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Libra and the Others: The Future of Digital Money

by Nicola Bilotta and Fabrizio Botti

ABSTRACT

The current debate about cryptocurrencies is evolving around the proposals of big-tech corporations developing their own digital currencies, which have the potential to reach scale very quickly. Three ongoing projects – Facebook's Libra, Telegram's Gram and the Walmart Units – shed light on the different economic rationales behind the launch of a digital currency by large private companies with different business and political approaches. Walmart hopes its digital currency will improve the efficiency of its ecosystem by engaging consumers while saving on interchange fees. Facebook's and Telegram's digital currencies have the ambition to become global currencies. The development of private digital currency poses a number of risks related to the stability of the banking and finance systems as well as oversight. The regulatory approach towards these three projects will set a precedent that will influence other private giant corporations. There is a need to address regulatory gaps within the existing frameworks at an international level because domestic public policy risks being inefficient in mitigating potential challenges.

keywords

Currency | Digital policy | Financial services

Libra and the Others: The Future of Digital Money

by Nicola Bilotta and Fabrizio Botti*

"Money is too important to be left to the private sector alone.
Like the law, it is a foundational public good.
The state has always had oversight over money
and must continue to do so".[1]

Introduction

Digital currencies are an innovation that could deeply impact financial markets, potentially transforming business models and the overall economic system. The retail payment segment (cross-border transactions, e-commerce payments and peer-to-peer payments) as well as the remittance sector are especially exposed to this new solution as cheaper, frictionless and faster transactions are likely to attract end users like consumers and merchants as well as remitters.

Digital currency is a type of currency that has no physical configuration and only exists in digital form. It can include virtual currencies – which are issued and regulated by a central server – and cryptocurrencies – which are a distributed and decentralised system managed solely by an open source cryptographic protocol. Digital currencies can be used to buy any digital or physical good, and, in addition, they can be stored in an electronic wallet and transferred among users. A currency has three main functions: (i) a medium of exchange, used to enable the exchange of goods and services; (ii) a unit of account, used as a standard numerical unit of measurement of market value for products, services or other transactions; and (iii) a store of value, when it is reliably saved, stored and retrieved.

According to the European Central Bank (ECB), digital currencies are not full forms of money and are defined defined "as a digital representation of value, not

[1] Martin Wolf, "The Threat and the Promise of Digital Money", in *Financial Times*, 22 October 2019, https://www.ft.com/content/fc079a6a-f4ad-11e9-a79c-bc9acae3b654.

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issued by a central bank, credit institution or e-money institution, which in some circumstances can be used as an alternative to money".[2]

Tech corporations' digital currencies contradict the original libertarian ambition behind the early development of cryptocurrency, driven as it was by the subversive nature of technology and the aspiration for decentralising control from central banks and states. Digital currencies issued by large technological corporations could instead transform the nature of this technology by creating privately owned forms of money. Their transformative power lies in their potential reach established by pre-existing relationships with consumers, which could enable digital money to spread out very quickly.

The aim of this paper is to investigate the drivers for the development by large technological corporations of their own digital currencies and the corresponding risks for the stability of the financial system and the economy as a whole.

Despite their considerable differences related to political purposes, technical features and business objects, the projects of Libra, Gram and Walmart Units shed light on how and why private large tech companies are keen to launch their own digital currencies.

If tech giants' digital currencies become widely used, succeeding where cryptocurrencies have failed, the implications and risks for national markets and for the world economy could be dramatic.

1. Large tech corporations and digital currency

With the increasing digitisation of society, new means of payment are gaining ground. In addition to mobile money apps that operate within the traditional payment infrastructure, digital currency has emerged as an alternative to fiat money and to incumbent intermediaries – despite being just a niche market in the current financial landscape (see Figure 1).

In the context of an increasing interaction between technology and payments, large technological corporations, despite different business models and sources of profits, have understood that there are gains to be made in penetrating the segment of payments, disintermediating incumbent financial players while enhancing the tech corporations' ecosystems.

[2] European Central Bank (ECB), *Virtual Currency Schemes: A Further Analysis*, Frankfurt am Main, ECB, 2015, p. 25, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf.

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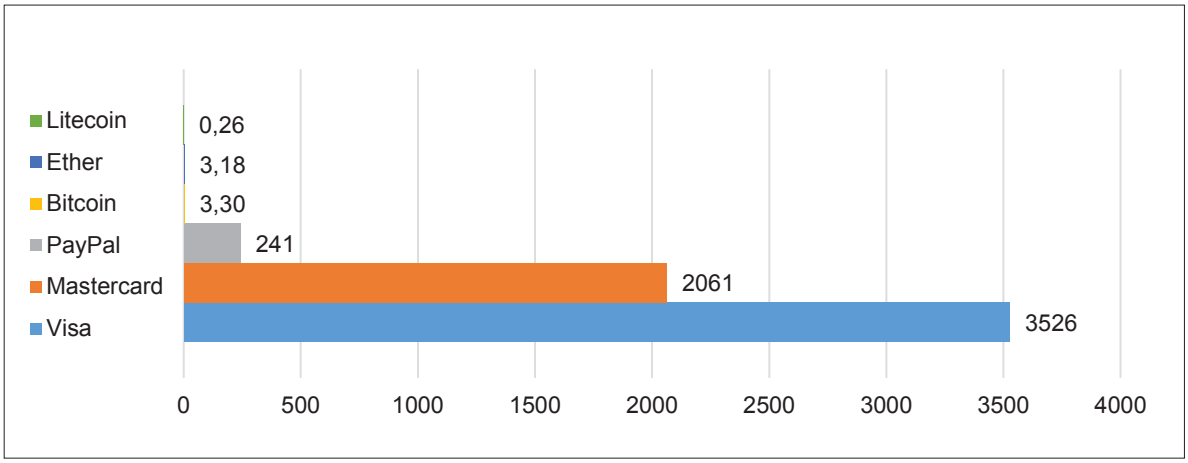
Figure 1 | Digital retail transactions (number of transactions per second), 2017



Source: Bank for International Settlement, *BIS Annual Economic Report 2018*, June 2018, p. 99, https://www.bis.org/publ/arpdf/ar2018e.htm.

Technological giants have already started to develop and offer several payment services all around the world – and, in a few cases, they have set up fully licensed banks.[3] So far, digital currencies have been a niche form of money, but the size of large technological companies could allow them to reach scale very quickly owing to their pre-existing ecosystems. Such ecosystems would allow for both diffusion of information and adoption, reducing the common entry barriers to traditional currency. Tech giants' projects for developing digital currencies could thus be a turning point not only for the banking industry but also for the economy as a whole.

When in June 2019 Facebook presented its project to launch a global stablecoin (digital currencies pegged to a single currency or a basket of fiat money) called Libra, central bankers, financial regulators and politicians around the world called for oversight, concerned over the potential disruptive implications of Libra as it could reach scale very quickly. Even if the media have concentrated mostly on Libra, some other projects with similar implications deserve to be investigated in a comparative approach, namely Walmart's application for a stablecoin and Telegram's launch of Gram (see Table 1 for a synthetic overview of the main characteristics of Libra, Gram and Walmart's Units).

[3] Amazon Pay, Google Pay, Apple Pay, Mercado Pago, Alipay and Wechat, to mention only the most relevant. See: Nicola Bilotta and Simone Romano (eds), *The Rise of Tech-Giants. A Game Changer in Global Finance and Politics*, Bern, Peter Lang, 2019.

