KPMG

Digitalization in Treasury

A Ripple is Going Through Treasury!

Finance- and Treasury Management Switzerland

In our series of articles on digitalization in Treasury we analyzed the relevance of crypto-currencies and blockchain technology for corporate treasury departments, as well as their possible influence on the established money system. As we already mentioned then, the market for crypto-currencies and the underlying technologies are developing at the speed of lightning.

While crypto prices (above all, those for bitcoin) took a dive in 2018, the past year nevertheless could be called the year of the blockchain, as this is the underlying technology of many of these currencies. While different consortia and joint ventures in the financial industry are testing the usefulness of blockchain, broad changes seem to be especially evident in one area due to blockchain technology: in international payment operations. Currently, the established top dogs (especially the SWIFT consortium) are competing against innovative newcomers to the industry.

Cross-border payment operations – the status quo

When it comes to the settlement of cross-border payment operations, SWIFT has been dominating the scene now for more than 40 years with its SWIFTNet. Not only that: the network itself as well as the framework conditions and limitations under which international payments are processed and transferred through this network are "ancient". In the age of the digital revolution and instant communication, these disadvantages are all the more apparent and so the question arised to what extent the current SWIFT transfer standard based on the established correspondent bank system is still adequate.

In today's traditional payment operations environment, the processing of an international payment using Swift takes between two to five or even more days , as the payment has to pass through several fixed stations (usually four to six) in the correspondent bank network[1]. This process is best explained with the simplified model below.

Let's take the case where a regional UK bank ("Reg. UK) would like to make a cross-border payment to a regional US bank (Reg. US). Neither bank has a direct business relationship with foreign banks in other currency zones. Because of this, Reg. UK bank will first transfer the payment to a UK-based international institution that acts as correspondent bank; let's call it "Int'l UK". Int'l UK bank then transfers the payment to its partner bank in the USA acting as correspondent bank in the USA, "Int'l

[1] A correspondent bank is a banking institution that specializes in cross-border and cross-currency payment transactions on behalf of other banks. A reciprocal bank account (nostro/loro accounts) is set up, which enables the netting of the business transactions in each currency of the banks involved.

US". In the last leg of the journey, Int'l US bank transfers the payment to the actual recipient bank, Reg. US. In order for the two correspondent banks to be able to perform the described business transaction, Int'l UK has to have a nostro account in US dollars at Int'l US. For the Int'l US bank to actually perform the payment in US dollars, the Int'l UK bank is generally obliged to hold US dollars in the nostro account. The payment is only performed if there are sufficient funds or if a bilateral credit line is adhered to.

Disadvantages of the payment processing system SWIFT and the established correspondent banking model

As the example above of a settlement of an international payment shows, this is a complex process. Among other things, this complexity causes the problems and inefficiencies that are part and parcel of a treasurer's daily business. These are intensified by the exponential growth that such cross-border payments have undergone in the last decade: while in 2005 daily payments were around 9 million, in 2015 it was already at 25 million.

1. **Throughput time of wire transfers:** Depending on the currency, the throughput time of a cross-border payment can take up to a week. There are many reasons why it takes so long. For instance, there is no fixed path for routing a payment. Depending on the currency zone and the target country, the executing correspondent bank has to hunt for a relevant partner bank. Oftentimes, payments are routed through several correspondent bank stations because there is no direct access to the executing bank for the target currency zone. The technical availability also plays an important role. The banks' payment processing systems are not open 24/7 and there are daily cut-off times by when a transfer has to be submitted. For instance, due to different time zones, payments are not processed and forwarded until the following day. On top of that, each bank has its own KYC and AML processes, which can cause delays in the settlement process, especially if the US dollar is being used as a bridging currency when clearing two currencies. And finally, the nostro account held by the initiating correspondent bank at the correspondent bank in the target currency has to be sufficiently liquid or the credit line has to be sufficiently large. If there is not enough liquidity to cover the charge, the executing bank will be told to top up the account before the order is executed. This can cause further delays in the transferring process.

