

## Blockchain in Financial Services in Emerging Markets Part II: Selected Regional Developments

*Blockchain, or distributed ledger technology, is now disrupting the financial services industry as part of a larger wave of external innovations by digital financial technologies. Emerging markets—due to their higher banking risks, lower bank penetration, and greater presence of digital financing—are an ideal backdrop for the adoption of blockchain-based financial solutions, and benefits could include a technological leap forward and a boost to financial inclusion and growth. This note focuses on selected regions in emerging markets where distributed ledger technology is already affecting the provision of financial services, including Africa, Latin America, and Asia.*

The blockchain innovation landscape is still dominated by the United States and Europe. The United States represents 54 percent of the blockchain global deal share, followed closely by Western Europe.<sup>1</sup> This dominance is, however, being challenged by Asia, according to a 2016 CB Insights analysis of venture capital financing. It shows that Asia, driven by China, increased its share of the pie from 14 percent in 2015 to 23 percent in 2016, a remarkable rise (see Fig. 1).

### Africa

Sub-Saharan Africa, with its 70 percent unbanked population, provides enormous potential for the adoption of blockchain-based solutions as an alternative to traditional payment options. Economies with a history of frequent political turbulence or those with high currency risk and capital controls are also fertile ground for individuals and households to embrace a solution that permits them to bypass the system's inefficiencies, overcoming fears of potential risks in the execution of transactions.

The overwhelming presence of alternative payment solutions in Africa could potentially pave the way for blockchain, since households may be less resistant to new technology. Seventy percent of all transactions in Kenya are already digital and over half of the country's adult population holds a M-Pesa digital wallet.<sup>2</sup> With relatively small legacy systems in the region, the adoption of blockchain becomes easier due to lower transition costs and less cultural resistance.

This provides the backdrop for the disruption in the remittances and payments segment, described in EMCompass Note 43. Peer-to-peer payments with digital currencies have started to become an alternative to local currencies, with a number of growing blockchain African-run startups, including Kenya's BitPesa and Bitsoko, Ghana's bitcoin exchanges BTCGhana,

and South Africa's Luno and Ice3X and GeoPay, BitSure and Chankura. South African mobile money network PayFast recently integrated bitcoin payments options and now provides access for bitcoin payment to 30,000 merchants outlets across the country.<sup>3</sup>

### About blockchain in Africa

*"The opportunity is to produce new constructs that bring together unique opportunities and competencies – things like the blockchain and mobile-money movement on the phone, and mesh networking. It's a matter of using Africa's unique potential right now to come up with things that defy Western logic in many terms or just don't fit that classical model." —Brett King, co-founder of Moven*

Prospects for rapidly developing blockchain technology into a full range of financial services, beyond just digital payments, are considerable, due to strong support from financial players and local governments. In Nigeria, the central bank approved an industry-wide e-payment incentive scheme and awareness campaign to encourage Nigerians to embrace the use of e-payments by consumers and commercial agents.

