NBP Narodowy Bank Polski

June 2015 r.

Instant Payments Systems

– analysis of selected systems, role of the central bank and development directions

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Table of Contents

Introduction

Efficient and secure payment systems, constituting a channel of money transmission in domestic economies and at a global level, form the basis for the stability of the financial system. The continuous technological development and growing expectations of the participants of the financial market that the process of payment execution would be accelerated are forcing changes in the operating rules of payment systems and, perhaps more importantly, have led to the development of new payment solutions in the form of instant payments systems, allowing for faster settlement of claims. At the moment, beside mobile payments, they represent the most dynamically developing segment of payment infrastructure and their role and share in retail settlements have been rising systematically. This is evidenced by solutions of that kind already operating in over a dozen countries worldwide, whereas many countries are in the process of analysing the needs of their implementation, or have already started to implement them (cf. Figure 2.1).

This paper has been drawn up for the needs of the Payment Systems Council, the opinion-giving and advisory body to the Management Board of Narodowy Bank Polski. It contains the analysis of selected instant payments systems and the role of the central bank in the establishment and development of such systems. The document presents an attempt aimed at defining further development directions of this type of systems and their role in the domestic payment infrastructure, in particular, as regards such systems operating in Poland.

Chapter 1 presents: the definition of instant payments, reasons for creating instant payments systems and an attempt aimed at the classification of this type of payment systems according to the rules of settlement and clearing. Further in this chapter, other methods of executing payments with immediate effect, the aforementioned role of the central bank and results of the SWOT analysis of instant payments systems are described. Chapter 2 describes European initiatives related to the development of a consistent standard of instant payments, followed by the analysis of selected instant payments systems in the European Union and worldwide. On the other hand, the analogical analysis of instant payments systems operating in Poland is presented in Chapter3. For the needs of this report, a questionnaire survey related to instant payments systems has been conducted by NBP, addressed to the Polish banking environment, operators of instant payments systems in Poland, the organisation associating non-banking payment institutions – the Polish Organisation of Non-banking Payment Institutions (PONIP) and to the organisation associating e-commerce market entities – e-Commerce Poland Chamber of Digital Economy. The summary of this questionnaire survey is provided at the end of Chapter 3. In the fourth part of the publication a summary of the conducted analysis is presented, whereas in the last Chapter 5 measures are proposed by Narodowy Bank Polski, aimed at supporting the development of instant payments systems in Poland, the extension of their range and availability as well as the gradual dissemination of the instant transfer service.

1. Introduction to instant payments

1.1. Definition of instant payments

In publications and studies related to payment system problems, the notion of instant payments is expressed in a variety of ways. The most commonly found terms include: *faster payments, immediate payments, real-time/near real-time payments, instant payments, 24/7/365 payments*. They all indicate that the essence and characteristic feature of this type of payments is, first of all, the speed of their processing, which should be immediate or nearly so. Such labelling of those payments has been meant to distinguish this type of payments from those executed so far in other retail payment systems or in the classic RTGS systems[1]. Instant payments systems are systems in which a given payment is executed at the same moment, immediately, instantly. While referring to instant payments we mean retail payments executed by individuals or legal entities, and it is important to distinguish them from interbank payments, which have been executed in real time in RTGS payment systems, most commonly operated by central banks, for a long time.

An attempt aimed at defining the term "instant payments" was also made at the European Union level. The definition was presented by the Payment Systems and Settlement Committee (PSSC) operating within the European System of Central Banks (ESCB). The definition states that instant payments are electronic retail payment solutions available 24/7/365[2] and resulting in the immediate or close-to-immediate crediting of the payee's account (irrespective of the method/scheme used for executing that type of payment, e.g. pre-financing, limits, guarantee funds, RTGS, and irrespective of the underlying electronic payment instrument used for its execution). Initially, at the European level, the *faster payments* term was used, however, attention was paid to the fact that the term *faster* may be understood as a faster (instead of immediate) execution method of a standard payment, which may be effective even within several hours on the same operating day, as e.g., in some net payment systems. Accordingly, it has been concluded that *instant payments* appears a more appropriate term, better reflecting the essence of immediate execution of a payment. The *instant payments* term, including its definition, was endorsed by the Euro Retail Payments Board – ERPB[3] operating at the European Central Bank (ECB) and published in the official Statement of the Board following its meeting held on 1 December 2014[4].

[1] RTGS – Real-Time Gross Settlement, systems for gross settlements performed in real time

[2] 24 hours, 7 days a week, 365 days a year.

[3] The Euro Retail Payments Board was established by the ECB in December 2013. Its main goal is to foster the development of an integrated, innovative and competitive market for retail payments in euro. More information on the ERPB can be found on the website http://www.ecb.europa.eu/paym/retpaym/governance/eu/html/index.en.html

[4] Statement following the second meeting of the Euro Retail Payments Board held on 1 December 2014 http://www.ecb.europa.eu/paym/retpaym/shared/pdf/eprb_statement_2.pdf??b6cf304bff7465b0b3255d3de1d42c72

In the literature, slightly different definitions of instant payment can be also found; however, they are very close to the definition described above and, in general, they indicate that the essence of this type of payments is primarily the immediate or close to immediate crediting of the payee's account, executed within one minute.

1.2. Premises underlying the creation of instant payments systems

In today's era of globalisation, in many areas of life and business a tendency to and a demand for acceleration of various types of processes and actions can be observed, due to time, and hence, money savings. A similar situation exists in the payment sector which, in order to follow such trends and meet clients' expectations, has put forward a solution in the form of instant payments systems, allowing for faster execution of the transaction (payment). In the case of this type of systems, the key issue is the immediate or almost immediate flow of funds between the accounts of the sender and the receiver of the payment, which in some traditional retail payments systems worldwide can even take several days. Moreover, instant payments systems offer a possibility to execute payments 24 hours a day, which was practically impossible until recently. Instant payments systems are becoming increasingly attractive, both at a national, European and at a global level. Promoting their development is included in tasks assigned to such entities as central banks, which are involved in measures aimed at supporting the efficient operation of domestic payment systems. The considerations concerning the development direction of this segment of payments have been and continue to be driven by the need to increase banking penetration ratio of people who do not use banking services or use them to a lesser extent. The easiness and, first of all, the speed of solutions of that kind perfectly fit into the currently dominating trends. A thorough observation of the global mainstream in this scope has also triggered a discussion concerning the development of instant payments at the European level, which is presented in this report. The observed development of such systems at a national level has become a serious driver for starting discussions on this subject.

The demand for execution of payments with immediate effect is also confirmed by answers to questions contained in questionnaires addressed by NBP to banks and operators of instant payments systems, described more comprehensively in Chapter 3 of this report. They indicate that clients of banks in Poland are interested in this type of service, pointing out that it will enable them to improve their liquidity management and, in certain situations, it may represent an alternative, e.g. to payments executed by payment cards via the Internet, charged with the MSC[5] (*Merchant Service Charge*), comprising the *interchange fee*. Such costs are often added to the price by on-line retailers. Banks which are participants of instant payments systems as well as those which are not, unanimously claim that from their point of view there are measurable benefits of holding such a product in their offer. Above all, this product increases their competitiveness, meets expectations of clients oriented towards innovative products and enables to gain additional revenue due to providing such a service. However, looking from the perspective of the system operator, creating such solutions should be treated as taking a new development direction

[5] The fee charged by the acquirer from merchant for each card transaction accepted by it.

and expanding the scope of business operations, which may be recognised as the consecutive development stage of payment systems.

In terms of the initiative in building instant payments systems, it may stem directly from the payment market, e.g. from entities operating payment systems, most commonly clearing houses, or arise from steps taken by various public institutions which are responsible for organising monetary clearing and developing the payment and financial system. The second group primarily includes national central banks which in many cases act as initiators of changes in this area, e.g. through consultations concerning the need to build such systems in a given country, and then participate in the process of their creation, or operate such systems themselves.

Considering the above, the main premise underlying the setting-up of instant payments systems is the demand for accelerated retail payments execution, reported by clients and entities operating in the market of payment services, enabling the flow of funds between the accounts of the sender and the receiver close to real time, at practically any time, not restricted by any system working hours.

1.3. Classification of instant payments systems according to the principles of clearing and settlement

Significant issues associated with the processing of instant payments are clearing methods and settlement principles. Executing of payments usually takes place through tailored payment systems created for this purpose which, in fact, may be recognised as a new category of retail payment systems. For the needs of this study, **an instant payments system** is defined as **a payment system available 24 hours a day, 7 days a week and 365 days a year, in which retail payments are executed, made by individuals and legal entities, resulting in an immediate or close to immediate crediting of the payee's account**. Depending on the system, the method of payment execution, resulting in crediting the payee's account, may not coincide with the settlement which is performed later.

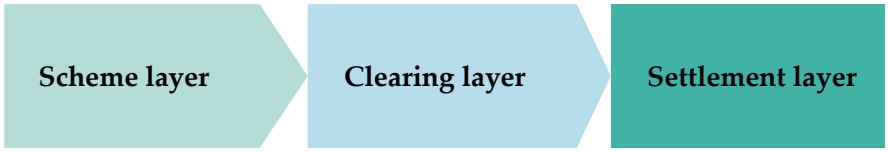
While discussing the issue of instant payments systems, one should remember that distinguishing the layers constituting such a system is also an important issue, starting from the layer in which the payment is initiated by the sender, through the rules of its clearing in the system, ending up with the final settlement (cf. Scheme 1.1). The first of the layers is the **scheme layer**. At this level, the following elements are mainly defined:

- type of payments operated by the system, e.g. credit transfer, standing order, direct debit;
- standard used for sending payment messages in the system among participants, e.g. ISO 20022;
- access channels used for sending payments by the sender, e.g. Internet banking, smart phone, telephone, bank's branch.

The second element is **the clearing of payments (clearing layer)**. This stage consists in defining the methods and rules of payment execution from the moment of payment initiation by the seller, through its entering into the system by the participant, authorisation and execution of the

payment at the level of a system operator, ending up with crediting of the payee's account. Due to the immediate nature of the payment, this stage is very important and requires determining such rules that will guarantee the payment security and efficiency. Depending on the solutions adopted, processing method in the instant payments systems is most commonly performed using the additional tools aimed at the system's protection (see below).
The last stage of payment executing is its **settlement (settlement layer)**. It may be performed on a net basis, with delay in relation to crediting the payee's account, or in real time, in central or commercial bank money.

Scheme 1.1 Stages of order execution in instant payments systems



Source: own study

The classification of instant payments systems is presented below, according to the clearing and settlement rules and payments executed therein, including examples of such systems.

Real time settlement systems

In real time settlement systems, the settlement of each payment is performed in real time, which means that such payments are executed on an on-going basis, and not at defined moments of the day. In contrast to the net settlement systems, the exchange of payment orders between participants is accompanied by the immediate and final settlement of the payment. Such a method of payment executing requires that each participant maintain an adequate level of liquidity on their settlement account, or to establish a special security on a special, dedicated account maintained for this purpose.

In the case of instant payments, the settlement on a gross basis may be performed directly in the RTGS systems operated by central banks. However, such systems should be divided into two subgroups. The first group comprises RTGS systems which are dedicated to processing interbank large-value payments, however, they also enable the immediate execution of retail payments, if only during the operating day – like the SORBNET2 system operated by NBP. This group also comprises RTGS systems which, besides executing interbank orders, enable direct, immediate execution of large volumes of retail payments in the 24-hour mode. An example of such a system is the SIC system operated by the Swiss National Bank (cf. Chapter 2.2.3).

The second subgroup of real time settlement systems includes dedicated modules for processing instant payments, connected directly with the RTGS system of the central bank. Such a solution is currently under development at the Bank of Australia (cf. Chapter 2.2.4).

Deferred net settlement systems

Deferred net settlement is the payment execution method most frequently used in instant payments systems. In net systems, executing of payments is conducted in the so-called clearing cycles, during which payment orders are exchanged between participants. On the other hand, settlement of payments takes place within settlement sessions, during which the system operator determines one net position for each participant: crediting or debiting, constituting a sum of all liabilities from a given clearing cycle against other participants of the system and set-off against the sum of all receivables from other participants within a given clearing cycle. After of the net position has been determined, the settlement agent, a role often fulfilled by central banks, performs the final settlement of the payment consisting in crediting or debiting the account of a system participant operated by the settlement agent. Such a method of payment execution reduces significantly the demand of system participants for liquidity, which is much higher in gross-type systems, where orders are executed consecutively, one by one and must be fully covered by funds. However, in instant payments systems with deferred net settlement, additional protection measures are applied, which guarantee payment execution, such as: maximum limits for participants, or securing deposits (e.g. BlueCash system) and special guarantee funds in case of liquidity problems of any of system participants (e.g. Faster Payments Service system).

In Box 1.1. differences between deferred net settlement and real time settlement systems are presented.

Box 1.1. Comparison of executing of payments rules in deferred net settlement and in real time settlement systems

Let us assume that within a single clearing cycle the following payment orders were exchanged among system participants, i.e. banks A, B, C:

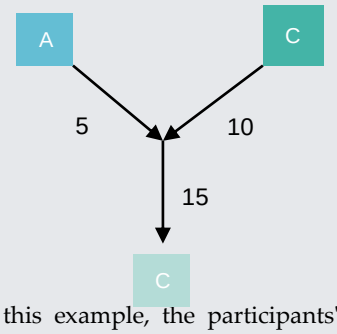
Payment time	Sender	Order value	Receiver
8:00	C	20	B
8:18	A	40	C
9:30	B	35	C
10:12	C	60	A
10:14	B	20	C
10:44	A	25	B

At the end of the clearing cycle, in the multilateral net settlement model, one net position is defined for each system participant, i.e. in this example, bank A, B and C. The net position for the bank is the sum of the value of orders credited to the bank, less the sum of the value of orders debited against the bank. Net positions for banks A, B and C are determined in the table below, in which positions debiting (negative values) and crediting (positive values) a given bank are distributed, summed up in the next step, consequently obtaining the net position for the bank.

Payment time	A Bank	B Bank	C Bank
8:00		20	-20
8:18	-40		40
9:30		-35	35
10:12	60		-60
10:14		-20	20
10:44	-25	25	
Net	**-5**	**-10**	**15**

After determining net positions (i.e. determining participants' demand for liquidity), the clearing agent performs the final multilateral settlement on a net basis (in accordance with the flow chart below).

In the first step, participants' accounts are debited. In this example, accounts of banks A and B are debited with the amounts: 5 and 10, respectively. In the next step, the relevant banks' accounts are credited. The account of bank C is credited with the amount: 15.



Thus, in this example, the participants' liquidity demand for the multilateral settlement on a net basis amounts to:

$$5+10+0 = 15$$

and it is lower than it would be if the same payment orders were executed consecutively, i.e. on a gross basis, in which case the banks' demand for liquidity would amount to:

$$40+35+20 = 95$$

which is illustrated in the table below, where the available balances of banks' accounts are determined, following the execution of each of the payment orders from this example.