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Table 1 | Main characteristics of Facebook, Telegram and Walmart digital currencies

	Libra	Gram	Walmart's Units
Potential number of users	2.4 billion	200 million	275 million
Geographical diffusion	Worldwide	Worldwide	USA
Pre-existing financial services	Messenger payment	Bot payments	Walmart Pay
Experience of partnership with incumbent banks or financial services firms	Yes	Yes	Yes
Type of digital currency	Stablecoin (pegged to a basket of currencies)	Cryptocurrency	Stablecoin (pegged to the US dollar)
Type of blockchain	Centralised; Proof-of-stake mechanism	Decentralised, open to up to 1,000 validators; Proof-of-stake mechanism	N/a
Main target	Peer-to-peer payments; Remittances	Peer-to-peer payments; Remittances	Retail payments; Enhancing Walmart's ecosystem
Policy orientation	Demanding supervisors' approval	No government approval	Applied for a patent
Date of launch	First half of 2020	30 April 2020	N/a

Note: Estimated by calculating the average monthly number of active users of Facebook and Telegram; and the weekly average number of customers of Walmart.
Source: Authors' elaboration.

Also, Viber, a messaging app with more than 800 million users, has announced its intention to develop its own digital currency but a lack of details does not allow a clear analysis at the moment.[4] The strategic interest of tech giants in digital currencies is also attested to by Yahoo!'s acquisition of 40 per cent of the Japanese crypto exchange, Taotao, in April 2018 for an estimated 2 billion yen (approximately 19 million US dollars). The messaging app Line obtained a licence in Japan to launch a cryptocurrency exchange service – Line has a customer base of 180 million users (including 80 million in Japan).[5] Amazon has recently purchased, without releasing any statement, the domains AmazonEthereum.com, AmazonCryptocurrency.com, and AmazonCryptocurrencies.com, which could speculatively suggest a future expansion in the crypto-exchange market. Although

[4] Viber could enable its digital currency by exploiting the customer base of its majority shareholder Rakuten's ecosystem.

[5] LINE Corporation, *BITMAX Cryptocurrency Exchange for Japan Begins Operations*, 17 September 2019, https://linecorp.com/en/pr/news/en/2019/2914.

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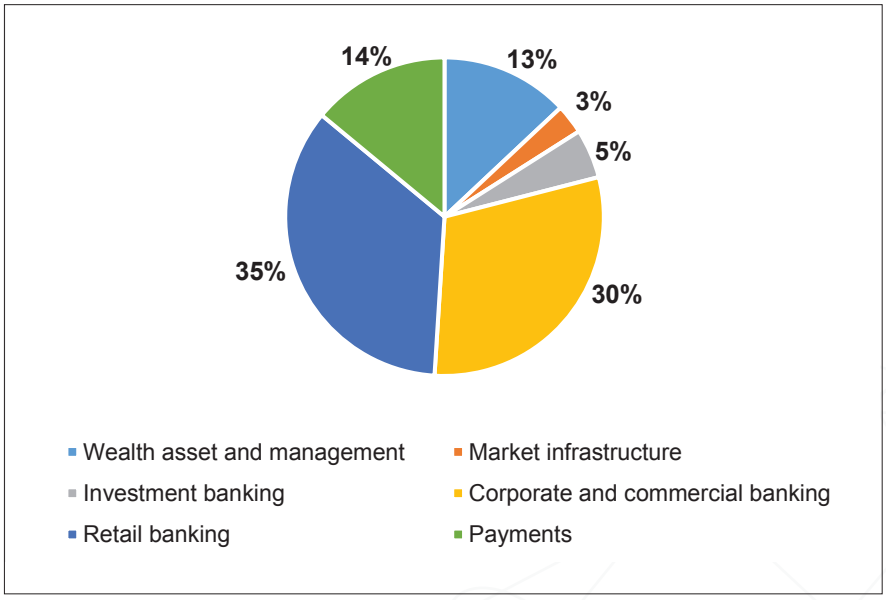
Amazon does not currently accept any cryptocurrency as form of payment, the crypto payment-processing start-up Moon has developed an ingenious solution which allows users to indirectly pay with cryptocurrencies on Amazon's online marketplace.[6]

The advent of these new digital currencies could gradually unbundle the three main functions served by traditional fiat money (store of value, medium of exchange and unit of account), encouraging consumers to choose currency based on specific needs.[7]

The banking segments most likely to be deeply impacted by the consolidation of digital currencies are the retail and corporate payment segments and the remittance market, which together generated profits of 715 billion US dollars in 2017 (14 per cent of the overall banking industry revenue; see Figure 2).[8]

Figure 2 | Annual revenue of the global banking industry in 2017, by share of total market (% share of total billion US dollars)



Source: McKinsey & Company, *Banks in the Changing World of Financial Intermediation*, November 2018, http://bit.ly/2Pfr5Ss.

[6] Through Moon's browser extension, shoppers can connect their cryptocurrency wallet and use it at the checkout to pay for goods. The exchange from cryptocurrency coins to fiat money to actually manage the transaction on Amazon.com is handled by financial institutions which ultimately pay merchants with fiat money. There are no transaction costs associated to this exchange. Moon has announced that it will expand this service to other online platforms such as Domino's, Ebay, Etsy and AliExpress.

[7] Markus K. Brunnermeier, Harold James and Jean-Pierre Landau, "The Digitalization of Money", in *NBER Working Papers*, No. 26300 (September 2019).

[8] McKinsey & Company, *Banks in the Changing World of Financial Intermediation*, cit.

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Digital currencies allow companies to save on interchange fees and other transaction costs by disintermediating the relationship between customers and banks. The lack of fees – or at least marginal low fees – could indeed be a huge incentive for end users like merchants and consumers. Small businesses in the US enjoy an average fee of 2 per cent for payment processing costs – which are charged on the gross sales value rather than on the net revenue. Generally, larger retailers are able to negotiate more advantageous fees. In the EU, there has been a regulatory framework since 2015 that imposes considerably lower interchange fees charged to merchants (for online payments 1.15 per cent with debit cards and 1.5 per cent with credit cards; for card payments 0.2 per cent with debit cards and 0.3 per cent with credit cards).[9] Yet, the promise of payment services free of charge would likely attract merchants who could encourage consumers to use digital currency by offering discounts or loyalty programmes.

Another profitable segment that could potentially be targeted by international digital currencies is the global remittance market, which reached 689 billion US dollars in 2018.[10] According to a recent study by Cecchetti and Schoenholtz, the average charge for sending 200 dollars abroad is 14 dollars – this figure includes fees charged to both sender and recipient. In addition, they found that 7 per cent of the amount sent is eaten up by the exchange rate margin. In 2017, they calculated, the aggregate cost of sending remittances was around 30 billion dollars.[11] If digital currencies are issued by large tech corporations operating in several countries, they could establish themselves as a cheaper, trusted and safe alternative intermediary to send money abroad.

In addition, in the long term, trusted digital currencies may become an alternative store of value and potentially target the retail deposit segment, which was estimated to have produced 545 billion US dollars revenues in 2017.[12] The aim would not be to compete with banks for large individual deposits but rather to collect many small deposits which, due to their potential reach, could allow them to manage sizeable funds. As an example, Yu'e Bao, Ant Financial's money market fund, has become one of the largest players in the world thanks to an average individual investment of 1,924 yuan in 2018 (269 US dollars) and 3,329 yuan (465 US dollars) in 2019.[13]

[9] European Commission, *Antitrust: Commission Accepts Commitments by Mastercard and Visa to Cut Inter-regional Interchange Fees*, 29 April 2019, https://europa.eu/rapid/press-release_IP-19-2311_en.htm; Guerino Ardizzi and Michele Savini Zangrandi, "The Impact of the Interchange Fee Regulation on Merchants: Evidence from Italy", in *Questioni di economia e finanza*, No. 434 (June 2018), https://www.bancaditalia.it/pubblicazioni/qef/2018-0434/index.html.

[10] World Bank, "Migration and Remittances. Recent Developments and Outlook", in *Migration and Development Briefs*, No. 31 (April 2019), p. 3, https://www.knomad.org/node/1285.

[11] Stephen Cecchetti and Kim Schoenholtz, "The Stubbornly High Cost of Remittances", in *VOX*, 27 March 2018, https://voxeu.org/node/62674.

