IFC Conference on external statistics "Bridging measurement challenges and analytical needs of external statistics: evolution or revolution?", co-organised with the Bank of Portugal (BoP) and the European Central Bank (ECB)

17-18 February 2020, Lisbon, Portugal

The weight of a Libra: are stablecoins a new challenge for external statistics compilers?[1]

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[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, IFC, BoP, ECB or the central banks and other institutions represented at the meeting.

The weight of a "Libra": are stablecoins a new challenge for external statistics compilers?

Alessandro Croce, Marco Langiulli and Giuseppina Marocchi[1]

Abstract

In June 2019, Facebook released a White paper, providing details about a new digital asset called Libra, to be launched in the first half of 2020. Libra is conceived as a low volatility digital coin (*stablecoin*), fully backed by a reserve of liquid assets and managed by an independent organization. Other Big-Tech companies could follow suit with similar initiatives, eventually reshaping the financial sector: given their (alleged) capacity to preserve value over time and the reputation of their proponents, these coins could rise as global payment instruments as well as novel reserves of value. Regardless of any technical details and contingent regulatory requirements, the purpose of this paper is to evaluate and highlight the impacts of such instruments on external statistics compilation. After a brief digression on digital assets' features and classification, the potential effects on a few Balance of Payments' items are discussed: workers' remittances, digital trading and financial account.

Keywords: crypto-assets, stablecoins, Libra, balance of payments, remittances, payment services.

Contents

1 Introduction

In June 2019, Facebook released a *White paper*[2], describing the main features of a new digital currency named *Libra*. According to promoters, this new instrument for international payments and transactions should hit the market during the first half of 2020.

In the days following the announcement, financial institutions, politicians and regulatory agencies began raising concerns on issues such as: privacy, money laundering, consumer protection and financial stability.

> *Facebook is already too big and too powerful, and it has used that power to exploit users' data without protecting their privacy. We cannot allow Facebook to run a risky new cryptocurrency out of a Swiss bank account without oversight.*
>
> *Sherrod Brown, American Senate Banking Committee*

Even though details are still unavailable at current time, regulators have been analyzing the project to cope with any possible risk and opportunity related to the innovation[3]. For instance, Bank of Italy's working group on financial innovation set up a task force to evaluate implications on some of its institutional functions (payments system, supervisory activities, financial stability and monetary policy). Hence, as compilers of the Italian Balance of Payments and International Investment Position, we would like to follow the work done by our colleagues and focus on the effects for data collection and production of external statistics.

Libra has been conceived as a "stablecoin", a digital coin that will be backed by a basket of fiat currencies. While media have concentrated on Facebook's project, other collateralized coins with similar features could reach scale in the near future. For an accurate investigation on stablecoins' present stage of development, see G7 Working Group on Stablecoins (2019).

The paper is divided into 4 sections; after this introduction, section 2 provides a brief overview on digital assets (with a focus on the novelty of stablecoins). Section 3, which is the bulk of the paper, discusses about the treatment of digital assets in external statistics and the ways to record them in the Balance of Payments. Concluding remarks are included in section 4.

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[2]   https://libra.org/en-US/wp-content/uploads/sites/23/2019/06/LibraWhitePaper_en_US.pdf

[3]   For a comprehensive view, see G7 Working Group on Stablecoins (2019): *Investigating the impact of global stablecoins*.

2   New digital forms of money

Digitalization is transforming money and payments systems; innovative forms of "currencies" wax and wane at an unprecedented speed, so that it is impossible to make sense of any innovation without a solid conceptual framework.

Waiting for Libra (or related coins), digital money has already surfaced in a variety of contexts. *WeChat* and *Alipay* dominate the payments system in China while in Africa mobile providers such as M-Pesa have successfully launched money transfer services. Finally, thousands of digital currencies already exist, enabled by the use of cryptography and Distributed Ledger Technology (Brunnermeier et al., 2019). What do these means of payments have in common? Not much, except the fact that they are digital assets, usable as private means of payments (money) with no backstop from Government or public authorities.

Stemming from Adrian and Griffoli (2019), we propose a simplified taxonomy for these digital assets, based on three attributes: *Underlying technology*, *Issuer characteristics* and *Redemption value*. The classification of Figure 1 is neither innovative nor comprehensive, but introduces a basic framework and a reference vocabulary for the rest of the paper.

Digital Money Tree   Figure 1
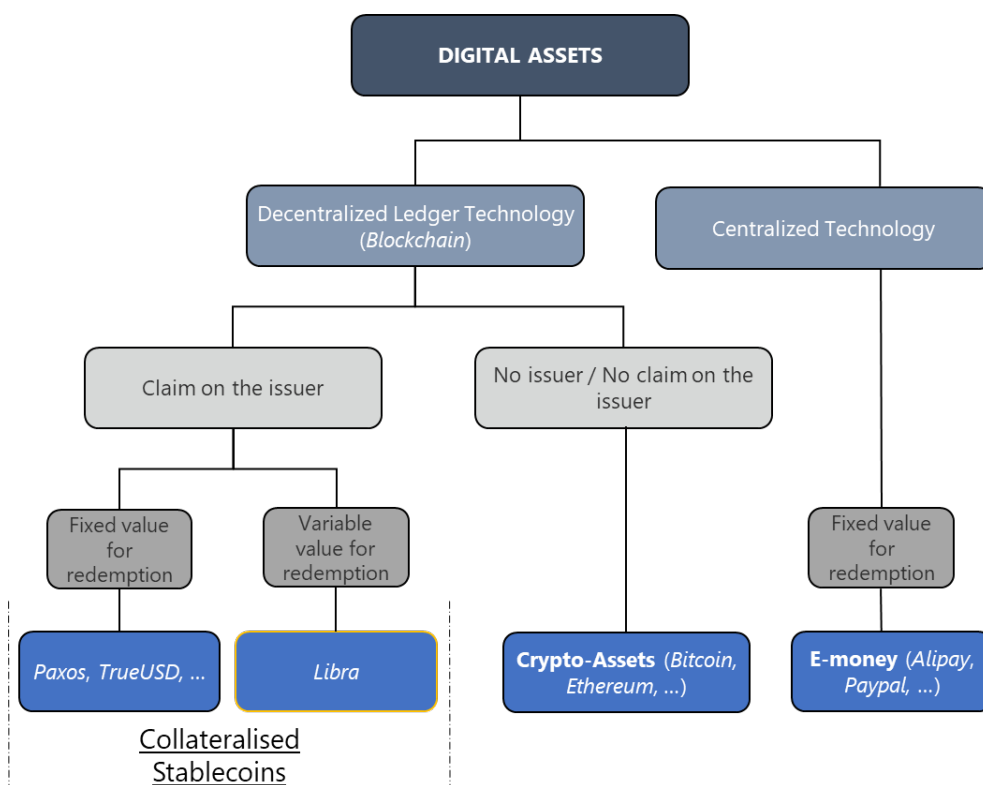
The first attribute is technology: transactions using centralized technology go through a central proprietary server, while decentralized ones are settled among several nodes. We will focus only on the latter type, as e-money centralized

transactions are no big deal for statistics compilers, as they use existing payment infrastructures - such as debit or credit cards.

The second attribute pertains to the issuer: digital assets having no issuer or representing no claim on the issuer are called crypto-assets, in line with the definition provided by ECB (2019)[4].