Time	Available balance		
	A Bank	B Bank	C Bank
Start of the day	**40**	**35**	**20**
8:01	40	55	0
8:19	0	55	40
9:31	0	20	75
10:13	60	20	15
10:15	60	0	35
10:45	35	25	35

Besides various liquidity demand in the clearing models presented, the significant difference between them is the time of payment settlement in terms of systems' participants. In real time settlement systems, participants do not need to wait, as in systems with deferred net settlement, for the next session in order to perform payment settlement, which for them means an immediate debiting or crediting of their account due to the payments executed in the system.

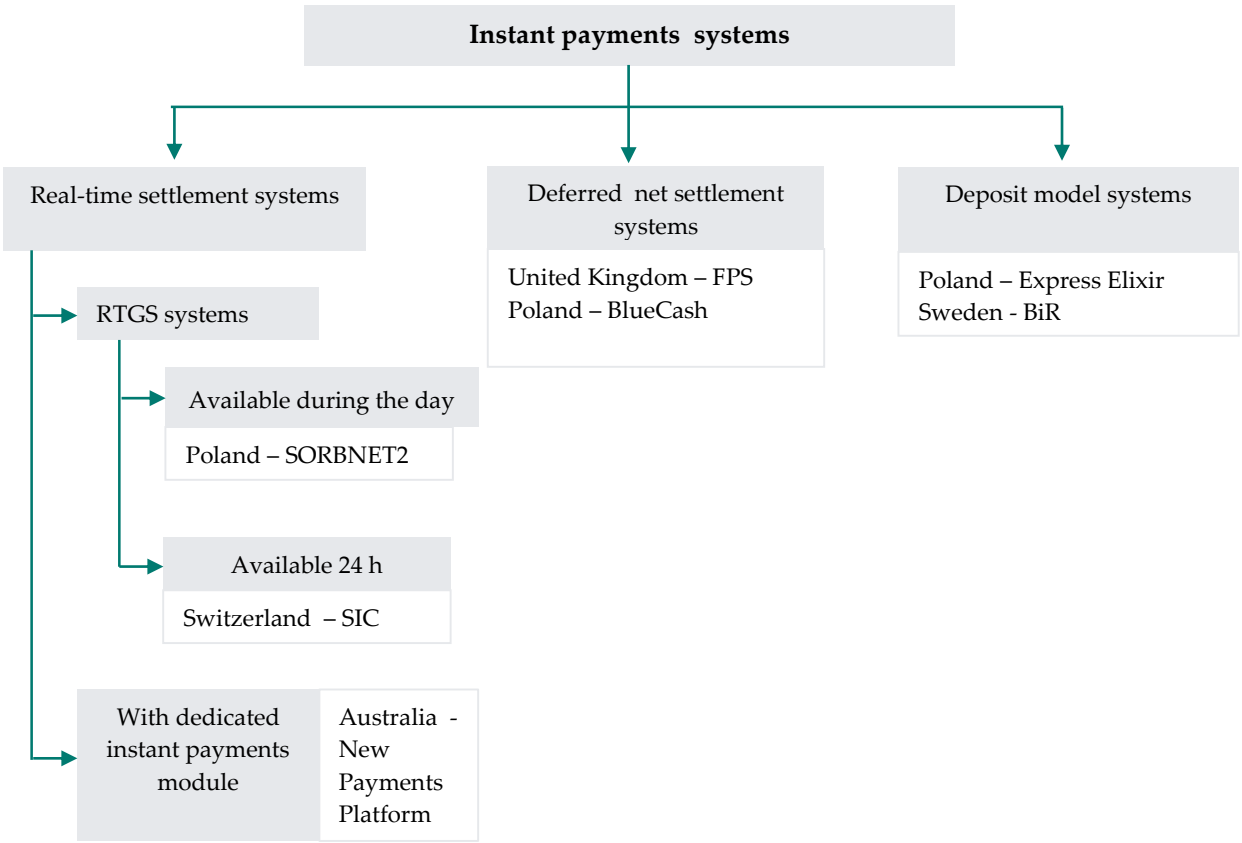
Source: own study based on Research and analysis: The Bank of England's RTGS infrastructure, Andrew Dent and Will Dison, Bank of England, 2012.

Systems based on a deposit model (prefunding)

In systems of that type payments are executed based on deposits accumulated by participants, held on a dedicated account. Each participant has a defined limit of transactions, covered by funds earlier deposited on a dedicated account. Transactions are executed only up to the level of the limit set for a given participant. If the limit for the sent orders of a given participant is exceeded, the payment is rejected. Participants manage the level of their liquidity on the settlement account of the system and, depending on the situation, may complement the required limit or transfer the surplus of funds collected over the limit to their account. Express Elixir is an example of such a system.

Scheme 1.2 presents the classification of instant payments systems, divided into three aforementioned groups of systems.

Scheme 1.2 Classification of instant payments systems



Source: own study

Besides the classification of instant payments systems presented above, other typology may be also found in literature, which is worth presenting in this material due to the diversity in the perception of those systems and their classification. In the *White paper* prepared by SWIFT

entitled *The Global Adoption of Real-Time Retail Payments Systems*[6], the following three categories of instant payments systems are distinguished:

1) central hub approach

The characteristic feature of the model of systems based on the hub approach is a clear separation of the payments clearing stage from the moment of their subsequent interbank settlement on a net basis.

This solution is based on creating a central application/concentrator, a so-called *hub* by a third-party entity, where a record of individual orders entered into the system is maintained, based on which the payee's account is subsequently credited. Payments between participants are executed in real time, based on the deposit model, in which all payments processed in the system have a 100% coverage by funds kept by participants in the central bank, or based on funds constituting a level of security defined by the system operator for clearing processes conducted in the system, also deposited in the central bank. Accordingly, payments are executed on a net basis during clearing cycles, whereas their settlement is performed during settlement sessions on participants' accounts maintained by the central bank. It is the model most commonly used for clearing payments with immediate effect, and examples of this solution include the British FPS or the Swedish BiR.

2) RTGS-based approach

In this case, payments are executed in the RTGS system operated by the central bank on a gross basis, i.e. one by one, and the settlement of such payments is immediate. As mentioned before, such systems enable an immediate execution of retail payments only during the operating day, i.e. on specific system working hours (e.g. like in the SORBNET2 system) or in the 24-hour mode (the case of the SIC system).

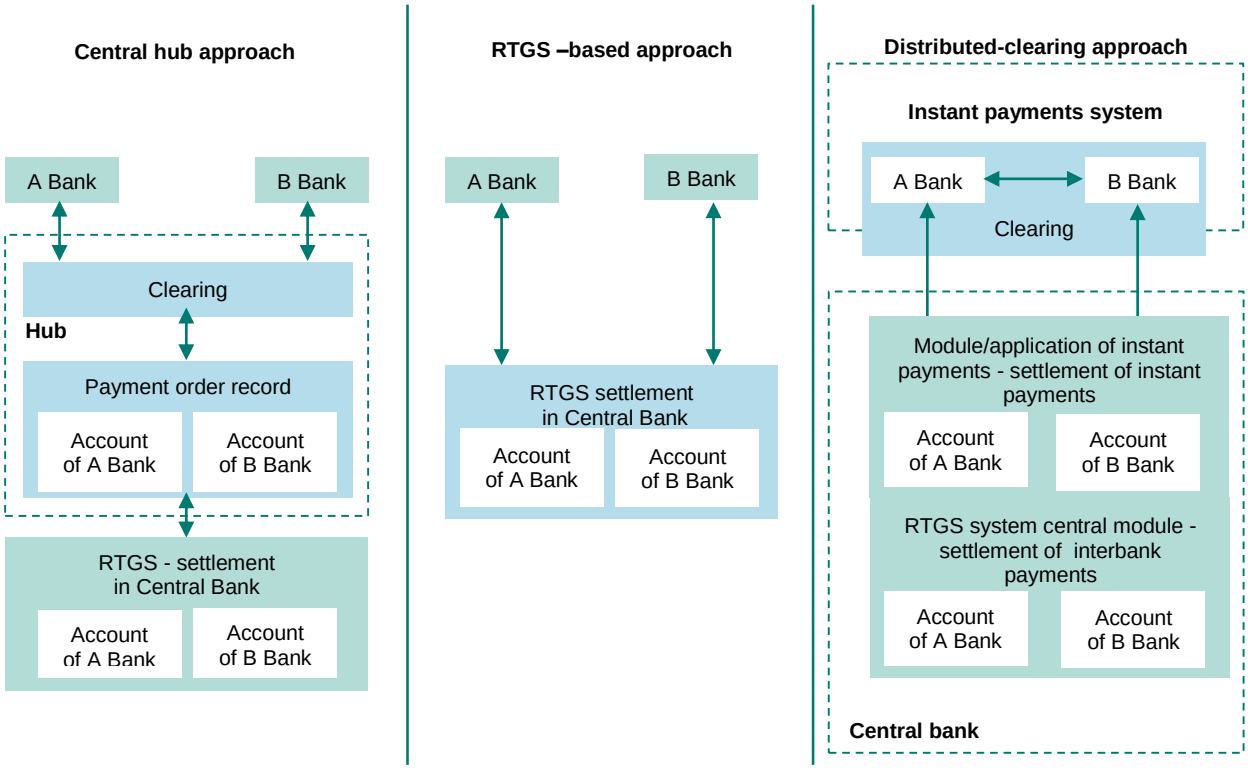
3) distributed-clearing approach

In systems based on the settlement preceded by bilateral clearing, payments are first executed between two participants in the clearing module of the instant payments system, followed by their settlement performed in the dedicated module/application operated by the central bank in the RTGS system. In systems of this type a possibility exists to credit the payee's account by its bank either following or prior to the settlement of the payment. Such a model of instant payments processing was adopted in, e.g., Australia, in the currently developed NPP system (cf. Chapter 2.2.4).

[6] The Global Adoption of Real-Time Retail Payments Systems, SWIFT, April 2015. http://www.swift.com/assets/swift_com/documents/products_services/White_Paper_Real_Time_Payments.pdf

A similar distribution of instant payments systems is also used by the European Central Bank. The above mentioned categories of instant payments systems are presented graphically in Scheme 1.3.

Scheme 1.3 Classification of instant payments systems according to the clearing rules[7]



Source: own study based on information derived from *The Global Adoption of Real-Time Retail Payments Systems*, SWIFT, April 2015.

1.4. Other methods of instant payments

Alongside the methods of performing instant payments listed above, there exist other methods of their execution, such as internal bank transfers or P2P mobile payments. A short description of these alternative methods of payment processing is presented below.

Internal bank transfers

The first method of instant payment execution are internal bank transfers performed at the level of one bank or banks via a common IT platform. In the majority of cases transfers between accounts operated in the same bank are performed with an immediate effect based on internal reclassification of funds in the bank's IT system. However, such a solution has many limitations, in particular, in terms of the range of its operation and availability, since it requires the sender

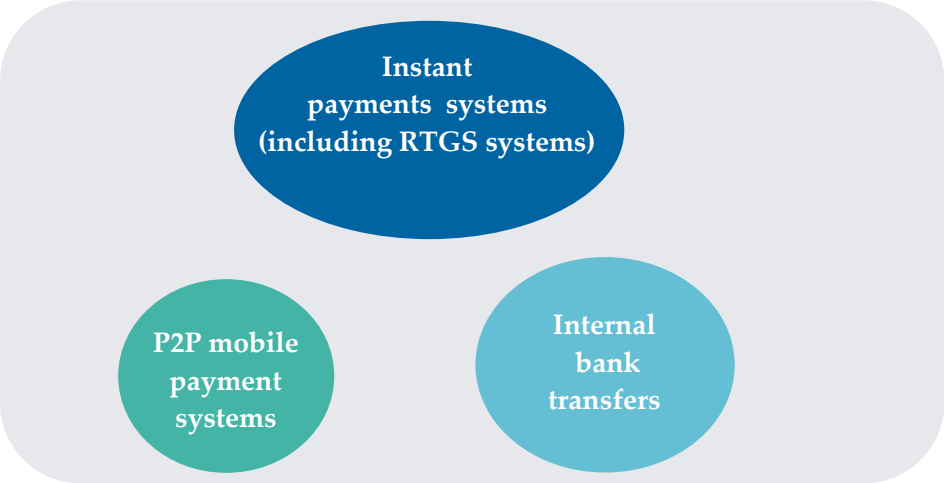
[7] Scheme 1.3 presents simplified models of clearing in instant payments systems, which may differ in some details from solutions adopted in practice in individual systems described in this material .

and the receiver of payment to hold bank accounts in the same bank. Moreover, some banks' transaction systems are not available in the 24-hour mode and/or they are switched off for weekends. This type of payment processing is used by the so-called payment integrators in on-line shops, e.g. PayU, Przelewy 24, DotPay etc., which open accounts in many banks. It was also used in the BlueCash service, provided by the Blue Media S.A. company, based on intermediation in the execution of payment orders of banks' clients through opening accounts in such banks by Blue Media S.A. and the replacement of a client's order to another bank by two interbank transfers (the first transfer –from the payer's account to the Blue Media S.A. account in one bank, and the second transfer – from the Blue Media S.A. account to the payee's account in the second bank).

P2P mobile payments

P2P (*peer-to-peer*) mobile payments performed by means of mobile phones, offer another alternative. In practice, such transactions consist in funds being transferred between the accounts of such service users. They require a prior crediting by the user of its special account kept by the service operator, or "connecting" a payment card to it. Such functionality restricts the use of this service basically to sending payments of a relatively low value and only another user of this service may act as the payee. At present, several solutions enabling the transfer of funds between users of this kind of application exist in Poland. They include, e.g. SkyCash, mPay or PeoPay. However, these services are mainly used to make payments for parking, purchase of public transport tickets, payments via the Internet, or cash withdrawals from the ATM. An exception is the BLIK mobile payments system, in which P2P payments will be directed for clearing in the Express Elixir system. Accordingly, it will be possible to execute payments made with the use of mobile phones between users holding accounts in various banks with an immediate effect.
All the possible methods of instant payments execution are presented in Scheme 1.4.

Scheme 1.4 Methods of instant payments execution



Source: own study

The above alternative methods of payment execution with immediate effect may constitute a certain alternative to the instant payments system, however, they have quite serious limitations in terms of availability (only the clients of a single bank), range (they refer only to a single bank or entities using the same technological platform), or the type of payments operated (low value payments, i.e. payment for parking or purchase of public transport tickets). As a consequence, they do not represent strong competition for payment systems, but rather supplement them. Payments made by mobile phones may be an exception, which, assuming their robust growth, may partly replace cash transactions in the scope of P2P payments in the future.