[12] McKinsey & Company, *Banks in the Changing World of Financial Intermediation*, cit.

[13] Stella Yifan Xie, "More Than a Third of China Is Now Invested in One Giant Mutual Fund", in *The Wall Street Journal*, 27 March 2019.

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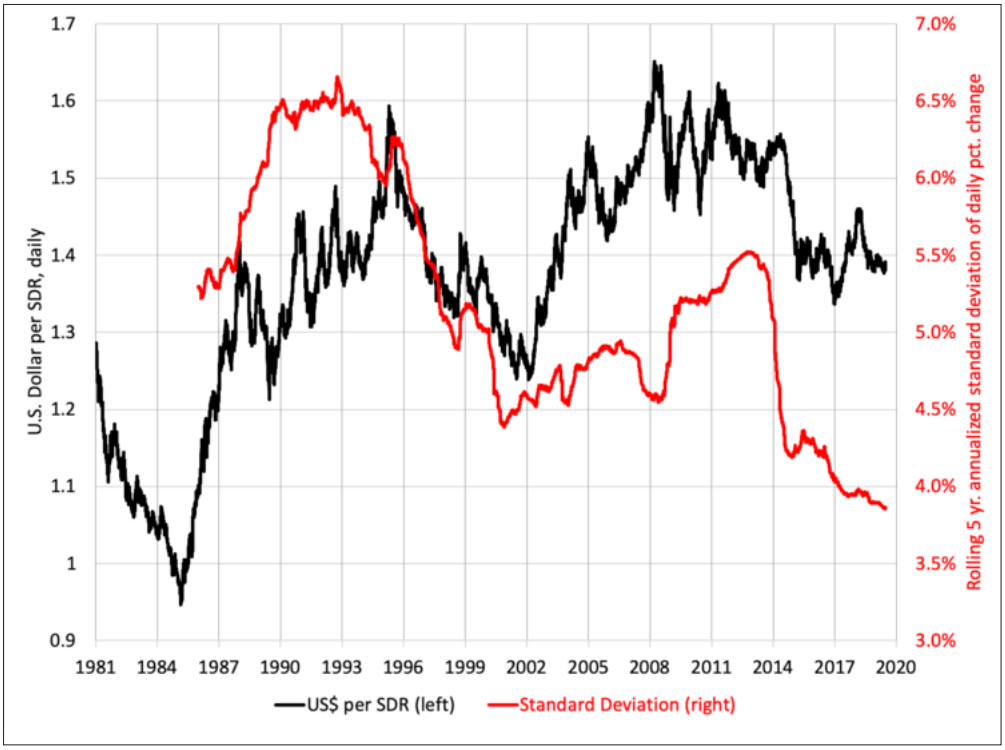
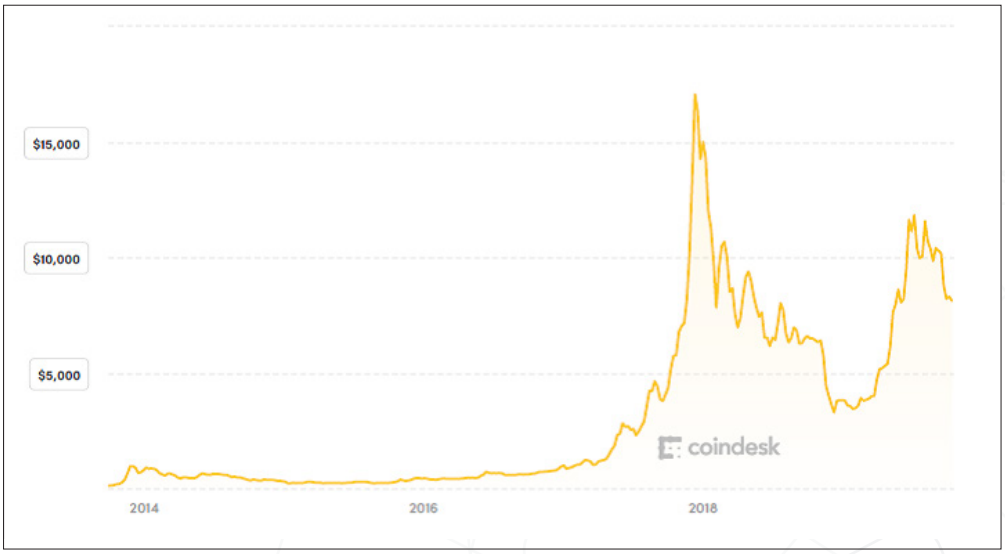
Figure 3 | Value of Special Drawing Right (SDR) in US dollars and of Bitcoins in US dollars





Source: Stephen Cecchetti and Kim Schoenholtz, "Libra: A Dramatic Call to Regulatory Action", in *VOX*, 28 August 2019, https://voxeu.org/node/64512; CoinDesk, *Bitcoin Price Index*, 2019, https://www.coindesk.com/price/bitcoin.

Possibly the main reason to expand in the digital currency market is that large technological corporations try to build an ecosystem bridging activity related to various industries aiming at reducing costs and increasing convenience for

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consumers, producing "aggregators of mutually complementary activities".[14] Network externalities are stronger when an ecosystem offers a broad range of products and services, providing these players with precious and various data on consumers.[15]

An example of this business strategic orientation is offered by Apple, which provides users with devices (iPhones, iPad, Mac, HomePod and smartwatches), accessories (such as Apple airPad), operative systems (iOS) and services (like Apple Music, Apple TV, Apple Pay or iCloud). Other similar cases are Rakuten in Japan, Alibaba and Tencent in China, Amazon and Google in Western countries or MercadoPago in South America.

Payment services provide large tech corporations with the opportunity to pursue both the enhancement of their relevance in users' lives and generating unique data on the transactions between fund senders and recipients. In comparison with e-wallets or payment apps, digital currencies allow tech giants to record transactions directly on their blockchain, potentially empowering faster, cheaper and more efficient solutions for data analysis.

Moreover, there seems to exist a more hidden – and yet potentially very profitable – objective with the launch of a digital currency: entering the market of digital identity. Since the economy is becoming increasingly digitalised, digital identities will be at the heart of online and mobile interactions, allowing cost reduction and better monitoring. Digital ID, to be verified unambiguously through a digital channel – such as facial or fingerprint recognition – could empower and unlock services such as access to banking, government benefits, education, and many other critical services.[16] If tech giants are able to obtain digital identities that comply with Anti-Money Laundering (AML) rules, the business identity or individual identification they offer could be extremely valuable.

Since July 2018 Telegram has been offering Telegram Passport, which is a unified authorisation method for services that require personal identification. Alipay and WeChat in China have developed, in accordance with the Chinese central government, a digital identity enabling access to government services without a physical identity card. Both companies are testing and developing a facial recognition system to verify the user's identity.[17]

[14] Markus K. Brunnermeier, Harold James and Jean-Pierre Landau, "The Digitalization of Money", cit., p. 12.

[15] Ibid.

[16] Olivia White et al., "Digital Identification: A Key to Inclusive Growth", in *McKinsey Global Institute Reports*, April 2019, p. 4, https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-identification-a-key-to-inclusive-growth.

[17] WeChat Mini Programmer, "How Will WeChat Electronic System Work?", in *Medium*, 24 May 2019, https://medium.com/p/26b35f09f83f; "Inside China's Effort to Marry Digital ID with Mobile Payments", in *PYMNTS*, 14 May 2018, https://www.pymnts.com/mobile/2018/china-digital-id-mobile-payments-wechat-pay-alipay.

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2. Walmart, the dream of being an everything shop

Walmart is the US biggest retail corporation with more than 11,300 stores globally (of which 5,993 are outside the US) and around 2.2 million employees (of whom 1.5 million are in the US). Since 2014 it has been the world's largest company by revenue, recording 514.4 billion US dollars revenues in 2019.[18] It can boast more than 275 million weekly customers.[19] In less than two years from its launch, Walmart Pay – an e-wallet which works only at Walmart's shops – reached 11 million users in 2018.[20] These remarkable figures emphasise the potential impact of Walmart's further business expansion into the banking service market on the US economy and on the other countries where its presence is relevant.