The last attribute is about value: when there is a private entity committed to redeem the digital asset, redemption can occur at either a fixed price or a variable price; in the first case, any possible risk is on the issuer, while in the second case there is no such backstop.

2.1   Crypto-assets

In principle, any asset recorded in digital form and enabled by the use of cryptography and Distributed Ledger Technology (DLT) could be deemed a crypto-asset. However, these instruments are at their initial stage of development and undergoing fast changes: even definitions are somewhat inconsistent across time and organizations. As previously said, the ECB points out that the use of DLT technology is a necessary but not sufficient element to characterize this asset class: the distinctive feature of crypto-assets is the lack of an underlying claim/matching liability.

Crypto-assets derive their high volatility from the absence of an underlying fundamental value, which hinders their capacity of performing the three functions of money: acting as a store of value, a means of payment and a unit of account. Today, these assets are actually held as investments by people who expect their value to rise, the most notorious example being Bitcoin and Ethereum.

2.2   Stablecoins

Inspired by Libra's vicissitude, we conceived this paper to focus on so-called stablecoins, i.e. digital assets whose design should reduce price-volatility, favoring their adoption as means of payments. Terms used hereinafter follow those used by Facebook to describe Libra's ecosystem and the entities involved.[5]

Stablecoins achieve price stability through different mechanisms: some of them are collateralized to a reserve of liquid assets (either traditional financial instruments or crypto-assets) while others implement an algorithm that adjusts their supply to maintain price stability. We will focus on the first class, as algorithmic stablecoins are more a theoretical possibility than a reality at the time of writing.[6]

Launched in 1996, *E-gold* can be considered the first example of a stablecoin: before the service was suspended in 2009 due to legal issues, E-gold holdings could be converted into physical gold. *Tether* (USDT), born in 2015, is the greatest stablecoin in terms of market capitalization and was originally designed to maintain a 1-to-1 ratio with the US dollar in terms of value; nevertheless, *Tether Ltd.* states that owners

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[4]   We prefer using the word crypto-assets instead of crypto-currencies, because these instruments do not have the typical features of a currency.

[5]   Annex A offers a short overview of Libra's project.

[6]   Moreover, most algorithmic stablecoins could be considered crypto-assets, as they do not represent a claim on the issuer (if any).

of Tethers have no contractual right, other legal claims, or guarantee that Tethers will be redeemed or exchanged for dollars. Other popular stablecoin initiatives include *TrueUSD*, which is similar to Tether but does offer legal protection to token holders, and *Dai*, which is backed by a portfolio of crypto-assets.

In most cases, an independent entity purchases and sells assets as a collateral for the coins issued. The amount of assets moves according to the circulating supply of the stablecoin, which in turn reflects users' conversion demands.

As previously mentioned, stablecoins can have different characteristics in terms of backing reserve and redemption value.

- Reserve assets can fully back the amount of the outstanding coins or they can be just a fraction of the liabilities issued.

- Stablecoins may be backed by any kind of assets (deposits in fiat currencies, metals, crypto-assets and so on). Of course, the more liquid the reserve is the more "stable" is the value of the issuance, even though holding short-term deposits can be extremely costly.

- Coins can be redeemed at a fixed (pre-determined) or at a variable conversion price, dependent on reserve's market fluctuations. In the second instance, stablecoins have the typical features of investment fund shares (for this reason, Adrian and Griffoli (2019) call these instruments *i-money* instead of e-money).

A precise scrutiny on stability and convertibility issues can be found in Ferrari and Ferrero (2019). According to the authors, there is a trade-off between the stability of coins' value and the stability of the system as a whole: if coins can be redeemed at a fixed conversion price, the issuer internalises any possible loss, which eventually could lead to its default; on the contrary, if no-par convertibility is guaranteed, coins' value may vary over time depending on the composition of the reserve.

2.3   Global Stablecoins

The impact of stablecoins on the financial system has been negligible so far, as the most popular assets are linked to a single currency and have failed to become widespread means of payment. For this reason, many "Big-Tech" companies are preparing to issue "second-generation" assets, defined in literature as *Global Stablecoins* (GSC), having the following features:

- They will be accessible to everyone, in several jurisdictions;

- They will run on standalone independent payment systems.[7]

- In most cases, they will be "collateralized stablecoins", backed by a portfolio of very liquid assets, much like an exchange-traded fund (ETF).

On the one hand, Big-tech companies can draw on huge amounts of data and count on billions of users, to be involved in profit-generating activities. On the other hand, payment services provide Big-tech companies with the opportunity to enhance their relevance in people's lives and generate valuable data on the transactions between users (Bilotta and Botti, 2019). This unique combination represents a crucial advantage for them to leverage on.

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[7]   Unlike platforms like Apple Pay, Alipay, PayPal etc., which use existing payment infrastructures.

As stated above, Facebook has recently taken the first step along these lines by presenting its own stablecoin, called Libra. Yet, most of the thoughts and reflections in this paper are not limited to this initiative but applies to similar (global) stablecoins that will eventually reach scale in the near future. At the time of writing, examples include Walmart's *Units*, Telegram's *Gram*, as well as an alleged move by Amazon, which bought up a number of crypto-assets related domain names.

Global stablecoins could gradually emerge as an alternative to fiat money, having the potential to foster the development of faster, cheaper and more inclusive payment arrangements (G7 WG on Stablecoins, 2019). Moreover, these coins can benefit from the reputation of their proponents and the network effects created by their huge customer base.

Indeed, regardless of any contingent impediments and slowdowns, digitalization of money seems able to address most of the limitations of existing financial systems, reshape their traditional structures and redefine the roles of banks and central banks. For that reason, statistics compilers should anticipate the most predictable issues, in order to cope with this advent as smoothly as possible.

3 Impact on External statistics

Treatment of digital assets is still neglected in the statistical framework of Balance of Payments and International Investment Position.

A first reason for this is their limited value in relative terms: according to ECB (2019), total market capitalization of crypto-assets was 96 billion euros in January 2019,[8] around 1% of euro area GDP. When compared to traditional monetary aggregates, the capitalization of crypto-assets is 1.2% of euro area M1 and 0.8% of M3. In addition, these assets are so volatile that this amount was less than one sixth of the market capitalization reached just one year before, in January 2018.

A second issue is that these assets enable electronic payments without relying on third parties such as banks or clearinghouses; so national authorities in charge for compilation of statistics have no reliable data sources.

If digital assets become widely used as payment instruments or store of value, this shall have both direct and indirect impacts on external statistics. However, compilers will struggle to find a suitable item to include these assets in, using current definitions.

3.1 Digital assets in the context of macro-statistics

Even though digital assets do not (currently) serve the basic functions of money, they have a monetary value and a price on the market where they are traded. Ipso facto, these instruments are to be considered economic assets but, depending on their specific features, they might fit better in the category of **non-financial assets** or **financial assets.**

In line with the guidelines issued by the IMF (2018), crypto-assets like Bitcoin should be considered **produced non-financial assets**, because they are the outputs of a production process and they do not represent a liability for any institutional unit.[9] In particular, these assets are to be included in the sub-category of *valuables*, much like precious metals and stones (in fact, they come into existence through a process called "mining").[10]

In the Balance of Payments (BoP), transactions in valuables are recorded indistinctly under *general merchandise:* in this regard, a separate identification of transactions in crypto-assets might be useful in order to help monitor trends and isolate impacts on the current account (Figure 2).

