

PAYMENT SYSTEM DISRUPTION: CHALLENGES POSED TO BANKS AND CENTRAL BANKS BY FACEBOOK'S LIBRA

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For about two centuries, banks had maintained an uncontested monopoly power over both national and global payments. The previous payment systems based on the physical transfer of gold, specie or bank notes could not survive due to their obvious weaknesses. They were risky, costly, inconvenient and time-consuming. Banks were able to ease the strain to some extent by introducing several novel inventions like the cheque and money transfers via bank orders nationally as well as internationally. However, these novelties also could not meet the needs of a fast growing volume of transactions among the people of a nation, on one side, and between nations, on the other. Hence, to meet the demand and keep the market satisfied, banks had to introduce improvements to payment systems by adopting advanced Information and Communication Technology (ICT). This pertains to the use of technology by financial institutions to address emerging issues in the financial system, code-named 'FinTech'.

Ironically, these methods too were reactive instead of being proactive and marginal rather than being holistic. The main defects were the high costs, exclusivity and trust-breaching. This created a vacuum in the payment systems needing inclusivity – that is, bringing a vast majority of people throughout the globe into formal financial services – and afford ability – that is, lowering the costs to remove disincentives for participants to use them. The solution came in two forms. One was the entry of informal money transfer agents like Hawala¹ and Fei Chien². They managed to offer a safe and swift global service from collection point to delivery point at low costs. The other took place with the entry of technological firms to financial business which can be termed 'TechFin' implying a reversal of FinTech. Accordingly, technological firms like mobile phone service providers, supermarket chains and previously unknown tech networks offering cryptocurrencies entered the fray grabbing an important portion of the payment market that was traditionally the preserve of the financial institutions.

This latter entrant to the payment system made a significant dent to the payment monopoly held by banks. It also challenged the monopoly power held by central banks in

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¹ For details, see: <https://www.quora.com/How-does-the-Hawala-system-of-transferring-money-work> (Accessed on 10.08.2019).

² Buencamino, Leonides and Gorbunov, Sergei, 2002, Informal Money Transfer Systems, DESA Discussion Paper No 26, United Nations (Available at: <https://www.un.org/esa/desa/papers/2002/esa02dp26.pdf> (Accessed on 10.08.2019).

producing and supplying the medium of payment, money. This shift in the market power was largely facilitated by the technology on which the cryptocurrencies were based, namely, the blockchain³.

Though the blockchain was originally associated with a specific cryptocurrency, the Bitcoin, its use entailed a system in which a large number of participants could complete their transactions safely recording them in a distributed digital ledger, building trust through difficult-to-hack technology among unknown parties and enforcing contractual arrangements automatically, a phenomenon known as ‘smart contract enforcement’. These three features elevated the blockchain to a superior position which had hitherto been unknown in the financial services industry. For some, it was a new revolution which had swept through the entire economic system⁴. Some other analysts have viewed its entry as a method of freeing money from the crutches of governments and central banks⁵. The disruptive elements it created throughout the global economy could be observed from three recent developments.

First, the blockchain technology has now become a universal technology capable of being used in governments, education, healthcare services and businesses. Second, most of the leading commercial banks have now begun experiments to issue their own digital currencies based on the blockchain technology. Third, many leading central banks which had felt the competition it has provided to them have seriously considered replicating it by issuing their own digital currencies, code-named e-Fiat currencies.

In this background, the news that the social media high-tech giant, Facebook, is also planning to enter the fray together with some other leading tech and non-tech firms by issuing its own cryptocurrency, Libra, came as a disruptive announcement. Unlike other cryptocurrency producers who are anonymous, Libra’s fathers – numbering 28 at the beginning – have all been real firms. The successes they have demonstrated in their respective businesses implied the success of Libra as well. Hence, it caused to send ripples among banks and central banks that they are facing a real threat if Libra enters the market in mid-2020 as planned.

This paper will analyse the implications and challenges to be faced by banks and central banks due to the entry of Libra to the market. Part I will present an overview of Libra as proposed by its founders in a White Paper issued to the market in July 2019. Part II will examine how it will disrupt both the financial services institutions and central banks. Part III will present a summary of major conclusions drawn from the analysis.

³ For a detailed treatment, see, Wijewardena, W A (2016), “Thriving in Digital Age: Digital Currencies pose the Biggest Challenge for Banks” in Thriving in a Digital World, Association of Professional Bankers of Sri Lanka, Colombo.

