

# UNIVERSITY OF PIRAEUS



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Target Instant Payments (T.I.P.S.)

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## ABSTRACT

This thesis explores TARGET INSTANT PAYMENT SETTLEMENT (TIPS), a payment services infrastructure developed in the Eurozone. The aim is to spot the added value of the service and identify the potential threats and risks associated with its operation.

Why was TIPS introduced at this point? What is the added value of the service? Which participants in the payment system will be affected? Who is responsible for its operation? Are there other options? What are the possible disadvantages? Are these disadvantages recognized? Does the existing legal framework support the development of such an infrastructure? Is there a connection between TIPS and digital currencies? This thesis seeks to answer questions such as these and at the same time raise readers' concerns about other service-related issues.

This thesis is based on reports and rulebooks published by the European Central Bank and National Central Banks. The views contained in this thesis are personal and cannot be considered to represent the views contained in the rulebooks and reports.

The first chapter describes the payment procedure and makes an introduction of the existing payment scheme. A short presentation of services that compete TIPS follows and a comparison between them in order to spot the added value of the service. The second chapter contains technical details about TIPS's operation, its structure and governance and summarizes the legal framework upon which the service is built. A cost-benefit analysis on each participant directly or indirectly involved in the service, follows. In the fourth chapter the instant payment scheme outside the Euro Area is presented and the question of whether these solutions apply in the Euro Area is answered. The last chapter contains the potential effects in the global economy, the consequences in the financial stability within the Euro Area and tries to spot any possible connection between instant payments and digital currencies.

Key words: Payment System, Payment, Instant payment, Settlement, Clearing, Target2, Target Instant Payments, Real Time Gross Settlement, Digital Currency

## ΠΕΡΙΛΗΨΗ

Η παρούσα διατριβή διερευνά το TARGET INSTANT PAYMENT SETTLEMENT (TIPS), μια υποδομή υπηρεσιών πληρωμών, που αναπτύχθηκε στην Ευρωζώνη. Στόχος είναι ο εύρεση της προστιθέμενης αξίας του συστήματος καθώς ο εντοπισμός των πιθανών απειλών και κινδύνων που σχετίζονται με τη λειτουργία του.

Γιατί εισήχθη το TIPS σε αυτό το χρονικό σημείο; Ποια είναι η προστιθέμενη αξία της υπηρεσίας; Ποιοι συμμετέχοντες στο σύστημα πληρωμών θα επηρεαστούν; Ποιος είναι υπεύθυνος για τη λειτουργία του; Υπάρχουν άλλες επιλογές; Ποια είναι τα πιθανά μειονεκτήματα; Αναγνωρίζονται αυτά τα μειονεκτήματα; Το υπάρχον νομικό πλαίσιο υποστηρίζει την ανάπτυξη μιας τέτοιας υποδομής; Υπάρχει κάποια σύνδεση μεταξύ TIPS και ψηφιακών νομισμάτων; Αυτή η διατριβή προσπαθεί να δώσει απάντηση σε ερωτήματα όπως αυτά και ταυτόχρονα να προκαλέσει την ανησυχία των αναγνωστών για άλλα θέματα σχετικά με την υπηρεσία.

Η παρούσα διατριβή βασίζεται σε εκθέσεις και εγχειρίδια κανόνων που δημοσιεύουν η Ευρωπαϊκή Κεντρική Τράπεζα και οι Εθνικές Κεντρικές Τράπεζες. Οι απόψεις που περιέχονται σε αυτή τη διατριβή είναι προσωπικές και δεν μπορούν να θεωρηθούν ότι αντιπροσωπεύουν τις απόψεις που εμπεριέχονται στα εγχειρίδια κανόνων και τις εκθέσεις των Εθνικών Κεντρικών Τραπεζών και της Ευρωπαϊκής Κεντρικής Τράπεζας.

Το πρώτο κεφάλαιο περιγράφει τη διαδικασία μιας πληρωμής και κάνει μια εισαγωγή στο υπάρχον σύστημα πληρωμών. Ακολουθεί μια σύντομη παρουσίαση των υπηρεσιών που ανταγωνίζονται τα TIPS και μια σύγκριση μεταξύ τους προκειμένου να εντοπιστεί η προστιθέμενη αξία της υπηρεσίας. Το δεύτερο κεφάλαιο περιέχει τεχνικές λεπτομέρειες σχετικά με τη λειτουργία του TIPS, τη δομή, τη διακυβέρνηση του και περιγράφει το νομικό πλαίσιο πάνω στο οποίο βασίζεται η υπηρεσία. Στη συνέχεια παρατίθεται μια ανάλυση κόστους-οφέλους για κάθε συμμετέχοντα που εμπλέκεται άμεσα ή έμμεσα στην υποδομή. Στο τέταρτο κεφάλαιο παρουσιάζεται το σύστημα άμεσων πληρωμών εκτός ζώνης του ευρώ και απαντάται το ερώτημα εάν αυτές οι λύσεις δύνανται να εφαρμοστούν στη Ευρωζώνη. Το τελευταίο κεφάλαιο περιέχει τις πιθανές επιπτώσεις στην παγκόσμια οικονομία, τις συνέπειες στη χρηματοπιστωτική σταθερότητα εντός της Ευρωζώνης και προσπαθεί να εντοπίσει οποιαδήποτε πιθανή σύνδεση μεταξύ των άμεσων πληρωμών και των ψηφιακών νομισμάτων.

Λέξεις κλειδιά: Πληρωμή, Σύστημα Πληρωμών, Εκκαθάριση, Διακανονισμός, Target2, Target Instant Payments, Real Time Gross Settlement, Ψηφιακό Νόμισμα

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The professor contribution was determinant in making this thesis understandable for every reader. This text not only describes plainly the operations of the payment system and the TIPS infrastructure, making it understandable for users unfamiliar with the payment scheme, but also tries to generate questions and concern readers familiar with the topics described, by driving them to make critical assessment to the project.

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## 1) Introduction

Today we live in a world that is massively affected by globalization. All sectors of human activity are continuously adapting to the new needs rising under these conditions. The global scheme that is being forged, demands greater speed and efficiency. Thus, the transition to digitalization in every sector of human activity is inevitable.

The effects of this transition have a remarkable impact in the global economy consequently. People tend to make transactions all over the world and round the clock. Information is continuously generated and exchanged between individuals, businesses and public authorities and the need for its efficient and instant utilization is urgent. As a result, the transition to digitalization has a significant impact to the global economy consequently.

The nature of transactions has altered. The need for shorter execution times, more safety and lower transaction costs is continuously rising. Innovative payment options are continuously introduced. New payment service providers try to be benefited from the inefficiencies of the existing scheme. As a result, electronic payments have started gaining a great share in the payment scheme.

Despite the advantages that electronic payments have to offer, the ceaseless interaction between the parties of the global economy subsequently demands a simpler, more efficient payment system with lower operating costs. A system that offers wide and costless access. Access independent of that to the banking system. A system where information's allocation is efficient, transparent and can be used for the greater good and the evolution of economy and human activity subsequently. A system where settlement is executed instantly and the credit and settlement risks are limited. A system that would contribute significantly to the governance, monitoring and management and would improve the performance of all parties involved in the global economy, by lowering the execution times and limiting the risks and costs regarding the transactions.

Even though the introduction of digital payments has contributed significantly to the evolution of the global payments scheme, the COVID 19 pandemic came to highlight the existing deficiencies.

The pandemic forced the transaction to digital means and strengthened the demand for faster settlement and clearing executions procedures. At that point, the solution of Instant Payments (IPs) was considered suitable. IPs offer a combination of real time transactions, round the clock and independently of the place of the participants. At the same time, they offer high safety and security standards by making the payment system transparent.

On the other hand, instant payments are closely associated with significant risks and costs for some participants of the payment scheme. For instance, the fact that settlement and clearing are executed instantly, makes instant payments irrecoverable. Who is responsible in case of a wrong order? Is there an option to reverse the transaction after the amount is transferred? Moreover, the existing infrastructures cannot support multicurrency transactions.

What is the added value of a single currency payment system in the existing payment scheme? In case where the system executes multicurrency transactions, questions rise regarding the exchange rates. Who will determine these rates? Is it really possible for the amounts to be converted directly? Does this action grow the exchange rate risk? Are the Payment service providers willing to undertake that risk?

To sum up, taking into consideration all the factors mentioned above, it is clear that the demand for smoother and continuously adaptive solutions in the payments scheme is growing ceaselessly. Thus, the introduction of national instant payment mechanisms forced the European Central Bank to respond immediately and develop an infrastructure that would operate as a pillar for them, in order to avoid fragmentation in the retail payment scheme. The ceaseless war between USD, Euro and other currencies, strengthened the demand for the development of something innovative in the Eurozone, which would undertake the settlement of instant payments effectively at a centrally authorized level. Moreover, the fact that payment card sector and fin-tech companies mainly established in the USA and Asian markets seemed to gain an even greater fraction in the international digital retail payment scheme, pushed the European Central Bank to take drastic measures, in order to keep the financial stability which remains its main task. ECB was forced to examine her options and expand its reach, in order to remain key player in the global payment scheme and keep the euro currency strong against the dollar.

As of today, instant settlement and finalization were offered by fiat money exclusively. The development of IPs introduced to the payment scheme an innovative option combining the advantages of fiat money with higher safety standards. In this thesis we are going to examine, whether the option of Instant Payments apply in the Eurozone, regarding the existing legal framework and whether the existing infrastructures can support its operations. So, does the added value of the service really justify the investment of funds and resources earmarked for the project?



## **2) Payment system – Operations and Components**

Independently of the means of payment, all payment options are closely connected with financial institutions. In order to understand this connection, initially it is important to define what payment is, to examine the life cycle of a payment and spot the elements and procedures of a payment system. The chapter closes with the description of the role of the main participants involved in the procedure.

### **2.1 Transaction**

Transaction is an agreement between two parties to exchange commodities, services or funds for a determined price. Each transaction has two settlement components. The delivery of the good, service or funds from the one party and the transfer of the agreed funds from the other party.

There are two types of transactions. Cash transactions and non-cash transactions. Cash transactions are agreement between parties to buy/sell a product, service in exchange for cash. In non-cash transactions (payment cards, cheques, credit transfers, direct debits) money is transferred between the accounts of the parties involved in the agreement. Buying a product with debit card is the most common example of non-cash transaction.

An agreement between two parties to exchange a commodity for a service or other commodity and vice versa is also a non-cash transaction. Nowadays, the exchange of goods or services cannot be applied and money regardless of its form (card, cash, checks, mobile application) is the main means of transaction. Imagine an owner of an electronic device store that wants to buy a medicine. In order for the transaction to be completed, the owner of the pharmacy should accept an electronic device in return for the medicine requested. Even in case where the two parties came to an agreement, the products or services exchanged should match their value. Thus, money is the main means of transactions in today's economy. Credit transactions are considered non-cash transactions too. Credit transactions include all trading activities where payment is promised and completed at a future date than the date of delivery of commodity or service. Many companies tend to sell their products or provide services on credit.

### **2.2 Payment**

Payment is the second component of a transaction which contains the transfer of funds. There are numerous payments options in order to meet the needs of the global economy. Debit and credit cards, checks, cash, wire transfers and mobile phone apps are the most common. Instant payments are an innovative means of payment which is important to understand the way they are executed in order to assess TIPS operations.

## 2.3 Payment system

A Payment System is a technological infrastructure which coordinates all the procedures, intermediaries and instruments under specific rules, in order to achieve the smooth and safe circulation of money in a currency area. In other words, a payment system executes the transfer of funds between the ordering and beneficiary party of any transaction. (Federal Reserve Bank of New York, October 2000.)

Payment instruments are the main components of a payment system. Through payment instruments the authorization and submission of any payment is accomplished. Payment instrument contain, all the means by which the payer (ordering party) gives its financial institution authorization to transfer the ordered funds. Respectively, the payee (beneficiary party) grants its financial institution permission to collect these funds. The most common payment instruments are credit and debit cards, checks and mobile phones.

The main process of a payment system is clearing, where payment instruction is exchanged between the financial institutions that manage the respective accounts. The payer introduces a payment instruction through his payment instrument. Then the clearing procedure follows where the instruction is shared between the respective institutions (banks, fin-tech companies) that manage these accounts, in order to check the availability of the funds.

Imagine a consumer buying an electronic device. The consumer chooses between the available payment instruments such as a debit/credit card or mobile app in order to complete the transaction. Then the seller makes use of his payment instrument such as a POS to inform his financial institution about the requested funds. Clearing follows. If there are sufficient funds in the payers account the institutions are informed respectively and the transaction is approved. Otherwise, the payment is declined. That is the clearing procedure which is vital in order to zero the credit risk of transactions.

The final component of a payment system are the means of settlement. Settlement is the procedure where the funds are transferred from one financial institution to another in the first place, and to the relevant accounts in a final stage. The transfer is accomplished either by an exchange of funds into the relevant accounts held on a third party, called settlement agent, or either by bilateral.

A payment system offers services and alike each service and product, its nature is determined by supply and demand. The demand in this case comes from the members of transaction that require wide and easy access with no restrictions to execute their financial transactions. Those transactions can either be wholesale payments (mostly referring to large amounts that are exchanged between financial institutions), retail payments (mostly

small amounts referring to daily transactions) or security transfers. The users seek for low transactions costs, high security standards, strong legal protection, privacy and immediacy. On the other hand, the supply is determined by payment service providers such as banks, financial institutions and fin tech enterprises who share the revenue of the system by providing their financial services.