This is not the first time Walmart has sought to offer its own banking services. In 2007, it failed in obtaining a full banking licence. In 2010, it started to offer check cashing services and cheap prepaid Visa debit cards through more than 1,400 "Money Centers" located in its shops. In 2014 Walmart launched a money transfer service within the US – in partnership with the money transfer service Ria – which does not offer a mobile, online or foreign transfer option. Its competitive advantage was about leveraging on fee pricing. Walmart applied a fixed amount of 9.50 dollars for any transaction valued between 50 and 900 dollars whereas competitors on average charged 4.75–5 dollars for any transaction between 0–50, 11–12 dollars for any transaction between 50–200, 34.5–40 dollars for any transaction between 400–500, 46–58 dollars for any transaction between 600–700 and 57–76 dollars per any transaction in the range of 800–900.[21]

A further step to expand its financial services operations was the introduction in 2018, in partnership with MoneyGram,[22] of Walmart2World, which allows consumers to send money from the US to 200 foreign countries with a fixed pricing plan independently of where sender and receiver are located.[23] In 2018, Walmart was already MoneyGram's largest agent, accounting for 16 per cent (231 million US dollars) of MoneyGram's total revenue.[24]

[18] Fortune, *Fortune 500: Walmart*, 2019, https://fortune.com/fortune500/2019/walmart.

[19] Craig Smith, "60 Amazing Walmart Statistics and Facts (2019) | By the Numbers", in *DMR*, updated 6 September 2019, https://expandedramblings.com/index.php/walmart-statistics.

[20] "2018 Mobile Wallet Adoption Data", in *PYMNTS*, 2019, https://www.pymnts.com/mobile-wallet-adoption-statistics.

[21] Matthew Yglesias, "Walmart Destroying MoneyGram and Western Union with New Money Transfer Service", in *Vox*, 18 April 2014, https://www.vox.com/2014/4/18/5626436.

[22] As the second-largest international money transfer service in the world, MoneyGram is a big contender for money transfer.

[23] "Amendment No. 8 to Amended and Restated Master Trust Agreement, effective as of March 30, 2018, by and between MoneyGram Payment Systems, Inc. and Walmart Inc.", in MoneyGram, *Quarterly Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Quarterly Period Ended March 31, 2018*, May 2018, https://sec.report/Document/0001273931-18-000018/#exhibit106.htm.

[24] MoneyGram, *Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Fiscal Year Ended December 31, 2018*, March 2019, https://sec.report/Document/0001273931-19-000061.

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Hence, when in January 2019 Walmart filed a patent application for launching a system and method for digital currency via blockchain, the news did not go unnoticed. Walmart's project is to introduce a digital currency pegged to the US dollar. This digital currency could be used to pay at selected retailors and partners as well as being a peer-to-peer payment instrument for crowdsourcing endeavours. This system could provide fee-free or fee-minimal transactions and store of value. Customers would also earn interest on the Walmart coins deposited in their accounts.

Walmart would promote the use of its digital currency through a rewards programme in which a customer would receive a reward to be applied to other purchases any time one spends a unit of Walmart's digital currency. Moreover, customers can buy coins of this digital currency and be able to purchase goods at the price of that given day even though the price goes up afterwards.

Walmart argues that wide use of its digital currency could allow customers and the company itself to save money, to the benefit of both. If customers buy coins of its digital currency, they are likely to spend them at Walmart shops rather than at other retailers or exchanging them for cash, thereby increasing Walmart's sales and helping it to better forecast future selling. Furthermore, Walmart could better analyse its clients' purchase history to predict what and when they are likely to buy, reducing some risks in forecasting. This trend could be boosted by rewarding clients when they buy certain items repeatedly, thereby making Walmart's inventory management easier.

Walmart's aim is to enhance its ecosystem, trying to offer a full range of services and experiences to customers. Once customers get into the ecosystem, they tend to spend more time and more money within it. According to Consumer Intelligence Research Partners, Amazon Prime's users spend on average 1,300 US dollars on the e-commerce website whereas non-Prime users spend only 700.[25]

In addition, having recorded and collected customers' transactions on a centralised blockchain, Walmart would be facilitated in analysing and working with shopping and payment data, increasing its accuracy on clients' behaviours and habits.

Most importantly, Walmart's digital currency has the potential to save dramatically on interchange fees. To illustrate the problem Walmart would solve or at least reduce, in July 2016 Walmart threated to ban Visa credit cards as a form of payment in its shops in Canada due to the high fees applied. Walmart reported it was paying four times higher fees than in other countries, and interchange fees in its Canadian stores were absorbing around 78 million US dollars.[26] According to Moneris, a

[25] Don Reisinger, "Here's How Much Amazon Prime Customers Spend Per Year", in *Fortune*, 18 October 2017, https://fortune.com/2017/10/18/amazon-prime-customer-spending.

[26] Ethan Lou, "Walmart Canada to Stop Accepting Visa, Says Fees Too High", in *Reuters*, 11 June 2016, http://reut.rs/1VSBhfc.

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consultancy company, as of April 2015 Visa charged between 1.42 per cent and 2.08 per cent in Canada, depending on the deal related to the card and the retailer.[27] Another consultancy firm estimated that Walmart paid worldwide around 3 billion US dollars in interchange fees on card transactions in 2013.[28]

The implications of the reduction on costs represented by interchange fees could be deeper than saving Walmart money. Walmart has suggested that its digital currency could be used in place of credit and debit cards, with a "pre-approved biometric" credit – such as finger prints. Walmart has also put forward the establishment of unattended "micromarkets" in which consumers could purchase and pay in self-checkout kiosks. If consumers are unbanked, they could open a "microbank" account in which to deposit money and Walmart's coins. Furthermore, Walmart's application suggests that it could be possible to convert all or part of paycheques directly into Walmart's digital currency. What if Walmart's 1.5 million employees started to be paid partially in Walmart's coins?

Another interesting point – which is not explained in the application – is about whether Walmart is planning to apply for similar patents in the foreign markets in which it operates. It currently has 2,442 stores in Mexico, 663 in the UK, 443 in China, 411 in Canada, 371 in Chile, 332 in Japan, 811 in Central America, 436 in Africa, 92 in Argentina and 22 in India. If Walmart develops its digital currency in other countries – either pegged to the US dollar, to national currencies or to its digital currency issued in the US – it is not hard to imagine that it would strategically target the profitable remittance market. Due to its widespread presence in the US and Mexico, for example, its remittance services could be used by Mexicans living in the US. In the application it is indeed suggested that this digital currency could also be tied to other digital currencies in other embodiments.

3. Facebook/Libra vs. Telegram/Gram: different twins

Facebook and Telegram have similar background stories but their commercial outcomes and, accordingly, their development plans for a digital currency incorporate two opposite views of the world.

Telegram allows users to send encrypted messages between phones, while claiming to protect their privacy as it neither sells their data for commercial purposes nor gives it to governments. That has made it popular in countries with limited freedom – the governments of Russia and Iran, for instance, have tried (and at times succeeded) to block Telegram, the most popular instant messenger

[27] Pete Evans, "Walmart Strikes Deal with Visa to Settle Credit Card Fee Dispute", in *CBC News*, 5 January 2017, https://www.cbc.ca/news/business/visa-walmart-1.3923039.

[28] John Heggenstuen, "Here's How Much Wal-Mart Pays in Interchange Fees on Payment Card Transactions", in *Business Insider*, 31 March 2014, https://www.businessinsider.com/heres-how-much-walmart-pays-in-interchange-fees-2014-3.

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service among both Russians and Iranians. Because of its high security credentials, Telegram also appeals to people seeking to manage communications related to illegal or criminal activities.