2. **Robust processes:** The routing of the payment is nothing other than a stringing together of internal book transfers in a chain of participating correspondent banks, as well as the settling using the banks' own payment processing systems. Having several transmitters in the routing system described above also makes for potential points of failure because each bank has its own IT environment and thus its own processing and interpretation routines (e.g. the treatment of exception-to-policy cases, mapping of region-specific data sets, etc.) to settle payments (the official error rate reported by SWIFT is 6% of all executed payments).

3. **Transfer costs:** It is estimated that settlement costs for international transactions amount to about USD 1bn[2]. According to a World Bank study, banks charge about 7-12%[3] to execute a transfer. It is especially for low amounts that the fees are relatively high and the fees are higher for wire transfers in less used currencies, where liquidity is accordingly low. The fee is composed of various cost items charged by the banks. A relevant cost factor is that there is only a certain number of international large banks that act as correspondent banks and accordingly, the currency corridors are relatively limited. This, in turn, restricts competition and, depending on the currency, causes liquidity bottlenecks, larger spreads for foreign exchange transactions and higher processing fees. Furthermore, banks generate considerable costs in connection with treasury operations for the disposition and provision of liquidity (e.g. through repo transactions) and currencies as a base for settling transactions. What should also not be forgotten are the indirect costs caused by the meeting of regulatory and compliance requirements (especially under the Basel III regime), which are caused mainly by the system's complexity and which are mandatory.

[2] World Trade Organization, International Trade Statistics 2014; Institute of International Finance, Aggregate Capital Flows 2014; Federal Reserve Financial Services, Cross-Border Payments 2015.
[3] World Bank Remittance Prices Worldwide

Does blockchain make settling payments quicker, more integrated and more secure?

Innovative start-ups, such as Ripple, but also established technology: corporations such as IBM are aiming to revolutionize the payment operations environment with new concepts based on blockchain technology, thus eliminating the weaknesses of the established system presented above. The focus of the aspirations lies especially on the minimization of the number of intermediaries or even their complete elimination, which the new kids on the block think cause the traditional payment systems to be intransparent, complex and therefore costly.
Before we look at the individual approaches in more detail, we would like to digress and take a quick look at the term blockchain. A more specific explanation of its technical functioning may be gleaned from our previous Treasury Newsletter covering this topic.

Side note:
The core concept of blockchain technology is the dematerialization of assets (the creation of so-called digital assets) with the simultaneous elimination of information asymmetries between transaction partners. Just like Whatsapp messages have replaced the traditional postcards and internationally transfer messages cheaply and within nanoseconds, blockchain helps to do this for assets.

The way things are handled currently, assets are generally transferred with the help of a physical medium, for instance, cash or securities. Enter blockchain to dematerialize the process, thus allowing the digital settlement of transactions. It also eliminates the use of a third party as intermediary or fiduciary while still offering full, unchangeable transparency of information for all participants.

Remittances based on this new technology are supposed to be cheaper and more secure because financial transactions are sent in real time (according to Ripple, a transaction takes 4 seconds on average) as opposed to through the SWIFT network and the currently used settling-by-netting systems. As such, IBM and Ripple are in direct competition with SWIFT. Currently, industry giants such as Santander and SEB, as well as tech giants such as Google, are already part of the Ripple platform, also as investors. For its product, Blockchain World Wire, IBM is also cooperating with innovative tech companies coming from the payments environment, such as MBanq and KlickEx.

Let's take a payment made through Ripple to illustrate how payments based on blockchain work: Ripple is based on a so-called in-house blockchain, the so-called enterprise blockchain ledger, rather than on a public blockchain, as is the case with crypto-currencies. Furthermore, it is a kind of blockchain for promissory notes ("IOUs – I owe you"), supporting transactions for a variety of currencies. Moreover, the process neither requires Bitcoin-style coin mining nor the complex, energy-intensive computing operations to validate the performed transactions.