## **2.4 Access to the payment system**

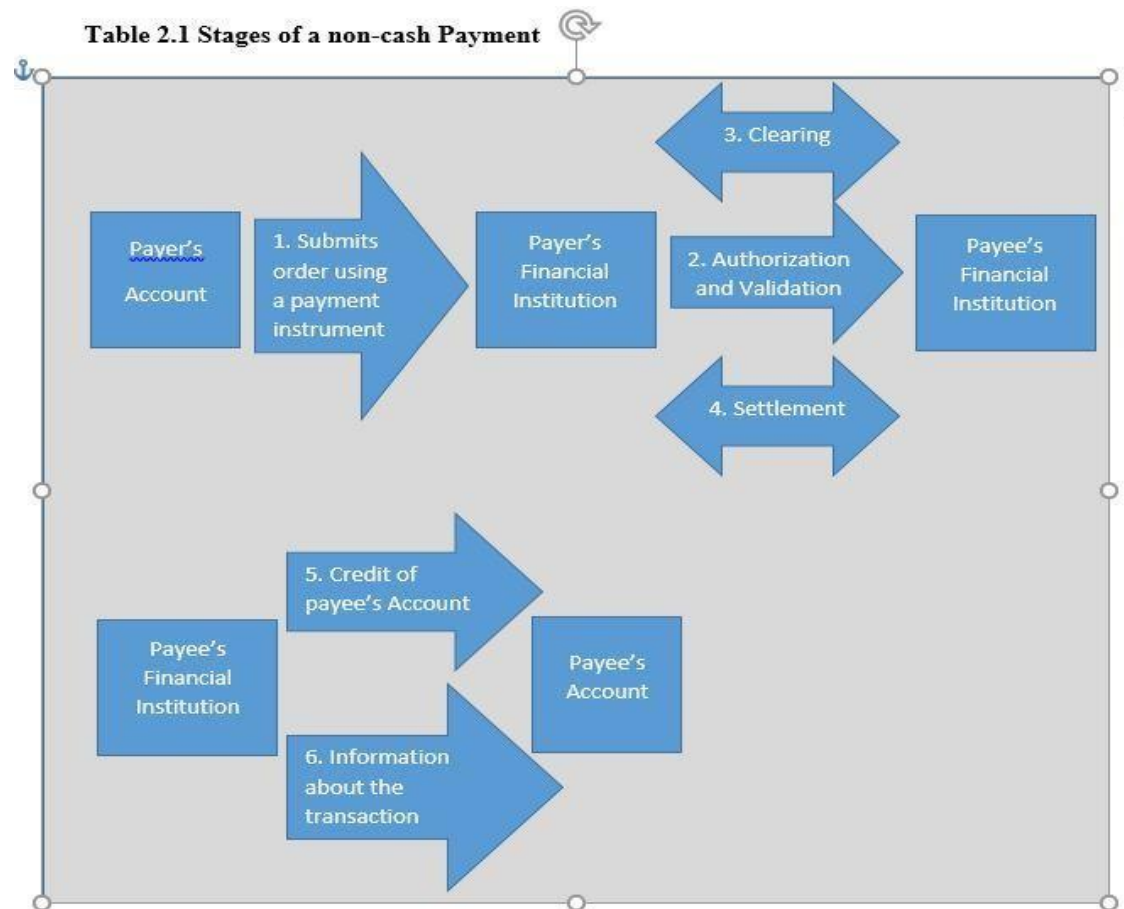
The conditions governing participation in and membership of a payment system are known as “access criteria” and serve to define the potential members of a system. Access criteria may include minimum requirements for a potential participant, such as quantitative criteria (concerning, for example, a participant’s capital base, credit rating or payment volumes), qualitative requirements (relating, for instance, to the entity’s legal status), and technical, operational and geographical criteria. The basic objective of such access criteria is to ensure that individual members do not introduce an unacceptable financial, operational or legal risk into the system. There are two basic means of accessing a payment system: direct participation as a full member; or indirect participation via a direct participant.

Direct participants can perform all activities allowed in the system without using an intermediary – including, in particular, the direct inputting of orders and the performance of settlement operations. Direct participants have to fulfil all of the system’s access criteria. Typically, the identity of a direct participant is known to all parties. A remote participant is a special type of direct participant – one which has no physical presence in the country in which the system is located.

An indirect participant uses a direct participant as an intermediary in order to perform some of the activities allowed in the system (particularly settlement), doing so through the establishment of a bilateral agreement with the relevant direct participant. Indirect participants do not normally hold an account with the settlement institution, instead having to act via their direct participant. Their rights and responsibilities vary from system to system, and so they may or may not have to fulfil certain access criteria, and they may or may not be directly addressable in the system (i.e., without the need to specify the relevant direct participant on a payment order for the indirect participant). As multilateral arrangements, payment systems make the processing of payment instructions more efficient by coordinating the exchange of payment instructions and providing communication networks and processing services.

After briefly describing the operation of a payment system, it is advisable to analyze the Life Cycle of a Payment and examine the parties directly or indirectly involved in these procedures.

## 2.5 Life Cycle of a Payment



*Non-cash Payment*

The Life Cycle of a non-cash Payment is executed in 6 stages. (European Central Bank, 2010. "The Payment System"). The submission of the payment order. The internal processing of the ordering customer's bank in order to validate and authenticate the payment instruction's origin. The clearing of the transaction where the information is shared between the relative financial institutions. The settlement of the payment where funds are actually exchanged between the respective institutions following the approval of the payment instruction. The beneficiary's bank internal procedure, where the respective account is credited accordingly and the final communication where the beneficiary is informed about the finality of the payment. In the following paragraphs each step is analyzed in detail

In the first stage the payment instrument is chosen in order to submit the payment instruction. A payment instrument is the mean enabling the transfer of funds from the ordering (payer) to the beneficiary party (payee). The payments instruments are divided into cash instruments (banknotes, coins) and non-cash instruments (e.g., cards, mobile applications, cheques). In transactions completed without the use of cash the payment

instrument is the procedure, by which funds are exchanged between the relevant accounts. Non-cash payment instruments basically submit the payment instruction to the respective financial institutions.

The second stage describes Bank's internal processing following the submission of the payment instruction. The sending bank (bank that holds payer's account) verifies the payment instrument used. In particular, it is responsible for checking the availability of funds and verifying their legal and technical validity. Basically, the message is examined in relation to the relevant security standards and the existence of key data elements in its structure. In case the message does not follow the corresponding rules and instructions it is automatically returned to the sending party. In case of compliance with the rules and security standards, the necessary entries are registered in the accounting system of the respective bank and then the payment order is forwarded to the clearing and settlement procedures.

In the third stage the payment instructions are initially collected, matched, sorted and shared between the payer's and payee's financial institutions. The payment order is eventually confirmed in order to proceed to the fourth stage, the settlement stage. Basically, this step is the clearing of the payment instruction, where financial institutions exchange and validate the information regarding the transaction in order to accept or deny the transaction. These procedures are sometimes executed by third parties called correspondent institutions.

The fourth stage contains the settlement of the payment order. After the order is approved, the requested funds are transferred between the financial institutions. The payee's financial institution's account is credited and the payer's financial institution's account is debited accordingly. The settlement procedure can be accomplished either bilateral if the two institutions have accounts registered in the same payment system, or through a settlement agent who holds accounts of both institutions in its books.

In the fifth stage the beneficiary's (payee's) financial institution credits his account, in order to make the requested amount available for use to its client.

In the sixth and final stage the beneficiary/ ordering party is communicated and informed about the credit/debit of his account.

## **2.6 Payment System Main Participants**

After examining the procedure of a non-cash payment, we are going to analyze the operations of each participant individually, in order to make a comparison between Target Instant Payments Settlement and the competition. Services added value to the existing

payment scheme is going to be spotted. The possible drawbacks regarding its operations will be recognized. A brief analysis over the existing payment scheme in Eurozone is vital in order to examine the relationship between TIPS and the other services. This chapter describes the role of payment service providers, the clearing and settlement mechanisms, the automated clearing houses and real time gross settlement systems.

As mentioned in the previous paragraphs, transaction is the act of buying or selling something. The agreement between two parties to exchange something of a determined value in other words. Each transaction consists of 3 stages in order to be installed successfully. In the initial stage, participants come to an agreement. Thereafter clearing follows, which secures correct and on time transfer of funds between the participants. Clearing as a procedure promotes cooperation between the parties, allocates efficiently transfer's reserves and limits the default and settlement risk. "Clearing is the process of transmitting, reconciling and, in some cases, confirming transfer orders prior to settlement, potentially including the netting of orders and the establishment of final positions for settlement", (ECB 2010). In the European payment scheme, organizations acting as intermediary, undertake the clearing of transactions by matching the buyer and seller and ensuring that the agreement reached between the two parties can be fulfilled. After Clearing comes Settlement where the funds are actually transferred and become available to the beneficiary's account for use. "The completion of a transaction is succeeded by the final transfer of funds, which subsequently drives to the discharging participants' obligations. (European Central Bank, 2010. The Payment System)". Settlement risk is limited by the clearing procedure as the adequacy of funds is secured at an initial stage.

### **2.6.1 Clearing and Settlement Mechanisms**

Clearing and Settlement Mechanisms are infrastructures used to clear and settle the payments instructions. Most of those mechanisms operate automatically. They are high tech systems with high security standards that entry the instructions and make the required processes in order to finalize a payment instruction. (Tompkins M. November 2018. "Clearing and Settlement Systems from Around the World: A Qualitative Analysis", Payments Canada Research Unit, and Ariel Olivares, Bank of Canada.

Clearing mechanisms are mainly executed by organizations called Clearing Houses. If these mechanisms execute their operations automatically, they are called Automated Clearing Houses. An ACH operates at a central level (most of them facilitate at a national level) and clear the instructions at batches. ACH also executes the netting of payment orders. Other than ACH, there are Clearing Associations. In reverse with the operation of an ACH, the CA does not operate at a central level and does not execute netting of payment instructions. Netting is the procedure by which mutual obligations are matched and sorted to establish a net settlement position (European Central Bank, 2010. "The Payment System").

### **2.6.2 Automated Clearing House**

An Automated Clearing House (ACH) is an electronic net settlement infrastructure for clearing large number of grouped payments. ACH handles mainly domestic transactions. An ACH system's aims to achieve low processing costs for both credit transfers and direct debits. ACH credit transfers consist of payrolls, retail payments and vendor payments. Every type of bill payment is included in the ACH direct debits. ACH receives grouped payment orders by the banks. These orders are stored by each bank through its operating hours and are shared to the clearing house later. The process of clearing in an ACH may take days before it is processed, so the settlement risk remains high. ACH systems are mainly used for low value and non-urgent transactions. ACH are mentioned in this thesis, as TIPS service benefits them, by offering them the option of operating cross border transactions. Additionally, the settlement and clearing procedures become simpler through TIPS service.

### **2.6.3 RTGS**

Real Time Gross Settlement is a system where clearing and settlement take place immediately, upon receive of the order, from the beneficiary's bank. Thereafter, ordering customer's account is charged and beneficiary's account is credited. The accounts are hold in the same institution (central bank) and thus transaction is executed electronically. Transactions are processed individually. RTGS is mainly used for wholesale payments, which are of high-value and importance. Since the clearing and settlement procedure happen instantly these types of transactions are irrecoverable.

RTGS limits the settlement risk since accounts are held in the same institution and transaction is finalized as soon as, there the required funds are available. On the other hand, costs are higher, since the pricing is adopted on each transaction separately rather than a group pricing like in an ACH. RTGS have an increased risk of data leak and fraudas everything happens instantly and the system is more vulnerable to hacking.

On the contrary, ACH payments have lower transactions costs but have higher settlement risk due to the time of clearing and settlement and thus are ideal for retail non urgent payments. An ACH calculate the net balance on central bank sheets, while in an RTGS system there is no net settlement as transactions are settled individually.

### **2.6.4 Payment Service Provider**

A Payment Service Provider is an enterprise, which supports the procedure of a transaction by accepting a variety of online payment methods on behalf of its customers.

The payment methods that Payment Service Providers mainly accept, are payment cards, online banking applications, e-wallets, cash cards and prepaid cards. (The World Bank, July 2001. "The Oversight of the Payment Systems: A Framework for the Development and Governance of Payment Systems in Emerging Economies").

Payment Service Providers support businesses to widen their range of payment methods. They ensure that the procedure of a transaction reaches to a specific point. Payment Service Providers connect banks, card providers and payment networks. Their main goal is to achieve lower transaction costs by managing these technical connections and negotiations between financial institutions and merchants at batches. Merchants become less dependent on the banking system and competition regarding their commercial accounts management becomes stronger. Merchants are offered the choice of either negotiating directly with the respective bank or through a Payment Service Provider.

A Payment Service Provider offers services other than the procedure of a payment, such as risk management for electronic payments, reporting, fraud protection and in some cases multicurrency services. PSPs charge their clients either a flat fee per transaction or a percentage depending on the amount involved.

As a payment service provider can operate an issuing bank, an acquiring bank, a payment gateway, a payment processor or a payment network.

An issuing bank is a bank or financial institution which supply payment cards to consumers on behalf of card networks such as Visa, American Express or MasterCard. In detail issuers provide credit cards, debit cards, contactless devices or prepaid cards. Basically, issuing bank or issuer, is the consumers bank and is responsible for transferring the funds to the merchant's bank (acquirer or acquiring bank). An issuer faces credit risk when it provides credit to its customer. In addition, there is always the risk of account fraud or transaction fraud. The issuer is responsible for paying in full for an unverified account operating under its own name or for any fraudulent debits made to its customer accounts.

An acquirer is a financial institution or bank, which collects funds on behalf of the merchant from the consumer. Acquirers support the merchants' activity by contacting the issuing bank, the consumers' bank, on behalf of their client. An acquirer is mainly associated with the risk of an insolvent merchant. That risk mainly occurs when there is a fund reversal, by the cancellation of transaction, either by the consumer or by the merchant before settlement occurs.