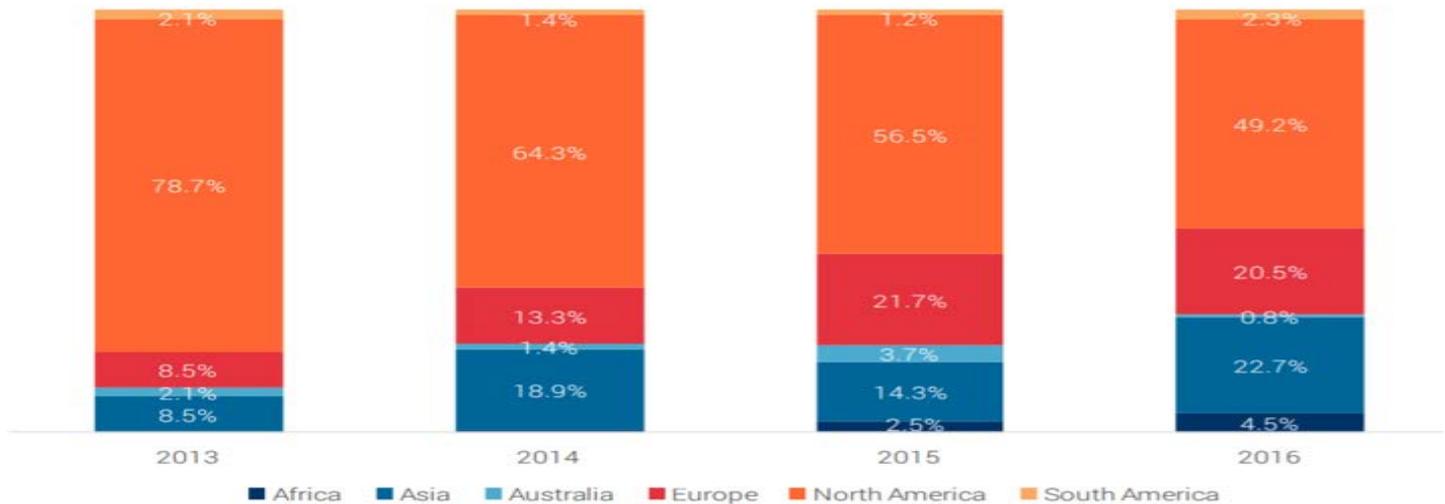
Similarly, Senegal announced plans to introduce a cryptocurrency (eCFA) overseen by the West African Economic and Monetary Union, which can be used in Benin, Burkina Faso, Cote d'Ivoire, Niger, and Togo. South Africa is also home to a friendly regulatory environment and a vibrant fintech ecosystem, a necessary precondition for blockchain innovation.

In 2014 South Africa's central bank indicated that it will have no supervisory obligations over virtual currencies, giving

stakeholders relative 'carte blanche' to conduct cryptocurrency transactions in that country. Furthermore, the South African Reserve Bank, along with the Payments Association of South Africa and top banks, circulated Africa's first ever private Ethereum-based smart contract among several of the country's financial institutions in an attempt to test the technology for

potential future implementation in its financial system. They are also participating in a regional consortium of leading banks, including ABSA, Standard Bank, Nedbank, and others, to develop a blockchain based solution for loan syndication and securitization.

**Figure 1: Bitcoin and blockchain annual deal share by continent 2012-2016**



Source: CBInsights, cbinsights.com

South Africa also boasts a blockchain-curious and active financial sector looking to improve existing company operations through process re-engineering and cost reduction. Rand Merchant Bank has launched a blockchain initiative to develop blockchain solutions for its business, while Absa Bank, Barclays Africa and Standard Bank have joined the R3 Consortium to collaborate with other international financial institutions in the development of blockchain systems for the banking sector.

**Insight:** Bitcoin and blockchain have the potential to leverage pre-existing mobile penetration to create a cross-border and decentralized system of alternative finance in sub-Saharan Africa. This system can reach previously underserved and unbanked population segments and has the potential to provide the infrastructure for inclusion of Africa's largely unbanked population. Governments and regulatory authorities are compelled to adapt quickly to these emerging trends as digital financial services account for up to 85 percent of volumes in certain geographies. Many have started strategic initiatives to provide regulatory sandboxes and encourage public-private collaboration. Stakeholders are increasingly recognizing blockchain as an emerging disruptor and enabler, and they are studying and fostering the technology to ensure they are not excluded from its future developments and potential benefits.

### Latin America

While Latin America has a smaller percentage of unbanked population than Africa (49 percent, according to World Bank

Index<sup>4</sup>), it has been subject to cyclical political and currency fluctuations that have undermined trust in local currencies. Additionally, the penetration of illegal activity (including drug trafficking and related money laundering activities) have intensified the de-risking effect on economies in the region, as traditional financial institutions have exited markets due to increased compliance requirements and costs.

