eCurrency

eCurrency eSDR™ Solution

White paper, 9 May 2019

Bejoy Das Gupta, Miles Au Yeung

Cross-Border Payments powered by *eCurrency eSDR*

This white paper examines the opportunities to reduce cost, increase efficiency, mitigate counterparty risk and improve transparency of cross-border payments using the eCurrency eSDR[1] solution for financial service providers and central banks. The solution would enable participating financial service providers to issue, transact and settle with eSDR, a global digital composite asset of stable value, which utilizes the International Monetary Fund's Special Drawing Right (SDR) as the refence currency basket. The same technology can of course be used with other suitable regional currency baskets as a reference point. The development of the eSDR solution has its genesis in a speech by Christine Lagarde, Managing Director of the International Monetary Fund, delivered September 2017 at the Bank of England, in which she said, "…the Fund will also have to be open to change....to considering a role for a digital version of the SDR…"

Cross-Border Payments Witnessing Rapid Expansion

Cross-border payments are set to continue to expand at a rapid pace. One key driver is growing international trade, not only in goods but now increasingly in advanced services, including e-commerce and digital services such as Airbnb and Uber. Meanwhile, demand from foreign investment flows remain substantial, along with workers' remittances bolstered both by greater volume of migration and migrant incomes. Furthermore, retail as well as corporate transactions are driving overall value of cross-border payments to rise from $22 trillion in 2016 to US$30 trillion in 2022.

A key component of cross-border payments is remittances. International remittances, the money that overseas workers send home to their families, are rapidly growing. Remittances are not only a vital source of income for families, but they are also important in helping offset trade imbalances and keeping current account deficits moderate in recipient countries.

The World Bank estimates that remittances to low- and middle-income countries reached $529 billion in 2018. These flows are more than three times the size of official development assistance to these countries and close to the amount recorded through inward foreign direct investment. Remittances to all countries worldwide, including high-income economies, reached $689 billion in 2018 and are projected to increase by 3.6% in 2019 and 4.5% in 2020. These flows are about the size of the economy of Switzerland, which is ranked 19th worldwide by the IMF.

Though Hampered by Inefficiencies

Against the backdrop of rapid expansion, cross-border payments are often seen to be costly, slow and opaque. This is because the existing systems involve complex clearing and settlement processes, multiple intermediaries and correspondent banks, with the latter falling in numbers due in part to the challenges posed by onerous regulatory requirements and declining profitability.

[1] eCurrency eSDR is a technical security solution …

The World Bank estimates that the average cost of sending $200 in remittances to low- and middle-income countries remained at 7% in the first quarter of 2019. This is well above the UN's Sustainable Development Goal (SDG) target of 3% by 2030. Moreover, while the cost of remittances was the lowest in South Asia, at 5%, Sub-Saharan Africa had the highest cost at 9.3%. There was also wide dispersion, with the cost of sending money from Russia to Central Asia at only 1.3-1.7%, against 10% in many African corridors and small Pacific islands. The highest was 22.4% from Angola to Namibia. The average cost of remittances is greatest through banks, at 10.2%, in part due to regulation requirements, and lower for money-transfer-operators at 6.2%, and lowest through post offices at 5.5%.

The average cost for a US bank to effect a cross-border transaction was $25-35 in 2016, more than 10 times the cost of a domestic payment, as estimated by McKinsey. Cost of trapped liquidity in a correspondent bank, through which cross-border transactions are typically undertaken, was 34% of the total. Treasury operations (invoicing, claims handling, dispute management) accounted for 27%, foreign exchange costs 15%, compliance costs 13%, payments operations 9% and network management costs 2%.

Overall, cross-border payments through banks are expensive compared with domestic payments, it can take several days and lack transparency regarding costs and delivery times. The causes are a complexity of cross-border payments and settlement processes, due to multiple parties, regulations (anti-money laundering, counter-terrorism financing, know-your-customer), capital requirements, differences in technical and operational standards across jurisdictions, legacy systems and infrastructure, and divergent regulatory approaches. Concentration of market structures and information asymmetries in the case of both banks and money transfer operators also add to costs.

Making Cross-Border Payments Ripe for Digital Disruption

Businesses and individuals are increasingly looking for faster, more convenient, transparent and inexpensive cross-border payment methods, as their expectations are shaped by their experience with other digital services and innovations. This is fueling innovations in cross-border payment services enabled by mobile and other technologies resulting in better user experience.

However, these innovations are often limited to the front-end user experience. The back-end clearing and settlement payment networks still go through the traditional value chain optimized for high-value low-volume transactions involving banks which settle payments and execute foreign exchange transactions. In short, there is growing need for technologies, which can help improve back-end processes, lower compliance costs and revolutionize the means of payments.

eCurrency eSDR Offers an Innovative Solution

New models of back-end clearing- and settlement-payment networks are required to improve the efficiency of cross-border transactions. Models involve bilateral connection between domestic e-money services in two countries, extending an e-money system from one to multiple countries, and using technology to create a peer-to-peer payment network accessible in multiple countries.