⁴ See, Tapscott, Son and Tapscott, Alex (2018), Blockchain Revolution, Penguin, UK.

⁵ Patrick Eha, Brian, (2017), How Money Got Free, Oneworld Publications, London.

PART I

LIBRA, THE NEWEST CRYPTOCURRENCY TO BE FATHERED BY FACEBOOK AND OTHERS

Unlike the paper on Bitcoin and its operating system, Blockchain, posted to internet by an anonymous writer, Satoshi Nakamoto⁶, the main promoter of Libra, Facebook, has released a whitepaper on the proposed cryptocurrency seeking public views⁷. As expected, it generated a wide public discussion of the proposed move. Two leading economists, both of whom are Nobel Laureates – Paul Krugman⁸ and Joseph Stiglitz⁹ - were opposed to Libra publicly. Central bankers and regulators¹⁰ too were also not kind to it.

This section will present the Libra model as suggested in the whitepaper issued by Facebook. The criticisms levelled against it will be dealt with in the next section.

1. Founding members of the Libra scheme

According to the whitepaper, Facebook is being joined by 27 tech and non-tech firms in the launch of Libra. Table 1 presents the names of these firms with the industry they are operating.

TABLE 1: INITIAL PARTICIPANTS IN LIBRA PROGRAMME

INDUSTRY	FIRM
Payments	MasterCard, PayPal, PayU (Nasper's FinTech arm), Stripe, Visa
Technology and Market Places	Booking Holdings, eBay, Facebook/Calibra, Farfetch, Lyft, Mercado Pago, Spotify AB, Uber Technologies, Inc
Telecommunications	Iliad, Vodafone Group
Blockchains	Anchorage, Bison Trails, Coinbase, Inc, Xapo Holdings Limited
Venture Capital	Andreessen Horowitz, Breakthrough Initiatives, Ribbit Capital, Thrive Capital, Union Square Ventures
Non-profit, multilateral & academic organisations	Creative Destruction Kiva, Mercy Corps, Women's World Banking

Source: *Whitepaper on Libra*, p 4

⁶ Available at: <https://bitcoin.org/bitcoin.pdf> (accessed on 20.08.2019).

⁷ https://libra.org/en-US/wp-content/uploads/sites/23/2019/06/LibraWhitePaper_en_US.pdf (accessed on 20.08.2019).

⁸ <https://twitter.com/paulkrugman/status/1141654129896566784?lang=en> (Accessed on 20.08.2019).

⁹ <https://www.project-syndicate.org/commentary/facebook-libra-facilitates-crime-money-laundering-by-joseph-e-stiglitz-2019-07> (Accessed on 20.08.2019).

¹⁰ <https://www.ft.com/content/5535fb3a-91ea-11e9-b7ea-60e35ef678d2> (Accessed on 20.08.2019).

In order to dissipate the fears that the social media data possessed by Facebook, at present or in future, could be compromised by its cryptocurrency arm, a new subsidiary to handle the latter by the name of Calibra has been set up¹¹.

The first product of Calibra is a digital wallet to be launched in 2020 along with the launch of Libra. It can be accessed by users through Facebook's existing services such as Messenger or WhatsApp or as a standalone app. The low-cost Calibra digital wallet would specially be appealing to those who remit small sums of money across borders. In this instance, the main target group will be the migrant workers.

According to a study done by UNESCO in 2017, the global total remittances in that year had amounted to US \$ 613 billion. Of that sum, US \$ 466 billion had been remitted to households in low and middle-income countries at an average transaction cost of 7.1%¹². If these costs can be brought down to near zero level through Calibra digital wallet, these households can save up to US \$ 33 billion annually. It is a significant saving affecting their wellbeing, capital formation and human capital development. A firewall has been erected between Facebook and Calibra preventing each from using the other's data sets for their private benefits.

2. The Libra Association

These 28 ventures, designated Libra founding members, have been formed into a 'not-for-profit' Libra Association to be registered in Geneva, Switzerland, in view of the country's 'neutrality' in international affairs and 'openness' to blockchain technology. Though Facebook has been the leader in the enterprise, all founding members are to enjoy the same powers and privileges.

The Association has three roles to play in the Libra network: facilitating the operation of Libra blockchain, coordinating the work among the network's 'validator nodes' and managing the Libra reserve to be set up to preserve the value of the currency. In blockchain technology, a validator node is an entity that has powers to maintain a node – devices that store blocks of data – to validate transactions and bring new blocks to the blockchain for a Proof of Authority (PoA)¹³ token as the reward¹⁴.