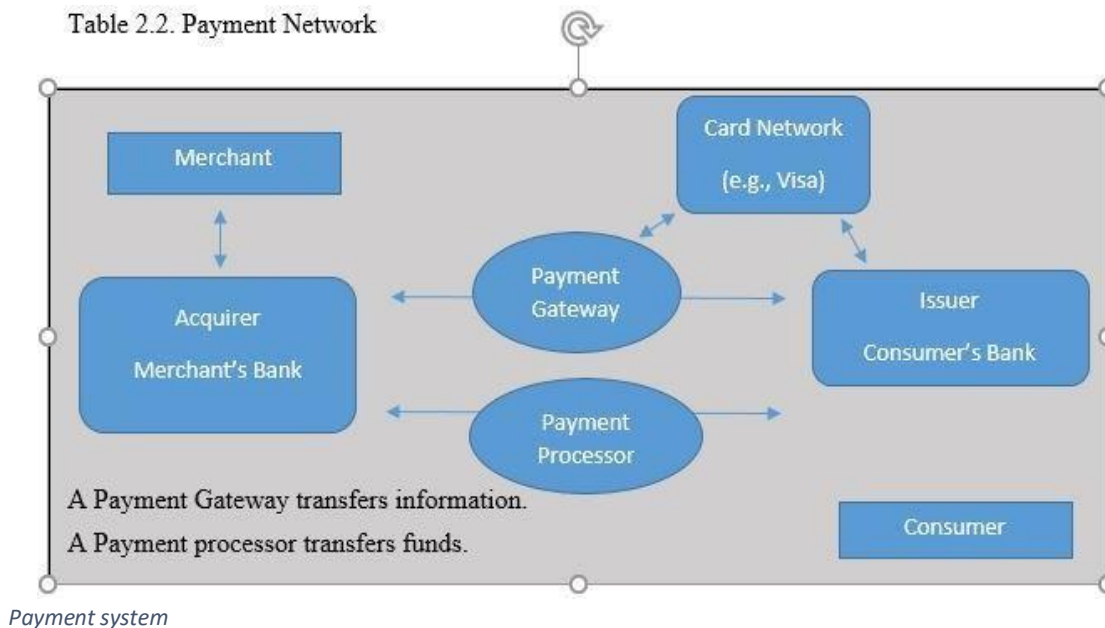
Payment gateway is an infrastructure that transfers information between a payment portal



(e.g., mobile application, website) and the acquirer. A Payment gateway is not involved in the transfer of funds. In most case it is a server where merchants are connected with the acquiring banks and gain access to the different payment methods. For instance, imagine a consumer buying something from an e-shop. The gateway is responsible for the technical operations and the transfer of the order to the merchant, starting when the button “submit order” is pressed by the consumer. There are many types of message formats by which a message is constructed.

A payment processor is an infrastructure that operates financial transactions on behalf of a merchant. A payment processor manages transactions from a variety of channels, such as cards or bank accounts. Payment processors are divided in the front-end and back-end regarding their operations. The front-end are connected to card issuers and operate authorization and settlement services to the merchant’s bank. The back-end accept the settlement result and are responsible for the transfer of funds between the issuing banks (consumer’s bank) and the acquiring banks (merchant’s bank).

A payment network also known as payment system is an infrastructure that contains all the procedures mentioned above. The payment systems in Eurozone for Large Value Payments are EURO1 and TARGET2. Retail payments system in Eurozone are STEP1, STEP2 and TIPS.

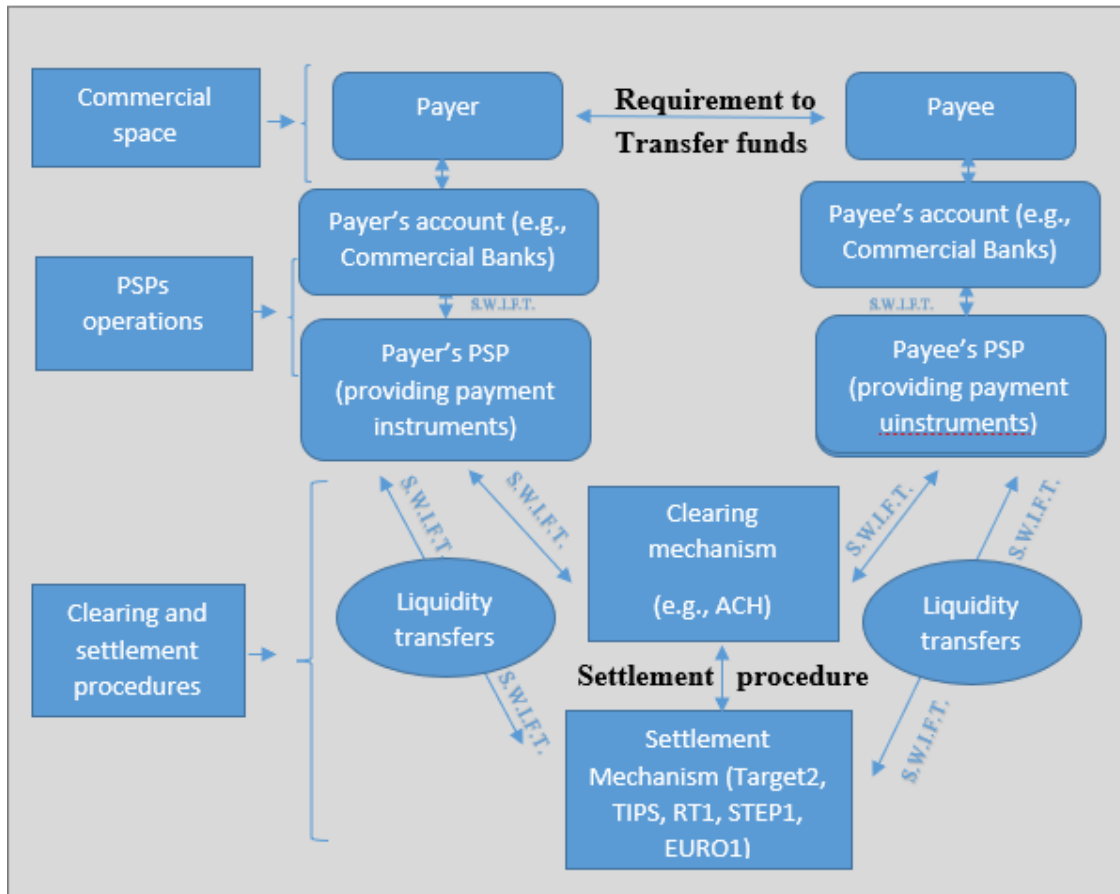


### 3) European Payment Scheme

This chapter presents the payment scheme in Europe. In the beginning, there is a synopsis of the current messaging system. Even though there are many messaging systems for information exchange purposes between financial institutions, this thesis focuses on

SWIFT, since it is currently dominating, from a participation perspective and ISO20022, which is strongly believed to undertake SWIFT in the years to come. A description of Single Euro Payments Area follows, which contains directives and rules in order to accomplish a pan European smooth and interoperable payment scheme. This chapter ends up to the European settlement mechanisms of EURO1, TARGET2, STEP1 and Target Instant Payments Settlement and a comparison between the first and the second pair accordingly.

**Table 3.1.1 Credit Transfer Scheme**



*European Payment Transfer Scheme*

Communication between PSP's and financial institutions is accomplished through the S.W.I.F.T. service. The Payment Order is instructed by the payer to the respective PSP through the relative payment instruments (e.g., debit/credit card, mobile application)

### 3.1 Messaging standards

**Table 3.1.2 Messaging Standards**

	Wholesale Payments	Retail Payments
S.W.I.F.T. Standards old	TARGET2, EURO1	STEP1, RT1
ISO 20022		TIPS

Messaging standards are set in order to achieve interoperability between financial institutions. They are produced mainly by bodies comprised by representatives from various national standards organizations. The most commonly used standards are those of International Organization for Standardization (ISO). These standards provide common rules for its members, in order to achieve exchange of financial information (e.g., payment instructions) at a global scale.

#### 3.1.1 SWIFT

Society for Worldwide Interbank Financial Telecommunications (SWIFT) is a messaging infrastructure used widely by banks and other financial institutions in order to exchange information and instructions fast, easily and securely. It operates as an intermediary between financial institutions in order to execute financial transaction at a global scale. S.W.I.F.T. messaging structure is based on ISO standards.

The system shares rules and directions, which have to be followed closely by its clients in order to achieve the required communication. Swift has more than 11000 members worldwide. The service executes successfully more than 40 million transactions each day as measured in March 2021. SWIFT ownership belongs to its participants-members which are categorized into groups according to their share of ownership. Each participant, pays a one-off contribution fee to enter the service plus extra charges annually, accordingly to the group it belongs.

SWIFT provides each financial institution or bank a unique code of either eight or eleven characters. The code is widely known as BIC, Bank Identifier Code. Each code follows a specific structure. The first four letters respond to the name of the institute/ bank. The next two characters stand for the country where the institution is operating. The next two stand for the city where the institution is established. The last three characters are optional and are

assigned to the branch of the institution. For instance, Bank of Greece is assigned to the B.I.C. BNGRGRAA, where BNGR stands for Bank of Greece, GR states the country where it belongs, and AA stands for Athens, where the central branch operates. For Bank of Greece Thessaloniki branch the Swift code is BNGRGRAA121, where 121 is assigned to this specific branch. (Ross Mc Gill, 2008. “Global Custody and Clearing Services”)

### **3.1.2 ISO 20022**

ISO 20022 consists of international interbank communication standards introduced by International Organization for Standardization (ISO). It consists of standards that describe the procedure of interbank messaging. It is designed to replace the existing S.W.I.F.T. standards. S.W.I.F.T. members are expected to fully adopt ISO 20022 by the end of 2025.

ISO 20022 provides interoperability and an international form of messaging, enabling a more effective allocation of information. That is a massive step towards the integration of the payments scheme internationally, since it promotes cross boarder exchange of information and consequently strengthens cross boarder payments landscape interoperability. Payments industry and financial institutions will adapt to the new framework and a common message structure will be adopted in the years to come. ISO 20022 benefits the current messaging system by introducing a new language that enables the introduction of non-Latin characters and symbols, following XML messaging approach and combining formats that could not coexist previously according to the SWIFT messaging standard.

The mention to the current messaging systems is important, considered that the TIPS messaging services comply with the ISO 20022 standard, while other TARGET and EBA Clearing services follow the previously published standards. The benefits of the new standard are applied to the TIPS infrastructure, and through that wider access, simpler and friendlier environment for the user is achieved.

Migration to ISO 20022 comes at a great cost. For Payment Service Users, migration costs average 10% of their payment processing costs. Payment Service User is any individual or legal person that uses Payment Service Provider either as a payee or payer. Payment Service Providers' costs of migration come to 70% of their annual transactions' costs. (“Costs and benefits of migration to ISO 20022 in SEPA”, Europe Economics, November 2016)

The main benefit of ISO 20022 refers to the transactions' costs and executions times. A wide adoption of the standard translates into common language for financial institutions. That would restrict the operation of systems that act as intermediary and their goal was to transmit messages between the different messaging systems. These innovative standards

bring greater interoperability and lowers the cross broader transactions costs. That is a great benefit for Payment Service Providers, as the new standard brings competition by supporting the introduction of innovative products and services (e.g., e- invoicing between customer and seller). On the other hand, the transition requires hardware and software investment. Technology required comes at a cost and banks and financial institutions are currently working the business case to justify this transition.

### **3.2 Single Euro Payments Area Instant Credit Transfer**

Single Euro Payments Area (SEPA) is a project aiming to bring market integration, interoperability and unity in the retail payment's scheme. It contains directives and instructions describing the procedure of sending and receiving electronic payments in euro. It is addressed to all economic operators such as individuals, firms and public entities.

The governance and operation of SEPA is assigned to the European Payments Council (EPC). In detail, EPC has made public, standards and instructions for harmonized payment instruments: the schemes (Rulebooks) for credit transfers (SEPA Credit Transfer - SCT), direct debits (SEPA Direct Debit - SDD) and for card payments (SEPA Card Framework) and settlement infrastructures.

In this thesis, we examine SEPA Credit Transfer – SCT rulebook, which is a rulebook describing the structure and procedure of a payment instruction. The main topics of this rulebook that need to be highlighted due to their immediate association with TIPS are the following three:

- a) The upper limit of each transaction's execution time is set to 10 seconds.
- b) The service's operating hours are set from 00:00-23:59 making it accessible round the clock and
- c) The maximum limit per transaction is €100,000, unless a different agreement is reached between the Payment Service Providers (PSPs) and Clearing and Settlement Mechanisms (CSMs).

How do PSPs actually gain access to the originator's funds? Can banks be completely cut-off from the payment scheme described? PSPs have authority to make transactions on behalf of their clients. This jurisdiction is granted by their clients. Payment Service Providers contact banks on behalf of their clients and transmit the required information between the related institutions. The systems operations require banks which hold the payer's and payee's accounts. In the existing structure, Payment Service Providers act as

intermediary and thus banks operation is vital for the payment procedure.

The actors of the settlement process of an instant credit transfer in the SCT Inst scheme are, the originator, who provides the initial instruction to the Payment Service Provider, the Beneficiary, to whom the funds are transferred, the Originator's PSP, which receives the instant credit transfer order from its customer, the Beneficiary's PSP, which holds the beneficiary's account, the Clearing and Settlement Mechanism consisting of one or more actors who jointly perform the necessary operations such as transmission, reconciliation, confirmation of payments and netting through the determination of a final position for settlement and settlement which is the extinction of the obligations determined in clearing.

The settlement process is strictly described in the rulebook. Firstly, the PSP receives the request to execute an instant credit transfer from the originator. Then the referred amount is reserved from the originator's account and is being sent to the collaborating CSM (Clearing and Settlement Mechanism). The originator's CSM forwards the instruction to the beneficiary PSP's CSM and stands for the reply. There are two scenarios. Provided that the payment order is accepted, the amount is charged on the originator account and afterwards the beneficiary's PSP makes the funds instantly available on its client's account. In case of rejection, notification is sent to the originator PSP. The Sepa credit transfer SCT or SCT Inst is feasible only in the case where both originator's and beneficiary's PSPs belong to the same CSM. In case they are registered to different mechanisms, those have to be interoperable with each other.

Even though the steps for an optimal instant payment scheme are strictly defined by the European Payment Council, CSMs are given the option to alter their operating models. In detail, a CSM can operate both clearing and settlement procedures, without any obligation to follow a particular model. Each CSM comes to an agreement with its participants over the terms of the order's receipt, and the conditions under which acceptance or denial of the order is submitted. Subsequently, each up to each PSP decision making, to determine the way of sharing credit and debit information to its clients accordingly. The clearing function can be performed by infrastructures known as Automated Clearing Houses (ACH), which allow participants to exchange flows containing payment information according to shared rules and standards. Settlement is then proceeded from the CSMs on behalf of its respective PSPs client, according to the limits of funding deposited by them on a dedicated account in TARGET2 (Dedicated Cash Account).