1.5. Role of the central bank in instant payments systems

In the context of instant payments and the maintenance of such systems, national central banks play a significant role. They may act as a settlement agent or an entity operating the system, as well as fulfil the oversight role in relation to this type of payment systems. In the framework of activities oriented towards the development of the domestic payment infrastructure, some central banks undertake measures aimed at establishing this type of system, which is preceded by discussions with the banking environment and other providers of payment services related to the potential need to create the system. All these roles may be played simultaneously, or a given central bank may only fulfil selected functions. The description of roles which may be played by national central banks in relation to instant payments systems is presented below, indicating examples from various countries.

Settlement agent

The role of the settlement agent is one of the roles most frequently fulfilled by central banks in the context of instant payments and consists in performing final settlements of payments cleared through such systems operated by the central bank. The settlement in the central bank money guarantees its final and irrevocable nature and enhances the reliability of payments processed in such a system. The settlement in the central bank is also aimed at the limitation or total elimination of credit risk[8] and liquidity risk[9]. Examples of central banks acting as settlement agents include, e.g.: the Bank of England, National Bank of Denmark, the Swedish National Bank or the South African Reserve Bank.

Trustee

This role involves the central bank operating the escrow account for the needs of the processing payments in the system, on which participants' funds are collected as a security of the executing payments in the system, or the liquidity of participants of such a system, based on which the clearing is performed. Such a solution guarantees the integrity of funds deposited on such an account in case of bankruptcy of the entity operating the system and their exclusive use only for

[8] Credit risk means the inability of a payment system participant to fulfil the obligations arising from payment orders on the defined deadline or at any other subsequent moment.

[9] Liquidity risk means the inability of a payment system participant to fulfil the obligations arising from payment orders on the defined deadline, although it may fulfil them in the future.

the needs of clearing performed in a given system. It is used in instant payments systems based on the deposit model. Express Elixir is an example of such a system.

Entity operating the system/ system owner

In some cases central banks operate their own RTGS systems in which instant payments are also processed. An example of such a solution can be found in the Swiss National Bank, which operates the RTGS system, where retail payments in the 24-hour mode are executed. On the other hand, the operator of the module running at the RTGS system, dedicated to the instant payments processing, will be the Reserve Bank of Australia where such a solution is under development.

Overseer

Central banks also act as overseer of instant payments systems. Performing oversight of payment systems is one of many central banks' major tasks. The goals of such oversight include, inter alia, ensuring the effectiveness and efficiency of payment systems as well as compliance of their performance with the legal regulations and standards, as well as maintaining public confidence in relation to such systems.

In practice, the oversight of payment systems usually consists in conducting a periodical assessment of the systems in terms of their compliance with national regulations and international standards, e.g. with the *Principles for Financial Market Infrastructure*[10] developed by the Bank for International Settlements. The objective of the assessment is to check the security and efficiency of performance of such systems. Some banks (such as, for example, NBP) are also authorised to issue approvals for the operation of payment systems, which is preceded by the analysis of performance rules and checking their compliance with the national legal regulations. The oversight function in relation to payment systems is fulfilled by the majority of national central banks.

Initiator of changes

Central banks are also involved in the process of creating instant payments systems as such, and in cooperation with institutions developing the rules of their operation. Some banks, for instance, initiate reviews of the domestic payment system, in terms of identifying areas for improvement. As a result of such an assessment they may, inter alia, check whether a demand for creating an instant payments system exists in their country.

An example of such initiative is, e.g. the Reserve Bank of Australia which, in 2010, through the local Payments System Board performed a review of the domestic payment system in terms of its innovativeness, and published the report containing the findings of this assessment in June 2012.[11] One of them was the need to establish a system to process retail payments in real time in

[10] Principles for financial market infrastructures, BIS, April 2012. https://www.bis.org/cpmi/publ/d101a.pdf

[11] Strategic Review of Innovation in the Payments System: Conclusions, Reserve Bank of Australia, June 2012. http://www.rba.gov.au/payments-system/reforms/strategic-review-innovation/conclusions/

Australia by the end of 2016. The decision was taken according to which the central bank would be the owner and the operator of the system, and the system itself would be connected with the currently operating RTGS system of the Reserve Bank of Australia called RITS (*Reserve Bank Information and Transfer System*).

Similar actions had also been taken by the US Federal Reserve System (FED), which conducted public consultations in 2013, aimed at the identification of areas for improvement in the payment system. As a result of the consultations it was found that creating a consolidated payment scheme in the USA for the execution of payments in real time was recommended. It was assessed that such a solution would have a positive impact on the payment system development and, indirectly, on the entire national economy. Moreover, the establishment of an instant payments system would contribute to the development of other innovations, such as mobile payments, and enhance the global competitiveness of the USA. The next stage was the review of the existing instant payments systems and drafting the conclusions for the American market. As a result of this analysis, FED defined its targets to improve the speed, efficiency and security of the payment system.

1.6. SWOT analysis of instant payments systems

Besides their unquestionable advantages, such as the immediate transfer of funds between the accounts of the sender and receiver of the payment, instant payments systems have also certain disadvantages which for some entities may act as a barrier to participation or use of this kind of service. In order to put in order the information on instant payments systems and identify their strengths and weaknesses as well as opportunities and threats associated with the use of those systems, a SWOT analysis [12] of instant payments systems has been performed for the needs of this report. Its results are presented in Table 1.1., broken down by groups of stakeholders of this service, i.e. from the point of view of participants of those systems, their operators and end users (banks' clients). Answers to the questionnaire addressed by NBP to banks, operators of instant payments systems and organisations associating non-banking payment institutions and e-commerce market entities, among others, were used for the preparation of the analysis. The detailed description of the questionnaire survey results is included in Chapter 3.

[12] SWOT analysis - Strengths, Weaknesses, Opportunities, Threats.

Table 1.1. SWOT analysis of instant payments systems

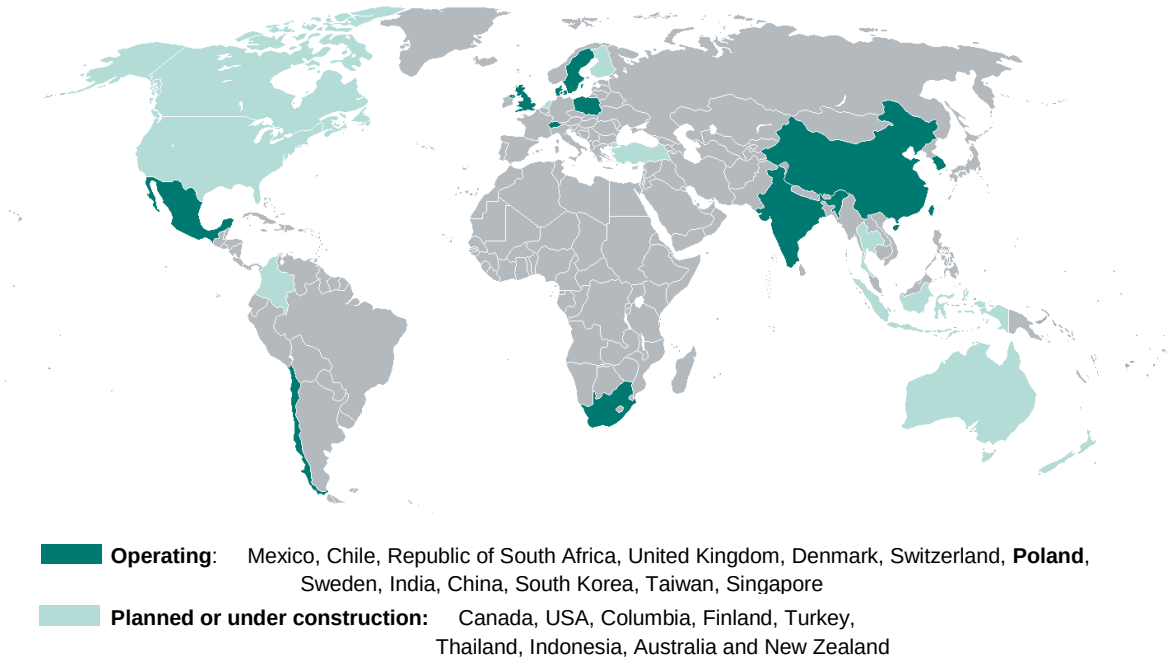
STRENGTHS	WEAKNESSES
From the point of view of a system participant (a bank): ▪ increasing the competitiveness and recognition, ▪ meeting clients' expectations, ▪ building a modern and technologically advanced image, ▪ gaining new revenue. **From the point of view of a bank's client:** ▪ possibility of immediate fulfilment of own liabilities 24 hours a day, ▪ better liquidity management (refers to economic operators in particular), ▪ immediate crediting of the receiver account may mean, e.g. faster delivery of goods purchased, ▪ lack of pay-by-link fee – lower transaction costs for the merchant, ▪ possibility of executing payments by both individual clients and economic operators. **From the point of view of a system operator:** ▪ new source of revenue acquisition, ▪ increasing the competitiveness, ▪ implementation of the new solution results in the development of the company and following the global trends.	**From the point of view of a system participant (a bank):** ▪ necessity of performing adjustment changes in IT systems, ▪ high costs of service implementation and maintenance, ▪ in many cases – the requirement to maintain additional liquidity to cover executing payments in the system, or to secure them, ▪ lack of revenue from float, ▪ in some cases – limited range of system, ▪ value limits for a single transaction. **From the point of view of a bank's client:** ▪ potential additional fees charged by banks for instant transfers, ▪ frequent lack of possibility of making payment due to the limited range of the service and, in some cases, unavailability of the service, e.g. during the weekend, ▪ lack of possibility of executing certain types of payments, e.g. tax payments or direct debit, ▪ value limits for a single transaction. **From the point of view of a system operator:** ▪ necessity of incurring costs of implementation of the new system and its maintaining.
OPPORTUNITIES	**THREATS**
From the point of view of a system participant (a bank): ▪ harmonisation of the clearing standard of instant payments, ▪ interoperability of systems, ▪ increasing the range of the service through accession of new participants, ▪ monitoring of existing sanction lists, or creating such lists in order to reduce the risk of frauds, ▪ reducing costs of system implementation on the banking system provider side, ▪ recognising funds based on which payments are processed in the system as the reserve requirement or applying the interest – refers to systems based on the deposit model. **From the point of view of a bank's client:** ▪ decrease or elimination of fees by banks, ▪ expanding the catalogue of payment types performed with immediate effect, e.g. by the e-commerce sector, ▪ covering a higher number of participants with the range of operations - increase of service range, ▪ interoperability of systems - increase of service range. **From the point of view of a system operator:** ▪ harmonisation of the clearing standard of instant payments, ▪ interoperability of systems on the national and cross-border level - increase of service range, ▪ expanding the catalogue of payment types performed with immediate effect, e.g. by the e-commerce sector or P2P mobile payments, ▪ covering a higher number of participants with the range of operations, including payment institutions, ▪ migration of a part of payments so far processed in other systems to instant payments systems.	**From the point of view of a system participant (a bank):** ▪ threat of funds fraud due to the immediate nature of payment execution, ▪ growth in the number of fraud transactions, ▪ lack of homogeneous standard for the processing of instant payments, leading to market fragmentation, ▪ lack of interoperability of systems – limited range of the service, ▪ competition for mobile payment systems operated by some banks, ▪ treating instant payments as a paid premium product – limited group of service users, ▪ competition for payment cards in the event of introducing instant payments in POS terminals. **From the point of view of a bank's client:** ▪ creating successive systems resulting in the lack of recognition and service fragmentation, ▪ lack of interoperability of systems – limited range of the service. **From the point of view of a system operator:** ▪ creating successive systems means increased competition, ▪ competition from mobile payment systems in the scope of P2P payments, ▪ lack of a homogeneous standard for the processing of instant payments, leading to market fragmentation, ▪ lack of interoperability of systems – limited range of the service, ▪ lack of interest in participation in the system from successive banks.

2. Directions of instant payments systems development in the European Union and worldwide, on the basis of selected examples

The essence of instant payments systems operation is the speed of transaction execution and the immediate or close to immediate availability of funds on the payee's account. However, in practice clearing such payments is a complicated process and requires the development of such a solution which, on the one hand, is efficient and fast and, on the other hand, ensures safety of the clearing.

At present, several dozen instant payments systems exist worldwide, whereas in several countries they are at the stage of planning or implementation (cf. Figure 2.1). Each of those systems has its characteristic functionalities and operating scheme, which often result from the specific character and needs of the local market. Those differences are best visible in the method of payment execution and in the settlement rules. Executing of instant payments is usually processed in accordance with the methods mentioned earlier. The first of them takes place through the dedicated payment systems with deferred net settlement, created for that purpose, which, in fact, can be recognised as a new category of retail payment systems. The second method is the processing of retail payments directly in the RTGS systems operated by central banks or performing their settlement in the dedicated module at the RTGS system. The third method of instant payments processing are systems based on the deposit model, namely, the so-called pre-funding.

Figure 2.1. Instant payments systems worldwide.



Source: Own study

Table 2.1. Instant payments systems worldwide.

Year of system launch	Country	Name of the system	Operating hours of the system
1987	Switzerland	Swiss Interbank Clearing - SIC	24x7x365
2001	South Korea	Electronic Banking - HOFINET	24x7x365
2004	Mexico	Sistema de pagos electronicos interbancarios - SPEI	from 7:00 p.m. to 5:45 p.m. (on the following day), 7 days per week. Minimum availability of the service in the bank – from 6:00 a.m. to 6:00 p.m.
2007	South Africa	Real-Time Clearing - RTC	24x7x365 (depending on the bank)
2008	Chile	Transferencias en Línea - TEF	24x7x365
2008	United Kingdom	UK Faster Payments	24x7x365
2010	India	Immediate Payment Service - IMPS	24x7x365
2010	China	Internet Banking Payment System - IBPS	24x7x365 (depending on the bank)
2010	Taiwan	CIFS - CBC Interbank Funds Transfer System	24x7x365
2012	Poland	Express Elixir	24x7x365 (depending on the bank – 4 of 8 banks ensure availability 24x7x365)
2012	Poland	BlueCash	24x7x365 (depending on the bank)
2012	Sweden	Payments in Real Time	24x7x365
2014	Denmark	The Express Clearing of Nets company	24x7x365
2014	Singapore	Fast and Secure Transfers - FAST	24x7x365

Source: own study

Instant payments systems have been operating for a relatively short period of time, compared to other electronic retail payment systems operating already for several decades. However, executing retail payments with immediate effect had started much earlier, namely, at the moment when execution of such payments became possible through the RTGS systems operated by national central banks. However, due to the availability of such systems being limited to operating hours, as well as the increased need for participants' liquidity associated with executing large payment volumes in the systems, a need has emerged to commence works related to other, more efficient solutions intended for the clearing of retail payments with immediate effect, which resulted in the setting-up of instant payments systems. Another underlying condition for the development of instant payments systems was the ineffectiveness of traditional retail payments systems, which in some countries executed payments within 2 or 3 days (D+1 or D+2 models). The ideas of setting up of such a system, e.g. in the United Kingdom, appeared as early as in the beginning of 2000 (cf. point 4.1). The first system in the world dedicated only to the processing of payments with immediate effect was, however, the Real-Time Clearing (RTC) system launched in March 2007 in the Republic of South Africa by the clearing house, BankservAfrica. Clearing operations in this system are conducted on a net basis, whereas the settlement takes place every hour in the central bank. The payee's account is credited within 60 seconds since the moment of payment initiation by the sender (more information on the RTC system can be found in Annex 2).