It is planned to increase the number of founding members to 100 by the time Libra is launched in mid 2020 so that there will be validator nodes that are distributed globally providing a convenient service to Libra users. However, the long term objective of the Libra network is to make it fully automated reducing the reliance on the Association or the founding members for its sustenance.

¹¹ <https://newsroom.fb.com/news/2019/06/coming-in-2020-calibra/> (Accessed on 16.08.2019).

¹² <https://unesdoc.unesco.org/ark:/48223/pf0000265996> , p 19 (Accessed on 16.08.2019).

¹³ Proof of Authority (PoA) is an improvement of Proof of Stakes (PoS) in which it is believed that entities work for monetary stakes or values; PoA guarantees that one will stake its identity to certify transactions. See: <https://medium.com/poa-network/proof-of-authority-consensus-model-with-identity-at-stake-d5bd15463256> (Accessed on 16.08.2019).

¹⁴ <https://github.com/poanetwork/wiki/wiki/Role-of-Validator> (Accessed on 17.08.2019).

The goal is therefore to decentralise the presently centralised Libra ecosystem. At that stage, anyone with the required technical capacity and commitment to the network's goals can become a validator node and the Association will simply an organisation to oversee the operations.

3. Authority levels in the Libra network

The Libra network is to be managed by three different levels of authority. At the top, there will be the Libra Association which is non-profit and made up of all the validator nodes. Under the Association functions the Libra Council consisting of individual representatives of Association members. The day to day affairs are to be run by a Board of 5 to 19 members elected by the Council.

The ultimate power of the network rests with validator nodes that are represented in the Council. The voting power is proportional to the initial investment made by members in the early period and the amount of Libra held by them later. It is an open and collaborative decision making process where all validator nodes would participate. The implementation of decisions will be done by individual validator members. With regard to the technical side, the blockchain source codes are open and available to all those who desire to acquire a stake in the network. The Association will also actively promote further research and development of the technology needed.

4. The task of the Libra Association

The prime job of the Libra Association is to “create a simple global currency and financial infrastructure that empowers billions of people”¹⁵. It proposes to accomplish this task by introducing a new cryptocurrency and using an improved version of blockchain technology. The new cryptocurrency is named Libra – the Latin word for balance implying stability. The improved version of blockchain technology is to be operated on a new programming language called ‘Move’ to be developed by a technical team working within Facebook.

5. Libra: Cryptocurrency versus Cryptotoken

Though Libra has been named a cryptocurrency, it is not a currency in the proper sense of the word. It is a cryptotoken which is created on user demand and burned when the demand reverses by the Libra Association. The operation mechanism is as follows.

Anyone wishing to acquire Libra for payment purposes could do so by surrendering real moneys issued by a national central bank to a Libra dealer at rates determined in the market. For instance, if one Libra is equal to US \$ 1, a person having one US dollar can buy one unit of Libra. Then, it is credited to his Libra wallet, a computer system maintained by a central server.

¹⁵ The Libra Association, p 2 (Available at: https://libra.org/en-US/association-council-principles/#goals_and_principles) (Accessed on: 16.08.2019).

The transaction does not become effective unless it is validated by a validator node, a member of the Libra Association.

When a payment is made, it is deducted from the owner's wallet and paid into the wallet maintained by the recipient. The owners can use smart phones in the same way they send messages to buy, send and spend Libra¹⁶. If the owner desires to have his money back, the Libra Association, as the 'buyer of last resort' will give the dollar back and burn the Libra already created. Thus, the whole system is similar to an open-ended mutual fund: it can grow as well as shrink freely.

6. Need for liquidity and solvency

What this means is that the Libra Association should have adequate liquidity like a commercial bank to make out payments to those who desire to get their money back. At the same time, it should be, like a commercial bank, solvent to meet its liabilities. For this purpose, the Libra Association is required to maintain a reserve in valid assets made up of a basket of currencies and other financial assets which carry high ratings. The minting of new Libra is therefore linked to the size of the reserve; in the opposite, when the reserve falls, those Libra already created will be taken out of circulation by burning them. In this sense, the Libra system is similar to a currency board which also has to maintain an equal reserve in convertible foreign currencies to issue currency under its signature.

7. Market volatility of cryptocurrencies

Libra network is, therefore, different from other cryptocurrencies like Bitcoin or Ethereum which do not have a backup reserve. The lack of a reserve backup makes any currency vulnerable to speculative attacks. As a result, one grave risk which the holders of unbacked cryptocurrencies face in the market is the wide fluctuation in their value from one cycle to another, generating losses for them.