As soon as two contractual parties issue promissory notes to each other using the RippleNet, this is stored in the Ripple blockchain. Of particular importance here is that a constant consensus must be found in the network between all participants in a transaction. It is therefore necessary for Ripple users to indicate which other user they trust and up to what amount, to redeem the stored IOUs on request. If there is no direct trust relationship between sender and recipient, the network endeavors to identify a path of users that everyone trusts sufficiently to enable the routing of the payment. In this way, payments seep ("ripple") through the social graph of trust relationships. The register then nets all of these payments.

At Ripple, the security of the payment system is anchored in the trust between participants that the bank-specific KYC and AML processes have been deployed. However, Ripple offers the advantage that when a payment is initiated, the participating banks exchange the necessary KYC and AML information directly though RippleNet. The screening takes place in seconds though the bi-directional messaging through RippleNet. This eliminates a bottleneck at the correspondent banks, which the traditional payment processing system of SWIFT displayed in regard to KYC/AML processes, and which slowed down the settlement process even more because the initiating bank at the start of the transfer process did not know which bank would eventually process its payment.

The created amount of Ripple coins (XRP) at the onset serves as bridging currency for the exchange and settlement of fiat currencies for the platform users as well as for the payment of the transaction fees. In order to calculate competitive FX rates (between the conventional currencies as well as between XRP and the conventional currencies), Ripple uses an additional module (FX ticker) which

gives participants (providers of liquidity and FX exchanges) the possibility to publish current rates in RippleNet, thus determining a competitive rate through an auction system. The FX ticker module also verifies accounts, currencies and authentications and eventually coordinates the asset transfer to be converted and settled. Finally, all of the transactions executed are stored in the Ripple blockchain, where it cannot be altered.

According to information provided by Ripple itself, the costs for cross-border payments have been reduced by 40 - 70% (also for bank clients) because the payment system uses XRP. The significant factors that have lowered costs are also due to the fact that participating banks only have to hold their local currency and an account in XRP, which lowers the number of currency-specific nostro accounts. For treasury departments, this also reduces activities related to obtaining liquidity and currencies, as well as the relevant hedging of currency exposures. The costs of meeting regulatory requirements have also been lowered because the throughput time and the available overall liquidity or highly fungible collateral have been reduced to a minimum.

IBM is going a similar way as Ripple with its payment system "World Wire" that is also based on blockchain. Money transactions are meant to be remitted within seconds through a worldwide network using digital assets as bridging assets. At this point, not that much is known about how World Wire works. IBM is counting on its partnership with Stellar, which is an open-source blockchain project that originally based itself on the Ripple blockchain protocol. However, Stellar has been developing its own blockchain since 2015.

A significant challenge for both Ripple as well as IBM is how volatile the price of the digital assets can be (as demonstrated by the highly volatile market for crypto-currencies last year). Digital assets are neither issued by a central bank nor are they linked to the price of a stable asset. Ripple argues that its XRP coins had initially been exposed to a certain volatility due to an increase in demand and the growth of the coin's ecosystem; however, they believe that this will even out as the demand becomes more constant due to a steady demand for XRP as bridging currency. IBM is trying to go a step further by establishing a stable digital asset (so-called stable coins). This is done for instance by linking the price to a leading currency (such as the US dollar, the Euro or the British pound) or the gold price. IBM is trying to settle financial transactions in fiat currencies as well as in any digital currency or to also allow the digital currency as bridging currency. This would mean a bigger commercial scope for the crypto-currencies as their demand rises.

Market adoption and challenges for blockchain technology for payment operations

Globally, there are more than 200 financial institutions that are participating in RippleNet, among them big institutions such as Santander, SEB, Western Union and Moneygram that are already offering -- or at least testing -- payment solutions based on Ripple's blockchain.

Not much is known about the user community of IBM's World Wire. According to IBM, 97% of the world's largest banks are their customers for hardware and software solutions. Moreover, about 90% of all credit card transactions are settled through IBM systems. This customer base and the enormous market share could certainly be helpful in gaining the trust of potential customers when introducing a new innovative solution such as World Wire.