2.1. Initiative concerning setting-up of a consistent standard of instant payments in the EU

In connection with the dynamic development of instant payments systems, the issue has become a subject of discussions and analyses at the EU level. Currently, systems through which this type of payments many be cleared operate in four EU countries, i.e. Denmark, Poland, Sweden and the United Kingdom. Their operating principles differ and, accordingly, in order to foster further development and popularise this payment solution as well as to prevent market fragmentation, it has been concluded that implementation of a consistent scheme for instant payments clearing at the EU level is worth considering. This issue has become the subject of analyses conducted by the Euro Retail Payments Board. Following its meeting on 1 December 2014, the ERPB, besides adopting the definition of instant payment quoted above, took the decision on undertaking works aimed at establishing at least one pan-European solution enabling to settling instant payments in the euro. According to the ERPB's opinion, this should prevent the aforementioned fragmentation of instant payments market and contribute to its dynamic development at the EU level. Works related to the preparation of the concept of such a solution are to be carried out under close cooperation of representatives of this payment market segment, with the active role of the European Payments Council (EPC) as a potential developer of this solution. Results of conducted analyses are to be presented to ERPB at the meeting in June 2015. It was decided that work on

this project would be carried out in parallel on three layers, taking into account the operating layers of instant payments systems described in Chapter 1.3: *Scheme layer*, *Clearing layer*, *Settlement layer*. Work concerning the *scheme layer* is carried out within the ERPB, and its objective is to develop at least one payment scheme for the processing of instant payments in Euro in the EU (or at least in the euro area).

Within the *clearing layer*, the analysis of possible and already operating clearing methods for instant payments will be conducted. In this area, close cooperation with the environment of providers of payment services and technical infrastructure is foreseen.

The last area – the *settlement layer* will cover issues associated with the rules of performing the settlement of instant payments, indicating the advantages and disadvantages of clearing on a net and gross basis, including the analysis of the possibility of using the TARGET2 system for performing the settlements of instant payments systems.

Within the framework of works related to the *clearing layer*, on 4 March 2015 the European Central Bank organised a meeting aimed at the exchange of opinions concerning the existing clearing methods of instant payments and possibilities of their use in view of implementation of the aforementioned ERPB decision related to the development of a consistent pan-European scheme for clearing instant payments in the Euro currency as well as defining further measures required in this area. The meeting was attended, inter alia, by representatives of European central banks (including NBP), clearing houses, operators of instant payments systems (including KIR S.A.), commercial banks and other institutions involved in the project on creating the pan-European scheme enabling the exchange of instant payments. At the meeting it was recognised that the best solution, implementing the goal set by the ERPB, would be the establishment of a bilateral link between clearing houses operating instant payments systems in the EU. Such a solution would be, however, applicable only in the case of linking a limited number of systems. However, if a larger network of links was built, the establishment of a central concentrator (the so-called hub) would be required, with many systems connected to it. Through the hub, exchange of payment orders among systems connected in such a manner would take place. This solution would enable the exchange of payments with immediate effect between clients of banks from various EU countries. The idea of appointing one clearing house to execute instant payments across the whole EU, now that such systems are already operated by several clearing houses, did not receive the approval of the participants in the meeting. The method of reducing the credit risk and liquidity risk generated, in particular, during clearing of large-value payments in systems with deferred settlement was recognised as a significant challenge to be faced while creating such a solution. Proposed solutions in this area may include more frequent clearing cycles in the system, or transition to real time settlements. Work on the preparation of the interoperability link between instant payments systems has already been undertaken by the European Automated Clearing House Association (EACHA[13]), whose representatives also participated in the

[13] The EACHA was established in 2006 and it currently associates 26 clearing houses from 22 countries of Europe (including KIR S.A.). Within the EACHA, cooperation between clearing houses is carried out, in particular, in the scope of interconnector exchange of payment orders.

meeting organised by the ECB. The first result of their work is the analysis published by the EACHA in January 2015[14], presenting the concept of establishing the technical link between various systems of instant payments. The presented proposal would enable the interconnector exchange of payments with immediate effect, irrespective of the payment currency. Representatives of the EACHA have announced that the next stage in this area will involve conducting an analysis of practical aspects arising from the establishment of the aforementioned link, considering both technical and business aspects. The next meeting related to the work on the *clearing layer* shall be held in autumn 2015 and it will deal with the assessment of solutions proposed to the ERPB in this area.

Instant payments and TARGET2 system

One effect of the measures aimed at developing the consistent scheme for instant payments clearing within the EU is also the appearance of the proposal related to the possibility of settlement and potential processing of such payments in the TARGET2 system[15]. Within the framework of this idea, various scenarios are analysed by ESCB working groups, which envisage both the settlement of instant payments in the TARGET2 system on the basis of the settlement of the so-called ancillary system based on the current and potential new solutions as well as methods of processing instant payments directly in the TARGET2 system.
Due to the broad range of operations of the TARGET2 system, whose participants include all central banks of the euro area and four central banks from non-euro area countries (including NBP), the use of this system for the settlements and potential clearing of instant payments definitely seems to be a justified concept. The ultimate determination of rules which would govern this solution requires in-depth analyses and arrangements within working groups and ESCB committees.

2.2. Analysis of selected instant payments systems

A detailed description of the operating rules of four selected payment systems in which payments are settled with immediate effect is presented below. They all represent categories of instant payments systems presented in Chapter 1.3, in terms of the method of clearing and settlements performed in those systems. The description takes into consideration, above all, the following issues:

- types of payments and the method of payment initiation,
- methods of performing the clearing and the settlement,
- system availability and speed of payment execution,
- types of participation,

[14] Study on interoperability of immediate payment systems, EACHA, January 2015.
http://www.eacha.org/form_download.php?doc=EACHA%20Study%20on%20Interoperability%20of%20Immediate%20Payment%20Systems

[15] TARGET2 is the RTGS payment system in the euro. It was launched in 2007 by three central banks of the Eurosystem, the so-called 3CB – Banque de France, Banca d'Italia and Deutsche Bundesbank.

- transaction amount limits,
- types of fees,
- role of the central bank,
- basic statistical data,
- system development.

On the other hand, Annex 2 to this material comprises the comparative specification of a larger number of selected instant payments systems operating in both Poland and the EU and worldwide.

2.2.1. Faster Payments Service – the United Kingdom

The Faster Payments Service (FPS) system was launched in May 2008 as the first instant payments systems in Europe and one of the first in the world. The operating entity and the owner of the system is a non-profit organisation established by ten banks, called Faster Payments Scheme Ltd (FPSL). The FPS operator is a British clearing house, Vocalink Ltd. The system is the key element of the British payment infrastructure and it has been recognised by the Bank of England as a systemically important payment system, subject to the PFMIs defined by the Bank for International Settlements.

Premises for establishment of the system

In the United Kingdom, the proposal to establish an instant payments system emerged on the basis of the conclusions of the report commissioned by the HM Treasury, published in 2000, concerning the competition in the British banking sector (the so-called *Cruickshank Report*[16]), and the review of retail payments systems in the United Kingdom performed by the *Office of Fair Trading Payment Systems Task Force* in 2003[17]. The main reason for building the instant payments system was the need to reduce the very long period of retail payments execution through the BACS[18] and Cheque and Credit Clearings[19] systems, which , lasted even 3 days at that time.

Types of payments and the method of payment initiation

In the FPS system the following four types of payments are operated:

- single credit transfers,
- standing orders,
- forward-dated payments,

[16] Cruickshank Report, Competition in UK banking, D. Cruickshank, March 2000.
[17] Office of Fair Trading Payment Systems Review, Office of Fair Trading Payment Systems Task Force, May 2003.
[18] The largest British retail payment system in terms of the number of processed payments and turnover, whose operator is the Vocalink Ltd. clearing house.
[19] A system clearing cheques in euro and in Pound Sterling, operated by the Cheque and Credit Clearing Company.

- direct corporate access payments.

A standard single *credit transfer* may be made via internet banking, by phone, smartphone or in the bank's branch. Such a type of payment guarantees availability of funds on the payee's account within maximum two hours. However, in practice it usually takes place much faster – within several minutes. The system enables the execution of such orders in the 24/7/365 mode (depending on availability in a given bank).

In the FPS system, *standing orders* are executed via the same channels as credit transfers and enable the client to establish a payment repeated at regular time intervals (e.g. once per month) in favour of a specific receiver of the payment. These orders are processed by the system from Monday to Friday, excluding banking holidays.

Forward-dated payments are one-off payments entered into the system with a future execution term. This type of orders is most commonly used for payment of various types of fees and may be processed in the 24/7/365 mode (depending on availability in a given bank). As in the case of the two aforementioned types of payments, they may be processed via internet banking, by phone, smartphone or in the bank's branch.

The last type of payments are the so-called *direct corporate access payments*. They are business clients' orders which are transferred to the central module of the system through the dedicated DCA Module, in which messages have the same structure as in the BACS system. In this mode, business clients have a possibility of direct submission of single orders or "packages" containing orders to the system.

System availability and speed of payment execution

The system is available in the 24/7/365 mode. The execution of a payment from the moment the order is entered in the system until the moment its execution is confirmed lasts a maximum of 15 seconds. If the bank is a direct participant of the FPS system, crediting the client's account takes several minutes. If the bank of the payee is an indirect participant, crediting the account of its client may take longer – even up to two hours. The settlement of payments is performed only from Monday to Friday, excluding banking holidays.
Transaction amount limits In the system, a maximum limit for a single order is set at £100,000. However, in practice, some banks apply lower limits for their clients.

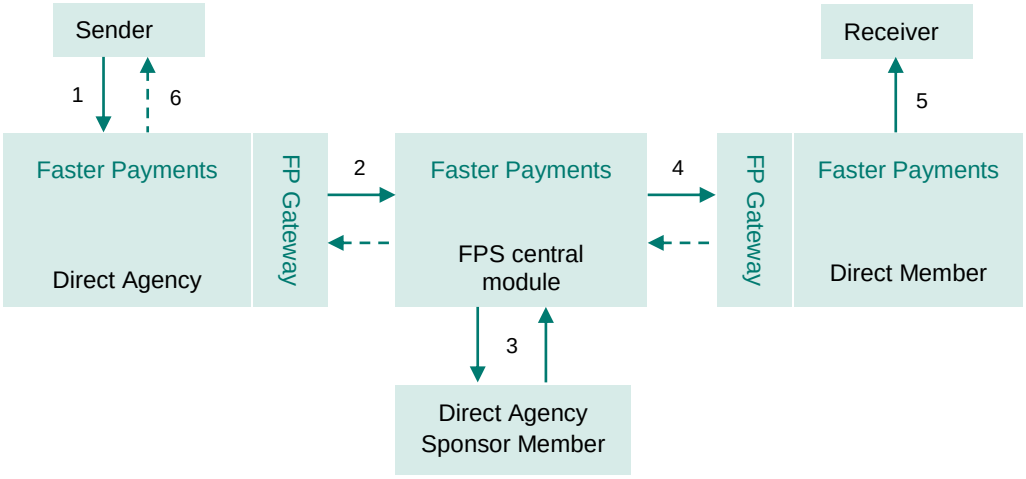
Types of participation

In the FPS system there are two types of participation: direct and indirect. Direct participants may include banks –payment services providers which hold an open settlement account with the Bank of England, or may use such an account as members of the capital group of an entity for which it is maintained. At present, the system comprises only ten direct participants, however, the majority of British banks have access to it. About 400 of payment services

providers have indirect access to the system. Direct participants may act as intermediaries in the access of other payment services providers to the system. Within the framework of indirect participation, the following four access options are offered:

- Direct Agency
  This kind of participation enables the payment services provider to send orders directly to the central FPS module. However, the settlement of such payments is performed on its behalf by the direct participant in the system on the account with the Bank of England. The direct participant in the system, the so-called *Direct Agency Sponsor Member* for the payment services provider, fulfils the authorising role – authorising or rejecting payments sent to the FPS central module by the Direct Agency. In this option both sending orders to the system and receiving orders from the system is possible. The method of payment clearing under this option is presented in Scheme 2.1.

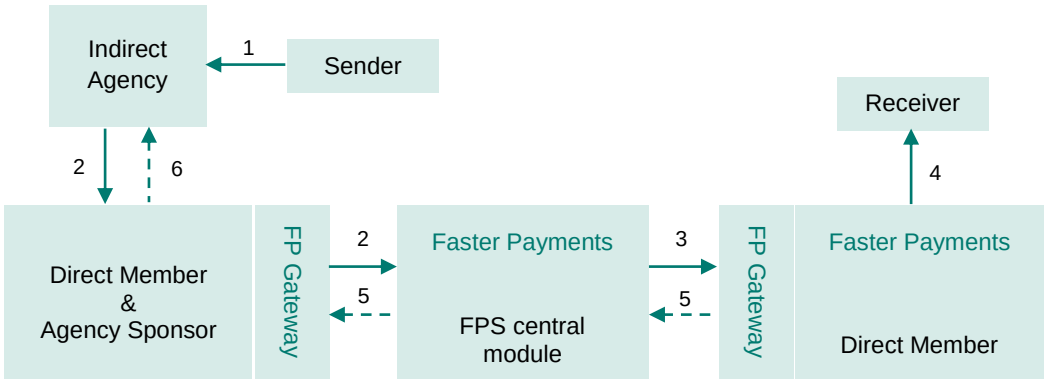
Scheme 2.1 Method of payment clearing in the FPS system under the *Direct Agency* type access



Source: own study based on information from www.fasterpayments.org.uk

- Indirect Agency
  In this case, the payment services provider acts as a so-called *Indirect Agency* and transfers the payment order first to the direct participant (the so-called *Direct Member & Agency Sponsor*). In the next step, the direct participant debits the account he operates for the payment services provider (*Indirect Agency*) with the relevant amount and sends the payment, on his own account, to the FPS central module. In this option it is possible to both send and receive orders to from the system. The method of payment clearing under this option is presented in Scheme 2.2.