For instance, the price of Bitcoin in terms of US dollar rose to slightly less than US \$ 20,000 in December 2017 but drastically fell thereafter reaching a low level of US \$ 3,500 a year later¹⁷. One reason for this unplanned crash of Bitcoin was that, when it came under speculative attack, there was no 'buyer of last resort' to cushion out the price fluctuations. Since no one held the liability for Bitcoin, there was no one who had kept a backup reserve. Thus, if the markets choose to push its price down, it would go down until the market is satisfied about the price levels.

Hence, Bitcoin and other cryptocurrencies which are not supported by a backup reserve are subject to both price inflation and price deflation alternatively. It does not provide stability to the currency which the holders need badly.

¹⁶ <https://newsroom.fb.com/news/2019/06/coming-in-2020-calibra/> (Accessed on 18.08.2019).

¹⁷ https://en.bitcoinwiki.org/upload/en/images/8/8e/Bitcoin_history_2017-2018.png (Accessed on 18.08.2019).

8. **Libra system is similar to a fully backed Currency Board**

But, Libra is a reserve currency system like any other national currency which is fully supported by reserves similar to a fully backed currency board system. A currency board cannot issue currency unless it has reserves in convertible foreign currencies. Similarly, the Libra Association cannot create Libra unless it has reserves in different national currencies as a reserve.

The Libra reserve is built from two sources, the initial investors who supply cash to Libra Association by acquiring Investment Token issued by the Libra network and the users of Libra who have to surrender national currencies to acquire them. The reserve which is invested in low-yielding low-risk financial assets will be kept under the care of a geographically distributed and highly rated set of custodians. A regionally distributed portfolio has the advantage of being able to invest on regional strengths and is free from the weaknesses which a centrally maintained portfolio will have.

The interest income initially earned will be used to meet the operational expenses of running the system. If there is additional income over and above that level, it would be distributed among the initial investors. As such, the holders of Investment Token have no first right to the profits of the system and their participation, as expected, is not-for-profit purposes.

The treatment of the surplus of the Libra system in this manner is similar to the treatment of the surpluses of central banks in national monetary systems. In the case of central banks, the surplus should first be applied to build reserves, meet extraordinary currency issue expenses which have been brought up in accounts and pay interest on central bank's own securities and statutory reserves held by banks if interest payment on them is warranted. If there is anything above that limit, it can be paid to the government in consultation with the Minister of Finance¹⁸. Hence, running a central bank by a government is also guided by not-for profit motives.

9. **Technology that powers cryptocurrencies: blockchain technology**

The main advantage of cryptocurrencies has been derived from the specific technology used in offering them to the market. When Satoshi Nakamoto presented the case for Bitcoin as a currency that facilitates peer-to-peer financial payments, the underlying technology was blockchain technology. Similarly, the plan of Facebook Libra too has been to use an improved version of blockchain technology to make its use inclusive, transparent and trustworthy. Thus, Libra blockchain has been described as “a decentralised, programmable database designed to support a low-volatility cryptocurrency that will have the ability to serve as an efficient medium of exchange for billions of people around the world”¹⁹.

¹⁸ For details relating to Central Bank of Sri Lanka, see: Wijewardena, W A (2017) Central Banking: Challenges and Prospects, BMS Publications, Colombo, pp 36-41.

¹⁹ Amsden, Zachary et.al (2018) The Libra Blockchain (Available at: <https://developers.libra.org/docs/assets/papers/the-libra-blockchain.pdf>) (Accessed on 18.08.2019).

While Libra blockchain is proposed to be developed on a new programming language called 'Move', its open source prototype implementation protocol has been called 'Libra Core' that commands global collaborative efforts for advancing the new system. The Libra core will facilitate healthy competition and innovation in financial services by setting up a common infrastructure for processing transactions, maintaining accounts and ensuring an important requirement for a payment system, namely, inter operability across different financial services and organisations.

The promises made by Libra protocol are many: lowering barriers to entry through open-source codes that can be used by anyone, promoting start-ups and incumbent firms to compete on a level playing field, facilitating innovation and conducting experiments in offering new financial services. The participation of a large number of agents in the blockchain technology protocol will also ensure that it is not controlled by single entity or it can be shaped by such entities to their own advantage.

10. Relationship between clients and validators

There are two parties who are involved in Libra blockchain technology protocol. One is the client who wants to get its services. The other is the validator who has to ensure that the client receives its services. The validators having maintained the database will process the transactions submitted by clients and include the processed information in the database. The blockchain protocol offers a consensus protocol for use by validators.