In this regard, the eCurrency eSDR™ solution enables financial service providers, including fintech companies, to conduct cross border payments using a global digital composite asset of stable value, namely eSDR, available to any payment network. eSDR will serve as the unit of account and medium of exchange of the transacting parties. The value of the eSDR is based on the basket of currencies of the International Monetary Fund's Special Drawing Rights

(SDR), namely the U.S. dollar, the Euro, the Chinese Renminbi, the Japanese Yen and the British Pound Sterling. eSDR represents a claim on the freely usable currencies of the transacting parties and can be exchanged for these currencies.

The eSDR basket is kept in line with the currency composition and weights of the IMF's SDR, which are adjusted every five years, or earlier if warranted, to ensure that the SDR reflects the relative importance of currencies in the world's trading and financial systems (Table 1).

Table 1 - SDR currency basket weights and units[2]

	Weights[3]	Number of units of currency [4]
U.S. Dollar	41.73	0.58252
Euro	30.93	0.38671
Chinese Yuan	10.92	1.0174
Japanese Yen	8.33	11.900
Pound Sterling	8.09	0.085946

The value of the eSDR is determined based on the value of SDR posted on the IMF website daily, which is the refence currency basket. The value of the SDR is set daily based on market exchange rates, for example, Table 2 shows the SDR valuation on April 22, 2019.

Table 2 - SDR valuation on April 22, 2019

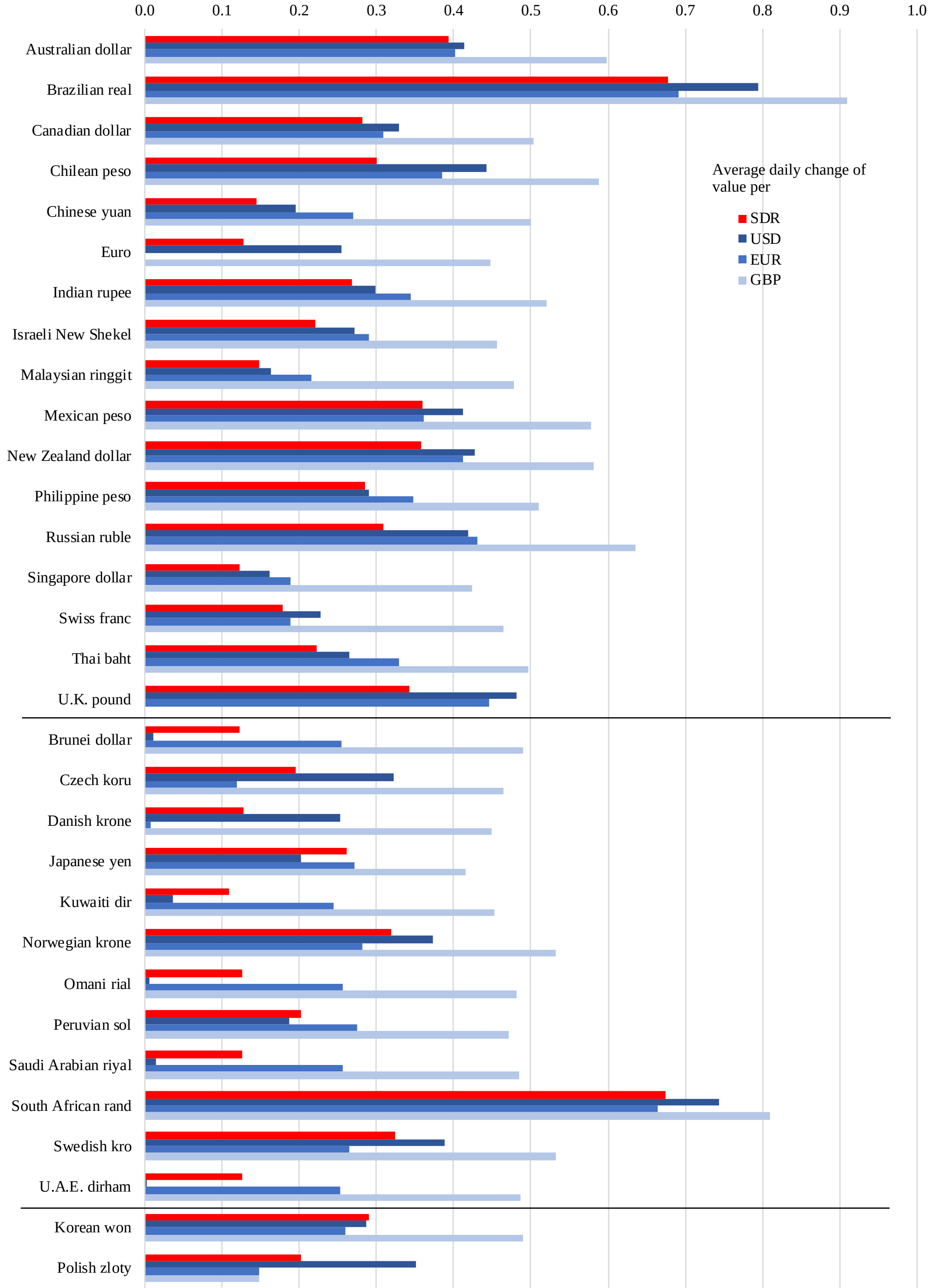
	Number of units of currency	Exchange rate	USD equivalent
U.S. Dollar	0.58252	1.00000	0.582520
Euro	0.38671	1.12500	0.435049
Chinese Yuan	1.0174	6.71125	0.151596
Japanese Yen	11.900	111.92000	0.106326
Pound Sterling	0.085946	1.29890	0.111635
		SDR value in USD	1.387126
		USD 1 = SDR	0.720915