Until recently, SWIFT, with its more than 11,000 participating financial institutions and its obvious market dominance, has been very reticent in dealing with the topic blockchain, despite the up-and-coming competition. Instead, SWIFT is counting on its SWIFT GPI (Global Payment Initiative). GPI is no technical revolution but is based on the already existing SWIFT network. The big difference to the traditional network is the creation of uniform standards and the possibility to permanently track payments. For instance, remittance data should be transmitted unaltered along the transfer path in the network by the various correspondent banks, thus facilitating the matching and recording of the payments, thus shortening the processing. Because of the stringent standardization requirements, the banks wishing to participate in GPI are forced to make far-reaching adjustments to their internal payment operations. This therefore may also be one of the reasons why so far only a small fraction of 11,000 worldwide institutions (approx. 160) have adapted their system to SWIFT GPI standards.

SWIFT has cautiously admitted that the market for payment operations is undergoing dramatic shifts and that blockchain is a technology that is sufficient mature to bring about major changes to the

market circumstances of payment operations. On the one hand, SWIFT is trying to establish its GPI approach as the new remittance standard among its participants by 2020. It intends to implement this with mandatory standards, without which a participation in the SWIFT payment operations becomes

impossible. Moreover, SWIFT has also been testing blockchain as an option to execute international remittances since 2017 together with technology service providers and partner banks. As such, SWIFT recently informed of its partnership with the blockchain consortium R3.

Despite all the innovation euphoria and the efficiency gains, the new solutions, such as those offered by IBM and Ripple, still have a way to go until they are widely accepted and have jumped regulatory hurdles, such as:

- Should digital assets be classified as securities, commodities or even a separate currency? Will different regulators have different opinions on this?
- How should digital assets be recognized and valued in the balance sheet and which methods are best to measure risk in order address capital requirements, just as an example?
- Will banks hold digital assets and trust these to settle cross-border payments?
- If banks do not hold these themselves but get them from digital providers of liquidity how should these be regulated going forward or how can liquidity be ensured in stress situations?
- How will the global money and collateral market develop and how will the big players in these markets react if the solutions described above establish themselves? Liquidity requirements in various fiat currencies would drop accordingly, currencies that currently are rather illiquid will become more accessible thus shrinking the spreads and risk premiums of the traded currencies.

How significant and relevant is all of this for corporate treasury departments?

The advantages of the new technology for corporate treasury departments are obvious. Executing payment operations in practically real time brings with it an incredible flexibility for practically every company and any treasury department. By streamlining the processes and increasing efficiency, the following advantages also become more evident in regard to risk and costs:

- Lower costs and premiums for remittances, FX conversions and the holding of foreign currency accounts abroad by reducing the use of financial intermediaries and bridging currencies in the remittance chain as well as the creation of more market places, thus competition.
- The settlement risk has been practically eliminated due to the simultaneous execution by all participants (the risk remains if not all business partners interact simultaneously).
- Certain treasury activities, i.e. obtaining currencies, disposing and hedging these, will cost less.

How should treasurers act in view of the current market situation, i.e. is the time already ripe to jump on the bandwagon?
The market for the solutions described is still in its infancy but is growing in leaps and bounds. It is therefore regulators and standard setters that have to get in on this as fast as possible in order to clarify the open questions. Once the legal framework has been created, the question for treasurers will certainly depend on their companies' business models and the banking landscape of each individual company:

- Are cross-border payments (possibly also in more exotic currencies) a significant part of the treasury business?
- Do payment operations (therefore affecting treasury activities) cause significant fees and costs because of the business model?
- Are my company's main banking partners already participants in an innovative payment operations network?

Depending on how these questions are answered, it may be worth discussing certain implementation scenarios with your house bank(s).

In any case, it may be said that new life has been injected into the markets, pushing established players, such as SWIFT, to act. In the end, it is highly likely the markets will become more competitive, resulting in lower costs for payment operations and higher transparency in the payment process.