On the other hand, Facebook has been more willing to cooperate with worldwide public authorities and has never made a secret of the fact that it does sell data of its users, mostly to advertising companies. According to the Electronic Frontier Foundation's 2015 report, Facebook required a warrant before giving content to law enforcement,[29] without however having any secret "backdoor" – which is a hidden channel designed to access encrypted data and devices.[30]

Due to these different – almost ideological – approaches, it comes as no surprise that Telegram and Facebook are following two divergent patterns to launch a digital currency.

Facebook is carefully trying to find agreement with central authorities at the national and international level before launching Libra. It is engaging in the public debate, presenting its project, for instance, in two hearings before the Banking Committee of the US Senate or penning public letters. Libra's market launch is unlikely to happen without an approval by US regulators.

By contrast, Telegram has largely proceeded in secrecy and has not sought approval by public authorities before launching its IPO,[31] thus considerably increasing concerns over the opacity of the project and its potential implications. In October 2019, the Securities and Exchanges Commission (SEC), the main financial oversight body of the US, filed an emergency action and obtained a temporary restraining order regarding the initial coin offering on the grounds that Telegram was registering its offer and sales of Gram in violation of the Securities Act of 1933 as Telegram was accused of planning to sell securities without having provided investors with adequate information.[32]

Regarding the architecture of each company's digital currency, Telegram has started raising capital for developing and launching the Telegram Open Network (TON) – on which Gram will operate – since early 2018, getting around 1.8 billion US dollars from venture capital firms and other investors. According to the original

[29] Nate Cardozo, Kurt Opsahl and Rainey Reitman, *Who Has Your Back? Government Data Requests 2015*, Electronic Frontier Foundation, 17 June 2015, https://www.eff.org/who-has-your-back-government-data-requests-2015.

[30] See for example this case: US District Court for the Southern District of Ohio Eastern Division, "Pen Register Device and/or Trap and Trace Device provided by WhatsApp", Case No. 2:16-mj-254, 26 May 2016, https://www.documentcloud.org/documents/3391606.

[31] An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance.

[32] The Security Act of 1933 oversees the sale of securities in the US. See US Securities and Exchange Commission (SEC) website: *The Laws That Govern the Securities Industry*, https://www.sec.gov/answers/about-lawsshtml.html#secact1933.

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plan, Gram should have been introduced in the market by the end of October 2019, but Telegram has officially extended the deadline for the launch to 30 April 2020 to deal with US regulatory concerns.[33] Facebook meanwhile has declared that Libra will be launched in 2020 and yet this date also seems unrealistic.

Other differences appear to concern how these digital currencies will operate. While Libra will be a stablecoin, pegged to a basket of the US dollar (50 per cent of the basket value), euro (18 per cent), Japanese yen (14 per cent), British pound (11 per cent) and Singapore dollar (7 per cent),[34] Gram unit's value will be determined by market forces – as Bitcoins, for example, operate. However, in the white paper in which Telegram has explained the technical features of its Gram project it is underlined that, in case of a need to increase or decrease the supply of Gram to prevent significant fluctuations, the TON Foundation could adjust the distribution of Gram coins, partially mitigating the risks of extreme fluctuations.[35] The TON Foundation, of which the two founders are also the sole board members, will manage the TON Reserve that will retain 52 per cent of the total supply of Grams to prevent speculative trading.[36]

The blockchain underpinning the two digital currencies will have some common features (see Figure 4 for a basic description of blockchain architecture and functioning). Both blockchain systems will implement a proof-of-stake mechanism to validate the transactions instead of a proof-of-work mechanism – which characterises the most popular cryptocurrencies such as Bitcoins.[37]

Telegram's white paper argues that such a mechanism would result in a more decentralised system, as the investment in Gram coins required to become a validator would be inferior to the investment required for purchasing the equipment and the energy necessary to compute in a proof-of-work system. In 2017, for example, 75 per cent of new Ethereum and Bitcoin blocks were produced by fewer than ten miners. The TON Blockchain will rely on a decentralised system of 1,000 validators, which will allow for a more open infrastructure, according to Gram's developers.

[33] See: US Securities and Exchange Commission (SEC), *SEC Halts Alleged $1.7 Billion Unregistered Digital Token Offering*, 11 October 2019, https://www.sec.gov/news/press-release/2019-212.

[34] Tim Bartz, "Facebook verzichtet bei Libra auf chinesische Währung", in *Spiegel Online*, 20 September 2019, https://spon.de/afzbZ.

[35] Telegram, *Telegram Primer (TON White Paper)*, November 2017, p. 15-16, https://relayto.com/relayto/telegram-open-network-ton-ico-whitepaper-6kf4rycn/pdf. See also Nikolai Durov, *Telegram Open Network, Version 3*, 10 April 2018, p. 128-130, https://ico-telegram.org/tech-wp-ico-telegram-org.pdf.

[36] See US Securities and Exchange Commission (SEC), *SEC Complaint: Telegram Group Inc. and Ton Issuer Inc.*, 11 October 2019, p. 19, https://www.sec.gov/litigation/complaints/2019/comp-pr2019-212.pdf.

[37] Whereas in a proof-of-stake mechanism the probability of validating a new block is determined by how many coins of the cryptocurrency are held, in proof-of-work the probability relies on how much computational work is done by the miner.

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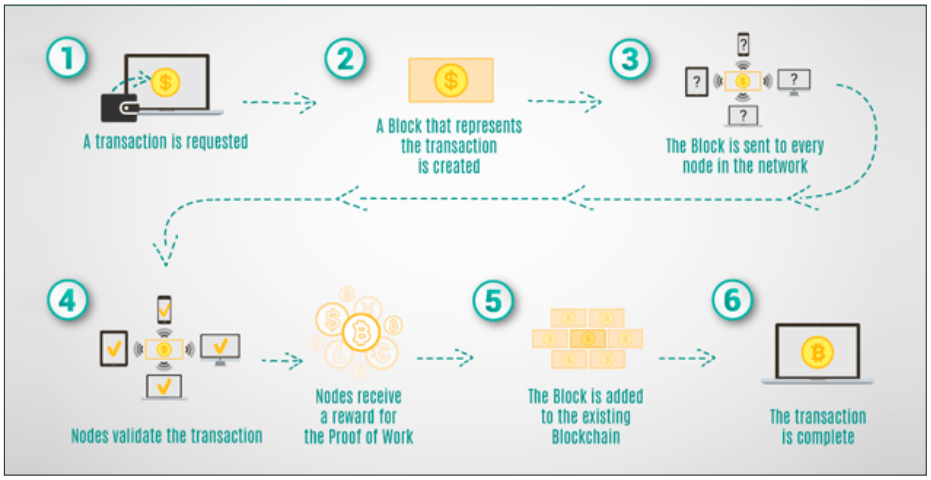
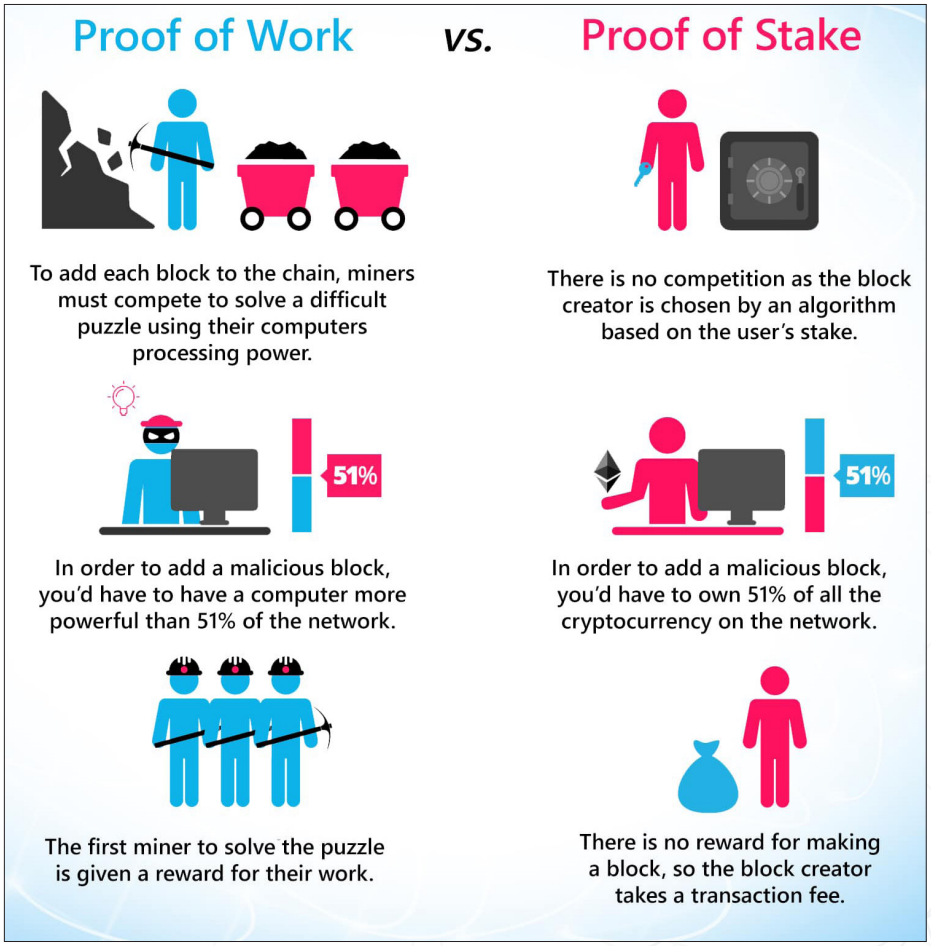
Figure 4 | How blockchain works