Target Instant Payments Settlement, which fully confronts with S.W.I.F.T. and ISO 20022 standards, settling and clearing procedures are executed following the SEPA Credit Transfer rules and instructions.

**Table 3.2 Payment systems in Eurozone**

Service/ Supervisor -Operator	Settlement of Large Value Payments	Settlement of Retail Payments	Instant Settlement of Retail Payments
ECB	TARGET2	-	TIPS
EBA Clearing	EURO1	STEP1	RT1

### 3.3 EBA Clearing

EBA Clearing is a pan European payments system's infrastructure provider owned exclusively by the biggest European banks. EBA Clearing is a pan European Payment System that uses the TARGET2 infrastructures for its operations. It supports a wide range of services for euro payments settling retail payments, large urgent payments and securities. EBA Clearing is responsible for the operations of EURO1, STEP1 and RT1.

#### 3.3.1 EURO1

EURO1 is a European infrastructure, equivalent to RTGS systems, which processes large value payments. It is the only infrastructure in the Eurozone that is operated by the private sector. The EURO1 system settles both domestic and cross border, urgent transactions on the same day they are installed. EURO1 uses TARGET2 as an intermediate for settlement at the end of each day. It is supervised by the European Central Bank in coordination with the National Central Banks. EURO1 is expected to adapt the ISO 20022 standard by November 2022, in order to accomplish wider interoperability and integration and make cross border payments feasible.

It needs to be highlighted that EURO1 is based on TARGET2 for accomplishing liquidity transfers, in order to achieve instant settlement. EURO1 participation is granted to banks with direct participation to TARGET2. As far as the financial criteria are concerned, a participant funds minimum requirements reach 1,25 billion and the credit rating score have to be minimum P2 (Moody's scale) or A2 (S&P's ratings).

EURO1 offers lower costs to its participants enabling them to make use of their excess liquidity during the day. In detail, there are seven liquidity distribution windows (at 11:00, 12:00, 13:00, 14:00, 15:00, 15:30, 15:45 and 16:00). During these windows participants can withdraw funds that exceed the required amount. The required amount is a minimum

amount that has to be available throughout the operation of EURO1 in order to achieve Clearing and Settlement in the EURO1 platform. These funds are held in accounts called liquidity transfer accounts and enable the settlement of the payment instructions. (EBA Clearing, April 2020. “EURO1PFMI Disclosure Report”).

### **3.3.2 STEP1**

STEP1 is an infrastructure for settling retail and commercial payments. It is built and based on the same standards and technical infrastructures as the EURO1. Its management and functionality are assigned to the EBA CLEARING. It was introduced in order to lower the execution time and costs of retail and commercial payments and promote interoperability in the euro payment scheme. STEP1 does not offer instant settlement and clearing since the liquidity transfer takes place at the end of T2 operating hours.

The existing payment scheme offers a wide range of services through TARGET2 settlement mechanisms and SEPA's settling standards. TARGET2 supports international transactions, with the option of instant settlement and finalization in central bank money. TARGET2's services only apply to gross amounts and is typically used for interbank transactions. Settlement and finalization are applied on each transaction individually. TARGET2 operates as a supportive tool for other RTGS systems like EURO1. Single Euro Payment Area, describes the standards for settling and finalizing retail payments in groups. Through SEPA interoperability at a minimum cost is accomplished in the settling and clearing scheme. STEP1 offers retail payments individual settlement with short execution time but at a higher operating cost since its services are executed with T2's support. So, what is clearly missing, is a service monitored and governed by authorized institutions that combines all. An infrastructure that offers interoperability, instant settlement and finalization at the lowest transaction cost for retail payments. An infrastructure that would direct other privately, or domestically operated infrastructures in these types of payments. At this point, the European market is based on non-European options to cover the needs of instantly settling retail payments.

### **3.3.3 RT1**

RT1 is a payment infrastructure service that offers instant settlement round the clock, at a pan-European level for SEPA members. It was introduced in November 2017 and is operated by the EBA Clearing. RT1 follows the SEPA Instant Credit Transfers regulations. RT1 instantly settles transfers in euro, making available the amount within seconds to the beneficiary's account. Settlement processing in RT1 goes through the TARGET2 infrastructure. RT1 is also in line with the ISO 20022 standards for real-time payments. RT1 counts more than 64 participants across Europe by this time, with over 2500 PSPs. RT1 acts on the same field as TIPS. As we can clearly understand RT1 is TIPS' main competitor for the time being. An analysis between the two follows after TIPS



presentation.

### 3.4 TARGET2

TARGET2 (T2) is an RTGS system. It is mainly used for high volume transfers (mainly interbank transactions). It can settle any type of transaction, (retail payments, gross payments and securities) offering real time settlement in central bank money. Target 2 provides access to statistics and historic information on all types of transactions, which compromise an essential tool for implementing monetary policy and governing. The system stores information about the transaction's type, its value, parties involved (beneficiary, ordering customer) which are necessary to study economic factors and make estimations faster and more precisely.

TARGET2 is built on a single technical infrastructure and is operated by the central banks. The platform runs on a cost recovery pricing policy. Its purpose is to harmonize the operations of the national legal frameworks. While the system is designed on the Single Shared Platform, a pan European platform, Target 2 's operations differ in each country, as each one runs it 's own RTGS. The responsibility for its operation and the legal framework falls in each country's jurisdiction.

TARGET2 aims to limit systematic, operational and settlement risk, by making settlement and clearing procedures to happen instantly, as soon as the payment instruction is introduced. As a result, credit and liquidity risk is reduced due to instant settlement and finalization of payments, since accounts involved are held in central bank money. That makes the payment system more efficient.

Collateral and liquidity pools secure the implementation of the transfer. Collateral and liquidity pools are accounts that are held in National Central Banks, and their aim is to offer instant clearance and settlement of transactions. For instance, when a payment instruction is introduced, these accounts act as collateral in order to secure the adequacy of required funds. Funds are then transferred to transit accounts in order to secure settlement. The fact that this type of accounts is held in Central Banks' balance sheets, provides sound credibility to the system.

TARGET2 contributes to the implementation of monetary policy. TARGET2 operates as a tool, which executes transfer of funds associated with monetary policy decisions. Transfers between National Central Banks and European Central Bank take place in TARGET2 platform, since it provides high security, transparency and short execution times. Moreover, TARGET2 is a vital contributor to monetary policy making. In detail, macroeconomic indicators could be measured more accurately and directly, as TARGET2, which is responsible for settling all National Government-related transactions, stores data

on each type of transaction. Thus, the collection of the required data becomes simpler due to the transparency the system offers.

The settlement procedure makes use of SWIFT old messaging standards, but a transition to ISO 20022 by 2025 is in the agenda. Target 2 constitutes the main settlement mechanism for all type of payments and ancillary systems.

Participation to TARGET 2 services is achieved by 2 channels, direct or indirect. The criteria which are applied for participation in TARGET 2, stand for TIPS service too, since it constitutes a TARGET2 component. The participation in TARGET2 and subsequently TIPS is going to be examined later on this thesis. (TARGET, October 2018. “Single Shared Platform User Detailed Functional Specifications - Core Services”, 1st book, Version 12.01).

### **3.5 TARGET2 and EURO1**

EURO1 uses the Ancillary System Interface of the TARGET2. Initially, EURO1 processes transaction messages to the EBA CLEARING, and informs the participants about their final position. After the final positions are approved and accepted the EBA CLEARING shares the information generated, to the TARGET2 infrastructure, so that the RTGS accounts will be debited and credited accordingly. First, the RTGS accounts with a negative position on EURO1 platform are debited and then the accounts with a positive balance are debited. After the RTGS accounts are settled the EBA CLEARING is informed and subsequently the EURO1 participants. Settlement of the EURO1 transactions has an expected execution time of 7 minutes. So, as it stands, EURO1 keeps the advantages of TARGET2 infrastructure without settling directly. EURO1 offers access exclusively to banks, while target offers access to a variety of financial institutions.

### **3.6 TARGET INSTANT PAYMENTS SETTLEMENT**

TARGET Instant Payment Settlement (TIPS) is a European payments service that is operated by central banks, on behalf of the Eurosystem. The service follows the SEPA Instant Credit Transfer. Its main goal is to provide instant, real-time settlement of retail payments, at the lowest possible cost and simultaneously keeping the highest security standards. TARGET2 was initially developed to offer robustness, operational reliability and equal and smooth process for all euro payments. Since TIPS goal was to achieve all the characteristics mentioned in retail payments, it was built on T2's platform to gain the advantage that T2 already offers. TIPS operates at cost recovery basis and transfers money instantly from the ordering customer to the beneficiary's account, both in business to business and business to consumer transactions.

Even though TIPS infrastructure supports multi-currency transactions, by the time this

thesis is written, it only settles payments in euro. There are questions regarding a possible multicurrency function. Who will determine the exchange rate? There are questions about a possible multi-currency operation. Who will set the exchange rate? Does this feature increase the exchange rate risk for participants? Will there be a foreign exchange reserve requirement for participants?

Messaging for TIPS service is conducted following the ISO20022 messaging standard, which offers even wider access and messaging options than the existing SWIFT standards used by other services and TARGET2. How will TIPS adopt ISO20022 when TARGET2 continues to follow the old standards? Will the messages between T2s accounts and TIPS accounts be constructed under the new standard, considering that settlement takes place through T2's infrastructure?

TIPS main goal is to retain unity in the retail payment scheme in the Eurozone and operate as a supportive tool for the settling of all instant payments' infrastructure services at a pan European level.

TIPS has the following characteristics in terms of its functions. The service operates 24 hours a day, every day of the week. Even though multi-currency settlement is offered as an option, similar to TARGET2, at the present, settlement is executed exclusively in accounts held in euro currency. The same questions about multi-currency transactions mentioned in the TARGET2 transaction apply to the TIPS service. The settlement time limit is set at a maximum of 10 seconds. The settlement is executed in central bank money.

To sum up, TIPS is a centrally governed and monitored infrastructure, which aims to bring unity to whole payment scheme by coordinating all messaging-communication standards, payment technologies and infrastructures, in order to create a smoother, more reliable and efficient payment scheme in the Eurozone. So, it was basically designed as a pillar on which the development of a possible pan European card scheme and other future projects like a digital Euro will be relied on. Compared to the settlement mechanisms mentioned in the previous chapter, TIPS comes in direct conflict with RT1 as they seem to operate in the same sector, and are addressed to the same field of the payment scheme, the instant retail payments. The differences between the two and the TIPS added value are going to be examined in the following chapters.

#### **4) Target Instant Payments Settlement**

TIPS is a project that could cover some of the shortcomings identified in the existing European Payment System, provided it is used legally. The next chapter examines the TIPS mechanism, its operational structure and its legal framework. Possible malfunctions of the service are identified. The chapter ends with the added value of the service and makes

a comparison between the operations of the competition.

#### 4.1 How TIPS Works

From a technical point of view the service has a capability of settling 43.2 million transactions each day. That is a rate of almost 500 payments' settlements each second. The IT on which TIPS is based on, offers expansion options in case that the service reaches its peak. The service's development was based on Single Shared Platform directive. In this chapter we are going to examine the way that settlement and clearing takes place in the system.

Single Shared Platform (SSP) directive describes the operations of a central, integrated infrastructure. The idea was initially introduced by the ECB's Governing Council, Banca d'Italia, Banque de France and Deutsche Bundesbank. These three National Central Banks developed an infrastructure (TARGET2), which was operated by them under the supervision of ECB and other NCBs. Access to the service was initially granted to NCBs of the Euro Area. The SSP refers to a central service used by all members of TARGET2, which aims to bring interoperability, improve and harmonize the existing national payment services.

The procedure of an instant payment through TIPS service, is shortly described in the following paragraph. Initially, a participant or instructing party (Payment Service Provider), acting on behalf of the participant, sends a payment instruction to the TIPS desk. The message is conducted following the ISO 20022 messaging standards and the payment instructions are directed by the SCT Inst payment rulebook. No reservation of funds has been made up to that point. TIPS desk proceeds by validating and reserving the liquidity transfer. At that point the money is reserved from the perspective Dedicated Cash Accounts and transited to the Transit Account held in TARGET2. Dedicated Cash account and Transit Accounts are used for the operations of TARGET2. Their characteristics are analyzed in the following paragraphs.

At the next stage the payment instruction is sent to the receiver. The receiving PSP, acting on behalf of the beneficiary, proceeds the order's acceptance and responds accordingly to the TIPS desk. The desk then executes the required settlement and a confirmation of charge and credit is respectively shared to the participants Payment Service Providers. In case of rejection the liquidity transfer, TIPS automatically refunds the amount from the transit account to the TIPS Dedicated Cash Account and informs the ordering party about the failure. Either than the case of acceptance or denial, there is the scenario where the RTGS exceeds the responding time limit. In that case TIPS cancels the liquidity transfer and inform the TIPS operator about the incident, to take further actions. In the next paragraphs an extensive analysis of each of the steps described above is presented.

### 4.1.1 Liquidity Management

The liquidity on TIPS accounts is used for settling payments instantly in central bank money and is injected from RTGS accounts denominated in the same currency. Accounts liquidity is calculated on a minimum reserve ratio, according to the Target2 relative regulations. In detail, ECB requires financial and credit institutions established in the Euro Area, to hold deposits within their National Central Bank. These required funds are called Minimum Reserves Requirements (MRR) and aim to support liquidity management of financial and credit institutions. These funds offset the overnight interest rate risk faced by credit institutions. MRR allows banks to offset short-term changes in the money markets, where banks lend to each other, by adding or withdrawing funds from their reserves at the central bank. This prevents changes in the interest rate, which banks charge each other for the relative funds.

T.I.P.S. now gives its participants the option to use MRRs in liquidity TIPS accounts. This means that no extra funding will be required. Will the banks benefit from making use of these funds in TIPS's liquidity accounts? Is that benefit more profitable than the interest rate that the MRRs deposits? Will the funds used in TIPS's liquidity accounts gain an interest as well? If that applies, what would that interest be?