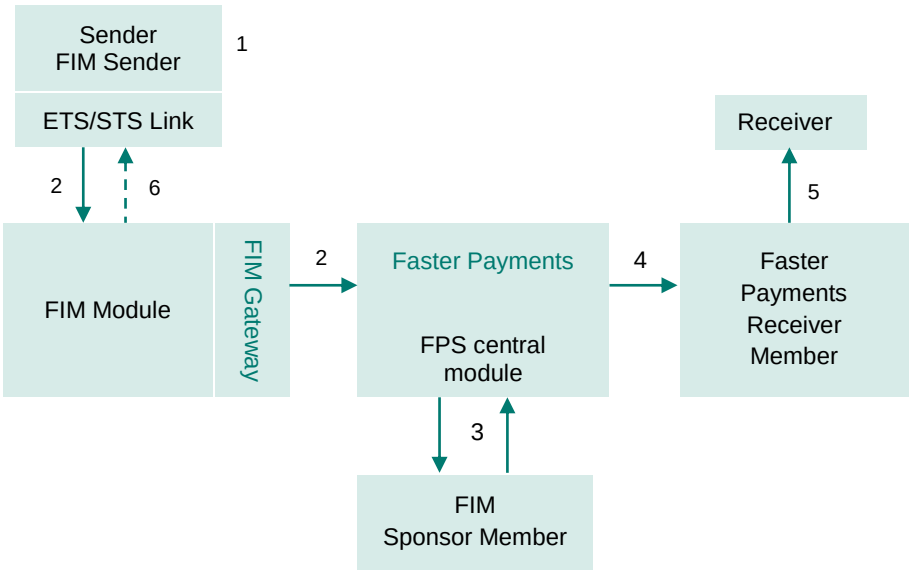
Scheme 2.2 Method of payment clearing in the FPS system under the *Indirect Agency* type access



Source: own study based on information from www.fasterpayments.org.uk

- File Input Module (FIM)
  In this option, the client of the direct participant, the so-called FIM *Submitter*, can only send orders to the system in the form of "packages" through the dedicated FIM module. In the FIM model, the "package" is unpacked into individual orders, which are sent to the FPS central model for authorisation. The direct participant of the system, in this case acting as the so-called FIM *Sponsor Member*, authorises or rejects payments sent by the FIM *Submitter*. The method of payment processing under this option is presented in Scheme 2.3.

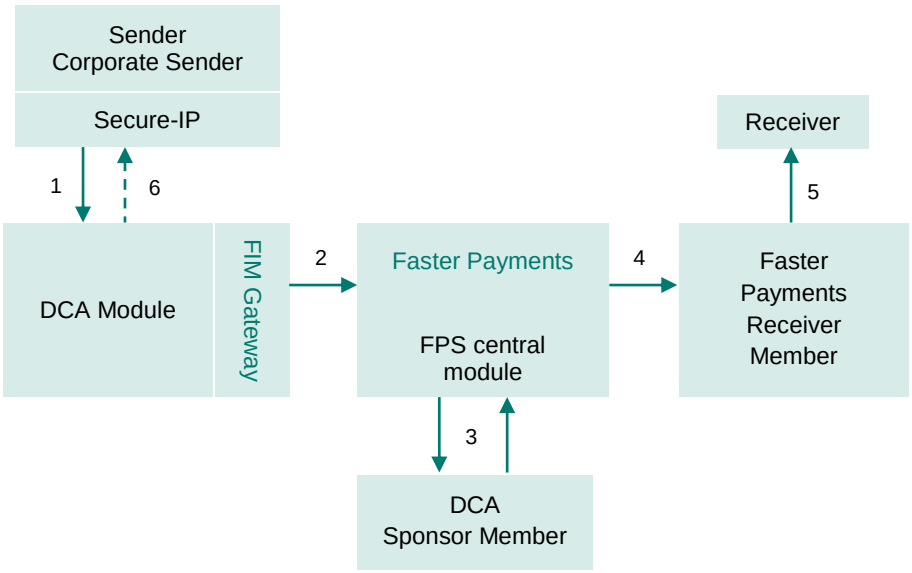
Scheme 2.3 Method of payment clearing in the FPS system under the FIM type access



Source: own study based on information from www.fasterpayments.org.uk

- Direct Corporate Access (DCA)
  In this option, the client of the direct participant can only send orders to the system through the dedicated *DCA Module*, in which messages have the same structure as in the BACS system. In this mode, business clients have a possibility of direct submission of single orders or "packages" containing orders to the system. In the DCA module, conversion of the payment to the ISO 8583 standard operated by the FPS system takes place, and those payments are subsequently transferred to the FPS central module for authorisation. The direct participant in the system, in this case acting as the so-called *DCA Sponsor Member,* authorises or rejects payments sent by the *Corporate Sender*. The method of payment clearing under this option is presented in Scheme 2.4.

Scheme 2.4 Method of payment clearing in the FPS under the DCA type access



Source: own study based on information from www.fasterpayments.org.uk

Types of fees

No fee is charged for the accession of the participant to the system, however, participants shall cover the operating costs of system in the form of an annual fee. Its level is determined on a pro rata basis, against the share of a given participant in the total number of payments made in the system (sent and received).

Vocalink Ltd charges the participants with a one-off fee for connecting to the central infrastructure of the system and a monthly fee for the maintenance of this link. Banks acting as intermediaries towards other entities in their access to the system establish the level of fees charged against those entities individually. The level of fees is associated with the number of orders sent to the system or received by such entities.

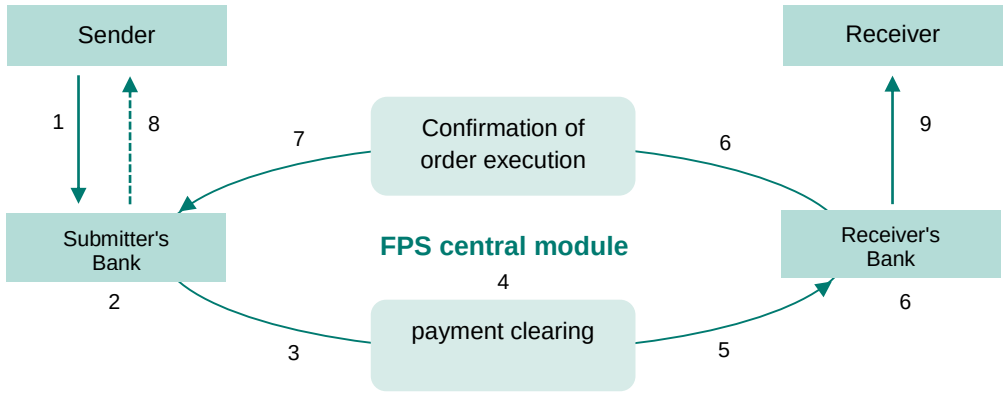
Banks usually do not charge clients with individual fees for performing transactions via the FPS system.

Clearing and settlement of payments

FPS is a classic example of multilateral net settlement system. Payments are processed on a net basis, within three clearing cycles ending with a settlement session during which the settlement is performed. The ISO 8583 standard is applied to the exchange of payment messages in the system. In the clearing cycles between sessions, orders are executed only up to the level of limits determined earlier for individual participants (the so-called *Net Sender Caps*). In case the limit is exceeded by the participant, orders sent by it to the system are rejected.

While ordering the payment, the client must check whether both their bank and the receiver's bank offer the *faster payments* type of payment. When the order has been entered into the system, the beneficiary's bank informs the payer's bank of executing or rejecting the payment. Direct participants in the system are bound to inform the payer's bank thereof in the close-to-real time (i.e. approximately 15 seconds). The full process of payment execution in the FPS system is presented in Scheme 2.5.

Scheme 2.5 Process of payment clearing in the Faster Payments Service system



Source: own study based on information from www.fasterpayments.org.uk

Within the aforementioned process, the following activities are carried out:

1. The sender of the payment submits a payment order at their bank (Submitter's Bank). In order to address the payment properly, apart from the amount of payment, the sender enters a special code number, the receiver's account number and the payment title into the order.
2. The sender's bank verifies the authenticity of the client submitting the order, e.g. through the requirement to confirm the transaction with a special password, and checks whether

sufficient funds necessary to execute the transaction are available on the sender's account. In some cases the payment sender's bank may withhold the payment in order to check it for fraud risk.

3. The sender's bank enters the payment in the central module of the FPS system. At that moment the payment becomes irrevocable.
4. In the central module of the FPS system, the accuracy of the payment is checked from the point of view of all the required data.
5. If the accuracy of the payment is confirmed, a payment instruction is sent from the FPS system to the receiver's bank, with the simultaneous entry of the generated liability of the sender's bank due to the payment made, into the FPS system record.
6. Upon the receipt of the payment, the receiver's bank checks the compliance of its client's account number and sends the reconfirmation on accepting or rejecting the payment to the FPS system.
7. The receivable for the receiver's bank due to the payment made by the sender's bank is entered into the FPS system record, and information on execution of the transaction is sent to the sender's bank.
8. The sender's bank notifies the sender of the payment execution.
9. The receiver’s bank credits the payee's account.

If the receiver’s bank is a direct participant in the FPS system, crediting the client's account should take several minutes. If it is an indirect participant, the operation may take longer – even up to two hours.

The final settlement of the payment is performed on a net basis on accounts of the banks operated by the Bank of England, in three settlement sessions during an operating day: at 7:00 a.m., 1:05 p.m. and 3:45 p.m. As mentioned earlier, the settlement of payments is carried out only on operating days when the RTGS system of the central bank is open, i.e. from Monday to Friday, excluding banking holidays and, subject to the position of a given participant, it consists in the debiting or crediting of its settlement account. The settlement of payments of the FPS system must be complete, i.e. covering the net positions of all the direct participants, with no possibility of partial clearing.

In order to guarantee the settlement of the system, the participants have concluded a special additional agreement, i.e. *Liquidity and Loss Share Agreement* (LLSA). It regulates the rules of loss coverage and provision of additional liquidity for the needs of settlement. In the Bank of England a special fund is maintained in which all the direct participants of the system take part. In case of any problems related to ensuring the adequate level of liquidity for the settlement of payments by any of the participants, resources deposited within the aforementioned fund are used for the performance of payment settlement. The total amount of collaterals contributed by participants must fully cover the level of *Net Sender Caps* set in the system. A participant that has not provided adequate liquidity and caused the use of funds from the deposit shall incur full costs of such an operation. However, such a solution shall not

eliminate credit risk completely since a situation may occur where the fund collected is insufficient to cover the liabilities of all the participants in the system unable to satisfy them.

Role of the central bank

The Bank of England fulfils three roles towards the FPS system:

- a settlement agent,
- a trustee institution,
- an overseer.

The role of the settlement agent involves performing the settlement of payments executed in the FPS system, which takes place using the bank accounts operated in the RTGS system of the Bank of England. Each of the direct participants in the system must hold such a settlement account with the Bank of England.

In terms of the trustee function, in the case of the FPS system it involves the Bank of England operating the account of a fund on which additional cash is deposited in case of problems related to the liquidity of any of system participants.

The Bank of England also is responsible for oversight of the FPS system. As part of those measures, a preliminary oversight assessment of the FPS system has been performed, in terms of fulfilment of the rules defined in the report published by the Bank for International Settlements entitled *Core Principles for Systemically Important Payment Systems (CPs)*[20]. The results of the assessment were published in April 2009 in Annex E to the *Payment Systems Oversight Report 2008*[21]. Due to the fact that in this period the system was at an implementation stage, it was not possible to perform its full assessment in terms of fulfilment of all ten rules, therefore, the evaluation was limited to eight of them. On the basis of the assessment performed, it was found that the system was fully compliant with two rules, almost fully compliant with three rules and partially compliant with three rules.

While implementing the above mentioned PFMIs, which have replaced the CPs, the Bank of England requires operators of the payment systems it oversees to perform the annual self-assessment of the system, or at least its review[22], which is subsequently used for performing the oversight assessment by the central bank.

[20] Core Principles for Systemically Important Payment Systems, BIS, January 2001. https://www.bis.org/cpmi/publ/d43.htm

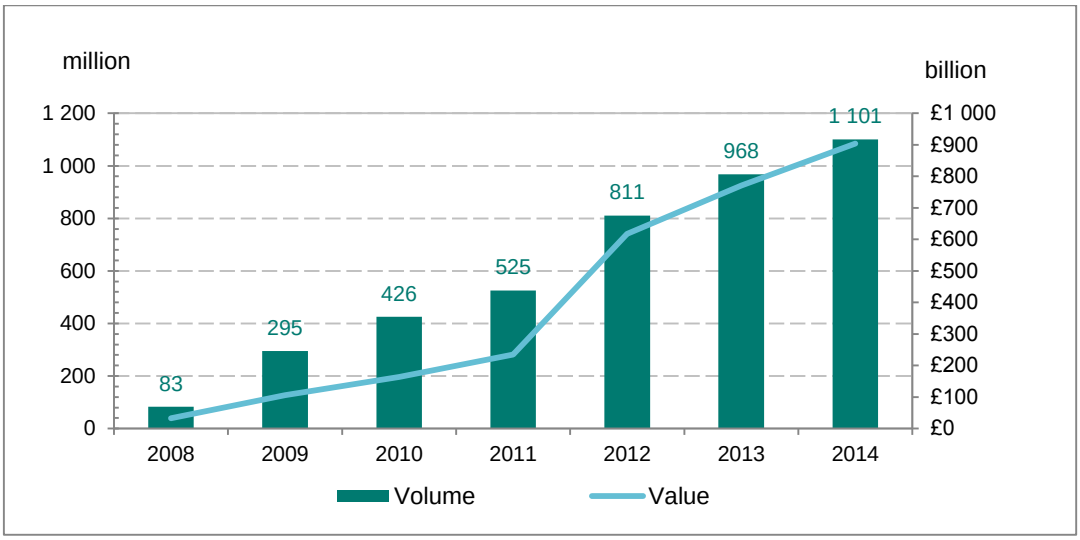
[21] Annexes to Payment Systems Oversight Report 2008, Detailed assessments of payment systems, Bank of England, April 2009. http://www.bankofengland.co.uk/publications/Documents/psor/psorannex2008.pdf

[22] The Bank of England's approach to the supervision of financial market infrastructures, Bank of England, April 2013. http://www.bankofengland.co.uk/financialstability/documents/fmi/fmisupervision.pdf

Statistical data

According to the latest data, 49 million bank account holders in the United Kingdom have access to the FPS system. In December 2014, over 102 million transactions totalling £82.5 billion were executed in the system. Scheme 2.1 presents the volume and value of transactions settled in the years 2008 – 2014.