Since it is used by many validators, it is known as a 'distributed consensus protocol' available for all the validators in the chain. Under this protocol, validators agree on transactions that have been included in the database and the results of executing those transactions. These acts by validators should be reliable even when there are some malicious, fraudulent or erroneous players in the system. The executed transactions become a part of the permanent database in the chain. Clients too can make requests to validators to read the data from the database. Since the data base that contains the executed transactions is authenticated by validators, there is accuracy in the data being read by clients.

11. Libra revolution

The Facebook Libra is planning to revolutionise the global payments system by making it inclusive and allowing those services to billions of people who have no access to formal payment systems. Even when they have access, the costs involved are unaffordably high. The Facebook Libra is virtually costless and therefore it is advantageous to small type money senders and those who make small payments. However, unlike other cryptocurrencies, Libra is a cryptotoken created out of the existing national currencies issued by central banks. Hence, its growth will take out the payments part presently done by national currencies by converting such payments to digital payments.

PART II

THE DISRUPTION OF COMMERCIAL BANKS AND CENTRAL BANKS BY FACEBOOK'S LIBRA

Libra is not a cryptocurrency in the proper sense of the term. It is a cryptotoken digitally outgrown from the existing national currencies known as fiat currencies²⁰. Accordingly, a user of Libra has to surrender his or her fiat currencies to an authorised dealer who is also called a validator node and acquire Libra units at a given exchange rate. That rate is subject to change depending on the strength or weakness of the fiat currency involved. Since Libra can at any time be exchanged back for the same fiat currency or another fiat currency, holders of Libra run the risk of losing capital or enjoy prospects of enhancing value. Thus, it is a continuous back and forth movement of Libra and other fiat currencies. Libra units acquired are stored in a digital wallet named Libra Wallet. Fiat currencies held by people are kept in their personal wallets or as bank deposits. Thus, an increase in the stock of Libra will amount to an equivalent reduction of fiat currencies held in personal wallets and/or as bank deposits. But they are transferred in favour of the Libra Association which maintains them in a special reserve. Since this reserve is kept in the form of deposits with banks of high credit rating and investments in bonds issued by credible governments, there is a redistribution of financial assets from low performing economies to high performing economies. This is a negative disruption to banks and central banks in the former category of countries and a beneficial disruption to banks and central banks in the latter category of countries. This section will examine the implications to banks and central banks as a result of both the negative and beneficial disruption caused by Libra.

1. Disruption to banks

a. Negative disruption

Banks in certain category of countries will experience negative disruption in the form of an outflow of deposits when moneys are withdrawn by customers to buy Libra for payment purposes. To an individual bank, it poses two issues. One is a liquidity issue involving their ability to meet the customers' demand. The other is a revenue issue arising from the reduction in the deposit base leading to a similar reduction in their ability to create multiple deposits and credit. Banks gain capacity to lend in multiple terms due to a unique feature possessed by them: That is, ability to lend to customers by making book entries. The volume of credit which a bank can create in this manner is determined by the size of the credit multiplier it possesses. An increase in the deposit base will allow banks to create more credit, while a reduction will deliver the opposite results. The actual number of times they can create credit is called the credit multiplier.

²⁰ A fiat currency is any currency brought into circulation through a law by governments. Fiat is derived from Latin meaning a 'decree' or in detail, 'it shall be' or 'let it be done'. See: <https://www.investopedia.com/terms/f/fiatmoney.asp> (Accessed on 25.08.2019). In contrast, Libra will be used not through fiat but due to utility it would deliver to users.

Since banks earn their income by lending depositors' money multiplied by several times in this manner, any decline in the deposit base will entail limitations on the growth of assets as well as their income earning capacity. In a competitive market, a reduction in income and as a consequence, a reduction in profit levels will be fatal to an individual bank.