TARGET2 requires return of liquidity on the RTGS accounts at the end of each day. TARGET2 is opening at 7 a.m. CET and closing 6 p.m. CET. That means that TARGET2 participants are able to withdraw any amount in excess of the funds required for settling operations in TARGET2. On the other hand, participants with a negative balance are obliged to deposit funds in order to reach the required liquidity limit.

TIPS does not require the return of liquidity to RTGS at the closing day of TARGET2, but the liquidity management of the accounts has to be settled during the operating hours of TARGET2. That means that even though there is no requirement for return of liquidity, TIPS participants have to forecast their liquidity needs so that there are sufficient funds in the RTGS accounts, in order for the service to be able to settle during the hours that TARGET2 is closed. Are the financial institutions in a position to forecast that amount efficiently? What happens when the balance turns negative? Will their clients still have the option of instant settlement or will the service go offline for that specific institution?

There are services operated by TARGET2, which are closely related with the balance of the liquidity accounts. But is their contribution enough to prevent any possible malfunctions and preserve the security of the infrastructure? Each RTGS system with an account to TIPS, receives from the service information about the balances of accounts denominated in each currency. Credit and debit notifications of every liquidity transfer, is shared to the relevant bank every time an account they own is settled. TIPS Participants are

offered the option of setting upper and lower thresholds, so that whenever the thresholds are exceeded the account owner is shared the information instantly. This type of information supports the efficient liquidity monitoring of the accounts. (4 Central Banks, 2019. "TARGET Instant Payment Settlement: User Handbook").

As it stands the liquidity needs of the participants must be well predicted in advanced, since TIPS operating hours differ from those of the TARGET2. Liquidity transfers in TIPS are settled in accounts hold in TARGET2 called transit accounts. There are two types of liquidity transfer in the system, the inbound and the outbound.

The inbound is the transfer from the RTGS Account to the TIPS accounts and the outbound vice versa.

#### **4.1.2 Settlement**

Settlement of TARGET Instant Payments takes place on accounts that are opened in TIPS platform. These accounts are called TIPS Dedicated Cash Accounts (TIPS DCAs) and are registered in the TARGET2 infrastructure. The accounts are denominated in central bank money. Even though Target Instant Payment Settlement is supposed to be a multicurrency service, settlement between TIPS DCAs has to be denominated in the same currency, as by the time this thesis is written, TIPS does not execute currency conversions services.

The accounts balances connected to the service are calculated on a minimum reserve. The balance of the accounts is updated at the closing time of T2 in the RTGS system.

#### **4.1.3 DCA accounts**

Dedicated Cash Accounts are deposit central bank money accounts, opened on the book of a National Central Bank. These accounts are held by either a payment bank or a National Central Bank. They are intended to mainly settle securities in all currencies in central bank money. DCA are linked to a unique RTGS account which operates in a single currency. DCA start the operating day with zero balance and settle any differences at the end of the banking day

#### **4.1.4 Transit Accounts**

Transit accounts are accounts held by Central banks exclusively. Their purpose is to support the liquidity transfers between the RTGS systems and TIPS accounts. Their balance can either be positive or negative. In case of a negative balance the settlement of

instant payments is not permitted. Each transit account is denominated in only one currency exclusively. Euro's transit account in this case is held by the European Central Bank.

#### **4.1.5 The case of wrong payment order**

TIPS directive in the event of a duplicate or wrong payment instruction, states that the originator party has the option of requesting the return of funds from the receiving participant. A request message is shared to the TIPS service, which forwards it to the beneficiary. TIPS has made clear that the responsibility for the refund falls exclusively to the participants, who have to reach an agreement about the standards and rules that have to be followed in each case. In the case of acceptance of the request, TIPS validates that the funds are available and gives a notification to the ordering party about the DCA account credit. In the same way the information about the DCA accounts debit is shared to the beneficiary. If the beneficiary rejects the refund request, TIPS informs the ordering party accordingly.

The latter creates wrong motivation for the participants. In detail, the fact that the refund process goes beyond the supervision of TARGET2, makes the participants act individually. This means that any institution operating on behalf of the beneficiary has no incentive to validate the payee's account nor the payment's order authenticity. As such, the recipient has no incentive to examine the order as the damage is fully borne by the counterparty.

#### **4.2 Pricing**

TIPS was designed on cost-recovery pricing policy, as it complies with the European Central Bank's non-profitable policy. An initial estimation about the services costs, made public earlier this year, suggesting that no entry or maintained fees are applied, but only a unique fee of 0,002 EURO per transaction.

TIPS combines a number of very challenging technical requirements with the need to make the service available at low cost. For the fee of 0.2 cents, the system has a capability of processing over 40 million payments daily, with an execution time limit of fewer than 5 seconds per payment.

#### **4.3 Access to the service**

Direct participation is exclusively offered to supervised credit institutions established in the European Economic Area. Otherwise, for institutions established outside the EEA, in order to achieve direct participation, a branch established in the EEA is required. Treasury

departments of central governments, public sector bodies of member states holdings customers' accounts, investment firms in the EEA and organizations managing ancillary systems operating under the supervision of an authorized authority have the option of direct participation too.

All other parties wishing to join TARGET 2 and TIPS services have the option of indirect participation. That kind of Participation is offered through the direct participants, to credit institution operating in the EA which are registered as indirect participants and other participants provided, they have valid BIC. The latest are registered as addressable BICs. The distinction between the two is that the first have the privilege of protection of the Settlement Finality Directive, a directive aiming to lessen the systematic risk. In the next paragraphs the participation paths are examined.

Participation in TIPS is offered to Payment Service Providers through different paths. For a PSP to be considered TIPS valid participant, it has to own at least one DCA account in TIPS platform. These accounts are held in the central banks and are basically TARGET2 accounts. They are mainly used for the exchange of instructions referring to the service. Each participant can own one or more TIPS accounts. For PSPs not willing to open a TIPS DCA on their name, access is accomplished through a contractual agreement with an already established PSP participant. These are the reachable parties.

TIPS participants or reachable parties have the option of messaging by acting as an instructing party themselves. In that case they connect to TIPS for the exchange of information. In any other case, they are offered the option of choosing an intermediate for receiving and sending payment instructions. That service can be offered by operators that are not TIPS members. These operators though are likely to have connection with multiple TIPS participants and they are called instructing parties.

#### **4.3.1 Access Criteria**

The access criteria applied for TARGET2 participation apply for TIPS service as well, since TIPS is a T2 extension. So, each PSP operating under the SCT Inst, which own an account in T2 can participate in TIPS either as participant or reachable party. The same stands for every ACH that operates in T2 provided the transfer if its accounts to TIPS platform.

Access is granted for direct, indirect participation, addressable BIC holders and multi-addressee access. The criteria applied on each case are presented on the following paragraph. (ECB, November 2019. "Information Guide for Target2 Users, Version 13).



### 4.3.1.1 Direct Participation

“Direct participation is offered to:

- a) Credit institutions established in the European Economic Area (EEA), including when they act through a branch established in the EEA.
- b) Credit institutions established outside the EEA, provided that they act through a branch established in the EEA.
- c) National Central Banks of EU Member States and the ECB.
- d) EU Member States’ treasury departments of central or regional governments active in the money markets.
- e) EU Member States’ public sector bodies authorized to hold accounts for customers.
- f) Investment firms established in the EEA.
- g) Entities managing ancillary systems and acting in that capacity
  - h) Credit institutions or any of the entities of the types listed under subparagraphs (a) to (d), in both cases where these are established in a country with which the European Union has entered into a monetary agreement allowing access by any of such entities to payment systems in the European Union subject to the conditions set out in the monetary agreement and provided that the relevant legal regime applying in the country is equivalent to the relevant Union legislation

Direct participants are able to:

- a) Submit/receive payments directly to/from the SSP/T2S Platform.
- b) Settle directly with their central bank.
- c) Open special purpose PM accounts for non-payment activity (e.g., for the maintenance of reserve requirements). These special purpose accounts are identified by a separate BIC11.” (ECB, 2019. “Information Guide for TARGET2 users”- Version 12.1).

### 4.3.1.2 Indirect Participation

Indirect participation is offered to all credit institutions in the European Economic Area, through an exclusive connection with one PM account holder, in order to instruct payment orders and settle their payment instruction through that participant. Indirect participants have to be register in the T2 directory by the central banks in order to gain authorized action.

Multi-addressee access:

PM account holders are able to authorize their branches and credit institutions belonging to their group, located in EEA countries, to channel payments through their account, without its involvement, by submitting/receiving payments directly to/from the SSP. This offers affiliate banks or a group of banks efficient features for liquidity management and payments business. More precisely, multi-addressee access may be provided as follows:

(a) a credit institution which has been admitted as a PM account holder can grant access to its PM account to one or more of its branches established in the EEA in order to submit payment orders and/or receive payments directly, provided that the respective central bank has been informed accordingly; (b) where a branch of a credit institution has been admitted as a PM account holder, the other branches of the same legal entity and/or its head office, in both cases provided that they are established in the EEA, may access the branch's PM account, provided that it has informed the respective central bank. In practice, a multi-addressee bank is able to send and receive payments from/at its own BIC address. However, the payments are booked on the account of its PM account holder. (ECB, 2019. "Information Guide for TARGET2 users"- Version 12.1)

“Addressable BIC holder:

TARGET2 addressable BIC holders are not subject to any system rules. Any PM account holder's correspondent or branch that holds a BIC is eligible to be listed in the TARGET2 directory, irrespective of its place of establishment. Moreover, no financial or administrative criteria have been established by the Euro system for such addressable BIC holders, meaning that it is up to the PM account holder to define a marketing strategy for offering such status. It is the responsibility of the PM account holder to forward the relevant information to the respective central bank for inclusion in the TARGET2 directory. Payment orders to/from addressable BIC holders are always sent and received via a PM account holder. Their payments are settled in the account of the PM account holder in the PM of the SSP. (ECB, 2019. "Information Guide for TARGET2 users"- Version 12.1)

#### **4.4 Legal Framework**

Every payment system in order to be successful and efficient needs to be based on a sound legal framework. A sound legal framework offers credibility to the participants. TIPS legal framework is based on an ECB's Guideline regarding TARGET2's operations. (ECB, December 2012. "“Trans-European Automated Real-time Gross Settlement Express Transfer system”").

In this thesis there will be no examination of the articles, upon the TIPS operation is based. Instead, there will be a reference on the directives running in the Eurozone that set the appropriate conditions upon which the service was developed.

The Settlement Finality Directive ensures that the transfer orders can be finalized, by setting rules to avoid possible causes arising by a participant's insolvency. In detail, common directives have to be followed in case of bankruptcy of a participant. Netting and transfer orders registered into the system before the start of the insolvency procedures remain enforceable against third parties according to that directive. Moreover, collateral of other participants and central banks can be realized against the collateral providers, according to the term are set before insolvency proceedings opening. Participants' rights and obligations are subject to the law established in the system. Settlement Finality Directive focuses on eliminating the settlement and payment risks and at the same time providing the optimal conditions for the co-enforcement of different laws referring to insolvency. (European Parliament, May 1998. "Directive 98/26/EC of the European Parliament and of the Council").

The Markets in Financial Instruments Directive has established the required framework, in order to provide the means for monitoring the action of service providers in a financial market. The MiFID ensures that the investment firms act on behalf of their clients and acting in the most favorable way to them. MiFID reference is of a major importance, as through articles 35 and 46, it provides member states firms the option of using clearing and settlement system of other member states in order to provide the optimal service to each clients some regulations for the clearing and settlement systems. So, settlement and clearing services has no border restrictions within the Euro Area. MiFID main cause is to protect the market participants and promote transparency. (European Parliament, May 2014. "Directive 2014/65/EU of the European Parliament and of the Council").

Payment Services Directive (PSD1) was initially introduced back in 2007. PSD1 aims to bring integration in the European payments market. Thus, it provides directives, which strengthen safety standards and bring innovation by making cross border payments execution smooth and efficient. The legal framework of PSD converges towards a single market in the payment services. The directive brought significant advantages to the Euro Area by limiting the constraints and making entry easier for new service providers. That resulted in stronger and healthier competition and subsequently more choices for the consumers. (European Parliament, November 2007. "Directive 2007/64/EC of the European Parliament and of the Council").

Following the success of PSD, PSD2 was developed to bring interoperability between the banking sector and the fin tech companies. PSD2 strengthened consumer rights and safety standards and at the same time gave access to third parties to payments accounts

information. In addition, it promoted the transition to digitalization in the banking and financial scheme.

PSD2 was a significant step towards the online payments landscape integration. The directive gave consumers the option, to allow online merchants have direct access to their funds with the use of PSD2 API. Users with more than one account could access gather them under an account information service provider (AISP), so they can monitor and manage them in one place. Last but not least the SPD2 made it obligatory for third party service providers to be authorized and strictly follow the PSD2 regulations in order to protect the consumers. (European Parliament, November 2015. “Directive 2015/2366 of the European Parliament and of the Council”).

E-Money Directive was seeking to regulate the entry of new type of payments service providers. The directive aims to provide market access to new participants, to keep the competition effective and promote the development of innovative and safer e-payment services in the Euro Area. By EMD, it was made obligatory for electronic money issuersto be subjected to authorization and make sure they followed the supervisory requirements and regulations. The regulation reduced the capital requirements for startup reason to 350.000 euro from 1.000.000 and introduced a new way for the calculation of the reserved funds. (European Parliament, September 2009. “Directive 2009/110/EC of the European Parliament and of the Council”).

Regulation 2006/1781 on information on the payer accompanying transfer of funds states that service providers have the obligation to store and forward at every stage information regarding the payer. Payer’s name, address and account number have to be validated before the actual transfer of funds. In the case where both the senders and receivers PSPs are located within the Eurozone, transfer of funds can be executed by forwarding just information of the account number or another unique identification that traces back to the payer. Even though the previous directives protect the consumer and seem to strengthen the free flow of funds, they take no protection against the risk that may be caused to reputation of the financial sector and thus the stability within the Euro Area. So, this directive aims to bring integrity and stability and reliability on the system of transfers of funds. It promotes confidence and trust to the financial sector and the payment scheme within the Euro Area as a whole, by weakening and preventing acts of terrorism and fraud. To conclude, this regulation is of high importance as it detects the origin of money and spots money laundering and other criminal activities. (European Parliament, November 2006. “Regulation No 1781/2006 of the European Parliament and of the Council”).