The value of SDR per national currency unit, thus eSDR, is relatively more stable than the value of a typical national currency against another national currency. Exhibit 1 (below)

[2] Source: IMF
[3] Determined in the 2015 review
[4] Fixed for a 5-year period starting Oct 1, 2016

compares the average daily changes of the values of 31 national currencies per SDR, U.S. dollar, euro and pound sterling between January 1 to March 31, 2019.

Exhibit 1- Average daily change of value of national currency per SDR, USD, EUR and GBP between January 1 and March 31, 2019, %



The comparison shows that:

- The average daily changes of the value of 17 of the national currency per SDR were lower than those per U.S. dollar, euro and pound sterling.
- The average daily changes of the value of 12 of the national currency per SDR were lower than those per euro and pound sterling, or U.S. dollar and pound sterling
- The average daily changes of value of the remaining 2 national currency per SDR were lower than those per U.S. dollar *or* pound sterling.
- The SDR being essentially the most stable and least volatile.

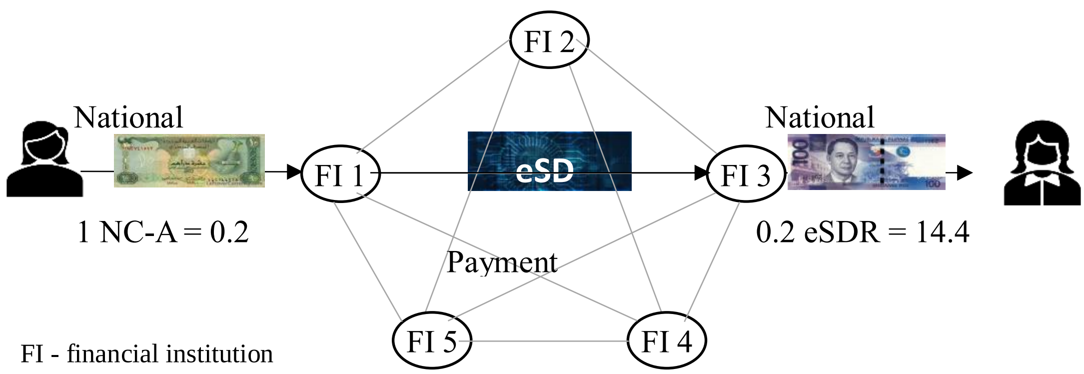
The development of the eSDR solution by eCurrency was sparked in part by the IMF Managing Director Christine Lagarde's September 2017 speech at the Bank of England. The topic was "Central Banking and Fintech - A Brave New World." In her address, she highlighted the Fund being an ideal platform for discussions on fintech, technology, regulations and global cooperation, and its financial and economic stability, and global payments and financial infrastructure stability mandates. In particular, "to shape a technology and economic future that works for all" she states that "I am convinced that the Fund has a strong role to play in this respect...But the Fund will also have to be open to change, from bringing new parties to the table, to considering a role for a digital version of the SDR."

Issuing, Clearing and Settling in eSDR to Bring Efficiency and Transparency Gains

eSDR exists in the form of digital tokens. It possesses the essential characteristic of banknotes: it is a digital instrument bearing a monetary value; it is protected by multiple anti-counterfeit security features; each object is uniquely identifiable and traceable; the supply is deterministic and controlled by the participating authorities; the value is backed by the issuing authorities; and it is interoperable across payments systems.