Smaller and more vulnerable economies, particularly those in the Caribbean, have been the hardest hit, according to the Economic Commission for Latin America and the Caribbean.<sup>5</sup> This phenomenon could provide fertile ground for blockchain adoption and its corollaries to deal with de-risking's impact, both through its automated compliance with Know Your Customer requirements and through digital currency platforms and cross-border payments systems that avoid the transaction costs associated with traditional financial services. Several early experiments are under way, both at large institutions as well as new digital finance players.

Brazil, a country with solid banking penetration, has seen the industry mobilize with the participation of Banco Itaú and Banco Bradesco in the R3 consortium. Banco Bradesco is launching pilots, including a new digital wallet using blockchain technology in partnership with startup eWally, as well as Bit.One, to address cross-border payments. In Mexico, under threat from a potential block on remittances by the Trump administration, startup Bitso received \$2.5 million in funding in early 2017, while Mexican venture capital fund INGIA invested

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in Abra, the US blockchain mobile payments startup. In Argentina, Rootcamp provides smart contract solutions for bitcoin technology, while SatoshiTango and Xapo provide bitcoin based payments solutions.

### Argentina: The Case of Ripio

Ripio's (formerly BitPagos) bitcoin financial services suite utilizes the blockchain and traditional payment rails to allow Latin America's unbanked and underbanked population (as high as 70 percent in some areas) to buy and sell bitcoins using local currencies, and to pay for goods and services through a simple, direct transfer to peers and merchants.

The platform currently has over seventy thousand users across Argentina and Brazil, and is in the process of expanding to other countries in the region, including Mexico and Colombia. It raised close to \$2.4 million in 2017 to expand internationally.

**Insight:** In Latin America, political uncertainty and the impact of de-risking are driving cryptocurrency adoption and blockchain-based financial products, but the region as a whole still lacks robust technological ecosystems, sufficient access to venture capital funding, and the regulatory clarity to boost wide adoption levels.

### Asia

Asia is becoming a global leader for venture capital investment and testing of blockchain solutions.<sup>6</sup> There are nevertheless stark differences across Asian nations, with China, Hong Kong, and Singapore leading the way (consistent with the Fintech trends outlined in EM Notes 34 and 42<sup>7</sup>. Asia is also home to the most forward-looking regulatory environments. Japan and South Korea have regulated cryptocurrency environments and their central banks are in the process of licensing exchanges.

Singapore and Malaysia have set up regulatory sandboxes for developing blockchain solutions by partnering with industry and technology providers. Similarly, China's government strongly supports adoption of blockchain technology, as announced in its most recent five-year plan, and is providing a flexible regulatory environment. The government is piloting a sovereign blockchain digital currency, led by the central bank, the People's Bank of China.<sup>8</sup>

Asia's venture capital financing community has taken notice, with deal activity rising to an all-time annual high in 2016, at \$119 million, up from \$37 million in 2015. This is in contrast with North America and Europe, which each saw decline in deals during that period.<sup>9</sup>

**China.** With the largest banking system in the world, China is

the world's dominant bitcoin trader, in terms of global transactions. Its bitcoin transactions are close to 98 percent of market volume, up from 10 percent in 2012.<sup>10</sup> China's strong appetite for blockchain goes beyond cryptocurrencies, and is anchored in its enormous demand for financial inclusion.<sup>11</sup> Since China aims to develop a robust Internet finance industry, the strong support to blockchain-enabled alternatives is a natural development.