By examining the regulations and directives established in the Euro Area, it turns out that there is strong protection for the consumers, which strengthen the confidence and reliability towards the payments service providers. The current regulations promote

transparency and safety in all transactions and promote the innovation by making the legal framework elastic at the same time. As it stands Eurozone has the required framework to support the operation of an innovative payment service such as the TARGET INSTANT PAYMENTS SETTLEMENT.

## **4.5 TIPS Structure**

This chapter contains an examination over the TIPS structure regarding the service's governance, the operational tasks and the technical tasks responsibility.

### **4.5.1 TIPS Governance**

TIPS governance is separated in internal and external. Internally, TARGET 2 and subsequently TIPS governance is assigned in a 3-level structure. The responsibilities and duties that fall in the first level are directly associated with system's general management. The governing council is responsible for the management of the system under a crisis situation, the authorization of TARGET2 simulator and the establishment security policy and principles. The governing council executes the duties assigned to the first level of governance in coordination with the Market Infrastructure Board (M.I.B).

Within M.I.B.'s jurisdiction, fall the duties that are assigned to the second level in the structure. These have mainly to do with technical and operational management. M.I.B. is responsible for monitoring users' daily activities, managing the relationship between central banks and their respective TARGET2 clients, financing invoicing budgeting and other administrative tasks.

On the third level and the lowest on the governance scheme are assigned the tasks of daily operation of the single shared platform provided by the Central banks. Their main task is to manage TARGET 2 following the agreement referred in T2's Guideline.

To sum up, in Level 1 the decision-making bodies of the ECB are responsible for making all the strategic decisions related to TIPS. In the second level the National Central Banks of the Eurosystem are responsible for the decisions concerning the daily operations. Moreover level 2 acts as a supportive body for Level 1 by collecting inputs on developments in payment systems from the payment scheme. MIB has a significant role in the second level by ensuring the evolution of TIPS service and development following the decisions taken Governing Council of the ECB on the first level. Level 3 is responsible for the operation and maintenance of TIPS.

The external governance of the service is a task TIPS Consultative Group (TIPS-CG), which has a supportive role by providing views and suggestions on future developments of

the service. The TIPS-CG cooperates with authorized committees and groups that are appointed by the by the MIB and the Market Infrastructure and Payments Committee of the European Central Bank.

#### **4.5.2 Organizational Structure on a Central Bank level**

Each National Central Bank has a service desk that acts as a contact service for the TARGET2 participants. In each national service desk, there are managers called “settlement managers”, whose duty is to implement the daily operations of the service. All settlement managers are connected to a forum regarding their tasks the “Settlement Managers Forum”. Access is granted electronically in teleconference groups where the CB’s settlement managers, the SSP/TIPS service managers and the TARGET services coordinator participate as well.

In each National Central Bank there is a crisis manager who is in direct contact with the settlement manager in case of an emergency. Alike the settlement managers’ teleconference, there is a similar for the crisis managers. In these facilities access is granted to the respective crisis managers, to the SSP/TIPS crisis managers and the ECB crisis manager

Crisis managers and settlement managers participate in the TARGET2’s teleconferences respectively.

### **4.6 TIPS and other Instant Payments services**

#### **4.6.1 Automated Clearing Houses**

ACHs can act as an instructing party in the TIPS service. By that action, an ACH would gain access to TIPS participants’ accounts, and would instruct on their behalf based on a contractual agreement between the two. Through that channel participants of two different ACHs could be indirectly linked without requiring a link between the two ACHs. TIPS service brings interoperability between the ACHs.

ACHs are not permitted to open accounts in TIPS since registration is prohibited to SCT Inst members but they can act as instructing parties as described in the previous lines.

#### **4.6.2 Other Ancillary Systems**

The service was developed to support ancillary systems. Liquidity is reserved within the TARGET2 in order to process the payments. TIPS cannot be used as liquidity pool or collateral for actions happening within an ACH. Thus, TIPS can settle payments for its participants exclusively. An ACH can use TIPS settlement service acting as an instructor.

(ECB, 2017. “Co-existence of TIPS with other instant payment services”)

### 4.6.3 TIPS vs RT1

Having examined the interaction of TIPS with other ancillary systems and Automated Clearing Houses it is time we examine TIPS main competitor RT1. A comparison between the two services follows regarding their reachability and their impact on the participants.

For other Payment Service Providers other than banks, that is not considered an option since RT1 offers access to the banking community exclusively. Even in the case of banks, on the one hand, having an account on both services looks promising, as it provides access to more participants. On the other hand, since the two systems are not interoperable by this point, that translates to more complex IT environments, with even more requirements, whose integration may prove costly.

For financial technology enterprises acting in the financial sector things appear to be simpler. Since, those members have no access to the European Banking Association (EBA), no access to the RT1 service can be accomplished. In their case TIPS is considered the only option for instant settlement of retail payments.

As mentioned before the two services are not interoperable. Thus, a TIPS participant is not capable of transmitting funds instantly to an RT1 participant and vice versa. As a result, the two services come at a direct conflict. The financial institutions, that want to take part in the SCT inst, require information about each service’s participants, in order to make a final decision between the two.

4497 BICs were connected to TIPS on October 2021 as participants or reachable parties. The EBA Clearings stated that 2280 BICs are registered to RT1 by the same time. the payment scheme appears to be fragmented. Is the optimal option for banking institutions that are offered direct access to both services, to join both? Are the benefits from joining both services greater than participation and operating costs?


Comparing the participation on the services in the SEPA area, TIPS may have more addressable BICs adhering to each service, but as far as the states are concerned, RT1 seems to have greater participation. By June 2020 RT1 had participants from 27 different countries while TIPS had only 13. The table that follows shows the current participants in each service, without referring the branches.


<b>RT1 PARTICIPANTS</b>	<b>TIPS PARTICIPANTS</b>
ABN AMRO Bank N.V.	Abanca Corporación Bancaria S.A.
AION SA	ABN AMRO Bank N.V.
Aktia Bank Plc	Austrian Anadi Bank AG
AS SEB Pank	Austrian Anadi Bank AG
AS LHV Pank	Banca di Credito Popolare
BANCA PATRIMONI SELLA & C SPA	Banco Bilbao Vizcaya Argentaria S.A.
Banca Popolare di Sondrio	Banco Bilbao Vizcaya Argentaria (Portugal) S.A.
Banca Sella Holding SpA	Banco BPI S.A.
Banca Sella S.p.A.	Banco Comercial Português
Banco Bilbao Vizcaya Argentaria	Banco Cooperativo Espanol S.A.
Banco BPM spa	Banco de Crédito Social Cooperativo S.A.
Banco Sabadell SA	Banca March S.A.
Banco Santander	Banco Mediolanum S.A.
Banque et Caisse d'Epargne de L'Etat	Banco Privado Atlantico-Europa S.A.
BANQUE FEDERATIVE DU CREDIT MUTUEL	Banco de Sabadell S.A.
Banque Internationale à Luxembourg S.A.	Banco Santander S.A.
Bankia S.A.	Banco Santander Totta S.A.
Barclays Bank Ireland PLC	Bank für Tirol und Vorarlberg AG
Belfius Bank SA	Bank of Latvia
BFF Bank SPA	Banka Intesa Sanpaolo d.d.
BGENIT2T BANCA GENERALI S.p.A	Banka Sparkasse d.d.
BGL BNP Paribas S.A.	Bankhaus Carl Spaengler & Co. AG
BPER BANCA	Bankhaus Schelhammer and Schattera AG
BNL	Bankia S.A.
BNP-PARIBAS FORTIS SA	Banking Circle S.A.
BNP-PARIBAS SA	Bankinter S.A.
Bonum Bank Plc	Bankinter S.A. - Sucursal em Portugal




bunq BV	Banque du Batiment et des Travaux Publics S.A. (BTPBank)
BRED Banque Populaire	Banque et Caisse D'epargne de L'etat
Caixabank S.A	Banque Internationale à Luxembourg S.A.
Cassa Centrale Banca - Credito Cooperativo Italiano	Berlin Hyp AG
CECABANK	BFF Bank SPA
Central Bank of Savings Banks Finland Plc	BKS Bank AG
Commerzbank AG	BPCE (including Natixis)
Coop Bank aksiaselts	BRED Banque Populaire
Crédit Agricole SA	Bunq B.V.
Crédit Agricole Italia S.p.A.	CaixaBank S.A.
Crédit Mutuel Arkéa	Caixabank, S.A. (previously Bankia S.A.)
Danske Bank A/S, Finland Branch	Caixa Central de Crédito Agrícola Mútuo
Deutsche Bank AG	Caixa de Crédito de Leiria
DEUTSCHE BANK AG - POSTBANK BRANCH	Caixa Económica da Misericórdia de Angra do Heroísmo
DZ BANK AG	Caixa Geral de Depósitos
ERSTE Group Bank AG	Cecabank, S.A.
FinecoBank Spa	Crédit Coopératif
flatexDEGIRO Bank AG	Delavska Hranilnica D.D.Ljubljana
Hanseatic Bank GmbH & Co KG	DEPObank
HSBC Continental Europe	Deutsche Bank AG
Illimity Bank S.p.A.	Deutsche Bundesbank
ING BELGIUM	Dezelna Banka Slovenije d.d.
Intesa Sanpaolo SpA	De Volksbank N.V.
J.P. Morgan AG	Gorenjska banka d.d., Kranj
KBC Bank	ING Bank N.V.
La Banque Postale	Laboral Kutxa (Caja Laboral Popular Coop. de Crédito)
Landesbank Baden-Württemberg	La Cassa di Ravenna S.P.A.

Landesbank Hessen-Thüringen	Liberbank S.A.
Latvijas Banka - Bank of Latvia	Hypo-Bank Burgenland AG
Lietuvos Bankas - Bank of Lithuania	Hypo Noe Landesbank
N26	Hypo Tirol Bank A.G.
Nordea Bank Abp	ICCREA Banca SpA
Oldenburgische Landesbank AG	Ibercaja Banco S.A.
OP Corporate Bank Plc	Kutxabank S.A.
Raiffeisen Bank International AG	Montepio Geral - CaixaEconómica
Raiffeisenlandesbank Oberösterreich	National Bank AG
Santander Consumer Bank AG	Nova Ljubljanska Banka d.d.
Skandinaviska Enskilda Banken AB (publ)	Novo Banco, S.A. (Formerly Banco Espírito Santo S.A.)
Société Générale	Oberbank AG
Société Générale WE	Rabobank Nederland
Svenska Handelsbanken AB (publ)	Raiffeisen International AG
Swedbank AB, Lithuania	Raiffeisen Landesbank Südtirol AG
Swedbank AS, Estonia	Raiffeisenlandesbank Oberoesterreich Aktiengesellschaft
Swedbank AS, Latvia	Sberbank banka d.d.
TARGOBANK	TeamBank AG
TeamBank AG	Unicaja Banco, S.A.
UniCredit Bank AG (Hypo Vereinsbank)	UniCredit Bank Austria AG
Unicredit Bank Austria AG	Unicredit Bank AG (Hypovereinsbank)
UniCredit S.p.A	UniCredit S.P.A.
	Volksbank Wien AG
	Vorarlberger Landes- und Hypothekenbank AG
	Volkskreditbank AG

 Tips participants

 RT1 participants

 Participants on both services

By examining the two services it is clear that TIPS offers access to all payment institutions and financial technology companies, while RT1 was designed to meet the need of the banking sector exclusively. Other than that, there are some points regarding their structures that need to be highlighted. TIPS DCA accounts are calculated on a minimum reserve. RT1 on the other hand does not offer that option, despite the fact that the liquidity accounts of the service are kept in the TARGET2 platform as in TIPS. This means that RT1 participation requires additional investment of funds while in TIPS the required funds are used by funds already committed in Central Banks' balance sheets. The current state creates some questions around the two projects. If TIPS accounts are considered part of the minimum reserve requirements of an institution, will these funds be considered as a high liquidity asset in the liquidity coverage ratio? If that states, then what states for the RT1 accounts? Will they also be considered high quality liquidity assets, since they are both kept in TARGET2 accounts?

#### **4.7 Milestones of TARGET Instant Payments Settlement**

2017- T.I.P.S. project entered the development phase.

2018, November- Deutsche Bundesbank, Banque de France, Banco de Espana and BancaD' Italia co-introduce TIPS service as an extension of the current TARGET2 system.

2020 – ECB official statement over the required steps to achieve instant settlement for cross-border payments is released.

2020, 2<sup>nd</sup> of June -0, European Payments Council makes public a draft on the SEPA Request-to-Pay scheme. The draft contains a directive describing the procedure of an instant payment request.

2020, 24<sup>th</sup> of July- The ECB publishes a statement containing two major steps, aiming to achieve interoperability of the service. The statement contains two steps. The first step makes participation in the service obligatory for all national central banks and members of the TARGET2 infrastructure. The second step describes the participation of the Automated Clearing Houses.

2020, November - The official version of the scheme is made public. TIPS participants show a great interest in the directives published

2020, November - Banca d'Italia tests a possible coordination of SEPA Request-to-Pay with the Mobile Proxy Look-up service.

2020, December- Sveriges Riksbank, ECB and Banca d'Italia examine the requirements to achieve instant settlement of accounts on a different currency.

2021- Banca d'Italia, based on researches, introduces a recovery plan, aiming to zero the recovery time in case of service's site failure. The plan is called Recovery Time Objective.

2021, November- All European National Central Banks have an account installed in TIPS platform.

## **5. TIPS Added Value**

Having analyzed the way Tips works, the legal framework upon which the service is based on and the structure on which the services duties are assigned, we are in a position to spot the services added value to the payment system.