This can be avoided if the investors of the Libra Reserve at the regional level plough such lost deposits back to banks concerned when they maintain bank deposits to ensure liquidity of the system. However, such a strategy is bound to raise two issues. The first one arises from the need for splitting the fund inflow into the reserve between non-earning bank deposits and income-earning investments. Since bank deposits are kept only up to a level necessary for assuring liquidity, the bulk of the funds will be kept in other investments. Hence, what would go back to banks as deposits will be only a fraction of what would have gone out of them initially. It does not support banks to maintain the same credit creating capacity which they had enjoyed earlier. The other is concerned about a more fundamental need in the banking system. To become eligible for receiving deposits to be placed by the regional Libra reserve investors, a bank should necessarily have a high credit rating. If a bank's credit rating is below the threshold limit of rating expected by investors, those banks would be excluded from their investment choices. Hence, only a few high-performing banks will be able to attract the fraction of funds which reserve investors might choose to re-deposit in the local banking system. As a result, the system of maintaining bank deposits by reserve investors will not support the banking system in general to maintain the multiple credit-creating capacity. Hence, there is a threat to the overall profitability of banks which will lose their deposits to the Libra system.

The resultant deposit outflow from banks will create liquidity problems necessitating them to redesign their asset and liability management techniques. The quick sale of financial assets or borrowing from untapped sources to acquire liquidity will push the interest rates up causing an unintended disruption to the whole economic system. Central banks can alleviate it by issuing new fiat currencies. But that would bring only a temporary relief to the economic system. That is because in the long run, those newly created fiat currencies are expected to find their way back to the Libra system due to elevated prices, on one side, and loss of confidence in fiat money, on the other.

b. Beneficial disruption

Disruptions become beneficial to certain groups if they stand to gain out of them. For instance, the motorised trucks delivered a negative disruptive shock to traditional mode of transport based on horse driven carts. However, that disruption benefited petrochemical and rubber industries by creating a new demand for their respective outputs, an outcome that can be termed as a beneficial disruption. Similarly, the disruptive shock to be delivered by Facebook's Libra will be beneficial to banks, central banks and governments in high-performing economies.

Banks in this category of countries with high credit ratings will experience an inflow of deposits. Central banks will find a new demand for their fiat currencies exerting pressure for value

to increase. Governments will stand to receive more funds to securities markets. Hence, the mirror image of the experiences of these countries will be exactly the opposite of the experiences of the countries that were subject to the negative disruptive shocks. There will be high liquidity, reduction in interest rates and extra-stimulus to economic initiatives. To the extent that there is a negative output gap – a situation in which the actual Gross Domestic Product (GDP) is below the installed capacity of the economy – there will be acceleration in the economy.

Thus, the Facebook Libra is expected to redistribute the financial assets from low performing economies to high performing economies. It will threaten those economies if the output gap is positive or if the output has reached the long-term growth potential. A positive output gap implies that the economy is performing above the potential growth determined by the installed capacity. In this case, if new funds come to the market and interest rates fall, the economy tends to get overheated requiring governments to adopt contractionary economic policies. A possible solution is to recycle the gains through the existing market mechanism toward deficit countries. In the case of the first oil shock of 1973, oil exporting countries had amassed in 1974 a Petrodollar surplus of US\$ 55 billion; out of this, US\$ 40 billion or nearly three quarters of the surplus was recycled by the global financial markets²¹. During the Korean war related rubber boom of early 1950s, a similar strategy was adopted by Sri Lanka to prevent the high foreign exchange inflows from overheating the economy via increases in money supply. Adopting an unconventional monetary policy measure, the Central Bank permitted commercial banks to invest their foreign exchange working balances abroad²². If this strategy is adopted globally through financial and capital markets, the negative effects of the redistribution of world's financial assets in favour of high performing economies could be mitigated.

2. Disruption of Central Banks

The operational mechanism of Facebook's Libra involves taking the fiat currencies issued by national central banks out of the system in exchange of their own cryptotokens. This is a disruptive measure adversely affecting almost all operations of central banks²³. In this section, we will discuss these disruptions and the way out for central banks under the following sections.

²¹ For details, see: Emminger, Otmir, 1975, "International Financial Markets and the Recycling of Petrodollars", *The World Today*, Vol 31, No 3, p 95. (Also available: https://www.jstor.org/stable/40394842?seq=1#page_scan_tab_contents) (Accessed on 20.08.2019).

²² Wijewardena, W A, 1990, *Monetary Policy Instruments*, in 40th Anniversary Commemoration Volume of the Central Bank of Sri Lanka-1950-1990, Central Bank, Colombo, p 59.