On the contrary, stablecoins should be considered *financial assets* to the extent that they represent a claim on the issuer and the issuer recognise a liability vis-à-vis the holders. Insofar they are backed by fiat currencies and reserve assets, these coins could be considered very similar to investment fund shares / units and could be recorded accordingly in the Balance of Payments. Under this treatment, any

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[8]   According to the definition used in the paper, stablecoins having an identified issuer are not included among crypto-assets.

[9]   Non-financial assets can be non-produced as well: examples include land and natural resources in general.

[10]   See also 2008 SNA, Chapter 11 and OECD (2018), to draw a parallel with National Accounts.

transactions in GSCs would have a direct impact on the financial account as well as an indirect impact on the current account.

Digital assets impacts on BoP accounts and IIP   Figure 2
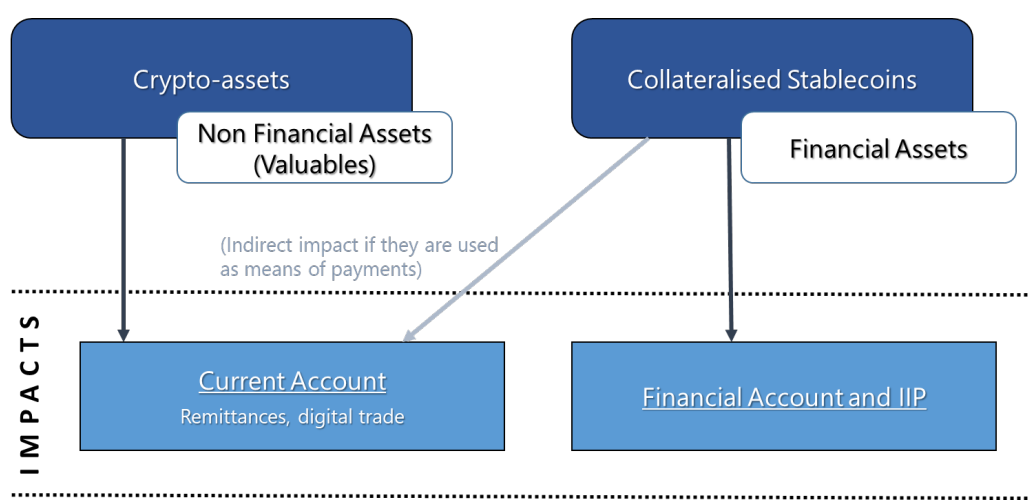
With no claim to completeness, in the next paragraphs we will focus on selected items and situations.

3.2   Remittances

Workers' remittances are payments made by migrants employed in new economies to non-resident households and are included in the item called *Personal transfers*.

In latest years, the growth of international mobility has led to a significant increase in value of the flows of remittances registered worldwide.[11] Nonetheless, these retail payments remain slow, expensive and opaque as operators charge significant transfers fees. Besides, there are 1.7 billion people globally who are unbanked or underserved with respect to financial services, even though 1.1 billion of them have a mobile phone (G7 Working Group on Stablecoins, 2019). Digital assets are able to address most of these shortcomings, as they can be quickly transferred peer-to-peer and converted in any currency; it is no surprise then that Big-tech and Fin-tech companies are turning their attention on these assets as they try to make their way into financial markets.

In the Italian Balance of Payments, both inward and outward remittances are estimated using supervisory reports transmitted by official intermediaries (Money Transfer Operators and banks) on a quarterly basis. While incoming flows are almost negligible, outward ones represent the largest type of transfer, accounting for more than 6 billion euros in 2019 (see Table 1).

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[11]   According to the World Bank, global remittances are worth little less than 700 billion dollars a year. Even considering the fact that the definition of remittances used by the institution is broader-including both personal transfers and compensation of employees – this figure is still impressive. For many developing countries, the amount of inbound remittances exceeds the value of foreign direct investments.

Outward remittances by country of destination

Year 2019, EUR Million	Table 1
	Value
BANGLADESH	856.07
ROMANIA	613.60
PHILIPPINES	414.93
PAKISTAN	411.86
SENEGAL	376.10
MAROCCO	328.19
INDIA	312.80
SRI LANKA	278.34
PERU	218.88
GEORGIA	196.21
UKRAINE	173.77
ECUADOR	147.32
ALBANIA	137.14
DOMINICAN REPUBLIC	114.92
NIGERIA	108.27
MOLDOVA	107.78
OTHER COUNTRIES	1282.66
TOTAL	**6078.86**

Sources: Bank of Italy

This should be regarded as a lower bound for the actual amount of remittances, as migrants could prefer using cheaper informal channels under certain circumstances (e.g. direct delivery of money when returning home).[12]

The World Bank calculates and tracks the costs for sending remittances worldwide; we analysed its database to find out that in 2018 the average global fee for sending 500 dollars from Italy amounted to about 4.4% and was even higher for payments of 200 dollars (around 6%).[13] Global average has been declining over the years and has settled around 5% (see Figure 3), also thanks to a project promoted by G8/G20 in 2009.[14] In any case, payments are not usually processed in real time: in 40% of the instances, remittances were not available to the receiver until the next day.

[12] In one of the few empirical works attempting to estimate the size of informal flows, Magnani et al. (2016) estimate informal outflows from Italy at between 10 and 30%.

[13] These figures include any fees charged on both the sender and the receiver; on average, the exchange rate margin applied by service providers was calculated between 1.5% and 2%.

[14] The project, called *5x5 Objective*, was aimed at reducing remittances' average costs by 5 percentage points in 5 years (De Bonis and Vangelisti, 2019).

Average % cost of remitting 500 USD from
selected G20 countries

Figure 3
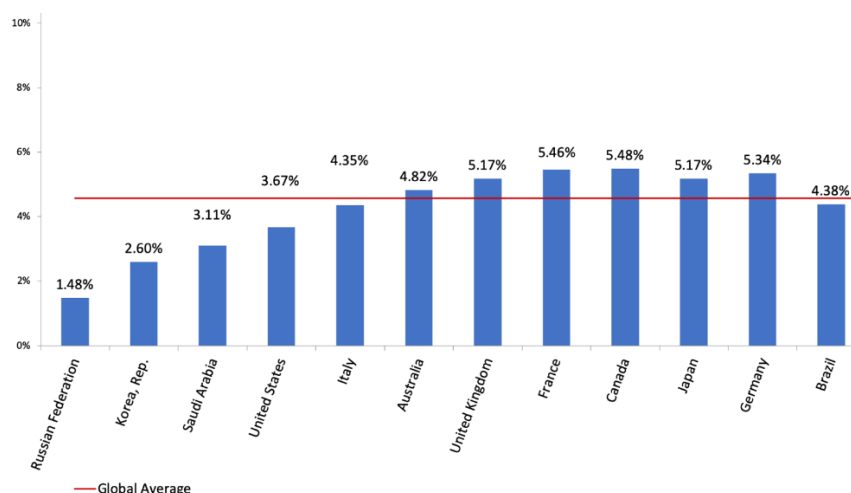
Source: The World Bank (2019).

Should the fees charged by authorized resellers be low, Global Stablecoins could be an appealing alternative to existing operators, while crowding out informal channels as well. Intuitively, amounts remitted through the informal channel are lower when travel costs are higher, the risks entailed in informal intermediation are more significant, fees and exchange rate mark-up are lower (Ferriani and Oddo, 2019).