By examining the infrastructures of the existing payment scheme and the applied legal framework, it is obvious that the payment system in the Euro Area contains settlement mechanisms for both Large Value and Retail Payments. Regarding the Wholesale Payments there are settlement options privately owned and there is TARGET2 which is operated by European Central Banks. Financial Institutions have a choice to settle interbank transactions in EURO1 which is privately owned, while non-banking institutions are offered the option of TARGET2.

In Retail Payment Settlement scheme, there is the option of RT1 and STEP1. Retail Payment scheme was lacking competition regarding the settlement of the payments. TIPS brings high level competition. It reduces the settlement costs and gives non-banking financial institution the option of direct settlement through TARGET2. TIPS thus supports the development of payments options that would benefit the consumers and the European trade. Non-banking financial institutions are now able to settle their payments directly from the TARGET2 platform, which means that the costs of settlement for Payment Service Providers are reduced.

The fact that banks are excluded from the procedure of direct settlement does not mean they are excluded from the payment scheme, since consumers accounts are still held within their balance sheet. Banks have a major role in the payment scheme and the existing system's infrastructures cannot operate without their participation, as they hold all

consumers accounts. TIPS limits the power of banks and their revenue, but on the other hand, lowers costs and shortens execution times, strengthening the payment scheme and making it more efficient.

TIPS's infrastructure can work as a supportive tool for the development of digital currencies. Instant settlement is vital for a currency that is exchanged online in order to be settled directly. TIPS mechanism provides the payment scheme the required tool to develop innovative payments options in the Euro Area.

TIPS comes to cover the TARGET2's inefficiency as far as the retail payments is concerned. TIPS's operation aim to avoid fragment in the retail payments. The service provides interoperability in the Euro Area and tries to combine the nationally developed settlement mechanisms in order to avoid fragment in the retail payment scheme. All participants of TARGET2 are offered the option of settling instant payments under the same infrastructure at a cost recovery basis. The service aims to unify the European payment scheme and strengthen the confidence and trust in the Euro project.

To conclude TIPS added value, is not the real-time settlement in retail payments, as this is already accomplished by other institutions and private sector entities. TIPS added value concerns the European Union and the integration of the European market in retail payments. TIPS offers reachability between different PSPs that adhere to different ACHs. TIPS competitors and the services advantages and disadvantages are going to be examined in the next chapters.

### **5.1) TIPS benefits, risks and costs for the participants of the payment scheme**

Through an instant payment system Credit risk will be minimized given that settlement is done instantly. On the other hand, a payment system is irrevocable in contrast with other payment systems and the fraud risk is quite high, given that participants are less likely to be able to block or recover funds from the customer since transactions are finalized instantly. An instant payment system rises liquidity risk, since the service operates outside the business hours of TARGET2. That means that participants have to forecast their liquidity needs and manage them properly during the operating hours of TARGET2. That requires investment in high end technology and good forecasting models in order to be able to operate properly.

Operational risk is also high, given that the service works not only outside TARGET2's working hours, but also outside of banks' operating hours. Banks and financial institutions involved in the service must be able to deal with problems that arise during these periods with only a small percentage of their human resources

To sum up, an instant payment system given its continuous operation has increased risks, regarding the finality of the transaction. On the other hand, it provides transparency and good monitoring conditions since everything is executed electronically through central and authorized infrastructures. The service brings interoperability between the payment systems of the Euro Area, since it combines the operations of all national infrastructures and limits the operational costs.

The service has multiple benefits and costs for individuals, for the banking sector, governments and the public and private entities. The possible benefits and risks regarding the parties involved in the system are going to be examined in this chapter for each participant respectively.

### **5.1.1 Eurozone**

Eurozone is going to take control of a significant part of the payments system. ECB will provide services, which by now are exclusively offered by private sector. The infrastructure is going to benefit the trade and improve the payment scheme by offering direct access and at the same time lower costs to the Settlement procedure for the Payment Service Providers. In detail lower costs make cross border transaction cheaper. The instant transfer of funds motivates the traders to wide their reach and proceed to cross border transactions. That is expected to have a remarkable effect in the payment scheme, since Europe is supplied with an innovative infrastructure that supports the development of innovative payment methods, whose majority is currently operated by non-European entities (e.g., debit cards issuers). That translates into increased demand for Euro against dollar, since the demand for the upcoming European payment services is expected to rise.

The fact that the service operations are executed using central banks money, also increases the demand for Euro. National Banks and commercial are obliged to keep accounts denominated in central bank money, which means that euro currency is supported. All financial institution involved in the scheme will hold accounts in central bank money.

Central Banks remain key players, since transactions are executed through their mechanism. Eurozone has indeed developed a tool which makes monetary policy easier. Fund transfers regarding monetary decisions are now transited through TIPS. Making of monetary policy becomes more efficient since the system stores information regarding all type of transactions. Ratios such as GDP, GNP, national exports and imports can now be measured with greater accuracy and velocity, given the fact that the system stores information of all type of transactions and provides transparency. In that way monetary policy goals will be determined with greater efficiency.

On the other hand, the systems storage ability regarding the data of the transactions, generates questions regarding the safety. Who will be responsible in case of system failure and data leak? Will the Eurozone take the responsibility for the distribution and analysis of data generated? Shall individuals be concerned about the data storage? The data generated from such a system is profitable. Will the Eurozone cede their financial exploitation to the private sector? Who is suitable for undertaking the operations of such a system with safety?

The transparency provided by the system could lead to increased demand for fiat money. Illegal activities such as money laundering, human and drug trafficking will be monitored if the use of the service becomes widespread. This could further increase demand for investment products such as cryptocurrencies that provide anonymous transfer of funds as of today.

Eurozone has developed a service that operates as a tool, towards European integration. National ACHs and RTGSs are now coordinated under the same system. Differences between national legal frameworks are now overcome, since settling between two national ACHs or RTGSs becomes costless and instant. The interoperability between the national Settlement and Clearing Mechanisms assists cross border trade. The instant transfer of funds makes trading easier. The service promotes the Eurozone integration in the retail payments and at the same time it consists a strong step towards a strong, unified Euro Area.

### **5.1.2 Individuals**

Individuals are offered more options to complete their transactions. They are offered the ability to complete emergency or last-minute payments at any time. For instance, an overdue utility bill that someone had forgotten to pay, could be repaid immediately after being notified by the competent authority/entity in order to avoid. For instance, an overdue utility bill that someone had forgotten to pay, could be repaid immediately after being notified by the competent authority/entity in order to avoid discontinuance of the relative. In that way, penalties will be avoided in some cases and the risk of accounts overdrafts. Additionally, employees that work on a day service, will be paid immediately. Instant access to funds means less reliability on short-term funding like payday loans.

Individuals benefit from the conditions of healthy competition that are created. The service brings new players to the payment system that are going to compete with existing participants. This would lead to lower transaction costs and wider payment service options

With TIPS people within the Eurozone will be able to monitor their accounts and transactions in real time. TIPS offers them the option to use instant payments in other countries within the Eurozone as the domestic ACH can now coordinate under its scheme.

Individuals can prove their transactions in real time. For instance, imagine someone traveling abroad. This person has some liabilities to the national state that will not allow him to travel if not paid in full. Now with TIPS the individual has the opportunity to pay his obligations immediately and to present the receipt to the competent authorities. Individuals are provided the option to pay their fines instantly. Imagine an individual getting fined for parking. The individual will have the option to pay for the fine directly to the officers.

Protection and safety of the consumer are strengthened since there is no risk of steal like credit cards and fiat money. Moreover, the transfer of funds becomes easier and simpler within the Euro borders as it happens in real time at a minimum cost. On the other hand, the fact that data of transactions are massively stored under the same infrastructure generates questions about possible hacking and data leak.

Instant payments are actually a digital form of payments. In such a world where the majority of transactions have a digital form the privacy is going to be threatened. Every transaction happening through TIPS is going to be recorded and the information of the produced, are going to be stored. In that case no privacy is guaranteed to individuals as payments are going to be transparent. Every retail payment is going to be monitored digitally, and the anonymity that fiat money offers, is going to be restricted. People will wonder who is responsible for the management of such information and will demand even more stable and sound security and privacy protection directives. Moreover, TIPS may lessen the risk of theft that the use of fiat money contains, or the stealing of a card's information, but TIPS remains a digital service, thus the danger of hacking remains high.

### **5.1.3 Banking sector**

National Central Banks become key players in the payment scheme. Settlement of retail payments takes place through TARGET2 which is operated by central banks. Even though the service operates at a cost recovery basis the data generated by its function can be used by NCBs as a tool for monetary decisions. The national central banks will now manage a huge collection of data, which could allow them to be actively involved in fiscal policy as through the service they will have a direct picture of government interventions and payments. Small amount payments, regarding monetary decisions taken by the ECB can now be transferred instantly to the respective account of the beneficiary state.



TIPS service makes daily operations of central banks faster. In detail NCBs are responsible for payments regarding the state they operate. For instance, in Greece the payments of pensions are executed through Bank of Greece. Initially, IKA the national Social Insurance Institution shares the information regarding the beneficiaries to the respective section of Bank of Greece. The section involved, generates manually the payments instructions. Since Pension Payment are considered retail payments, no instant settlement option was available. The value of foreign currencies is three days after the payment instruction is generated, while for pensions denominated in Euro the funds are made available the next day. TIPS gives the option for development of a mechanism that introduces the payments instructions automatically. Other than that, with the operations of current mechanisms, TIPS provides the option for the orders to be directly transferred to the beneficiary's financial institution.

Through TIPS, NCBs are indirectly involved in the payment scheme. That includes both advantages and risks regarding its operations. Banks are offered a service which interoperates with other domestic services. That gives them the option to expand their operations and be involved in transactions' settlement and clearing outside the national borders of the country they operate. An integrated instant payment infrastructure gives banks and financial institutions an innovative set of services that could possibly attract new customers. NCBs undertake more transactions. On the one hand that translates into profits. On the other hand, that means that banks responsibility regarding the service rises.

NCBs are involved in an innovative service, which increases the operational risks. NCBs will have to upgrade their infrastructures, regarding both hardware and software, since the service demands high end technology and high security standards. These technology investment requirements, may prove costly and the human resources that the banking sector currently employs, may prove inefficient as the digital transition is going to be direct. So, the service requires a huge investment. Is this investment really required? Are the benefits greater than the costs and risks regarding its operations?

Banks are given access to a gross amount of information, which can be used for more efficient management, and decision making. Central Banks have an easier task as far as the monetary and fiscal policy are concerned, since they have access to real time information, referring to the economy. Indexes like GDP, GNP and inflation will be measured more accurately and in much shorter periods than the predictions made today. As of today, the collection of data was a time-consuming procedure. The relative entities were informed and asked to collect the data. TIPS's operations store the data electronically. The accuracy of the information is a great benefit too. Bureaucracy can be limited as digital operations will be promoted. TIPS provides the required infrastructure for instant payments, which are automatically instructed and executed.

For commercial banks, the fact that the DCA accounts are calculated in the Minimum Required Reserves (MRR), gives them a cooperative advantage, against banks that participate in other instant payment systems. The required liquidity funds are calculated in MRR means that no further investment is required. In other settlement systems (e.g., RT1, STEP1) additional investment of funds is required to achieve settlement. In TIPS transfer of funds between institutions is made through funds already held in central bank accounts. That deposit of funds is compulsory. In that way TIPS takes advantage of funds that could not be used for other operations.

TIPS makes competition more efficient as they operate at cost running and offer European banks an alternative against RT1, so operating costs of settling and clearing will also be limited. On the other hand, TIPS offers direct access to all Payment Service Providers. Institutions and entities that wanted to settle retail payments instantly, had to reach a contractual agreement with a bank. Those contracts translated into great revenue for the banking sector. Now that TIPS offers lowers costs and the option of direct access to the service to all Payment Service Providers through central banks. That means that commercial banks which were direct participants in the RT1 scheme lose a significant profit regarding the correspondent expenses. Moreover, instant payments threaten the lending banks' profits. Payday loans may face a decreased demand since instant transfers of funds means instant availability. Payday loans that were used for urgent purposes could be avoided in some cases. Will that rise interest rates? How will banks cover the profits lost? To conclude, the service may lower the costs of settlement for all banking sector, but on the other hand it limits the profits of commercial and lending banks.

### **5.1.3.1 Digital euro and Financial Stability in Eurozone**

Financial Stability is the system's ability to overcome shocks regarding the economy. Eurozone's main goal is to preserve financial stability and provide its members a harmonized environment that operates smoothly without severe changes that damage its members economically. In Eurozone there are mechanisms assigned to preserve of financial stability. European Stability Mechanism is a firewall, which provides financial support through a variety of assisting programs for members of the Eurozone with financial difficulty. (European Parliament, October 2019. "The European Stability Mechanism: Main Features, Instruments and Accountability"). At international level, Financial Stability Board is an international body, supervisor of the global financial system. FSB is a non-for-profit board that monitor the global economy, aiming to prevent severe economic crisis situations. (International Governance Innovation, June 2010. "The Financial Stability Board and International Standards" Centre) As far as the introduction of TIPS is concerned, the two bodies have not presented any recommendations regarding its operations.

TIPS is going to alter the mixture of payment instruments in the Eurozone. The service also effects the banking revenue regarding lending and corresponding activity. Will banks that have a major role in the Euro System will be affected significantly by its operations? How will the loss of revenue be covered? Will there be an increase in lending and corresponding costs? Can banks be excluded at some point from the systems operations? On the other hand, TIPS provides a settlement mechanism that makes the payments scheme more effective, by making the payment procedures less time consuming and costless. Innovative payment instruments can now be developed under the operations of the infrastructure. Payment methods that will help the European economy recover from the effects of unusual situations, such as the Covid-19 pandemic, where the existing payment instruments (mainly cash) proved inefficient.

The development of new payment instruments brings to light the discussion over the digital Euro currency. TIPS offers instant settlement which is required for the development of a digital currency. Digital Euro will act as a complement to the euro currency as it is not intended to replace it. It will be considered central bank money and its issuance will be controlled by the Eurosystem. It will provide wide access on equal terms to all Euro Area participants, through supervised service providers. Digital Euro will require instant settlement of the accounts which will be provided through TIPS infrastructure. (ECB, 2020. "Report on a digital euro".)

