owner?
- Are online wallet service providers or currency exchanges, whether in the United States or abroad, subject to the Foreign Account Tax Compliance Act (FATCA) rules that govern foreign financial institutions?

<sup>18</sup> Internal Revenue Service, Notice 2014-21.

If the acceptance and use of cryptocurrencies continue to grow, we can expect the IRS and lawmakers will face growing pressure to address these and other complex tax and accounting issues.

For the cryptocurrency market to develop and thrive in the United States, the government and the private sector will have to work to find solutions to these substantial regulatory compliance issues. In this regard, the November 2013 US Senate hearings and the January 2014 New York State hearings have set a positive tone. New York State, in particular, seems to have taken the lead in trying to find common ground between the interests of government and the market.

According to a press release issued by the New York Department of Financial Services (NYDFS) on May 7, 2015, “ItBit applied to NYDFS for a charter under that process for virtual currency exchanges in February 2015. NYDFS conducted a rigorous review of that application, including, but not limited to, the company’s anti-money laundering, capitalization, consumer protection, and cyber security standards. As a chartered limited purpose trust company with fiduciary powers under the Banking Law, itBit can begin operating immediately and is subject to ongoing supervision by the NYDFS. ItBit will also be required to meet the obligations for operating a trust company under New York law, as well as those under the final BitLicense regulations.”<sup>19</sup>

With the timely and correct level of government guidance and oversight, the industry could thrive in the United States. Without it, the industry could be driven offshore.

## Present and future opportunities

### *Consumer acceptance and potential growth*

Cryptocurrency growth over the next year is expected to be solid but not spectacular, and it is important to note that this growth starts from a very low base. Frequency of use is expected to remain low.

Our consumer survey showed that, of those who have used cryptocurrencies within the last year, only 17% are “very” or “extremely” concerned about cryptocurrencies. Almost half (48%) say they are only “slightly” concerned for any reason, and 12% say they are not at all concerned. When asked about their concerns, cryptocurrency users cite fraud, followed by fluctuations in value, and acceptance among vendors. These concerns are realistic and represent significant hurdles that must be addressed before cryptocurrency is widely accepted.

Yet respondents are bullish about cryptocurrencies’ potential impact on banking and retail. A majority (76%) of current users say cryptocurrencies will redefine banking as we know it, and 59% say their banking experience would be improved if they had greater access to cryptocurrencies.<sup>20</sup>

<sup>19</sup> New York Department of Financial Services, “NYDFS grants first charter to a New York virtual currency company,” May 7, 2015.

<sup>20</sup> PwC’s 2015 Consumer Cryptocurrency Survey.

### *Striking the right balance*

In the short term, businesses will find success if they can strike the right balance between growing market demand and an evolving regulatory landscape. For example, strategic partnerships formed by companies such as Coinbase and BitPay serve as bitcoin “wallets” and payment processors for merchants. By holding the digital wallets that receive bitcoin payments from customers, and then immediately paying those merchants the cash value of those bitcoins, Coinbase and BitPay effectively enable merchants to accept cryptocurrency payments without taking on the risks of holding bitcoins on their books. Forging these types of strategic partnerships and solutions is the key to driving the market forward in the short term.

As the regulatory landscape develops and the market matures, more traditional business strategies may begin to play a greater role in achieving success. However, as with most groundbreaking markets, the combination of ingenuity and speed to market is likely to distinguish the market leaders.

### *Emerging markets*

Perhaps the greatest opportunity for those involved in the cryptocurrency ecosystem is in the potential this technology has in developing economies. In fact, rapidly developing technology has enabled many emerging economies to completely skip entire stages of development. For example, cell phones made it unnecessary for African countries to build telephone lines. Similarly, cryptocurrency may one day enable developing economies to forgo the need to build large financial infrastructures, clearing houses, and other third-party intermediaries.

There is already strong evidence of this concept at work in the M-Pesa and M-Paisa systems that have developed in Kenya and India, respectively.<sup>21</sup> Cryptocurrency will likely build on these innovations to offer the potential for micropayments and cheaper remittances across borders. If cryptocurrency is able to offer lower cost solutions for economically disadvantaged populations, this may be the technology’s greatest legacy.

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<sup>21</sup> M-Pesa and M-Paisa are text-message-based money transfer systems that are offered through retail stores and door-to-door sales.

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# *What this means for your business*

The cryptocurrency market is still in its infancy. Robust growth may take root first in international markets rather than in the United States, where a strong financial system makes the need for a currency revolution less than obvious. Our survey reinforces the idea that cryptocurrencies as a whole remain a niche product, but key indicators—consumers’ expectations that their use of cryptocurrency will increase and the growing use of digital wallets—point to a consumer base that is open to change.

Clearly, there are challenges for cryptocurrency in the near term. With so many of its characteristics falling between a currency, a financial asset, and a technology protocol, the pace of growth and adoption may splinter the industry. This could happen as various participants seek their own way to derive value from the concept of cryptocurrency. As a disruptive technology, it will continue to divide opinion and face skepticism. As regulatory standards are adopted and refined, creative products enter the market, and the prices of the various cryptocurrencies stabilize, we’ll see greater confidence on the part of all market participants.

This confidence and trust will need to be nurtured by the industry itself, using the guidance of trusted advisors to bridge the gaps between this new technology, the established principles that govern it, and the market demands that drive it.

If the pace of growth continues at a steady pace, it may not be long before the next iteration of cryptocurrency offers new ways of transfer, as well as wealth and asset creation that may reshape much of what we previously thought was possible on the Internet.

In our view, however, the more important potential disruptor is the blockchain public ledger technology that underlies cryptocurrency. This technology has the potential to open the door to revolutionary possibilities in multiple industries. Escrow accounts, securities and financial instrument offerings, “smart contracts,” and electoral systems are just a few of the concepts that are being discussed. Any financial asset that currently requires a trusted third party to provide verification could, theoretically, be disrupted. In future publications, we will explore this and related topics in greater detail.

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