Considering that most recipient countries can count on a medium-to-high digital inclusion and that recourse to the informal channel is expensive or inconvenient for all main destinations (but Romania and Ukraine), it is not far-fetched to assume a significant shift between money transfer operations and digital-assets payment solutions in the near future. If the "substitution rate" were in the range of 15-20%, we would miss almost 1 billion euros a year of transactions that we are not able to track at present times.

Box 1

Money Laundering

Remittances can be difficult to track and potentially sensitive to money laundering and terrorism financing concerns. Though no serious risk should be associated with migrants sending money to their families, misuse of the financial system remains a serious issue.

Controls on Money Transfers operations are usually carried out by national Financial Intelligence Units (FIUs), together with central banks and / or law enforcement authorities. Coordinated efforts to uncover illicit conducts has increased the cost of sending remittances and has set constraints on users. For instance, in Italy these operations are individually recorded while cash payments cannot exceed 1,000 euros.

On the contrary, transactions in digital assets are still unregulated and must not comply with any Anti-Money Laundering regulations. This circumstance, which is not expected to change in the short term, could divert more and more remitters from regulated markets, even though their

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income was not generated by irregular activities. Indeed privacy and confidentiality concerns could play a role in such circumstances.

Service providers might be required to conduct due-diligence checks on their users, which could prove extremely problematic due to the anonymity or pseudo-anonymity enjoyed by their users.① These concerns also arise in relation to tax compliance.

① According to a statement sent by the Libra Association to *CoinDesk*, for instance, "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".

Practical considerations

Data collection for this item is already quite challenging, as in some corridors a sizable amount of remittances is sent through informal channels. Future cooperation from the entities involved in the GSC system (*wallet providers* and *authorized resellers*, in the case of Libra) will be more important than ever in order to correctly assess the phenomenon. Alternatively, we might rely on supervisory reports – as it happens today for official operators – in case these new entities will be asked to comply with supervisory requirements.

3.3   Trade in goods and services

In the Italian Balance of Payments import and export of goods are estimated by the national statistical institute (ISTAT) using data on border passage coming from national customs. As means of payments are not relevant in this regard, there should be no impact on Balance of Payments if goods are paid using digital assets instead of national currencies.

International trade in services is more complex to assess because there are no physical cross-border passages involved. Transactions between companies (B2B) should be covered by the direct reporting system in place whilst transactions involving private customers (B2C) are estimated thanks to the information reported to the MOSS system (Mini One Stop Shop). This system was implemented within the European Union to redistribute the VAT paid by non-taxable persons to enterprises providing some types of digital services[15], registered in one member State.

In this regard, as long as the selling company is registered to MOSS, its transactions can be retrieved by its fiscal records and means of payment are not relevant either. Of course, if the company is not registered to MOSS and/or is resident outside the European Union, no data on transactions are available at present.

Practical considerations

Current account of the BoP could be indirectly influenced by Global Stablecoins, which are likely to stimulate global trade in both goods and services. In particular, as a side effect, such instruments could foster extra-EU digital trade as long as payments with digital assets will prove cheaper and smoother than traditional foreign-currency operations. In this case, compilers will need supplementary sources of information, as in the case of remittances.

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[15]   I.e. telecommunication, broadcasting and electronic services.

3.4 Financial account

Besides the indirect effects on the current account, the rise of Global Stablecoins would have a substantial effect on the financial account, in particular on the functional categories of Portfolio Investment and Other Investment.

Portfolio investment is defined in BPM6[16] as cross-border transactions and positions involving debt or equity securities, other than those included in direct investment or reserve assets.

Other investment is a residual category including, among other things, currency – which consists of notes and coins of fixed nominal values **issued or authorized by central banks or governments** - and deposits. Even though no private digital assets can be classified as a currency itself, the basket of instruments underpinning Global Stablecoins will arguably include currencies.

As already stated, stablecoins may be fully or partially backed by any kind of assets, from commodities to digital assets. However, for a global stablecoin to be used with trust by the public as a substitute of legal money, chances are that issuers will maintain 100% guaranteed reserves invested in a basket consisting of the most important currencies, at least at the initial stage.[17]

To evaluate the possible repercussions on the Financial Account, let us assume the following:

- The representative fund holding the assets purchased as collateral (*Reserve*, using Facebook's nomenclature) is headquartered in country A (e.g. Switzerland); for the sake of simplicity, collateral includes only bank deposits and/or short-term government securities in euros and US dollars (in fixed and equal quantities).

- The representative holder (Holder 1) of the GSC and his bank are resident in country B (Italy).

- Reserve holds accounts with a geographically distributed network of depositary banks/custodians, which includes intermediaries from Country B.

- Holders of GSCs do not receive any remuneration.

- The Issuer (*Libra Association*, using Facebook's nomenclature) defines the investment strategy and commits to convert coins in fiat money, but the actual amount at redemption will vary according to the EUR / USD exchange rate.

Case 1: Reserve basket consisting of deposits

In the simplest possible case, Reserve deposits all the funds it receives from Holder 1 in one or more accounts with Italian and non-Italian banks. Looking at the global banking system as a whole, account deposits would just change hands, with a liability vis-à-vis *Households* in Italy becoming a liability vis-à-vis *Other financial corporations* in Switzerland - assuming Reserve will be considered similar to an investment fund. Nevertheless, while the initial set-up is not relevant for external statistics, the purchase produces cross-border transactions and moves the financial account.

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[16] IMF (2009): Balance of Payments and International Investment Position Manual, sixth edition.

[17] As a matter of fact, in a letter responding to a question from a German legislator, Facebook said the dollar would make up 50% of its basket, followed by the euro with 18%, the yen with 14%, the British pound with 11% and the Singapore dollar with 7%.

In general, if the pool of depositary banks is less geographically diversified than the pool of GSC users, there are some redistributive effects as deposits will concentrate in some countries. However, with regard to developed economies, it is likely that stablecoins will not substitute the current payment system (which revolves around banks) but will integrate it. This means that users are not expected to hold reserves of these assets but would rather purchase stablecoins right before a disbursement and would recollect fiat money right after a receipt.[18]

Case 2: Reserve basket consisting of deposits and securities

In this (more realistic) instance, Reserve invests part of the funds it received from Holder 1 in Short-Term government bonds, basically acting like a monetary fund. In addition to the effects sketched out in the previous section, compilers would record potential purchases and sales of domestic securities under *Portfolio Investment*. The complexity of registrations depends crucially on the investment strategy defined (up-front) by the Association: a portion of the deposits drained from the banking system may revert to domestic bank deposits and short-term government securities, provided that these assets can be part of the reserve.

As an example, let us illustrate the strategy summarized in Figure 4, where the Association issues GSCs for a total amount of 250 euros (of which 130 purchased by Italian residents), recording it on the liability side of its balance sheet. On the asset side, the funds received are partly held in deposits (100, of which 40 with Italian banks), while the remaining part is invested in securities (150, of which 30 in short term debt securities issued by Italian Government).