Source: Zignuts Technolab, "How Blockchain Architecture Works? Basic Understanding of Blockchain and its Architecture", in *Zignuts Blogs*, 10 July 2018, https://www.zignuts.com/?p=2409; Ameer Rosic, "Proof of Work vs Proof of Stake: Basic Mining Guide", in *BlockGeeks*, May 2019, https://blockgeeks.com/guides/proof-of-work-vs-proof-of-stake.

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Libra is supposed to become open access within five years, but in the first phase it will be a "permissioned" blockchain in which only the founder partners will be allowed to process and validate nodes.

The governance structure of these two digital currencies is also different. Libra is managed by a non-profit organisation, the Libra Association, which includes 28 partners (Uber, Vodafone and Iliad among others) but aims to reach a hundred soon. At the beginning of October 2019, however, MasterCard, Visa, PayPal, Stripe and Mercado Pago – all key partners of the project – withdrew from the Libra Association following sustained political pressure from international supervisors and worldwide institutions. In response, David Marcus, the Facebook executive heading the firm's cryptocurrency efforts, suggested that Libra could also have "a multitude of stablecoins that represent national currencies in a tokenized digital form",[38] instead of a single global stablecoin.

Despite being legally registered as a non-profit organisation, Libra Association promises its members fees and dividends – which is quite unusual for a firm ostensibly uninterested in making profits. To become a member of the network applicants are required to invest 10 million US dollars, but it is however unclear if the current partners have already paid the fees or only committed to do so. In addition, in the Libra Association Council – in which each member has one individual vote proportional to its stake in Libra – founder members will enjoy a capped 1 per cent voting power. The Libra Council will have final say over Libra's management. Therefore, it looks like that the "ultimate power" lies in Libra's shareholders rather than in its board and management, much as in any limited liability company.

Gram will have a hybrid nature. Despite relying on a decentralised system, the TON Foundation and the TON Reserve will play a crucial decision-making role as they will retain the core function of setting the total quantity of Grams in circulation. In the long term, the plan is nevertheless to allow the TON Foundation to own less than half of all Grams in the attempt to democratise the system. In the first phase, at least, the TON Foundation will enjoy a sort of central administering power, raising doubts on how the TON chain governance will establish itself and what influence Telegram will have on its management.

In the end, despite the divergent structures and approaches of their digital currencies, both Telegram and Facebook share similar objectives when developing their own digital currency, notably the ambition to be a global currency.

[38] Omar Faridi, "David Marcus: Libra Might Use Several Different Fiat-based Stablecoins Instead of a Single Token", in *Crowdfund Insider*, 21 October 2019, https://www.crowdfundinsider.com/2019/10/153111-david-marcus-libra-might-use-several-different-fiat-based-stablecoins-instead-of-a-single-token.

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4. Regulatory issues and risks

Libra, Gram and Walmart's digital coins, for all their differences, pose risks and face regulatory challenges that are similar in nature. The risks are indeed considerable, as their adoption would potentially affect the transmission of monetary policy, financial stability, fair competition, data protection and privacy, and coordinated initiatives against money laundering and terrorist financing. Unsurprisingly, the need for a stable regulatory framework is being increasingly underlined by politicians and business operators alike.

Digital currencies promoted by large tech companies pose significant challenges and risks at the supranational level. As underlined by Marck Carney, governor of Bank of England, Libra could become systemically important the moment it is launched.[39] Becoming instantly systemic would be feasible also for Gram and Walmart's Units, given both companies' established presence in several countries.

This risk is particularly relevant in poor countries, in which these currencies could take over control of monetary policy from public authorities. In times of uncertainty, countries tend to impose capital controls or foreign exchange restrictions to avoid excessive devaluation of the national currency. Having control on capitals is an important tool of central bank policy-making, which could be undermined if the diffusion of digital currency increases to systemic levels. If digital currencies issued by private corporations gain a store value function, it would interpose privately owned money between states and citizens, providing private corporations with an underpinning power to mitigate the effectiveness of national laws. Bitcoins have a large user base in some countries with an unstable national currency such as Venezuela, Turkey and Brazil, as they are considered a more secure and accessible alternative to the national currency.[40]

At a micro-level analysis, these digital currencies will be required to conduct anti-money laundering/counter-terrorism financing/customer due diligence (AML/CFT/CDD) checks on their users which could be extremely problematic due to the anonymity or pseudo-anonymity enjoyed by their users. These concerns also arise in relation to tax evasion.

It is true that blockchain-based digital currencies, in theory, could enable more powerful monitoring practices as all transactions are permanently recorded on the ledgers. However, the *conditio sine qua non* to unlock this potential is that the real-world identities of users behind their pseudonyms are certain and known. It

[39] Mark Carney, *Enable, Empower, Ensure: A New Finance for the New Economy*, Speech delivered at the Mansion House Bankers' and Merchants' Dinner, London, 20 June 2019, p. 6, https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-the-mansion-house-bankers-and-merchants-dinner.

[40] In Venezuela, for example, merchants have also started to accept Bitcoin payments after the collapse of the Bolivar. See Lubomir Tassev, "Latin America and Turkey Have the Most Cryptocurrency Users, Poll Shows", in *Bitcoin News*, 18 June 2019, https://news.bitcoin.com/?p=318902.

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is not yet clear how and to what extent enforcement agencies will be allowed to access, collect and analyse data of users. Furthermore, there is an issue over which actor will be responsible for analysing and monitoring transactions within the blockchain: government agencies, e-wallet providers or digital currency issuers?[41] According to a statement sent by the Libra Association to CoinDesk, for example, "it will be the responsibility of developers building on the Libra Blockchain to comply with the laws and regulations in the jurisdictions in which they operate".[42]

A similar concern arises in relation to data protection and privacy. To manage and purchase digital coins, users would need to use an e-wallet, which could be solely provided by the issuer of the digital currency or by third-party providers. Unless previously agreed with individual users, in some jurisdictions e-wallet providers will be not legally allowed to share users' data with any third party nor with their parent company.[43] However, this problem may not be as complicated to solve as it seems at first sight. For example, if users integrate Calibra – Facebook's digital wallet for Libra – with their Messenger and WhatsApp accounts, Facebook will be able to track basic information anyway (without needing specific approval by users themselves) – such as with whom or at which shop users have started a transaction. Moreover, large tech corporations are likely to encourage users to allow the free flow of information within their ecosystem's activities with the promise of rewards.