Fintech and blockchain-specific start-ups are springing up across many segments: brokerage, digital wallets and money services, exchanges, post-trade clearance and settlement, middleware, infrastructure, and base protocols. Capital markets are aggressively pursuing opportunities in the industry, with significant funding going into the payments sector.<sup>12</sup> Supported by strong profit margins, Asia's traditional banking institutions are also adopting a 'prototyping' approach to blockchain and piloting initiatives, sometimes partnering with startups and other financial service providers.<sup>13</sup>

### Box 1: India

*"Blockchain Technology (BCT) provides tamper-evident recording of the linked transaction in a distributed network, and has the potential to disrupt the financial business applications. The nature of BCT addresses risks and inefficiencies in multi-party systems, and that is where the benefits will be most widely received."*— R. Gandhi, Deputy Governor, Reserve Bank of India

Regulators in India have been among the first to promote financial inclusion initiatives for banking and remittances, triggering strong adoption of electronic payments and the rise of new market entrants (M-banking transactions tripled between 2012 and 2014). New entrants, offering m-wallets, have attracted consumers and have motivated banks to invest

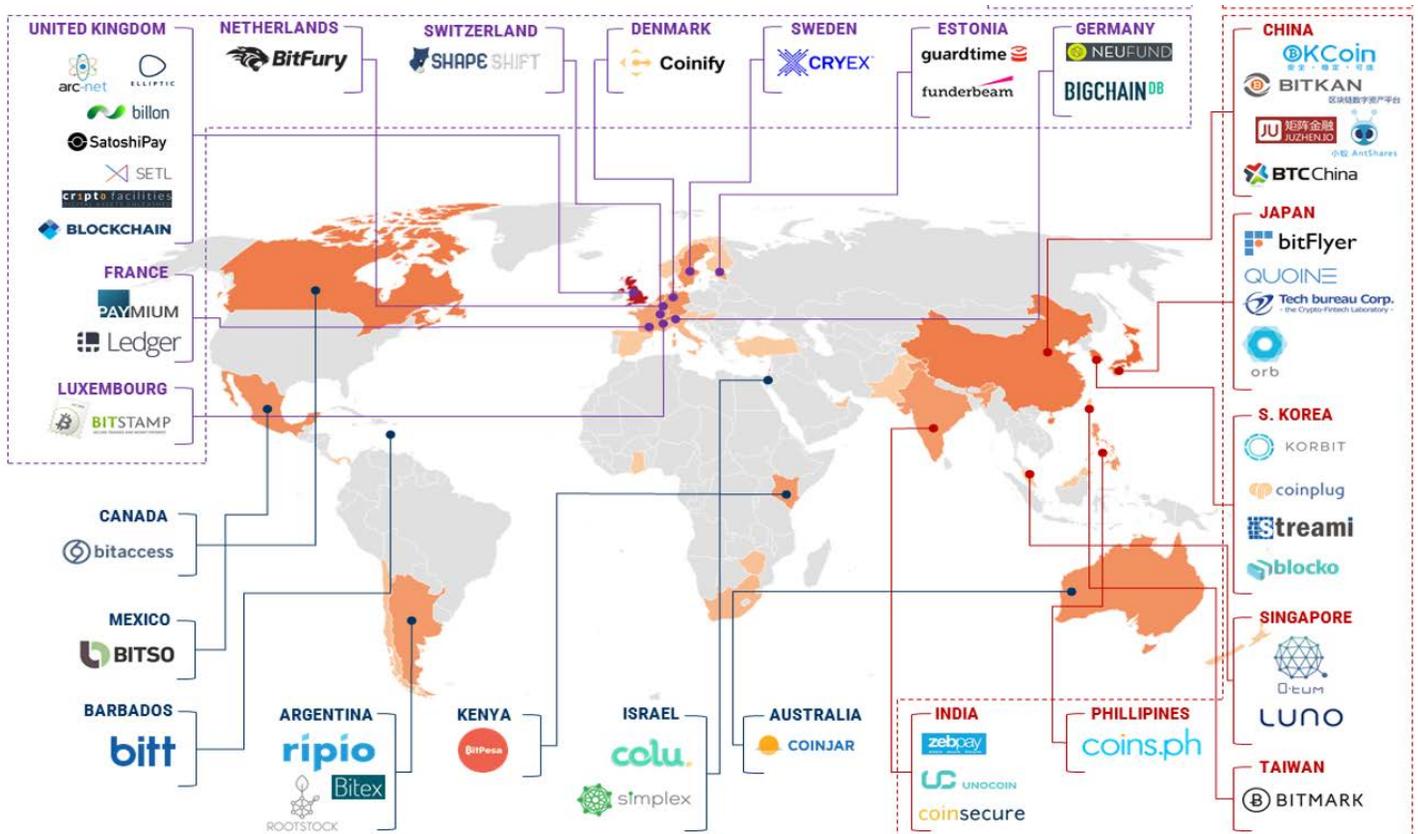
Driven by the prospect of cost reduction, the Postal Savings Bank of China has tested a blockchain-based asset custody system—a core business—in collaboration with IBM and Hyperledger. Large Internet players are incorporating blockchain into their business models, such as AntFinancial (subsidiary of AliBaba) that is introducing a bitcoin mobile wallet and Tencent, which is planning to use the technology to offer digital asset management, authentication, and "shared economies" through a new platform, TrustSQL.<sup>14</sup> The Chinese Internet giants and banks are also active venture capital investors on a global scale: Baidu recently invested in U.S.-based bitcoin payments startup Circle, Huiyin Blockchain Ventures invested in US-based Purse.io and Indian UniCoin, and Crefir China FinTech invested \$30 million in US/Dutch BitFury. Several Chinese blockchain/bitcoin based startups raised significant funding in 2016, including Juzhen Financials (\$23 million), OkCoin (\$10 million), BTC China (\$5 million), and AntShares Blockchain (\$4.5million).<sup>15</sup>