Accounting records from the GSC issuer's
balance sheet   Figure 4

GSC ISSUER			
Assets		**Liabilities**	
Bank deposits	**100**	**Coins**	**250**
vis-a-vis IT	*40*	*vis-a-vis IT*	*130*
vis-a-vis CH	60	vis-a-vis CH	120
Portfolio investments	**150**		
IT debt securities	*30*		
CH debt securities	20		
US debt securities	100		

From the Italian perspective, these transactions reflect in the BoP in the way described in Figure 5. In detail: the purchase of 130 euros of GSCs generates an increase of assets vis-à-vis Switzerland, in a specific item named GSC. The purchase of Italian securities (30 euros) made by Reserve gives rise to an increase of liabilities in the item *Portfolio investment – debt securities*. The increase in MFIs deposits

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[18]   On the contrary, if users hold GSCs in deposit-like accounts, retail deposits at banks may decline permanently, increasing bank dependence on more costly and volatile sources of funding (G7 WG on Stablecoins, 2019).

liabilities item (100 euros) is due to: the "new" 40-euros account opened by the Association (for Reserve); the settlement of the GSCs purchased by Italian resident (90 = 130 – 40 deposited in the account); the settlement of the securities issued by the Italian Government and purchased by the Swiss entity (-30).

Simplified BoP/IIP recordings of GSCs from an
Italian perspective

Figure 5

ITALY – COUNTRY B				
	Transactions		**Closing position**	
	Assets	Liabilities	Assets	Liabilities
Financial account	**130**	**130**	**132**	**131**
Portfolio investment		**30**		**31**
Other investment - Deposits MFIs		**100**		**100**
Deposits vis-a-visa Other fin. Corp.		40		
Securities settlement		-30		
GSC settlement		90		
GSC	**130**		**132**	
Net E&O / Net IIP	**0**		**1**	

Transactions involving MFIs deposits are considered by convention as increase/decrease in liabilities; they might have been considered as decrease/increase in assets, with the same final results.

In both cases, the IIP at the end of the period reflects the transactions occurred: the net IIP should not significantly change because any transaction is balanced by a financial settlement. However, the position can vary as a result of valuation changes: securities' prices and GSC's price and exchange rate fluctuations, since we supposed that coins are not guaranteed to maintain a fixed value. In our example, Italian debt securities revaluated by 3% while GSCs revaluated by 1.5% (see "Closing Position" columns in Figure 5).

Practical considerations

In theory, BoP/IIP correct recordings are possible, provided that comprehensive data is available for each period, referring to all the phenomena.

In practice, the task of external statistics' compilers will be subject to:

1. the regulatory requirements that are going to be introduced and

2. the technical features of the blockchain.

The first point mainly concerns compilers of the economy where Reserve will be headquartered: they should be placed in a position to obtain data on its investments by means of supervisory reportings, as in the case of financial institutions, and/or other disclosure statements.

The second point concerns compilers of other economies, too. The *sine qua non* condition for a proper assessment of GSCs holdings is that e-wallet providers reveal some information on users (their residency in aggregate form, at the very least), in breach of the pseudo-anonymity associated to digital assets using DLT. However, it is not yet definite if these data will be technically available and to what extent public agencies will be allowed to access the blockchain to analyse transactions (Bilotta and Botti, 2019).

As an alternative, compilers must settle for best-effort estimates, based on different sources such as household surveys, direct reporting from enterprises, administrative sources and tax records. Starting this year, for instance, Italian taxpayers are asked to declare the overall amount of "virtual currencies"[19] they own within the tax statement used to disclose foreign assets. Anyway, it is clear that these solutions would be particularly prone to under-reporting and misreporting, if no controls can be enforced by authorities.

However, a good starting point would be a widespread agreement on the main definitions, giving unambiguous answers to at least these questions: in which BoP item should GSCs be classified? Which is the sector of GSCs issuer? In which country is the issuer considered to be resident? Where should compilers collect data on GSCs prices/exchange rates?

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[19] "Valute virtuali" in the original form, with no further partition.

4 Concluding remarks

The paper focuses on the digital assets phenomenon with a twofold purpose: providing a general overview of such instruments in the context of external statistics and highlighting the expected effects of global stablecoins' success on BoP/IIP items.

Digital assets transactions and positions are not comprehensively captured within the current BOP / IIP framework. Even though some guidelines for classification exist, very few compilers include them in their statistical production. The main reason for this hiatus is related to their limited diffusion: even so called stablecoins are still tailored to niche audiences and are not used as a substitute of money for everyday operations.[20]

Circumstances are likely to change in case some initiatives of this kind are launched by Big-Tech companies, thanks to their ubiquitous presence and impressive customer base. On occasion, digital assets conceived by these players are called Global Stablecoins, to stress their ambitions to become widespread systems of financial intermediation. Facebook's Libra was the first such initiative to be revealed to the general public last year, being immediately caught in a crossfire by regulators, authorities, politicians and pundits. Perhaps the pilot project was "too ambitious, too soon" and will never become operational, at least in its initial form. However, several experiments are on the launching pad and it would be a surprise if other companies do not follow suit in the short-medium term, to take advantage of the shortcomings of the financial system, particularly in the field of cross-border payments.

Global Stablecoins could have controversial implications in many fields (from privacy protection to tax compliance, from accounting to financial supervision, and so on), requiring international coordination to ensure common sets of rules and standards as well as a level playing field. Moreover, GSCs could increase vulnerabilities in the broader financial system through several channels, especially in those countries whose currencies are not part of the reserve. However, analysing the systemic implications of stablecoins' possible success was outside the scope of this document.

Digital assets representing a claim on the issuer are financial assets, to be included in the financial account of the BoP; crypto-assets, instead, should be treated as non-financial assets, with an impact limited to the current account. Since definitions are still vague and inconsistent, we expect the relevant authorities to find a solid agreement on the classification of digital assets and the economic activity of stablecoins' issuers.

We anticipate that a widespread use of digital assets could have relevant impacts on remittances and, in general, on any kind of personal transfers - which may benefit from faster and cheaper conditions. However, repercussions are expected on other items as well, notably *taxes on income and wealth*, generated by these digital transactions. Further assessments of this topic could be carried out in the future, when the regulatory and fiscal frameworks will be set up.

When it comes to stablecoins, effects on financial account will be twofold, relating both to the assets used as reserve and to the coins themselves (held by users). Assets used as collateral for stablecoins can be estimated as long as they are kept by

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[20] Stablecoins still represent a small fraction of digital assets universe as their total value amounted to around 4.3 billion of euros in July 2019. (Bullmann et al., 2019)

custodians providing data to the relevant National Competent Authorities (NCAs). Stablecoins' holdings, instead, are more difficult to ascertain without ad-hoc reports coming from wallet providers, which act as coins' custodians: these subjects should be invited/forced to cooperate, similarly to financial institutions. Alternative solutions (based, for instance, on surveys or administrative sources) are likely to be inadequate, due to underreporting issues.

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Annex A: Libra

Libra is the first Global Stablecoins presented so far and its advent made the term itself popular for the general public. Hence, we believe that it is worth reporting its main features, as described in the White Paper, even though support for Facebook's initiative is slowly slipping away. In fact, understanding the "ecosystem" sketched out in the White Paper allows to make some educated assumptions about the diverse entities involved in cross-border transactions.

Promoters claim that Libra should facilitate payments and make easier and more cost-effective moving money around the world. Additionally, it could provide a broader financial inclusion because these services should allow all users having a digital device to move money immediately.

Preserving value over time is a key requirement for every money to be accepted by users as a payment instrument and as a safe financial asset. Libra can be defined a "stablecoin", meaning its value should not change much over time, as it will be fully backed by a reserve of real asset and actual fiat money.

The blockchain

Similar to other crypto-currencies, Libra blockchain is a technology implemented to allow transactions among users with no need of a central institution. At least at the first stage, this should be a permissioned blockchain with Libra Association's members working as validators.