Transactions would have no border restrictions and transfer of funds would become simpler and costless within the Euro borders. Digital Euro would promote safety and transparency. Since digital Euro would be issued by the ECB there would be no liquidity risk, no credit risk and no market risk like in cryptocurrencies which by now cannot be considered currencies. European payments service providers, would have access to a wider range of means of payment and their position against fintech companies and other institutions, which have currently invaded in the global payment scheme, would be strengthened.

A digital currency would benefit the whole Union as costs would be lowered even more, execution times of transactions would be shortened, and access to the payment system would be granted to more people, independently of their direct access to the banking system. In other words, financial inclusion would be accomplished as digital payments would be available to individuals that are currently excluded from the financial services.

Digital Euro aims to reduce transactions costs and decrease the price of acquiring and sharing information. That could destabilize financial markets and intensify contagion from one market to another. There will be a significant effect on commercial and lending banking activity. The banking business models and their role in the European financial system remains to be seen. Central banks' role is also examined since their operation are executed

through the existing banking system.

#### **5.1.4 Governments and Public Entities**

Governments in Eurozone, execute their transactions through national central banks. In the case where transactions are executed instantly, the procedures become less time costly and more inexpensive.

With the use of TIPS governments and their instruments like public entities and authorities gain access to an instant payment mechanism, as participants, a privilege which by now is exclusively offered to banks through RT1. The amounts will be validated at the same time the transaction happens, where in other cases it would take up to a week for that to happen. Governments gain peoples trust since transactions proves are provided within seconds, following the transfer of funds.

For instance, imagine a boat entering national borders. There are some customs fares that need to be paid to the custom authority. Today the procedure is quite complicated. The boat owner has to make a transfer to an account held in the central bank of the country entering. Then the central banks have to settle and clear the transaction, and inform the customs about the validation of transaction. That happens in a minimum of three days. Through TIPS the boat owner can instantly transfer the funds and forward the proof of payment to the local authorities, which can also check the relevant accounts transactions in order to validate the transfer.

All payments, such as pension or national insurances can be instantly paid through TIPS service. Tax payments could now be repaid instantly. The issuance of electronic invoice will be promoted through the operation of TIPS. Consumers will be able to pay the relevant public body and prove their transaction immediately. Consumers will be able to pay the respective public entity and prove their transaction instantly. Bureaucracy of public entities will be limited since the instant proof of payment comes to substitute procedures that would take up to three days. In particular, for an individual to prove the success of a payment, it would take days initially to go to his financial institution and request the transfer of funds to the respective authority. Then the authority would have to ask the relative proof from the national bank which holds the respective account. All these operations are omitted since instant payments provide the proof of transaction to both the ordering and beneficiary parry.

Imagine an individual entering / leaving the Greek border. In case of any illegality, the customs will have to impose a fine for the relevant category. The process takes time. Individual's financial institution must initially instruct the payment order and then payment proof must be presented to the competent authorities. In many cases, according to the

charge, the person is held in custody until the issue is resolved. If instant payments apply to the customs authority, the person will be able to transfer funds directly and prove his transaction avoiding this whole process and enter/leave the borders.

TIPS offers safety. Financial institutions are provided real time proof. The case of forged proof of payments could be avoided. Forged proof of payments could be avoided by the use of instant payments, but since the system runs electronically, public entities will become targets of hacking. Cyber-attacks are highly expected and the question that is generated concerns the responsibility regarding the relevant compensations. In which cases will the central banks be held responsible? When will the public entity undertake the damage?

On the other hand, the whole process requires upgraded technological equipment and well-trained human resources. Thus, public entities and governments services will have to upgrade their equipment including both hardware and software in some cases. An upgrade that needs time to be accomplished and a transition which requires human resources training and system modernization, actions, that will not come at a low cost.

### **5.1.5 Private Entities**

TIPS offers Payment Service Providers direct access to an instant settlement and clearing mechanism as participants. Lower settlement costs will apply to these transactions. Payment Service Providers are provided a mechanism which supports the development of innovative payment instruments. Mobile phone applications can instruct transfer of funds instantly. Settlement risk is limited since the procedure is executed instantly and the liquidity accounts secure the clearing procedure and the transfer of funds. PSPs have lower operating costs.

The rest private sector faces less credit risk as payments reversal due to insufficient funds is unlikely in an instant payment system. Moreover, the immediate settlement, means that money changes hands with a greater velocity. That is an outstanding point for production, as the traders receive their revenue much quicker and are able to meet their funding needs instead of buying on credit or making use of payday loans. That means that production costs are lowered as funding becomes cheaper in these cases. Since the corresponding revenue is limited, and payday loans become unnecessary in some cases, the question generated refers to the interest rates of lending bank? Will these interest rates rise in order to cover the loss described above? Will that affect private entities in need for a payday loan?

In the case of private entities, the data leakage is the major threat. Payment Service Providers assume major risk, since settlement is executed through their accounts. This means that they are expanding their reach. In case where a PSP does not take settlement

action operations and decides to use indirect participation to the system through a bank, as is the case of RT1, will the PSP face higher corresponding costs given that correspondent banks have lost a significant revenue? Entities will also be under constant control and auditing regarding their transactions. Moreover, in order to be directly benefited from the service an upgrade of their systems and investment in human resources will also be required.

## **5.2 Global Instant payment scheme**

In this chapter, a reference to instant payments systems operating outside Euro Area is made, in order to understand the global real time payments scheme. The reference concerns systems which are centrally managed

### **5.2.1 USA**

In the USA, a service similar to TIPS, regarding its operations is FedNow. The service is under development at the current stage. It aims to bring integration and interoperability in the American payments scheme. To be more specific, the infrastructure is intended to have a supportive role, and will provide interbank clearing and settlement. In that way, it will enable instant transfer of funds from the ordering party to the beneficiary. The service is initially addressed to financial institutions and at a later stage to entities and individuals. The service aims to provide the required infrastructure in order to promote the development of more value-added services to the American economy.

FedNow Service is designed to offer settlement and clearing services throughout the day, independently of the banking operating hours, alike TIPS. Reports regarding the balances of the depository accounts, will be forwarded to the Federal Reserve Bank at the end of the closing day. Access to intraday credit will be granted to participants of the FedNow Service under the same terms and conditions as for other Federal Reserve services. To conclude, FedNow operates, as a liquidity management tool that offers instant settlement to payment services to both private and public sector provided that the participants are granted direct or indirect access to an account at a Reserve Bank. FedNow Service aims to prevent fraud and criminal activity by promoting transparency and make the task of authorities easier.

The initial target for the service's release is the year 2023. The service is planned to be introduced into phases, by periodically releasing extensive features over time. The development of the service is exclusively upon the Reserve Bank and information regarding the project's implementation are expected to be made public by the Bank's official channels. (Federal Reserve, 2020. "The FedNow<sup>SM</sup> Service Readiness Guide").

### **5.2.2 BRAZIL**

In Brazil the Instant Payment System (SPI) is a centralized infrastructure, operated by the Banco Central do Brasil (BCB). The service executes instant settlement and clearing between different domestic payment service providers. SPI was introduced in November 2020.

SPI is a Real Time Gross Settlement (RTGS) system. Access to the service is accomplished either directly or indirectly through the direct participants. The service has a similar infrastructure as TIPS. (Augusto P. O. C. C., 2020. “Bacen’s Instant Payment System”, Series Central Bank and CVM)

### **5.2.3 INDIA**

Immediate Payment Service (IMPS) is an instant payment service operating in India. The service is available 24 hours a day independently of the banking hours. The service was initially addressed exclusively to banks. Today access is granted to financial institutions as well. The system is managed by the National Payments Corporation of India and is developed upon the national network, National Financial Switch.

IMPS was introduced in 2010. Initially the service promoted mobile transfers and the first commercial banks to join were the Bank of India, the Union Bank of India and ICICIBank. Today there are more than 53 commercial banks participating in the system and even more financial institutions. The service is widely used. Researches have shown that more than 200 million transactions are settled through IMPS monthly. The only requirement for an IMPS’s transaction to take place is the account number and the Indian Financial System Code of the beneficiary. (National Payments Corporation of India, 2020. “Immediate Payment Service”)

### **5.2.4 UK**

The Faster Payments Service (FPS) is an infrastructure supporting instant interbank transfers within seconds. FPS is designed for the settlement and clearing of retail payments. Some banks participating in the service have set the upper limit of 250.000 pounds per transaction. The main difference to the TIPS service, is that in FPS the transfer time is expected to last seconds but the system does not guarantee that. Moreover, the system may guarantee the immediate transfer of funds between the participating banks but takes no responsibility over the final transfer to the beneficiary’s account.

The service is operated by the Clearing House Automated Payments System (CHAPS), which is a company that mainly facilitates large money transfers denominated in British pounds (GBP). CHAPS is monitored and directed by the Bank of England (BoE). FPS was

initially introduced in 2008. On 1st of May 2018, the Bank of England announced, that the New Payment System Operator (NPSO) had taken over responsibility for the operation of the Bacs and Faster Payments systems.

### 5.2.5 CHINA

In China the payment scheme differs from the ones previously mentioned. China's payment system is developed by the private sector. There is no centralized authorization and control like the other systems. The platforms currently dominating the instant payment scheme are the Alipay and WeChat Pay. These systems are based on innovative technologies. They promote low cost of transactions and are capable of executing instant transfer of funds. They are basically digital wallets, where the money stays within the system.

Transactions inside the same system are costless. A digital wallet stores the consumer's payment instructions electronically and allows them to digitally transmit those funds in multiple settings. Wallets are connected directly to other wallets where they grant the funds from, or they are directly connected to bank accounts. This concept is different from a digital credit card. In this case a digital wallet stores money, whereas a digital card simply substitutes the physical card for a virtual one.

Each participant in the Alipay and WeChat Pay systems owns a unique QR code. These codes are directly assigned to individuals' accounts and for merchants to their stores. The Chinese economy seems to support those platforms and aims to bring them to the global scheme. These platforms are like ecosystems where money stays inside them and has no association with the European or American centralized systems.

China's payment system is based exclusively on the private sector financial technology enterprises. The majority of payment instruments is provided by financial technology companies. The banks that consumers' accounts are held sign contractual agreements which determine the settlement and clearing procedures. No central bank supervises or monitors the payment scheme. Even though, the system seems volatile to frauds in the absence of monitoring from a central authorized institution the existing system offers the most innovative payment options and the lower costs to its participants and subsequently to the consumers.

The system operations substitute the banking sector. Private entities with data base that offers information required to offer credit have the capability to evolve a payment infrastructure and handle consumers' accounts. These infrastructures undertake the execution of transactions making the Chinese banking sector lose a significant revenue. The system is considered ideal for countries with pure banking activity.



Can China's payment system apply in the Euro Area? Will that be advisable? As of today, the European states have prioritized the financial stability and the project of a Euro Union. For the general prosperity, a unified scheme seems the ideal solution. In the current scheme, National Central Banks have an important role to play. Through them and the operation of ECB the project of Euro is implemented. ECB makes monetary policy decisions that aim to preserve stability in the Euro Area and central banks operate as a tool to accomplish that goal. In the current system and with the priorities set by the states of Europe, the solution of China seems anything but ideal. It is expected to fragment the payment system into national solutions. This would make it impossible to implement a single currency in the Union, with all that entails.

For centralized systems such as the European payment system, the option of boosting the business of financial technology companies could have a significant impact. The European Central Bank's work for unity in the Euro Area is threatened as the European payment system is a centralized system where monetary policy-making is an integral part of the functioning of the European Union. By cutting a significant revenue of the banking sector, which is a key tool for the implementation of monetary policy decisions the system's financial stability could be in great danger.

## **6) Conclusion**

TIPS is a service that comes to cover inefficiencies of the existing infrastructures in the Eurozone. Even though the project seems promising and innovative, it seems to be following the global trend of instant payments.

The services advantages for individuals and private entities seem greater than the risks and costs regarding its operation. Healthy competition brings more players to the payment scheme, lowers the costs of transactions and shortens execution times. The banking sector faces significant advantages and disadvantages. Commercial and lending banks lose a significant revenue and their role in the payment system is constrained. National Central Banks become active participants in the scheme and their reach is expanded. Payment service providers are benefited by the service, since the development of new payment services is strongly supported. Governments avoid bureaucracy and their transactions become more efficient, with lower costs shorter execution times. Supervisory authorities are provided a tool that

TIPS will foster social inclusion by allowing individuals and businesses to transfer funds within the Euro Area without restrictions. The time-consuming process of the existing scheme belongs to the past. TIPS provides interoperability between the national

Automated Clearing Houses. That means that funds can be transferred throughout the Euro Area instantly at the lowest possible costs. Wider access to the payment system is offered to traders and consumers, who will be granted access to innovative payment instruments and payment methods.

To conclude, TIPS is a service that covers a variety of inefficiencies in the existing payment scheme. Even though the service's operations are anticipated to benefit the majority of participants in the payment scheme, questions regarding its operations are generated. The fact that banks are constrained is quite concerning since Eurosystem's financial stability is preserved through the banking system. The service's operations require a great investment in technology, hardware and human resources which many participants cannot afford. That investment comes at great cost. Is TIPS the right tool to prevent the fragmentation of the retail payment system? Is the investment committed to the development of services justified? Is TIPS intended to act as a support tool for the issuance of digital Euros? What will be the consequences of such a decision? It remains to be seen.

**ABBREVIATIONS**

ACH: Automated Clearing House BIC: Bank Identifier Code

CSM: Clearing and Settlement Mechanism DCA: Dedicated Cash Account

EBA: European Banking Authority ECB: European Central Bank

ESM: European Stability Mechanism FSB: Financial Stability Board IMPS: Immediate Payment Service IP: Instant Payment

MRR: Minimum Required Reserves

NPCI: National Payments Corporation of India NCB: National Central Bank

PSP: Payment Service Provider RTGS: Real Time Gross Settlement RTP: Real Time Payments

SPI: Instant Payment System (Banco de Brasil)

S.W.I.F.T.: Society for Worldwide Interbank Financial Telecommunication TIPS: Target Instant Payments Settlement

T2: TARGET2

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