The amount of eSDR in circulation is determined, maintained, protected and tracked by the transacting parties using the eCurrency eSDR solution. Any two transacting financial service providers will be able to clear transactions (i.e. exchange of payment instructions and calculation of payment obligations between the parties) in eSDR. The funds can be posted (i.e. made available after clearing) to the recipient in eSDR or in national currency based on the prevailing exchange rate between eSDR and the national currency. The financial service providers will settle directly in eSDR at the time of clearing and without reliance of any intermediaries or corresponding banks, achieving instant settlement (Exhibit 2).

Exhibit 2 – Cross-border payments over a payment network using eSDR



While the eSDR solution has been proposed for financial institution issuers, it could also be utilized by central banks becoming the issuers of what in effect would be a universal central bank digital currency (CBDC) for cross-border transactions in jurisdictions with participating central banks. As the value of the digital token would be determined by the SDR basket's currency composition and weights, it would be a stable instrument with no additional volatility nor trading nor investment activity nor danger of manipulation.

For example, South East Asian central banks could issue eSDRs for cross-border payments in the region. They already have SDRs in their reserves. Foreign exchange costs could be reduced through direct settlement between central banks. The payments would move from currency A to eSDRs to currency B. Transactions would be instantaneous, peer-to-peer, 24/7, with enhanced transparency and data sharing. The problem of multiple intermediaries would be eliminated. All financial service providers, banks and non-banks, could have access and use the central bank-backed digital tokens.

Over time, more central banks could join, and a multilateral institution, such as the IMF, take over the management. Or, the technology could be utilized in different regions, which uses some other regional currency basket as the reference point for valuation purposes. However, currently, private sector-issued eSDRs appear to hold greater promise for a quicker implementation of a global solution for cheaper, faster and more transparent cross-border payments.

eCurrency eSDR solution includes the secure application programming interface (API) to distribute eSDR to peer-to-peer payment networks and classic payment networks chosen by the financial service providers.

Payment networks with eSDR enable financial service providers to offer highly efficient, transparent and inexpensive cross border payment services even for low-value and high-volume use cases. Cross-border payments times and costs should fall substantially, with improved transparency. Financial integrity should be greatly enhanced through improved compliance at both ends.

eCurrency eSDR solution uses best-in-class hardware, software and cryptographic protocols. eCurrency eSDR solution is based on eCurrency digital fiat currency solution which has been proven in high volume retail production and proof of concept environments since 2014 in five countries.

Conclusion

The inefficiencies in cross-border transactions are crying out for an economic welfare-improving solution. eSDRs represent a way forward to revamping the back-end of the settlement and payments process to reduce costs and transaction times, while improving transparency, compliance and governance. The technology solution should be able to deliver on scale, speed and finality of settlement. The use of composite tokens based on the SDR helps create a product for users, while being a trusted and stable store of value as well as an effective medium of exchange. It can be utilized both by the private sector as well as central banks, with the involvement of the latter further bolstering governance over time.

For more information visit www.ecurrency.net or email info@ecurrency.net

References:

1. IMF SDR factsheet https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR
2. IMF SDR valuation https://www.imf.org/external/np/fin/data/rms_sdrv.aspx
3. IMF currency unit per SDR https://www.imf.org/external/np/fin/data/param_rms_mth.aspx
4. Considerations on the Role of the SDR, IMF Policy Papers, April 11, 2018 https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/04/11/pp030618consideration-of-the-role-the-sdr
5. Central Banking and Fintech – A Brave New World? IMF, September 2017 https://www.imf.org/en/News/Articles/2017/09/28/sp092917-central-banking-and-fintech-a-brave-new-world
6. Casting Light on Central Bank Digital Currency, IMF Staff Discussion Note, SDN/18/08 https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/11/13/Casting-Light-on-Central-Bank-Digital-Currencies-46233
7. Fintech and Financial Services: Initial Considerations, IMF Staff Discussion Note, SDN/17/05 https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2017/06/16/Fintech-and-Financial-Services-Initial-Considerations-44985
8. Migration and Remittances Recent Developments and Outlook, World Bank, April 2019 https://www.knomad.org/sites/default/files/2019-04/Migrationanddevelopmentbrief31.pdf
9. Cross-border retail payments, Bank for International Settlements, February 2018 https://www.bis.org/cpmi/publ/d173.pdf
10. State of the Industry Report on Mobile Money 2018, GSMA https://www.gsma.com/mobilefordevelopment/resources/2018-state-of-the-industry-report-on-mobile-money/
11. A Vision for the future of cross-border payments, McKinsey, October 2018 https://www.mckinsey.com/industries/financial-services/our-insights/a-vision-for-the-future-of-cross-border-payments
12. Cross-Border Interbank Payments and Settlements, Bank of Canada, Bank of England and Monetary Authority of Singapore. November 2019 http://www.mas.gov.sg/~/media/ProjectUbin/Cross%20Border%20Interbank%20Payments%20and%20Settlements.pdf