The Libra Association

The Libra Association is an independent and not-for-profit membership organization headquartered in Switzerland, which maintains the blockchain and defines Reserve's investment strategy. The association is governed by the Libra Association Council, which is comprised of diverse and independent members. It is the only party able to create (*mint*) and destroy (*burn*) Libra coins, whenever authorized resellers purchase or sell those coins from the association.

The Reserve

The Reserve is an investment fund holding all the assets purchased as a collateral for Libra. Jointly with the Libra Association, it is in charge of issuing and converting the currency at customer demand. Reserve will not actively control the amount of money, as it will just accommodate the demand of Libras coming from end users through authorized resellers. Reserve's balance sheet should include Libra coins on the liabilities side and these should be fully backed by financial instruments.

The assets in the Libra Reserve will be held by a geographically distributed network of custodians with investment-grade credit rating to provide both security and decentralization of the assets. Low-volatility assets included in the Reserve should be bank deposits and short-term government securities issued by the Central banks of the most important countries. Financial instruments included in the Reserve should be extremely liquid in order to accommodate all the conversion requests.

Interest on the reserve assets will be used to cover the costs of the system and, secondly, to pay dividends to the investors.

Authorized resellers

Reserve will work solely with a list of authorized resellers, who are unknown at the moment; other entities (i.e. would-be users and service providers) will have to buy their Libra coins from such third parties. In fact, resellers will be provided with a privileged status and thus be entitled to potentially very lucrative arbitrage windfalls, depending on the number of operators and the degree of market competition.

Finally, it is important to notice that Reserve undertakes to exchange Libra coins with authorized resellers only, who in turn have no obligation towards end users. This means that a situation of panic selling could severely undermine Libra's liquidity.

Calibra

Calibra, a Facebook's regulated subsidiary, has registered as a *Money Service Business* with the U.S. Department of the Treasury and is obtaining licenses in U.S. states that treat cryptocurrencies as the equivalent of money. It will be in charge of collecting all users' information and providing the upcoming digital wallet of Libra coins. This entity is arguably of little interest for statistics compilers, since it will not be involved in transactions.

End users

It is certain that Facebook will ensure the possibility of using Libra as a payment instrument for operations on its own platform (and on its subsidiaries, like WhatsApp or Instagram). In addition, this possibility should be granted by the most important financial services corporations, sitting in the Council of Libra Association. Final users will not be able to purchase and sell Libra coins directly from the Reserve, but there should be some authorized resellers providing these services.

The following diagram shows a schematic representation of Libra's structure.

Libra's Ecosystem   Figure A.1
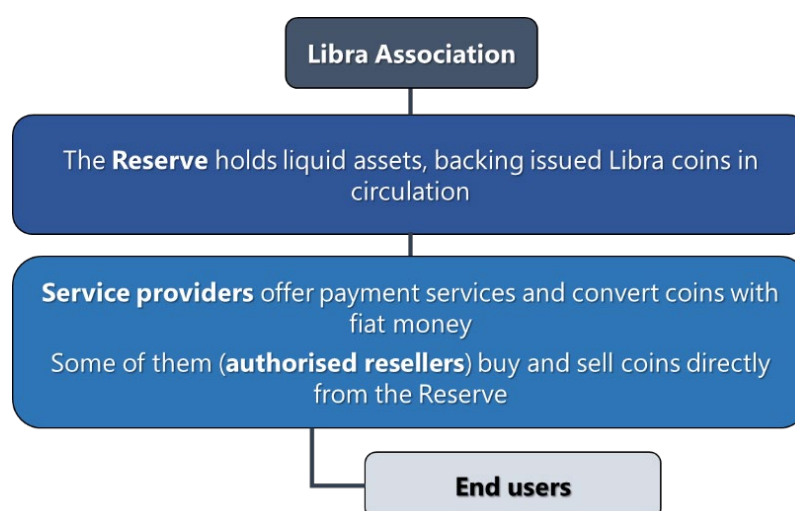
Source: Libra White Paper

The weight of a *Libra*: are stablecoins a new challenge for external statistics compilers?

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Bank of Italy - Statistical Analysis Directorate

Introduction

In June 2019, Facebook released a *White paper*, describing the main features of a new digital currency named ≈libra.

Libra is conceived as a stablecoin, a digital asset that is generally backed by a basket of assets and fiat currencies. While media have concentrated on this project, other collateralised coins with similar features could reach scale in the near future.

The paper wants to explore stablecoins from the POV of external statistics compilers, with a focus on the possible impacts they could have on selected BoP items.

What if exercise

| Digital assets | Stablecoins | Remittances and Current Account | Financial account | Conclusions |

Digitalization is transforming money and payments systems. Waiting for *Libra* (or similar coins), digital money has already surfaced in a variety of contexts.

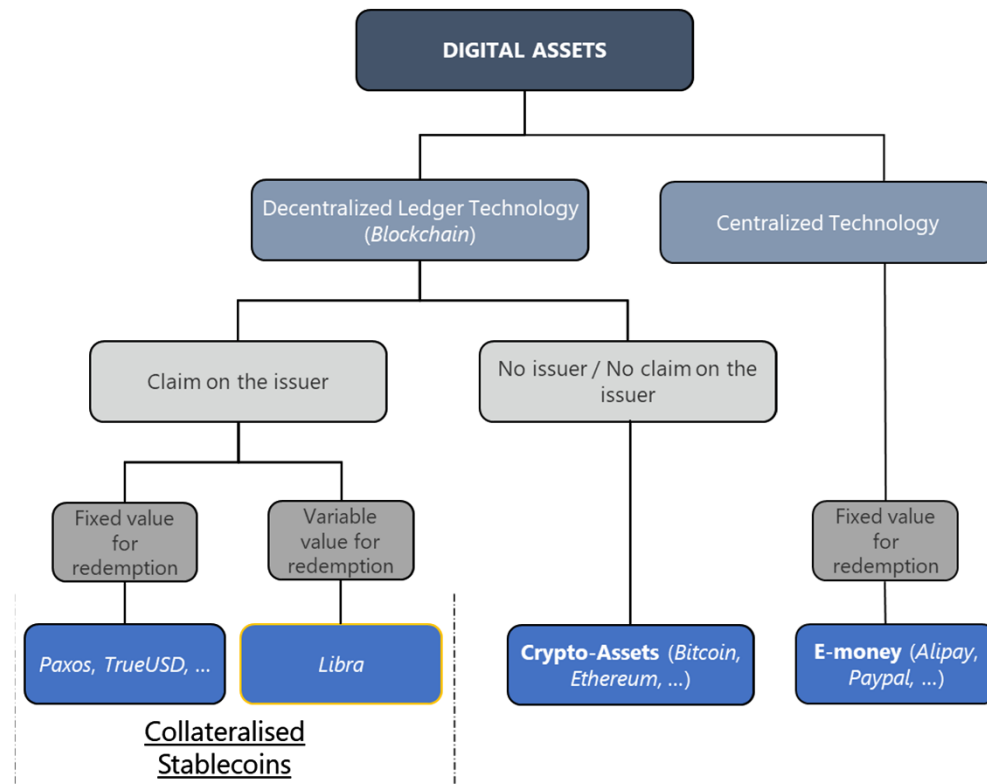3 attributes for classification:

1. **Technology**
   Centralized vs decentralized

2. **Issuer**
   Claim vs No claim

3. **Redemption Value**
   Fixed vs Variable

DIGITAL ASSETS

Decentralized Ledger Technology (*Blockchain*)

Centralized Technology

Claim on the issuer

No issuer / No claim on the issuer

Fixed value for redemption

Variable value for redemption

Fixed value for redemption

Paxos, TrueUSD, ...