What is more, there are issues concerning the nature and number of licenses that these digital currencies would need. To operate in some countries, they would need to obtain a licence as a payment service provider and as an e-money provider. However, in certain other jurisdictions they would need a banking or financial services provider licence, if not regulated as systemically important payment systems (SIPS) or settlement infrastructures. The issue then becomes to determine what activities these currencies perform, whether directly or indirectly. For example, regulators could argue that digital currencies also run as money market funds, requiring additional licences such as a Commodity leader in the US or as a MiFID investment firm in the EU.[44] The matter of which licences the digital currencies would need is not purely a matter of technical regulation, as it also implies different rule constraints, requirements and compliance costs, which are factors that dramatically impact the overall operative costs of running

[41] Robert Kim, "Facebook Hints at New AML/CFT Paradigm for Libra", in *Bloomberg Law Analysis*, 15 July 2019, https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-facebook-hints-at-new-aml-cft-paradigm-for-libra.

[42] Daniel Palmer, "Facebook Libra Brings 'Risks and Opportunities': Swiss Watchdog Chief", in *CoinDesk*, 12 September 2019, https://www.coindesk.com/facebook-libra-brings-risks-and-opportunities-swiss-watchdog-chief.

[43] For example, according to the EU legislation.

[44] Dirk A. Zetzsche, Ross P. Buckley and Douglas W. Arner, "Regulating LIBRA: The Transformative Potential of Facebook's Cryptocurrency and Possible Regulatory Responses", in *University of New South Wales Law Research Series*, No. 47/2019 (July 2019), p. 19, http://classic.austlii.edu.au/au/journals/UNSWLRS/2019/47.html.

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a financial service.[45] More generally, the distinct trait of digital currencies of combining innovative technology and incoming financial providers threatens the effectiveness of existing regulatory frameworks and supervision standards and calls for the development of new coordinated arrangements at the global level.

The integration of a digital currency within an ecosystem also poses an issue related to the accumulation of data. In a data-driven economy, data is a major competitive factor, enabling clusters of innovations that interact with each other and that drive the digitalisation of markets and society. Nevertheless, the existence of direct and indirect network effects could produce barriers for entering the market, leading to "a winner takes most" (if not all) scenario.[46] If digital currencies issued by large private companies gain ground, there is then the need to establish new standards for data protection, control and ownership to avoid the consolidation of a new market power.

Conclusions

Maybe Libra will never see the light of day. Too ambitious, perhaps.

But Libra is not alone. There are already two other projects which could rapidly reach scale and potentially change the equilibrium of, at least, national markets: Gram and Walmart's coins.

Gram is built to be a global decentralised digital currency which is likely to be launched neglecting permission from central powers. Walmart's Units are currently developed only for the US market and aim at enhancing solely the Walmart ecosystem.

What Gram, Libra and Walmart have in common is encouraging a new system of financial intermediation in which digital currencies operate independently of the traditional banking infrastructure.

Even though these could be just pilot experiments that will never reach scale, it would be a surprise if other giant tech players do not follow suit. However, competitors will have trouble penetrating that segment of the market if captive ecosystems have been already created.

In a recent paper published by the International Monetary Fund, Adrian and Mancini-Griffoli envisage three different scenarios brought about by the development of digital currencies, all of which would transform the relationship between incumbent banks and providers of digital currencies.[47]

[45] Stephen Cecchetti and Kim Schoenholtz, "Libra: A Dramatic Call to Regulatory Action", in *VOX*, cit.

[46] Varun Ghotgalkar, "How the Digital Economy is Changing Corporate Pricing and Inflation", in *Axa IM Research*, 22 August 2017, p. 2, http://po.st/8kz7IC.

[47] Tobias Adrian and Tommaso Mancini Griffoli, "The Rise of Digital Money", in *FinTech Notes*, No.

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The first scenario is one of competition between digital currency providers and banks, with the latter enjoying a stronger position due to existing distribution networks and reputation but also facing the risk of losing their direct relationship with customers, experiencing a switch from convenient retail funding to more expensive wholesale funding, and reducing precious data accumulation on clients.

The second scenario is one of complementarity between these two different actors through the integration of different business models and resulting enhanced market efficiency (e.g., digital providers could exploit their alternative channel of data aggregation to improve the creditworthiness profiling of banks).

The third and least likely scenario is the radical transformation of the banking industry, with incumbents losing part of their retail market segment and counting mostly on wholesale funding, and credit allocation intermediated by markets.

The question is then how to regulate this new kind of digital currency. In the case of Libra and Gram, it is clear that they aim at becoming a global medium of exchange. The only possible regulatory answer lies in a global supervisory approach, since establishing fragmented legal frameworks would inevitably lead to inefficient supervision. Surely, a multilateral effort is a tall order, especially in the financial services industry which is traditionally characterised by low levels of intra-country cooperation. Yet it is a necessity.

A digital currency issued by Walmart, in addition to posing challenges to US regulators, may have a spillover effect on other countries, as Walmart may well be tempted to extend its private digital currency to other countries (a side effect could be that of spurring other giant private conglomerates to develop their own digital currencies).

Technological innovation poses challenges that are different from the past and that require the development of increased international coordination. History teaches that transformation can be slowed down, but it cannot be stopped. The recent publication of the report "Investigating the Impact of Global Stablecoins", produced by the G7 Working Group on Stablecoins, stresses that the key answer to these innovations is grounded in a "technology-neutral, functions-based" regulatory approach which ensures a level playing field and fair competition.[48] The challenge is to govern the innovation of international digital currency to maximise its potential while mitigating the risks it will pose.

Updated 18 November 2019

19/001, 15 July 2019, https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097.

[48] G7 Working Group on Stablecoins, "Investigating the Impact of Global Stablecoins", in *CPMI Papers*, No. 187 (October 2019), p. iii, https://www.bis.org/cpmi/publ/d187.htm.

ISSN 2610-9603 | ISBN 978-88-9368-114-8

References

Samam Adhami, Giancarlo Giudici and Stefano Martinazzi, "Why Do Businesses Go Crypto? An Empirical Analysis of Initial Coin Offerings", in *Journal of Economics and Business*, Vol. 100, November-December 2018, p. 64-75

Tobias Adrian and Tommaso Mancini Griffoli, "The Rise of Digital Money", in *FinTech Notes*, No. 19/001, 15 July 2019, https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097

Guerino Ardizzi and Michele Savini Zangrandi, "The Impact of the Interchange Fee Regulation on Merchants: Evidence from Italy", in *Questioni di economia e finanza*, No. 434 (June 2018), https://www.bancaditalia.it/pubblicazioni/qef/2018-0434/index.html

Bank for International Settlement, *BIS Annual Economic Report 2018*, June 2018, https://www.bis.org/publ/arpdf/ar2018e.htm

Tim Bartz, "Facebook verzichtet bei Libra auf chinesische Währung", in *Spiegel Online*, 20 September 2019, https://spon.de/afzbZ

Nicola Bilotta and Simone Romano (eds), *The Rise of Tech-Giants. A Game Changer in Global Finance and Politics*, Bern, Peter Lang, 2019

Markus K. Brunnermeier, Harold James and Jean-Pierre Landau, "The Digitalization of Money", in *NBER Working Papers*, No. 26300 (September 2019)

Nate Cardozo, Kurt Opsahl and Rainey Reitman, *Who Has Your Back? Government Data Requests 2015*, Electronic Frontier Foundation, 17 June 2015, https://www.eff.org/who-has-your-back-government-data-requests-2015

Mark Carney, *Enable, Empower, Ensure: A New Finance for the New Economy*, Speech delivered at the Mansion House Bankers' and Merchants' Dinner, London, 20 June 2019, https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-the-mansion-house-bankers-and-merchants-dinner