²³ For the implications of Bitcoin on central banks, see: Mantzourou, Argyro N, 2015, *The Emerging and Future Role of Bitcoin and the Potential for a Regulatory Regime for the Outlaw Virtual Currency Schemes*, Dissertation submitted for MA in International Economic, Financial and Banking Law to Panteion University of Social and Political Sciences (Available at: https://www.academia.edu/33856081/The_emerging_and_future_role_of_Bitcoin_and_the_potential_of_a_regulatory_regime_for_the_outlaw_virtual_currency_schemes) (Accessed on 20.08.2019).

a. Impact on price stability objectives of central banks

Central banks, whether they target a particular level of inflation directly or reach that target through an intermediate goal like money supply or monetary base, will have to control the nominal aggregate demand in the economy to be compatible with the aggregate supply. This process is known as demand management. The level of nominal aggregate demand is determined by the level of money stock in the hands of the people available for spending. So far, that stock of money is the money issued by a central bank, called monetary base multiplied into a higher level of liquidity through a process called multiple credit creation by commercial banks. Since it is designated by the fiat money issued by the central bank and comes under its control via monetary policy, there was no difficulty for the central bank to manage the aggregate demand. But with Facebook's Libra, this is going to be changed.

Libra will take the money created by the banking system out of circulation and keep it in the form of a reserve outside the system. That reserve will not create aggregate demand but is kept as a liquidity reserve in banks and invested in government paper, most probably in papers issued by governments with high credit rating for safety. But the cryptotokens issued by Libra Association in exchange for the fiat money surrendered will be used for payments thereby generating a separate aggregate demand not subject to control by the central bank. Thus, there will be two types of inflation, one relating to Libra inflation and the other relating to national currency inflation. Since Libra is to be a stable currency, its inflation rate should naturally be lower than the national currency inflation. This will be a good reason for the public to shed national currencies in favour of Libra.

b. Impact on financial system stability

Libra will cause a drain of deposits from banks. That is due to depositors' withdrawing money from banks to acquire the new cryptotokens. It can be considered as an external shock delivered to the financial system with long term effects. The ensuing liquidity problems are expected to cause stress in banks and other financial institutions disrupting measures taken by central banks to ensure financial system stability. It will not only make the system unstable but also nullify both the microprudential and macro prudential measures employed by central banks.

Libra payment system is not subject to control by central banks. Hence, a country's financial system will have two parallel operations. One is the system which is under central bank's control and the other is the system which is outside its control. Any disturbance in the uncontrolled system will have implications for the controlled system as well. For instance, if the public loses confidence in Libra and desires to convert their cryptotokens to national currencies, the Libra Association will face difficulties in meeting the demand if the reserve is kept in a different currency form. A mass conversion of those reserves into the national currency concerned will be tantamount to receiving a large foreign exchange flow to the country. The ensuing excess foreign currency holdings will force banks to make a series of costly readjustments.

c. Impact on the payment system

Libra payment system with its improved features will be a threat as well as a competitor to the traditional payment systems that monopolise the world today. Improved features are that it is virtually cost less, instantaneous, reliable, safe, and above all, unhackable due to the distributed blockchain technology that it uses. Hence, payment systems operated by FinTech – financial institutions using technology to effect payments – or TechFin – technology companies operating payment systems – cannot effectively compete with Libra. Central banks have been working with these entities to offer local as well as global payment services to the public. They have relied on them to introduce marginal improvements to the existing systems assuming that it would resolve all the existing pressing issues relating to payments²⁴. One such issue is the exclusivity of such payment systems due to high costs and non-availability of the services to those who are in the bottom of the pyramid. Libra promises to serve mainly this group. Thus, Libra is to throw a formidable challenge to traditional payment-service providers.

But Libra will also face problems which will be the concerns of central banks as regulators of payment systems. A payment system, to provide its services smoothly, should have certain basic features: a liquidity support when it has no immediate recourse to funds in the event of the demand on its services exceeding the availability of currencies so demanded; a mechanism to resolve disputes when payments are made to wrong parties or if payments are not made at all. Liquidity is not an issue when payments made in Libra are also received in Libra. But, if the recipient of the payments needs to have it converted to another currency, unless Libra possesses a stock of that currency in the payment receiving country, liquidity issue will block the smooth payments flow. In the case of banks regulated by central banks, this will not be an issue since the central banks stand to provide liquidity by way of temporary loans as the liquidity provider of last resort. Even in the case of an informal payment service provider like Hawala, the local agents called Hawaladars have to maintain adequate cash reserves to meet the payment needs²⁵. If a Hawaladar defaults, he is excommunicated which is equivalent to passing ‘economic death sentence’ on him²⁶. Such harsh punishments are not available for Libra validator nodes. Hence, if a payment fails, the country’s central bank will be at the receiving end being a target for criticism by everybody.

d. Impact on seigniorage

Governments earn an unusual high profit by issuing paper-based fiat currencies through central banks. This profit, being the difference between the face value of a currency note and the production cost of that currency note, is called ‘seigniorage’²⁷. Since the paper currency

²⁴ Sri Lanka has introduced a less costly digital payment platform, named Lanka Pay, through its cheque clearing arm, LankaClear. LankaPay consists of 11 different payment modes. For details, see: <https://www.lankaclear.com/products-and-services/#> (Accessed on 25.08.2019).