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Key stakeholder collaboration is well under way, bringing together financial institutions, innovators and government actors to establish standards and develop the institutional framework of the ecosystem. The China Ledger comprises regional exchanges to create an open source Blockchain protocol to support an eventual 'Internet of Everything' for China.<sup>16</sup> Financial Blockchain Shenzhen Consortium intends to collaborate on research and group-wide Blockchain projects,

with a focus on capital markets technology, securities exchange, trading platforms, banking and life insurance. And Qianhai International Blockchain Ecosphere Alliance aims to combine Mainland China and international talent, technology, and capital to accelerate the commercialization of blockchain research and development, and promote its application to support China's social and economic development.<sup>17</sup>

Figure 2: Global bitcoin and blockchain companies 2012 to Feb 13, 2017



Source: CBInsights, cbinsights.com

**Insight:** Asia can be is the global emerging markets leader in blockchain-based solutions for the financial services industry. The technology's adoption in the region has been facilitated by the massive digitalization of payment solutions, particularly in China, which onboarded the unbanked and shaped consumer behavior in the process.

Asia has evolved to become the most comprehensive ecosystem for blockchain development due to a combination of strong government and regulatory support, and mobilization of capital from both industry players and venture capitalists.

Cryptocurrencies are being adopted and integrated into mature

and well-functioning financial systems (both private and public) and innovative solutions are being tested for trade finance and securities trading, as well as for non-financial processes such as e-proxy voting, land registry management, and supply chain management.

This combination of these factors, coupled with Chinese companies' global ambitions, will most probably guarantee that China will be a global hotbed for blockchain innovation in the financial services sector and beyond.

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## Conclusion

The adoption of any new technology is often difficult to discern in real time and nearly always unpredictable in the path that it will take. However, developments seem to indicate that a proof-of-concept phase is underway across emerging markets, in varying degrees of intensity and orientation, and that policymakers in these countries are keen observers of and participants in the evolving policy demands surrounding blockchain.

While blockchain can have a decisive impact for an innovation ‘leapfrog’ for all emerging market regions, Asia appears to be a rising champion for blockchain implementation, as it brings together regulatory activism, a vibrant technological/fintech ecosystem, supportive governments, collaboration of industry and entrepreneurial players, and sustained access to venture capital. And China and Singapore are emerging leaders in developing articulated global blockchain development strategies that combine all critical success factors.