Stephen Cecchetti and Kim Schoenholtz, "Libra: A Dramatic Call to Regulatory Action", in *VOX*, 28 August 2019, https://voxeu.org/node/64512

Stephen Cecchetti and Kim Schoenholtz, "The Stubbornly High Cost of Remittances", in *VOX*, 27 March 2018, https://voxeu.org/node/62674

Committee on Payment and Market Infrastructures (CPMI), "Digital Currencies", in *CPMI Papers*, No. 137 (November 2015), https://www.bis.org/cpmi/publ/d137.htm

ISSN 2610-9603 | ISBN 978-88-9368-114-8

Sinclair Davidson, Primavera de Filippi and Jason Potts, *Economics of Blockchain*, paper for the Public Choice Conference, Fort Lauderdale, May 2016, https://hal.archives-ouvertes.fr/hal-01382002

Darrell Duffie, *Digital Currencies and Fast Payment Systems: Disruption is Coming*, paper for presentation to the Asian Monetary Policy Forum, 30-31 May 2019, https://www.darrellduffie.com/uploads/policy/DuffieDigitalPaymentsMay2019.pdf

Nikolai Durov, *Telegram Open Network, Version 3*, 10 April 2018, https://ico-telegram.org/tech-wp-ico-telegram-org.pdf

Gerald P. Dwyer, "The Economics of Bitcoin and Similar Private Digital Currencies", in *Journal of Financial Stability*, Vol. 17, April 2015, p. 81-91

European Central Bank (ECB), *Virtual Currency Schemes: A Further Analysis*, Frankfurt am Main, ECB, 2015, https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf

European Commission, *Antitrust: Commission Accepts Commitments by Mastercard and Visa to Cut Inter-regional Interchange Fees*, 29 April 2019, https://europa.eu/rapid/press-release_IP-19-2311_en.htm

Pete Evans, "Walmart Strikes Deal with Visa to Settle Credit Card Fee Dispute", in *CBC News*, 5 January 2017, https://www.cbc.ca/news/business/visa-walmart-1.3923039

Omar Faridi, "David Marcus: Libra Might Use Several Different Fiat-based Stablecoins Instead of a Single Token", in *Crowdfund Insider*, 21 October 2019, https://www.crowdfundinsider.com/2019/10/153111-david-marcus-libra-might-use-several-different-fiat-based-stablecoins-instead-of-a-single-token

G7 Working Group on Stablecoins, "Investigating the Impact of Global Stablecoins", in *CPMI Papers*, No. 187 (October 2019), https://www.bis.org/cpmi/publ/d187.htm

Varun Ghotgalkar, "How the Digital Economy is Changing Corporate Pricing and Inflation", in *Axa IM Research*, 22 August 2017, http://po.st/8kz7IC

John Heggenstuen, "Here's How Much Wal-Mart Pays in Interchange Fees on Payment Card Transactions", in *Business Insider*, 31 March 2014, https://www.businessinsider.com/heres-how-much-walmart-pays-in-interchange-fees-2014-3

Robert Kim, "Facebook Hints at New AML/CFT Paradigm for Libra", in *Bloomberg Law Analysis*, 15 July 2019, https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-facebook-hints-at-new-aml-cft-paradigm-for-libra

Aaron Klein, "Is China's New Payment System the Future?", in *Brookings Reports*, June 2019, https://brook.gs/2wRgPEf

ISSN 2610-9603 | ISBN 978-88-9368-114-8

LINE Corporation, *BITMAX Cryptocurrency Exchange for Japan Begins Operations*, 17 September 2019, https://linecorp.com/en/pr/news/en/2019/2914

Ethan Lou, "Walmart Canada to Stop Accepting Visa, Says Fees Too High", in *Reuters*, 11 June 2016, http://reut.rs/1VSBhfc

McKinsey & Company, *Banks in the Changing World of Financial Intermediation*, November 2018, http://bit.ly/2Pfr5Ss

MoneyGram, *Quarterly Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Quarterly Period Ended March 31, 2018*, May 2018, https://sec.report/Document/0001273931-18-000018

MoneyGram, *Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Fiscal Year Ended December 31, 2018*, March 2019, https://sec.report/Document/0001273931-19-000061

Daniel Palmer, "Facebook Libra Brings 'Risks and Opportunities': Swiss Watchdog Chief", in *CoinDesk*, 12 September 2019, https://www.coindesk.com/facebook-libra-brings-risks-and-opportunities-swiss-watchdog-chief

Fabio Panetta, *21st Century Cash: Central Banking, Technological Innovation and Digital Currencies*, keynote address at the SUERF/BAFFI CAREFIN Centre conference "Do We Need a Central Bank Digital Currency? Economics, Technology and Psychology", Milan, 7 June 2018, https://www.bancaditalia.it/media/notizia/fabio-panetta-speaks-on-21st-century-cash-central-banking-technological-innovation-and-digital-currencies

Don Reisinger, "Here's How Much Amazon Prime Customers Spend Per Year", in *Fortune*, 18 October 2017, https://fortune.com/2017/10/18/amazon-prime-customer-spending

Craig Smith, "60 Amazing Walmart Statistics and Facts (2019) | By the Numbers", in *DMR*, updated 6 September 2019, https://expandedramblings.com/index.php/walmart-statistics

Lubomir Tassev, "Latin America and Turkey Have the Most Cryptocurrency Users, Poll Shows", in *Bitcoin News*, 18 June 2019, https://news.bitcoin.com/?p=318902

Telegram, *Telegram Primer (TON White Paper)*, November 2017, https://relayto.com/relayto/telegram-open-network-ton-ico-whitepaper-6kf4rycn/pdf

US District Court for the Southern District of Ohio Eastern Division, "Pen Register Device and/or Trap and Trace Device provided by WhatsApp", Case No. 2:16-mj-254, 26 May 2016, https://www.documentcloud.org/documents/3391606

ISSN 2610-9603 | ISBN 978-88-9368-114-8

US Securities and Exchange Commission (SEC), *SEC Complaint: Telegram Group Inc. and Ton Issuer Inc.*, 11 October 2019, https://www.sec.gov/litigation/complaints/2019/comp-pr2019-212.pdf

US Securities and Exchange Commission (SEC), *SEC Halts Alleged $1.7 Billion Unregistered Digital Token Offering*, 11 October 2019, https://www.sec.gov/news/press-release/2019-212

WeChat Mini Programmer, "How Will WeChat Electronic System Work?", in *Medium*, 24 May 2019, https://medium.com/p/26b35f09f83f

Olivia White et al., "Digital Identification: A Key to Inclusive Growth", in *McKinsey Global Institute Reports*, April 2019, https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-identification-a-key-to-inclusive-growth

Martin Wolf, "The Threat and the Promise of Digital Money", in *Financial Times*, 22 October 2019, https://www.ft.com/content/fc079a6a-f4ad-11e9-a79c-bc9acae3b654

World Bank, "Migration and Remittances. Recent Developments and Outlook", in *Migration and Development Briefs*, No. 31 (April 2019), https://www.knomad.org/node/1285

Matthew Yglesias, "Walmart Destroying MoneyGram and Western Union with New Money Transfer Service", in *Vox*, 18 April 2014, https://www.vox.com/2014/4/18/5626436

Stella Yifan Xie, "More Than a Third of China Is Now Invested in One Giant Mutual Fund", in *The Wall Street Journal*, 27 March 2019

Dirk A. Zetzsche, Ross P. Buckley and Douglas W. Arner, "Regulating LIBRA: The Transformative Potential of Facebook's Cryptocurrency and Possible Regulatory Responses", in *University of New South Wales Law Research Series*, No. 47/2019 (July 2019), http://classic.austlii.edu.au/au/journals/UNSWLRS/2019/47.html

ISSN 2610-9603 | ISBN 978-88-9368-114-8

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