Chart 2.1. Annual volume and value of payments settled in the FPS system

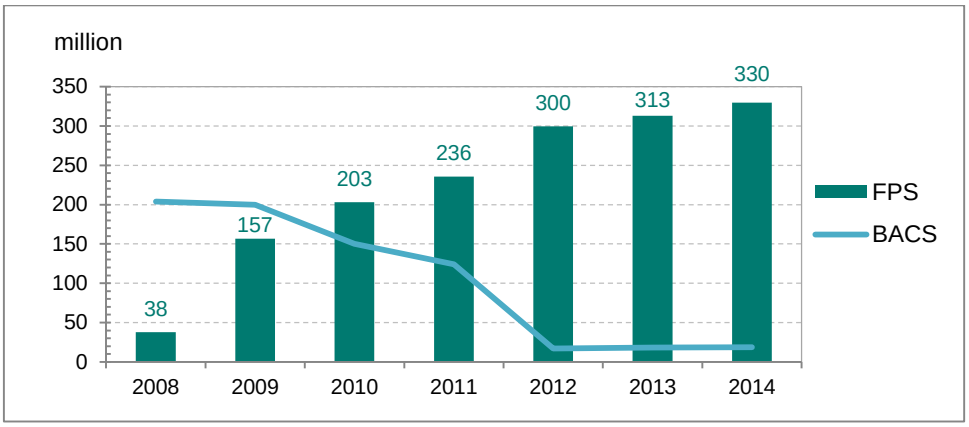


Source: own study based on data derived from www.paymentscouncil.org.uk

The dynamic growth in both the volume and the value of payments settled by the FPS from the moment of its launching until today results mainly from the general access to the system as well as the fact that the majority of banks do not charge additional fees for transactions processed via the FPS against individual clients. The migration of a part of orders earlier processed in the BACS system to the FPS is also significant in this context. **Payments of banks' clients which may be executed in the FPS are automatically re-directed by the banks to this system.** The scale of this migration can be clearly seen on the example of the number of standing orders settled in the FPS and BACS systems (Chart 2.2). The rule on executing the payment order by the end of the next business day at the latest (the so-called D+1 rule), effective as of 1 January 2012, introduced by the Directive on payment services in the internal market [23], was also crucial for the growth in the number of orders processed in the FPS.

[23] Article 69 (1) of the Directive of the European Parliament and the Council 2007/64/EC of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC.

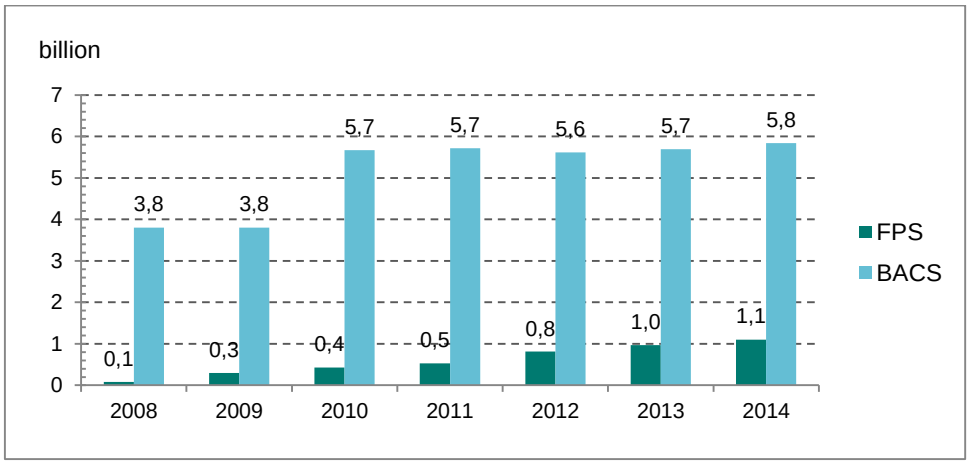
Chart 2.2. Annual volume of standing orders settled in the BACS and FPS systems in 2008 - 2014



Source: own study based on data derived from www.paymentscouncil.org.uk

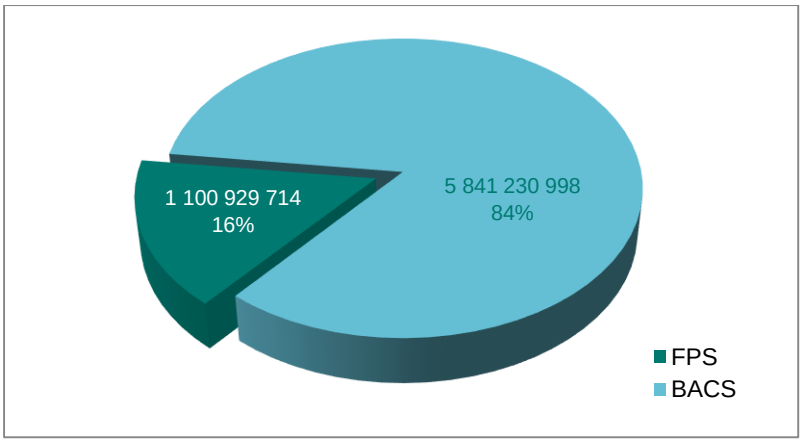
The presented data show that the FPS system plays a significant role in the domestic payment system, in which over 1 billion payments were executed in 2014 (Chart 2.3). Its share in domestic retail settlements has been also growing year by year, which is best visible in comparison with the BACS system. At the end of 2014 this share amounted to 16% (Chart 2.4).

Chart 2.3. Annual volume of payments settled in the BACS and FPS systems in 2008 - 2014



Source: own study based on data derived from www.paymentscouncil.org.uk

Chart 2.4. Volume of payments settled in 2014 in the Faster Payments Service and BACS systems



Source: own study based on data derived from www.paymentscouncil.org.uk

System development

During seven years since its launch in May 2008, the system has been continuously developing, offering processing of new payment types. In June 2008, the possibility of executing standing orders was introduced in the system, and a year later – the possibility of executing DCA orders from Monday to Friday. Processing DCA orders in the 24/7/365 mode was made available in September 2011 whereas since April 2014 P2P payments originating from the Paym mobile payments system [24] have been processed in the FPS system.

The owner of the FPS system plans to extend the availability of the system by various types of institutions which would like to offer the instant payments service to their clients. In December 2014 a *White Paper*[25] was published, containing the preliminary proposals concerning the extension of the access to the system. It is mainly envisaged that, first of all, smaller , which currently are not participants in the system due to the necessity to incur costs of adjustment of their technical infrastructure, could receive access to the system. At a later stage, preparation, in cooperation with the Bank of England, of a new model of performing the settlements of the system is foreseen, in which non-banking providers of payment services could participate.

In 2015, the replacement of the settlement guarantee mechanism based on funds deposited on the general escrow account with the Bank of England is planned, by opening individual

[24] The Paym mobile payments system enables making P2P payments using only the receiver's mobile phone number, with no need to know the payee's bank account number.
[25] White Paper – Faster Payments A Vision for a New Access Model, FPSL, December 2014. http://www.fasterpayments.org.uk/sites/default/files/FPS_Payment%20Access%20Whitepaper.pdf

dedicated accounts for each of direct participants, where additional funds would be accumulated equivalent to the Net Sender Cap set for a given participant.

Considering the planned development measures, it can be expected that the role and use of the FPS system will continue to grow. In a longer-term perspective, further migration of payments so far settled in the BACS system to the FPS system is also possible.

2.2.2. Betalningar i realtid (BiR) – Sweden

The BiR system, also known as *Payments in real time*, was launched in November 2012 by the Swedish clearing house, Bankgirot, which is its owner and operator. Payments originating from the Swish[26] mobile payments system are processed through the system. Due to the relatively small quantity of available information concerning the BiR system, the description presented below is quite limited and does not include detailed data.

Premises for establishment of the system

The initiative of setting-up an instant payments system in Sweden had been put forward by Bankgirot clearing house, which recognised it as the natural direction of development and expansion of its activity. The creation of the clearing scheme was preceded by detailed market research and consultations with banks interested in such a solution. Besides, the Swedish financial market demonstrates an openness to prompt implementation of innovative payment solutions, such as mobile payments, very popular in this country; therefore, the decision was made to incorporate them into the clearing scheme of the BiR system in the first instance.

Business model

While creating the BiR system, the assumption was adopted that it would operate on the basis of an open platform, on which it would be possible to clear various types of payments in real time, depending on the demand from banks and other providers of payment services.

Types of payments and the method of payment initiation

The BiR system is currently used only for clearing P2P type mobile payments originating from the Swish mobile payments system. Payments are initiated by individual clients through the dedicated smartphone application. The exchange of messages in the system takes place based on the ISO 20022 standard.

[26] The mobile payments system owned by six commercial banks, enabling making P2P payments using only the receiver's mobile phone number, with no need to know the payee's bank account number.

System availability and speed of payment execution

The system is available in the 24/7/365 mode. The payee's account is credited within 15 seconds since the moment of payment initiation by the sender.

Transaction amount limits

There are no transaction amount limits in the system.

Types of participation

In the system, a possibility of both direct and indirect participation is envisaged. Participants in the system may include banks and payment services providers. At present, ten banks are participants in the system.

Types of fees

In the initial phase of system operation, payment services providers did not charge any fees for transaction processing in the system against end clients. As of the beginning of 2014 such a fee has been charged, amounting to approximately 0.10 euro.

Clearing and settlement of payments

Clearing in the system is performed in real time, with the use of special payment accounts of participants, maintained by the operator in the BiR system, based on funds deposited by the system participants on the special escrow account of the system operator, kept by the Swedish central bank, in the RTGS – RIX system. During the operating hours of the RIX system, participants supply the escrow account with funds from their RTGS accounts operated in the RIX system. The funds accumulated on the operator's escrow account by participants are reflected on their individual accounts in the BiR system. In the BiR system, a mirrored operator's escrow account is also maintained for the needs of processing operations when the RIX system is not available.

Currently, only P2P mobile payments originating from the Swish system are processed in the system, initiated from the level of the mobile application, with the use of a mobile phone number, with no need to have the payee's bank account number.

Role of the central bank

The Swedish central bank (the Riksbank) actively participated in the building of the system and cooperated with the Bankgirot clearing house in this area. Besides this cooperation, the Riksbank is also responsible for performing oversight of payment systems, including the BiR system. Under this oversight, permanent monitoring of systems is carried out to secure its

proper operation and their assessment is performed in terms of systems' compliance with international PFMIs standards.

Statistical data

The information held by NBP implies that in 2013, 800 thousand people were users of the mobile application enabling the sending of P2P instant payments for execution in the BiR system. In 2013, the number of transactions cleared in the system exceeded 3 million whereas their value amounted to SEK 2 billion (approximately PLN 880 million).

System development

The system was created with a view to attaching further clearing services. The types of payments planned for implementation include credit transfers, e-commerce payments and interbank payments.

2.2.3. The Swiss Interbank Clearing (SIC) – Switzerland

The Swiss Interbank Clearing (SIC) system is an RTGS system the owner of which is the Swiss National Bank. The system has been operating since June 1987 and it is operated on behalf of the central bank by an external operator – the SIX Interbank Clearing Ltd company (SIC Ltd). It is an example of an RTGS system in which, besides interbank payments, low-value retail payments are also settled, without the participation of the clearing house.

Premises for establishment of the system

The SIC system as an RTGS system, the owner of which is the central bank, was originally established for the purpose of transfer of interbank large-value payments. During the last decade, a phenomenon rarely found in payment systems occurred on the Swiss market, namely, the decline of clearing houses' share in the clearing of retail payments for the RTGS system. This has ultimately led to the closure of the majority of clearing houses in Switzerland and transfer of payments cleared through them to the SIC system. Thus, the SIC system is not a typical instant payments system, instead, it represents an example of an RTGS system, in which high volumes of low-value retail payments are settled. Because of this functionality and the specific nature of the Swiss market, the description of this system has been included in this report.

Types of payments and the method of payment initiation

In the system, interbank large-value payments and the majority of cashless transfers initiated by banks' clients are settled. In general, payments executed in the SIC system may be divided into three categories:

- customer payments (the sender and the receiver are not banks);
- interbank payments (the sender and the receiver are banks – participants in the system);

- the so-called *service payments* (payments initiated by such entities as the securities settlement system, or the Swiss National Bank which has the right to debit the account of one participant and credit the account of the other participant).

Retail payments belong to the first of the above groups. The other two groups are typical payments executed in the RTGS payment systems.

System availability and speed of payment execution

The system is available to participants on a 24 hour basis from Monday to Friday, however, payments are processed in the system over 23 hours per day. The operating day starts at 5:00 p.m. and ends at 4:15 p.m. on the next day.
In terms of payment processing speed, if sufficient funds for execution of the payment submitted to the system are available on the account, its immediate executing and final settlement takes place, and the account of the participant to whom the payment is addressed is credited. In the case of lack of adequate funds on the participant's (sender's) account, the payment is sent to the system queue and executed on the FIFO basis (*first in first out*) (taking into account priorities of orders set by the participant), i.e., immediately after the provision of such funds.
Transaction amount limits Due to the type of system, no transaction amount limits exist. The only restriction is the principle of execution of orders up to the level of the participant's account balance.

Types of participation

Participants in the system may include entities maintaining an account with the Swiss National Bank. Such entities comprise, inter alia: domestic banks, foreign banks registered on the territory of Switzerland, foreign banks registered abroad and non-banking institutions, such as: post, companies conducting insurance activity, clearing institutions.
In terms of linking with the system, the participant may choose one of three available variants:

- SWIFT (access via the SWIFT network through the so-called remoteGATE);
- dedicated Finance IPNet network provided by SIX Group (direct or indirect connection through the third party);
- connection via the Swiss National Bank (dedicated only to specific entities and types of transactions).

Types of fees

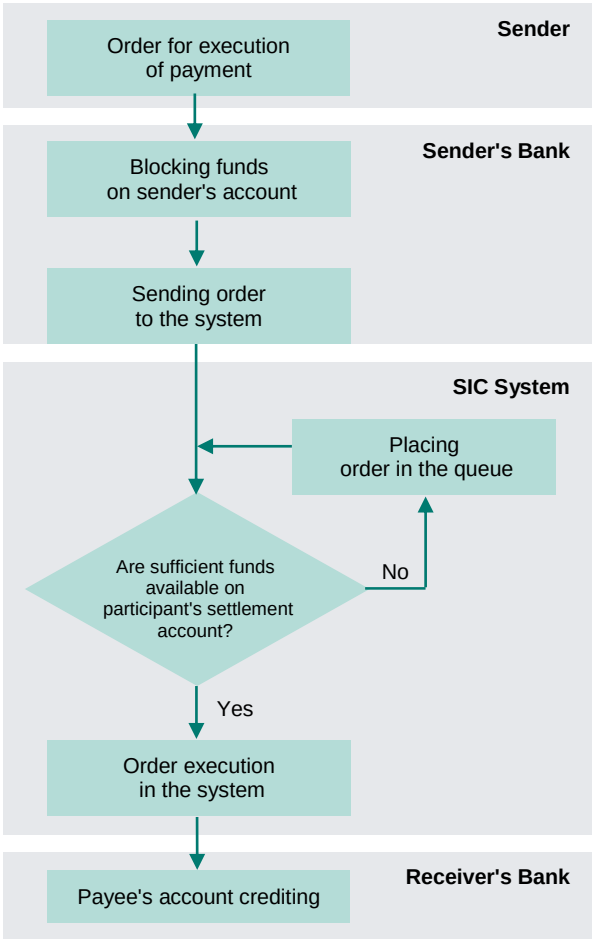
Fees charged to participants are aimed at covering the costs of system instead of gaining additional profits. The level of the fee depends on the time interval in which the payment is made and on the type of payment and its amount (retail or large-value payment exceeding CHF 100,000). According to the general rule, the closer the payment is to the hour of operating

day termination, i.e. 4:15 p.m., and the higher the amount of the payment, the more expensive the payment is. Its level ranges from CHF 0.008 to CHF 2. In terms of fees charged for settling payments to end users of the system, their level depends on each participant of the system.