Contact

KPMG AG
Badenerstrasse 172
PO Box
CH-8036 Zurich

kpmg.ch

Martin Thomas
Director
Finance and Treasury Management

+41 58 249 59 37
martinthomas1@kpmg.com

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Sustainable Finance

New Challenges for Corporate Finance

Finance- and Treasury Management Switzerland

More and more investors, insurers and investment funds consider a company's adherence to ecological and social standards when making lending and investment decisions. In December 2016, the Task Force on Climate-related Financial Disclosures published a recommendation on the disclosure of information on climate-related risks for companies. In the past year, a high-level expert group of the EU Commission drafted various laws addressing the integration of sustainability topics into the EU's regulatory and economic frameworks and into corporate reporting. The idea is to provide uniform standards to allow an assessment of whether ESG (environmental, social, governance) factors have been fulfilled.

This regulatory initiative aims to promote investments in climate protection in order to achieve the 2030 targets of the Paris Agreement on Climate Protection. Accordingly, the European Commission sees a central role in the financial system when it comes to implementing the sustainability strategy. The aim is not only to increase direct investment in sustainable projects but also to achieve an indirect impact by taking into account financing decisions to determine whether the borrower is complying with the ESG criteria. The regulations aim to obtain comprehensive sustainability while preventing the "greenwashing" of investment products or individual investments.

Current surveys say that 66% of investors are convinced that considering ESG factors helps to identify and mitigate risks, while 56% indicate that they get their ESG information on companies from annual reports and that this data influences their decisions and investment strategies. For instance, at the beginning of February 2019, HSBC communicated that it was going to calculate the CO2 output of its credit portfolios and that it would provide a significant portion of its loans to sustainable projects. Union Investment announced that sustainable criteria should apply to investments for all of its managed assets within five years. Other large financial institutions, such as the Norwegian State Fund, Allianz, Munich Re, Blackrock, DZ Bank and Deka, have declared that they were going to integrate sustainability considerations in their business decisions.

Among other things, the aim of the regulation is to integrate the relevant information into corporate reports. For Corporate Finance, it is therefore only a matter of time before they have to give investors answers on their company's adherence to ESG criteria. These criteria include:

- Investments in renewable energy
- Reduction of CO_2 emissions
- Efficient use of energy, commodities and water
- Eco-friendly production
- Work conditions, including the avoidance of forced labor and child labor
- Employees' freedom to assemble and join a union
- High work safety and health standards
- Fair working conditions, adequate remuneration, training and CPD, as well as non-discrimination
- Linking of management remuneration to attainment of sustainability goals
- Prevention of bribery and corruption
- Fair tax strategy
- Measures to improve cyber security

Beyond that, a company should also be able to present how it is/will be affected by climate change, which financial repercussions it expects from this and what its mitigating strategies are.

The law drafted by the EU Commission in May 2018 foresees that economic activities are classified as eco-friendly or sustainable as soon as at least one of six EU environmental objectives is being pursued:

1. Climate protection
2. Adjustment to climate change
3. Sustainable use and protection of water and maritime resources
4. Development of closed-loop economy, waste reduction and recycling
5. Avoidance/ mitigation of environmental pollution
6. Protection of a healthy eco-system

To this end, a taxonomy should be prepared which defines the criteria for an assessment of these, so that investments may be classified along standardized categories. This taxonomy is expected to be presented by mid-2020, along with an eco-certification of financial products, which will then be a characteristic of debt instruments, notes payable and other financing instruments.

In the future, treasurers will have to make it even more their business to be part of such decisions and processes to ensure that these aspects are adequately taken into account in the company and that investors' questions can be answered to secure the necessary financing. Treasurers will have to get involved in areas such as investments, the selection of suppliers and customers, production processes, HR policies, IT security and the internal control system, as all these will have to meet the standards expected by investors.

Treasurers who are wondering where their job is going in view of the increasing automation and digitalization thus see that they will still have a job, albeit a different one but just as important.

Contact

KPMG AG
Badenerstrasse 172
PO Box
CH-8036 Zurich

kpmg.ch

Martin Thomas
Director
Finance and Treasury Management

+41 58 249 59 37
martinthomas1@kpmg.com