²⁵ Buencamino, Leonides & Gorbunov, Sergei, 2002, Informal Money Transfer Systems, DESA Discussion Paper No 26, UN, p 2.

²⁶ Ibid, p 6.

²⁷ <https://www.investopedia.com/terms/s/seigniorage.asp> (Accessed on 25.08.2019).

notes are not that expensive to produce and the related face values are high, there is a high level of seigniorage earned by the currency issuers. Societies do not make objections to these high profits earned by governments because fiat currencies are issued by them as a public good and those profits are eventually redistributed through government expenditure programmes. But, this will not be the case if seigniorage is accumulated by a private party.

Libra Association also stands to amass a sizeable seigniorage on the cryptotokens it is planning to issue to its customers. In this case, the modus operandi is as follows. The public will surrender their fiat currencies to validator nodes to buy Libra. Since it is a digital signal in a computer system, the production cost of Libra is negligible. But, the fiat currencies so transferred to Libra Association will remain a reserve with it providing value at the face value of the currencies concerned. Since the production cost of Libra is negligible, the Association gains a high seigniorage out of the transaction. This is earned by a private party. In the initial years of the operation of the Libra system, the return on seigniorage is used to cover the cost of the Libra operation. But, later, when its return is higher than the operational costs, the excess will be distributed among the founding members in accordance with the stake they hold in the system.

This seigniorage is created by the Libra Association out of thin air. It is similar to a commercial bank which gets deposits from the public, records them on both the asset and liability sides by using double entry bookkeeping and use the asset sides to earn an income by lending the same. Since these banks are subject to control by central banks, any excess creation of credit through this process is subject to public control. But the Libra Association functions outside the regulatory mechanism and it is being subject to self-control and not public control. The self-controls are based on governance principles followed by organisations. If the governance principles break down, so does the entity. As long as the systems work perfectly, societies do not mind it. However, in the event of a system failure, the underlying social losses will force governments to go for public bailouts implying a case of 'privatising profits and socialising losses'. Modern societies do not approve of such resolution measures at the expense of taxpayers.

Thus, Libra system is not neutral on central banking operations. It creates many problems for their main operations. Hence, it is worthwhile that central banks should get involved in the creation of the system from a very early stage and bring it under its supervisory arm to assure its safe sailing in the financial high seas.

PART III

CONCLUSIONS

The Libra system proposed to be introduced by Facebook, the social media giant, together with several high ranking business firms, aims at providing affordable financial services, mainly, the payment services, to a large number of global citizens who are not at present served by traditional banking and financial institutions. Thus, its aim, namely, the financial inclusiveness, is laudable. Though it says that it is an improved cryptocurrency, it is in fact, a cryptotoken issued on the strength of a fiat currency already issued by a national central bank. The creation of Libra takes place when the Libra Association, the governing body of the system, receives an equivalent amount in fiat currencies to its reserves. Since it is fully backed by reserves, it is similar to a currency board which can issue currencies only if it had acquired the necessary foreign currencies to its reserve base. In the case of a currency board, the acquisition of reserves in foreign currency form depends on the country having a favourable balance of payments situation. Since it is the real economic factors that determine the status of the balance of payments and it is not easy to control such real economic factors to one's advantage, there is an effective limitation on the creation of fiat currencies by a currency board.

This is not the situation relating to Libra. Fiat currencies have already been issued by national governments in large volumes and they are available for being tapped by the Libra Association. It is similar to a situation where game animals are aplenty and a hunter equipped with modern weapons is going on a hunting spree. Hence, with the new technology available and the superb marketing techniques which the Libra Association can use, the attraction of fiat currencies for exchanging for cryptotokens is not a difficult job at all. With an active worldwide clientele of 2.4 billion²⁸ at present, it is not a difficult task for Facebook to reach out to many customers and hook them to the new Libra system. This will lead to the creation of a parallel financial system globally outside the regulatory controls of national governments. It is therefore, necessary for central banks to take note of these developments and introduce the needed safety measures in advance.

²⁸ <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/> (Accessed on 25.08.2019).

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