Clearing and settlement of payments

Settling operations in the system are performed on a gross basis, i.e. order by order, according to the FIFO principle. Each of the participants has two accounts held at the Swiss National Bank – a current account and a settlement account. However, in legal terms, they constitute a single participant's account. For interbank payments, including retail payments, the settlement account is used, supplied by the participant with funds from the current account. The operating day in the system starts at 5:00 p.m. and ends at 4:15 p.m. on the next day. At the beginning of the operating day, participants supply their settlement accounts with funds from current accounts. Subsequently, orders are settled one by one according to the sequence of their submission to the system, taking into account the established priorities, up to the level of funds on the participant's settlement account. In case of lack of sufficient funds, the payment is re-directed to the system queue and executed immediately upon provision of such funds. In the system three *cut-off times* are apply. The first cut-off time is set at 3:00 p.m., the second - at 4:00 p.m., and the third one - at 4:15 p.m. The time between the individual cut-off times enables the participants to obtain potential additional liquidity for the settling queued transactions. During this time, further submission of orders to the system by participants is also possible. After 4:15 p.m. all non-settled payments waiting in the system queue are cancelled and the procedure of operating day closure starts. Funds deposited on participants' settlement accounts are transferred to the current account. The process of payment processing in the SIC system is presented in Scheme 2.6.

Scheme 2.6 Process of payment processing in the SIC system



Source: own study based on data derived from www.snb.ch

Within the above process, the following activities take place:

1. The sender orders its bank to make the payment.
2. The sender's bank blocks funds on the sender's account and sends the order to the system.
3. When funds allowing for an immediate execution of the payment are deposited on the sender's settlement account, the account of the sender's bank is debited.
4. When there are no sufficient funds to allow the execution of the payment on the participant's settlement account, the payment is re-directed to the system queue and executed immediately upon provision of the funds (taking into account the order priority set by the participant).
5. The payee's bank account is credited.
6. The receiver's bank credits the payee's account with the relevant amount.

Role of the central bank

The Swiss National Bank plays the following roles in relation to the SIC system: it is the owner of and the entity managing the system, it performs oversight of the system and acts as a settlement agent.

The Swiss National Bank, as the owner and, at the same time, the entity managing the system, decided to delegate the role of system operator to an external entity. The rules of system operation by SIX Ltd and the scope of cooperation between the central bank and the system operator are defined in the bilateral agreement. It is not a common practice in the case of operating RTGS systems. In the majority of cases of that type, systems are operated and fully managed independently by central banks. The major tasks carried out by the Swiss National Bank related to system management include: defining the criteria and conditions of participation, operating participants' accounts, defining clearing rules, monitoring of the operating day process and ensuring liquidity for payment clearing and crisis management. On the other hand, the role of the settlement agent comprises performing the final settlement of the system in the central bank money, with the use of settlement accounts of participant banks.

Besides the two roles mentioned above, the Swiss National Bank also performs statutory oversight powers in relation to payment systems, including the oversight of the SIC system recognised as systemically important. The main objective of this oversight is to ensure the stability of the national financial system, which is the prerequisite of efficient conduct of monetary policy. In practice, the oversight is based on permanent monitoring of the overseen systems and conducting the assessment of compliance of such systems with the rules of efficient and secure performance. In 2010, full oversight assessment of the SIC system was performed, in terms of its compliance with the CPs rules defined in the report of the Bank for International Settlements. Results of the assessment were published in the report prepared by the Swiss National Bank in 2010, entitled: *Assessment of Swiss Interbank Clearing against the Core Principles for Systemically Important Payment Systems*[27]. Based on the performed assessment full compliance of the system with 9 rules applicable to it was confirmed[28].

Statistical data

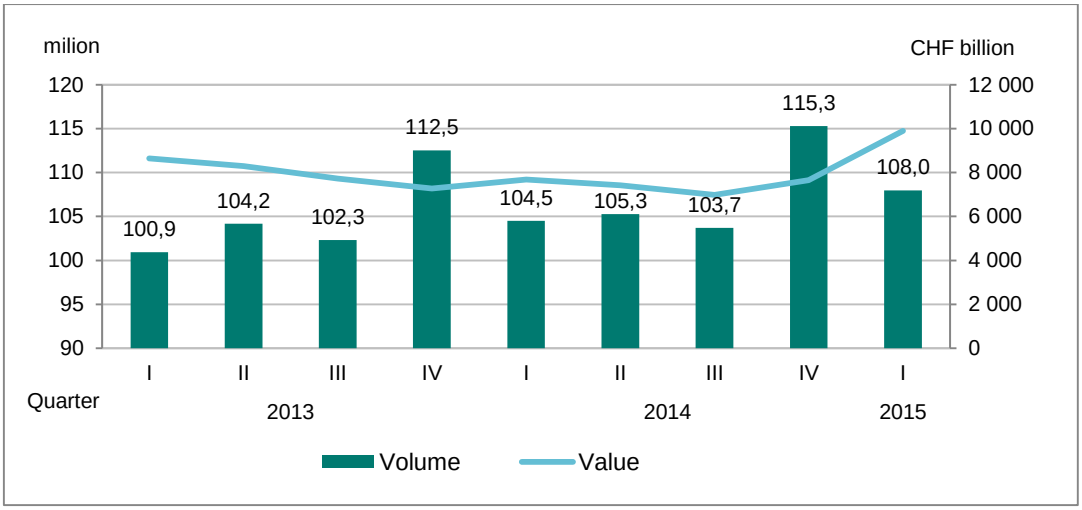
The data presented in Chart 2.5 show that owing to the direct execution of retail payments in the SIC system, the number of orders settled in the entire system is huge and in the first quarter of 2015 it amounted to 108 million, with a total value of almost 10 trillion Swiss francs. To compare the scale of the number of orders cleared in the SIC system, it can be indicated that, e.g. in the TARGET2 system, the number of orders settled in the first quarter of 2015

[27] Assessment of Swiss Interbank Clearing against the Core Principles for Systemically Important Payment Systems, The Swiss National Bank, 2010.
http://www.snb.ch/en/mmr/reference/assessment_sic/source/assessment_sic.en.pdf

[28] CPs rule no. V related to the multilateral net settlement systems does not apply to the SIC system.

amounted to "only" over 22 million. This shows the exceptional nature of the SIC system and its very high efficiency allowing for the implementation of those high volumes of orders.

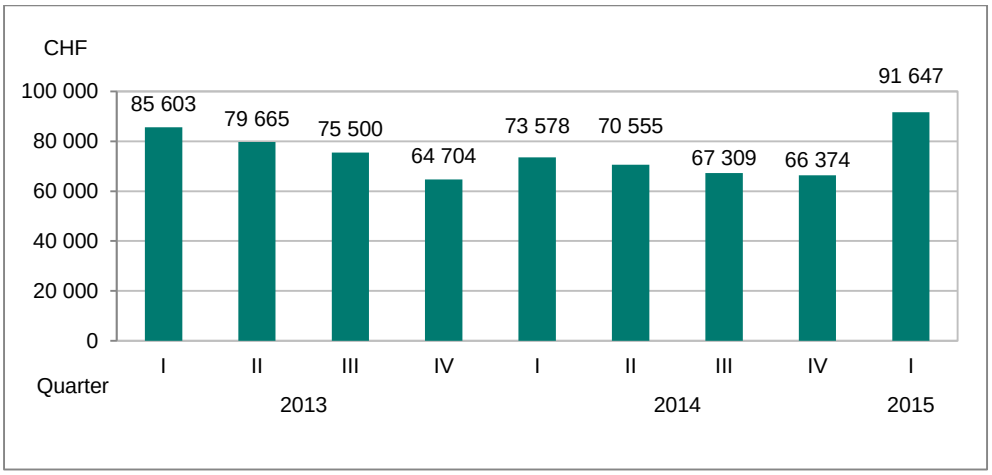
Chart 2.5. Quarterly volume and value of payments settled in the SIC system



Source: own study based on data derived from http://www.snb.ch

The value of a single order settled in the system is also high, and amounted to over 91 thousand Swiss francs in the first quarter of 2015, as illustrated in Chart 2.6.

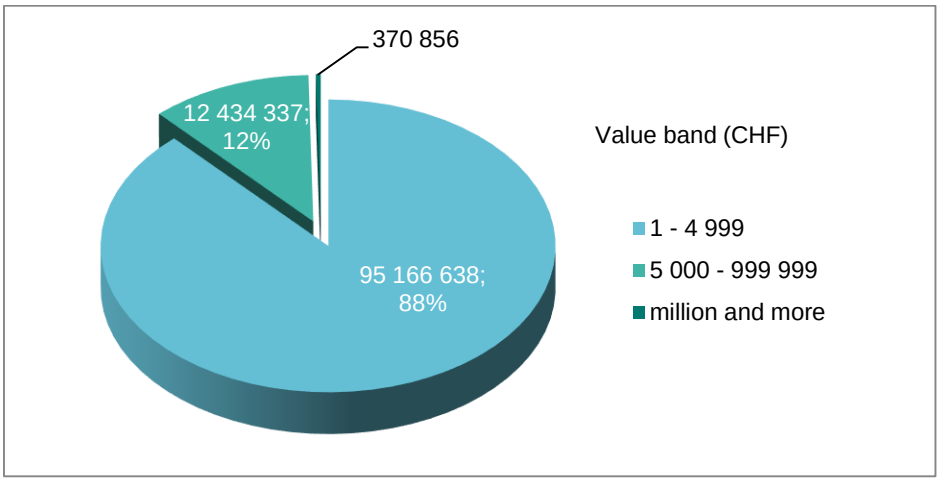
Chart 2.6. Average quarterly value of a single payment in the SIC system



Source: own study based on data derived from http://www.snb.ch

The data presented in Chart 2.7 indicate that payments of the value in the range of 1 and 4,999 Swiss francs constitute the highest number of orders executed in the SIC system, amounting to over 95 million. Their share in the total number of transactions executed in the SIC system amounts even to 88% and it can be assumed that this group predominantly comprises low-value retail payments cleared directly in the SIC system.

Chart 2.7. Volume of payments per value band settled in the SIC system in the first quarter of 2015



Source: own study based on data derived from http://www.snb.ch

System development

The SIC system has been operating for a very long time, i.e. 28 years. During this period two new versions of the system have been introduced and the scope of participation was extended by new types of entities. In July 2016, the implementation of the fourth version of the system, called SIC[4], is planned, which will enable the service of payment messages in the ISO 20022 standard. Full implementation of the new standard is scheduled in mid-2018. From that moment all messages in the system will be operated in the SWIFT FIN or ISO 20022 standard. The introduction of ISO 20022 messages reflects the global trend of application of this standard in transmission of payment messages and it will enable adjustment to financial market expectations in this scope. The SIC system is the key element of the national payment system and it can be assumed that the introduction of the aforementioned changes will strengthen its position even more.

2.2.4. New Payments Platform – Australia

The New Payments Platform (NPP) will be an open platform where instant payments will be processed, whereas their settlement will be performed in the dedicated module of the RTGS system of the Reserve Bank of Australia[29] called Fast Settlement Service (FSS). Twelve institutions (including the Reserve Bank of Australia)– members of the NPP (the so-called *common utility*) – will act as an entity leading and managing the clearing platform . The operator and entity responsible for building the clearing platform is the SWIFT organisation. On the other hand, the FSS module will be operated by the Reserve Bank of Australia. At present, the system is under design and its implementation is scheduled in mid-2017, however, due to its unique character and due to the fact that rules of its operation are already known, its description has been included in this analysis.

Premises for establishment of the system

The decision on building an instant payments system was preceded by a review of the domestic payment system, in terms of its innovativeness, conducted by the Reserve Bank of Australia. Its goal was primarily to identify the payment system areas requiring improvement as well as the proposal of measures aimed at improving this status. Within the framework of the review, public consultations were carried out [30], whereas its results were published in the report of the Reserve Bank of Australia of 2012.[31] One of the areas which called for corrective actions was the speed of payments execution, which could be remedied through the establishing of the instant payments system. In February 2013, a special committee called *Real-Time Payments Committee* (RTPC) was established by the *Australian Payments Clearing Association* (APCA), associating eight institutions representing the banking sector. The Committee presented a proposal related to the methods of implementation of the instant payments system in Australia[32] to the Australian Payments System Board (PSB[33]). The PBS received and readily accepted the proposal of the RTPC, recognising it as a significant step forward, contributing to the development of a concept of the new payment system. In June the same year a project on building the instant payments system was launched and the steering committee of the project was appointed, comprising, besides the Reserve Bank of Australia, representatives of various institutions of the financial sector. The commencement of the

[29] Reserve Bank Information and Transfer System (RITS) – the RTGS system operated by the Reserve Bank of Australia.
[30] Strategic Review of Innovation in the Payments System: Issues for Consultation, Reserve Bank of Australia, June 2011. http://www.rba.gov.au/publications/consultations/201106-strategic-review-innovation/pdf/201106-strategic-review-innovation-issues.pdf
[31] Strategic Review of Innovation in the Payments System: Conclusions, Reserve Bank of Australia, June 2012. http://www.rba.gov.au/payments-system/reforms/strategic-review-innovation/conclusions/pdf/conclusions-062012.pdf
[32] Strategic Review of Innovation in the Payments System, Real-Time Payments Committee, February 2013. http://apca.com.au/docs/real-time-payments/real-time-payments-proposal.pdf
[33] PBS is a body of the Reserve Bank of Australia responsible for the development of the payment system policy. Currently it comprises eight members, including the Governor of the Reserve Bank of Australia who acts as the Chairman of the Board.

system tests is scheduled at the beginning of 2016, whereas its implementation in production will take place in mid-2017.[34]

Types of payments and the method of payment initiation

In the initial phase of its operation, the system will process only credit transfers. Payments will be initiated by clients of direct system participants or through the so-called *overlay services*, i.e. the dedicated access interfaces for end users of the system. The NPP platform, due to its open nature, will be able to operate many types of interfaces designed for the transfer of payments to the system. The only limitation related to introducing new *overlay services* to the NPP platform will be their adoption for application by at least two participants. At the beginning, one type of *overlay services*, the so-called *Initial Convenience Service*, will be implemented on the NPP platform. At a later stage of the system's functioning, operation of other types of payments is also planned, such as, e.g. direct debit and introduction of a possibility of transferring payments using a sender's mobile phone number or e-mail address, to which a bank account number will be assigned. The exchange of messages in the system will take place according to the ISO 20022 standard.

System availability and speed of payment execution

The system will be available in the 24/7/365 mode. The process of payment execution will last 3 seconds maximum whereas its settlement on participants' settlement accounts in the FSS module – additionally 1.5 seconds. Crediting the payee's account may take a little longer and it will depend on the applied *overlay services* method.