Libra

Crypto-Assets (*Bitcoin, Ethereum, ...*)

E-money (*Alipay, Paypal, ...*)

<u>Collateralised Stablecoins</u>

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Crypto-assets (as defined by *ECB Crypto-Assets Task Force*) have two distinctive features: the use of *Distributed Ledger Technology* (DLT) and the **lack of an underlying claim/matching liability** → high volatile, incapable of performing the three functions of money.

In the context of external statistics, they should be considered **Produced non-financial assets**.

Our work focuses on *collateralised stablecoins*: decentralized digital assets **representing a claim** → low volatile, potential means of payments.
Stablecoins may be backed by any kind of assets (deposits in fiat currencies, metals, crypto-assets and so on). Of course, the more liquid the reserve is the more "stable" is the value of the issuance.

In the context of external statistics, they should be considered **Financial assets**.
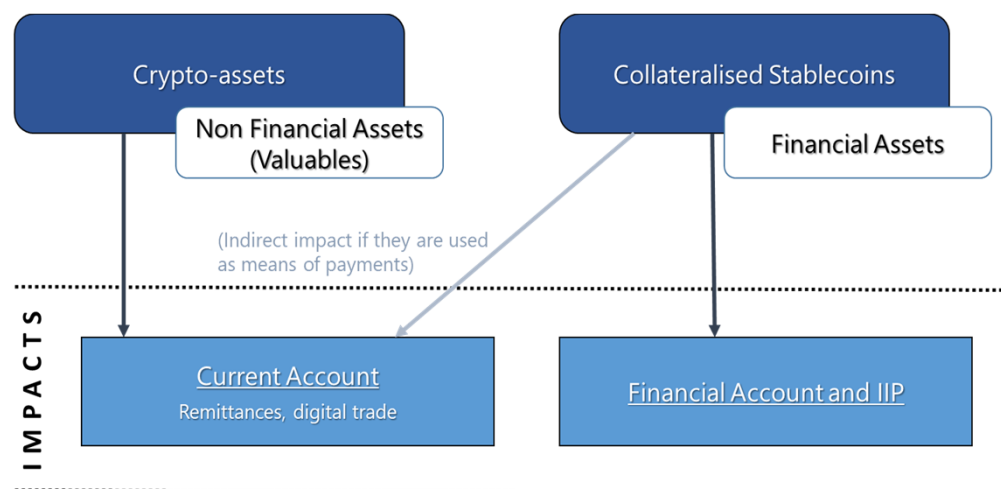
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3

The impact of stablecoins on the financial system has been negligible so far, as the most popular assets are linked to a single currency (USD) and have failed to become widespread means of payment. For this reason, some "Big-Tech" companies are preparing to issue "second-generation" assets, defined in literature as *Global Stablecoins* (GSC).

Several reasons to believe they can get serious in the short-medium term:

Transaction costs

Trust

Integration / Convenience

Network effects
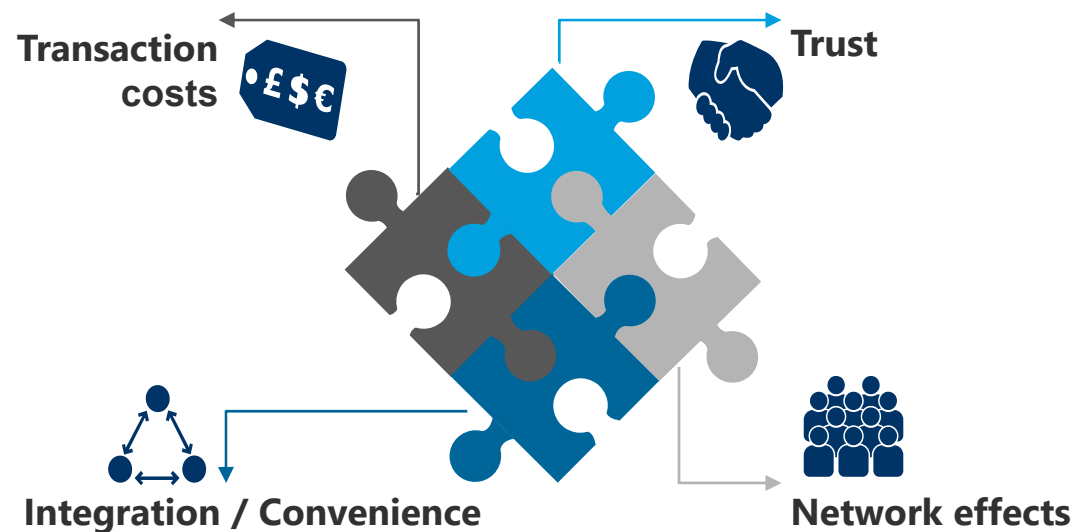
In particular, stablecoins may foster the development of faster, cheaper and more inclusive payment arrangements (G7 WG on Stablecoins), with particular regard to cross-border *transfers* and ***remittances***.

In the Italian Balance of Payments, both inward and outward remittances are estimated using supervisory reports transmitted by official intermediaries *(MTOs* and banks). While incoming flows are almost negligible, <u>outward ones accounted for about 6 billion euros in 2019</u>.

This should be regarded more as a lower bound for the actual amount of remittances, as migrants could prefer using cheaper informal channels under certain circumstances.

Destination	Value (EUR MLN)
Bangladesh	719.5
Romania	611.2
Pakistan	398.3
Philippines	383.1
Senegal	373.7
Morocco	327.1
India	311.7
Sri Lanka	241.0
Peru	215.6
Georgia	195.6
Ukraine	173.4
Ecuador	146.6
Albania	137.1
Other countries	1602.5
Total	**5836.6**

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Traditional channels are **expensive**, **opaque** and **slow**. The *World Bank* calculates and tracks the costs for sending remittances worldwide; in 2018 the average global fee for sending 500 USD from Italy amounted to about 4.4% and was even higher for payments of 200 USD (around 6%). Global average has been declining over the years and has settled around 5%, but payments are hardly processed in real time.

Average % cost of remitting 500 USD from selected G20 countries
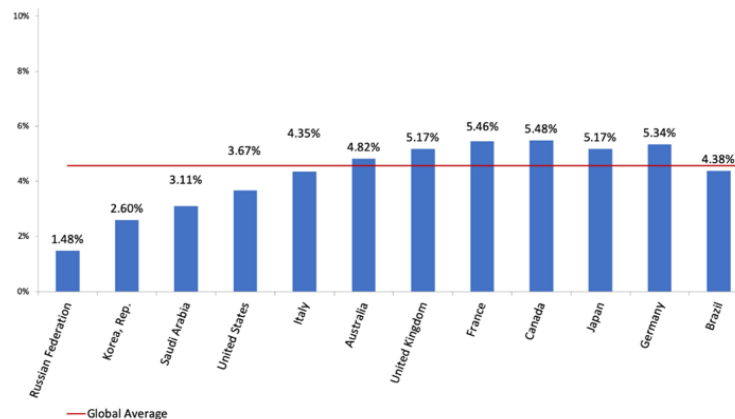
Most recipient countries can count on a medium-to-high *digital inclusion* while recourse to the informal channel is inconvenient → a significant shift between money transfer operations and digital-assets payment solutions is possible.