## About the Author

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## Additional EM Compass Notes about Blockchain

This note is the fourth in a series of five complementary EM Compass Notes by this author: The notes focus on: (1) a general overview of blockchain technology (Note 40), (2) an outlook for blockchain’s implications for emerging markets (Note 41); (3) a general overview of the impact of blockchain on financial services (Note 43), (4) an emerging market regional analysis of blockchain developments in financial services (this note) and, (5) implications of the technology beyond financial technology (forthcoming).

Please also refer to EM Compass Note 38, “Can Blockchain Technology Address De-Risking in Emerging Markets?” by Vijaya Ramachandran and Thomas Rehermann, for how blockchain can be used to mitigate de-risking by financial institutions, which affects recipients of remittances, businesses that need correspondent banking relationships.

<sup>1</sup> CB Insights, 2017. “Blockchain Startup Investment Bounces Back,” CB Insights Research Briefs.

<sup>2</sup> Kendall, J., Schiff, R., Smadja, E., 2014. “Sub-Saharan Africa: A Major Potential Revenue Opportunity for Digital Payments,” McKinsey & Company.

<sup>3</sup> Lielacher, A., 2017. “The State of Bitcoin in South Africa,” BTCManager.com.

<sup>4</sup> World Bank, 2017. “Global Findex Data: Latin America & Caribbean,” World Bank Group.

<sup>5</sup> Williams, R. C., 2017. “Prospects for Blockchain-based Settlement Frame-Works as a Resolution to the Threat of De-risking to Caribbean Financial Systems,” United Nations, Economic Commission for Latin America and the Caribbean (ECLAC).

<sup>6</sup> Niforos, Marina, 2017. “Blockchain in Development – Part II: How It Can Impact Emerging Markets”, EM Compass Note 41, IFC.

<sup>7</sup> Alexander, Alex. J. – Shi, Lin – Solomon, Bensam, “How Fintech is Reaching the Poor in Africa and Asia: A Start-Up Perspective”, EM Compass Note 34, IFC, November 2016; Saal, Matthew – Starnes, Susan – Rehermann, Thomas, “Digital Financial Services: Challenges and Opportunities for Emerging Market Banks”, EM Compass Note 42, IFC, August 2017.

<sup>8</sup> CB Insights, 2017. “Global Ledger: Mapping Bitcoin and Blockchain Startups Around the World.” CB Insights Research Briefing.

<sup>9</sup> Wong, M., 2017. “Trends in Blockchain and Digital Currency”, CB Insights Research Briefing.

<sup>10</sup> Oyedele, A., 2017. “One Country Dominates the Global Bitcoin Market,” BusinessInsider.com.

<sup>11</sup> In 2016, \$5.5 trillion in digital payments were made in China, fifty times more than the United States in the same year (\$112 billion): [http://wap.chinadaily.com.cn/2017-05/11/content\\_29295024.htm](http://wap.chinadaily.com.cn/2017-05/11/content_29295024.htm).

<sup>12</sup> Ngai, J. L., Qu, J., Zhou, N., 2016. “What’s Next for China’s Booming Fintech Sector?” McKinsey & Company.

<sup>13</sup> Ngai, J. L. et al., 2016. “Disruption and connection: Cracking the Myths of China Internet Finance Innovation,” McKinsey Greater China FIG Practice.

<sup>14</sup> Higgins, S., 2017. “Internet Giant Tencent is Building a Blockchain Platform,” coindesk.com.

<sup>15</sup> 2017. “Global Ledger: Mapping Bitcoin and Blockchain Startups Around the World,” CB Insights Research Briefing.

<sup>16</sup> Mittal, S., Lloyd, J., 2016. “The Rise of Fintech in China - Redefining Financial Services,” DBS and EY.

<sup>17</sup> Kastelein, R., 2017. “China Poised to Dominate Fintech and Blockchain Markets in 2017,” Blockchain News.

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