If the "substitution rate" were in the range of 15-20%, we would miss 1 billion of transactions.
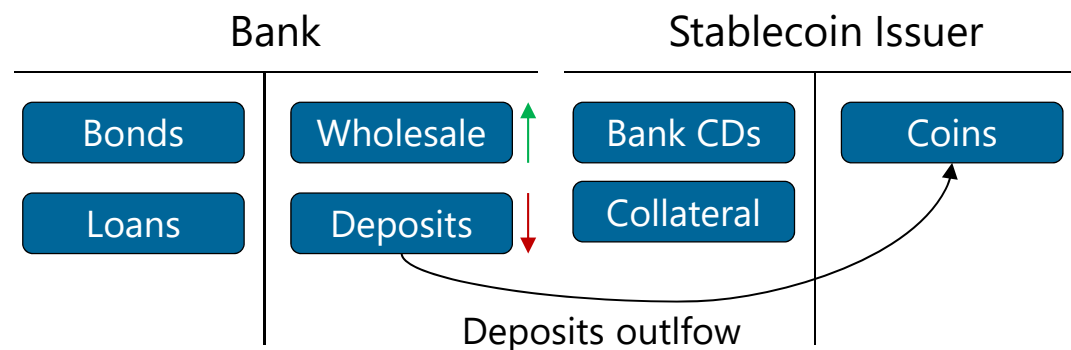
Money Laundering concerns

Remittances are difficult to track and sensitive to money laundering concerns. Efforts to uncover illicit conducts has increased the cost of sending remittances and has set constraints on users; on the contrary, <u>transactions in digital assets are still unregulated and must not comply with AML regulations</u>. This could divert more and more remitters from regulated markets.

Other *Current account* items that could be affected by stablecoins' predicted success:

- Any **personal transfer**, regardless of the source of income and the relationship between the parties
  ●●●○

- Other types of transfers, e.g. **taxes on capital gains** arising from trading
  ●○○○

- Trade in goods and services (thanks to a spur to **digital trade**)
  ●●○○

- **Compensation of employees**
  ◐○○○

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In developed economies, chances are that bank money and decentralized coins will coexist, even though we expect some repercussions on banks' funding → as users withdraw money from their deposits to buy coins, retail funding could be partially swapped by more expensive wholesale funding (for instance, *Certificate of Deposits*).

Bank   Stablecoin Issuer

| Bonds | Wholesale ↑ | Bank CDs | Coins |
| Loans | Deposits ↓ | Collateral | |

Deposits outlfow

These flows and those related to collateral-investment would have a substantial effect on the financial account of the Balance of Payments, in particular on *Portfolio Investment* and *Other Investment*.

We will get into it, through a couple of examples.

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Our hypotheses:

❖ The representative fund holding the collateral (*Reserve*) is headquartered in Switzerland

❖ *Reserve* holds accounts with a diversified network of custodians, including Italian banks

❖ Collateral includes only bank deposits and short-term gov. bonds in EUR and USD

❖ The representative holder (*Holder*) of the GSC and his bank are resident in Italy

❖ *Holder* receives no remuneration and redemption value is variable

Baseline case: Reserve basket consisting of deposits

Account deposits would just change hands, with a <u>liability vis-à-vis *Households* in Italy becoming a liability vis-à-vis *Other financial corporations* in Switzerland</u> →
if the pool of depositary banks is less geographically diversified than the pool of GSC users, there are some redistributive effects as deposits will concentrate in some countries.

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Realistic case: Reserve basket consisting of deposits and bonds

Reserve invests part of the funds in short-term government bonds, acting like a cross between an **investment fund** and an **e-money institution**. The complexity of registrations for compilers depends on the investment strategy defined →

Issuer might recycle part of its clients' funds back to Italy, not only in the form of bank deposits but also acquiring government bonds.

Example: Balance sheet

Stablecoin issuer

Bank deposits	**100**	**Coins**		**250**
vis-à-vis IT	*40*	*vis-à-vis IT*		*130*
vis-à-vis CH	*60*	*vis-à-vis CH*		*120*
Portfolio investments	**150**			
IT bonds	*30*			
CH bonds	*20*			
US bonds	*100*			

Example: Simplified BoP/IIP recordings

Italy				
	Transactions		Closing Position	
	A	L	A	L
Financial account	**130**	**130**	**132**	**131**
Portfolio investment		**30**		**31**
Other investment		**100**		**100**
Deposits		40		
Securities settlement		-30		
GSC settlement		90		
GSC	**130**		**132**	
Net E&O / Net IIP	**0**		**1**	

- The purchase of GSC by *Holder* generates an increase of assets vis-à-vis Switzerland

- The purchase of Italian securities by *Reserve* gives rise to an increase in *Portfolio* liabilities

- The increase in *Other investment* liabilities is due to: the account opening by *Reserve* (40); the settlement of the Italian bonds; the settlement of the GSCs purchased by *Holder* (90 = 130 – 40 deposited)

- IIP should not change dramatically as long as any transaction is balanced by a financial settlement. However, net position can vary as a result of valuation changes

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In theory, correct recordings are possible provided that complete data is available.

In practice, the task of external statistics' compilers will be subject to:

1. the **regulatory requirements** that are going to be introduced
2. the **technical features** of the DLT

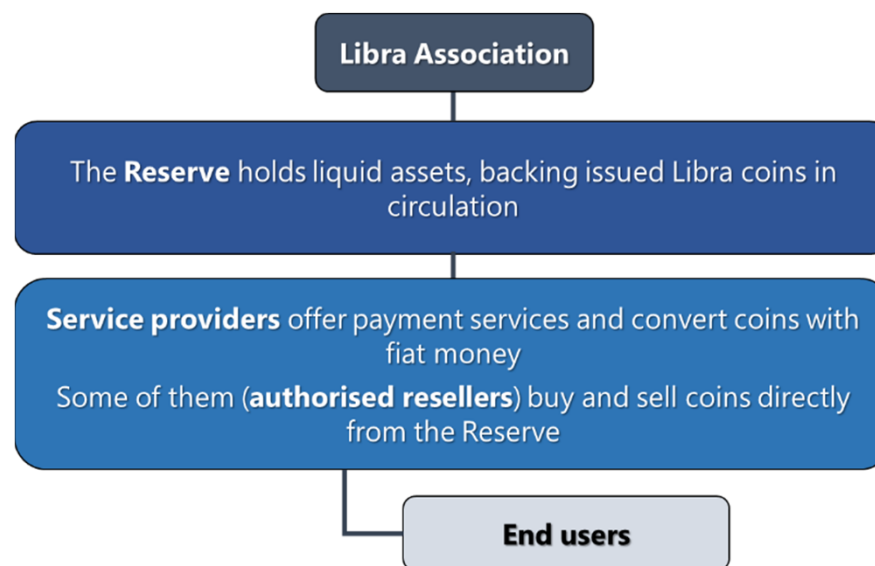| First-best solution	*e-wallet providers* reveal some information on users (e.g., their residency in aggregate) → Is this **feasible**?
Alternative sources	Household surveys, direct reporting from enterprises, tax records, etc. → Is this **reliable**?
A starting point	Formal guidance to assets' classification and statistical treatment of the entities involved

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Thanks for your attention!

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Bridging measurement challenges and analytical needs of external statistics: evolution or revolution? (Lisbon, 17-18 February 2020)

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Annex: Libra ecosystem

Source: Libra White Paper

Slide 15

AC1   Alessandro Croce; 27.01.2020

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