Types of participation

In the NPP system, both direct and indirect participation is envisaged. Direct participants will include institutions maintaining an account in the RITS system operated in the Reserve Bank of Australia.

Transaction amount limits No information is available concerning plans related to the application transaction amount limits settled on the NPP platform.

Types of fees

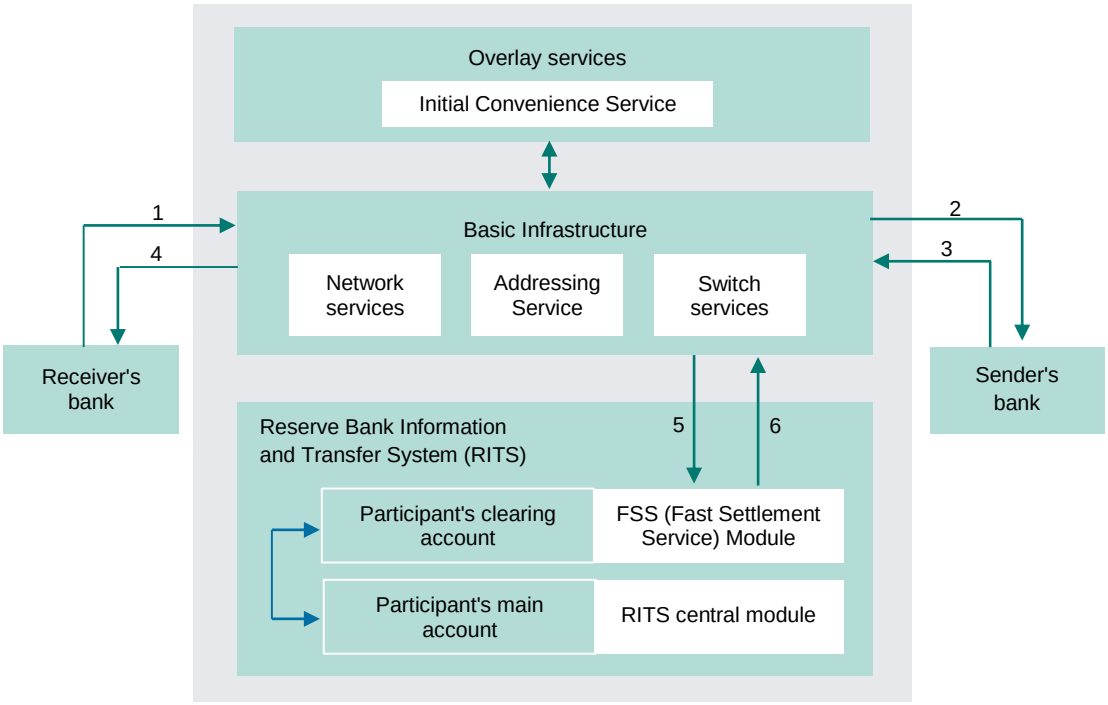
It has been assumed that revenues from fees charged to system participants should cover the costs of the system operation. The Reserve Bank of Australia is currently analysing the acceptable structure of fees to be adopted.

[34] Key Dates for New Payments Platform, APCA. http://apca.com.au/docs/new-payments-platform/key-dates-for-new-payments-platform.pdf

Clearing and settlement of payments

The Australian platform for instant payments clearing will consist of three major parts: the basic clearing module, the so-called *Basic Infrastructure*, the FSS module constituting an integral part of the RITS operated by the Reserve Bank of Australia and the access interface of *overlay services*. Payments will be transferred to the clearing module through *overlay services* or through system participants holding open accounts in the central module of the RITS and in the FSS module, who will be able to send orders directly to the clearing module, without the participation of *overlay services*. Settling payments in the system will be performed in real time, order by order, based on funds deposited on special settlement accounts of participants, operated in the FSS module. Subsequently, following the clearing, each payment will be directed by the system for interbank settlement in the FSS module. Direct participants in the system will hold two accounts: the main account – maintained directly in the RITS, and the settlement account – maintained in the FSS module, dedicated only to the clearing of instant payments. The funds accumulated on both accounts will constitute the total balance of a given direct participant. The FSS module will operate in the 24-hour mode, whereas the main RITS operates within specified operating hours, from Monday to Friday. In order to improve liquidity management, participants of the system will define the basic, minimum and maximum level of their clearing account balance in the FSS system. During the operating hours of the RITS, when the balance of a participant's settlement account in the FSS module is lower than the minimum level defined for it, automatic supply of its settlement account to the basic level will take place, using funds coming from the participant's main account maintained in the RITS. If the balance of a participant's settlement account in the FSS module is higher than the maximum level defined for such a participant, its settlement account will be debited by the amount collected above basic level defined by it and its main account maintained in the RITS will be credited with this amount. At the end of the operating day in the RITS, all funds from the main account of the participant will be transferred to its settlement account in the FSS module in order to ensure a bigger pool of funds for the execution of instant payments outside the RITS operating hours. If the funds on the settlement account of the participant are insufficient to execute the payment, the system will reject it. Upon the start of the consecutive operating day in the RITS, automatic determination of the participant's settlement account balance in the FSS system will be performed to the basic level – a potential surplus above the basic level will be transferred to the participant's main account in the RITS. Scheme 2.7 presents the method of payments processing in the NPP system.

Scheme 2.7 Planned process of payments processing in the NPP system



Source: own study based on the data derived from www.rba.gov.au

Within the above process, the following activities will take place:

1. The sender's bank submits a payment order to the basic module of the system, Basic Infrastructure.
2. In the system, validation of the order is performed, after which the order is transferred to the receiver's bank.
3. The receiver's bank confirms the accuracy of the order received, sending the feedback information confirming this fact to the basic module.
4. A confirmation of order accuracy is sent from the basic module of the system to the sender's bank by the receiver's bank.
5. From the basic module, a message is sent to the FSS module, with the demand to perform payment settlement. The interbank settlement is based on debiting the settlement account of the sender's bank and crediting the account of the receiver's bank maintained in the FSS module.
6. From the FSS module, a message on the performed payment settlement is transmitted to the basic module.
7. From the basic module, a confirmation of the performed payment settlement is sent to the sender's bank and receiver's bank.

Role of the central bank

The Reserve Bank of Australia plays a key role in the NPP system. First of all, the Bank was the initiator of changes performed in the Australian payment system, aiming at an acceleration of clearing processes, which resulted in the creation of the concept based on building the instant payments system (cf.: Premises for establishment of the NPP system).

Moreover, the Reserve Bank of Australia, as a settlement agent, will be responsible for performing the settlement of payments in the central bank money, which takes place using the settlement accounts of participants, maintained in the FSS module. An important issue is also the operation of the FSS module, as an integral part of the system whose owner will be the Reserve Bank of Australia.

The last role to be fulfilled by the central bank in relation to the NPP system, is the oversight of the system. RITS, an element of which will be the FSS module, is recognised as the so-called indicated system to which the international PFMIs, defined by the Bank for International Settlements, are applicable. The oversight function is not provided directly by the central bank, but belongs to the major tasks of the *Payments System Board*, whose chairman is the Governor of the Reserve Bank of Australia. The main objective of providing the oversight is to ensure the security and stability of payment systems in Australia, including, in particular, the RITS. In practice, this oversight is based on permanent monitoring of the overseen system and performing its assessment in terms of compliance with the PFMIs. As of 2013, the PSB has been conducting the self-assessment of the RITS system.

System development

As mentioned earlier, the NPP system will operate on the basis of a clearing platform and it may be expected that from the moment of its launching, successive *overlay services* will be attached to its clearing scheme.

3. Directions for the development of instant payments systems in Poland, including information gained from a questionnaire survey of banks

In Poland, two instant payments systems operate. The first of them, Express Elixir, is operated by Krajowa Izba Rozliczeniowa S.A., whereas the other, called *System Płatności BlueCash* (BlueCash Payment System), is operated by Blue Media S.A. Nearly three years of operation of these systems in Poland place our country in the group of European pioneers implementing this kind of solutions, confirming the modern character and high level of development of the Polish payment system as well as its pursuit of the requirements of the contemporary world related to the need to accelerate the execution of liabilities. This chapter presents the description and rules of operation of Express Elixir and BlueCash systems, in both cases taking into account the answers to the questionnaire addressed to operators of instant payments systems, and their comparison. In addition, this chapter also includes the description of the P2P mobile payments service which will be executed from the level of the BLIK mobile application user, provided by Polski Standard Płatności sp. z o.o., and to be directed for clearing in the Express Elixir system. This part of the report also contains the results of the questionnaire survey concerning instant payments systems addressed to banks.

3.1. Express Elixir System

The Express Elixir System was launched in June 2012 by Krajowa Izba Rozliczeniowa S.A. (National Clearing House, KIR S.A.) under the working name: Instant Payments Clearing System. It was the second instant payments system in Europe, following the British FPS. KIR S.A., as the owner, and, at the same time, operator of the system, has many years' experience in the clearing of retail payments on the Polish market, arising, inter alia, from operating the Elixir system – the largest system in terms of turnover and volume of transactions – since 1994, and –the first and only system in Poland clearing retail payments in Euro currency – Euro Elixir – since 2005. Below we present the detailed description of the Express Elixir system, including information provided by KIR S.A. in answers to the questions contained in the questionnaire addressed by NBP to operators of instant payments systems.

Premises for establishment of the system

The implementation of the system reflects the trends occurring in the market of payment services, demonstrated by the shortening of payment execution time, and responds to the demand for this type of services. Instant payments may be used in a number of applications,

both for retail clients (e.g. payments of bills with a close payment term, quick transfer of funds between private individuals, repayment of credit instalments and debt on credit cards at the last minute, payment for services, notarial fees), and by enterprises (payment for goods and services, payment of liabilities, payment of remuneration), in order to improve liquidity management. Public opinion surveys conducted by KIR S.A. indicated that instant payments represent a service expected by banks' clients. Respondents showed a high degree of readiness to use this type of services. KIR S.A., as an active participant in the market of modern electronic clearing services, made the decision on the requirement of fast implementation of the instant payments system, taking into consideration the necessity of creating a solution with a high security and stability standard, enabling participants to create new products and services based on a direct transfer executed in a matter of seconds.

Business model

The system was established in order to perform transfers of funds, resulting from various legal titles, between the sender and the receiver, in the close to real time. This product is mainly addressed to banks.

The final receiver of the instant payment service is the bank's client (a natural person, a small or medium enterprise or a corporate client), whereas each bank individually decides on access channels to the service and the policy of fees.

Challenges during the implementation of the system

Prior to the final agreement on the shape of the system, KIR S.A. held numerous consultations with banks, potential future users of the system. The agreement concerning the model of clearing and the scheme of message exchange as well as defining performance parameters constituted the foundation of the project and had a key impact on the future shape of the system.

An issue of particular importance for KIR, which may be defined as a challenge during the construction of the system, was the elimination of credit risk in the clearing process and enabling direct transfers in a matter of seconds, with the simultaneous assumption that the integration process for banks should be as simple as possible. This last assumption was fulfilled due to the use of mechanisms applied by banks for the needs of other clearing services provided by the KIR, and simultaneously, by relying on recognised standards (e.g. ISO 20022, Web Services, etc.).

From the business point of view, ever since the work on the construction of the system started, the key challenge has been covering clients of all the banks in Poland with instant transfer services. Due to the lack of mandatory participation in the system, the development of the

service is considerably slower than in the case of similar systems in other European countries (e.g. the United Kingdom).

Benefits for system participants and end clients

The operator of the Express Elixir system indicated, as the major benefit of participation in the system, a possibility of creating new banking products based on the Express Elixir system, thus gaining additional revenue from clearing services and maintaining an attractive product offer for clients. Moreover, in the opinion of KIR S.A., accession to the system results in strengthening a bank's brand through the implementation of a modern product corresponding to clients' needs and gaining the advantage / keeping up with the competition in the context of growing popularity of instant transfers in the market. At the same time, owing to the implementation of such solutions as P2P mobile payments, based on the Express Elixir system, banks can compete with global players in the payment market.

Necessary adjustments and entry barriers

Participation in the system is associated with the necessity to adjust the IT system of the bank to the communication with the Express Elixir system and enable the execution of crediting in close to real time. The operator has indicated keeping funds on a non-interest-bearing settlement account and the limited number of banks participating in the system as system entry barriers. From the business point of view, the last of the factors mentioned has been and still is raised by banks most frequently, due to the limited range of payments and, consequently, the whole service.

Types of payments and the method of payment initiation

The Express Elixir system currently operates credit transfers which may be submitted to the system via internet banking or in the bank's branch by individuals or companies. In the system, the ISO 20022 standard is used for the exchange of payment messages as well as the CSV standard based on the Elixir "format".

System availability and speed of payment execution

The system is available in the 24/7/365 mode. The execution of the payment takes place within a dozen or so seconds since the moment of order submission in the system. However, some participants do not ensure the 24 hour access to the system to their clients, switching off the system, e.g. for the weekend, and restrict access to the system to corporate clients only.

Types of participation

In the Express Elixir system only direct type of participation is provided for. Due to the fact that the Express Elixir system is not a so-called indicated payment system[35], in which systemic risk exists, its participants may also include payment institutions or electronic money institutions within the meaning of the Act of 19 August 2011 on payment services (Journal of Laws of 2014, item 873, uniform text), hereinafter referred to as the "Act on payment services", being the providers of payment services, which may be participants in the payment system within the meaning of Article 1 items 5 and 9 of the Act of 24 August 2001 on the settlement finality in payment and securities settlement systems and the rules of oversight of such systems (Journal of Laws of 2013, item 246, uniform text), hereinafter referred to as the "Act on settlement finality". Participants in the Express Elixir system are required to hold a current account operated by NBP in the SORBNET2 system.

Each participant may register one or more of the so-called participant's units in the system (a separate unit registered by the participant, e.g. a bank's branch), which are explicitly identified by a clearing number or numbers. A participant's unit may independently submit and accept payment orders in the system. At present, ten banks are participants in the system. In addition, five cooperative banks have also access to the Express Elixir system through an associating bank. Entities holding the status of domestic payment institutions, acting as intermediaries in executing payments (among others, cash offices, companies acting as intermediaries in cash transfers, including foreign transfers), as well as companies granting quick loans and Brokerage houses, are also interested in the possibility of being connected to the system.

Transactions amounts limits

In the system, a maximum limit for a single order is set at PLN 100,000. However, in practice, the majority of system participants apply much lower limits to their individual clients.

Clearing and settlement of payments

Clearing payments in the Express Elixir system is based on the deposit model, i.e. the so-called prefunding. For the needs of Express Elixir system clearing, in the SORBNET2 system NBP operates a dedicated settlement account of KIR S.A., supplied by participants in order to ensure the adequate liquidity of individual participants in the system. This account is an escrow account type within the meaning of Article 59 of the Act of 29 August 1997 – Banking

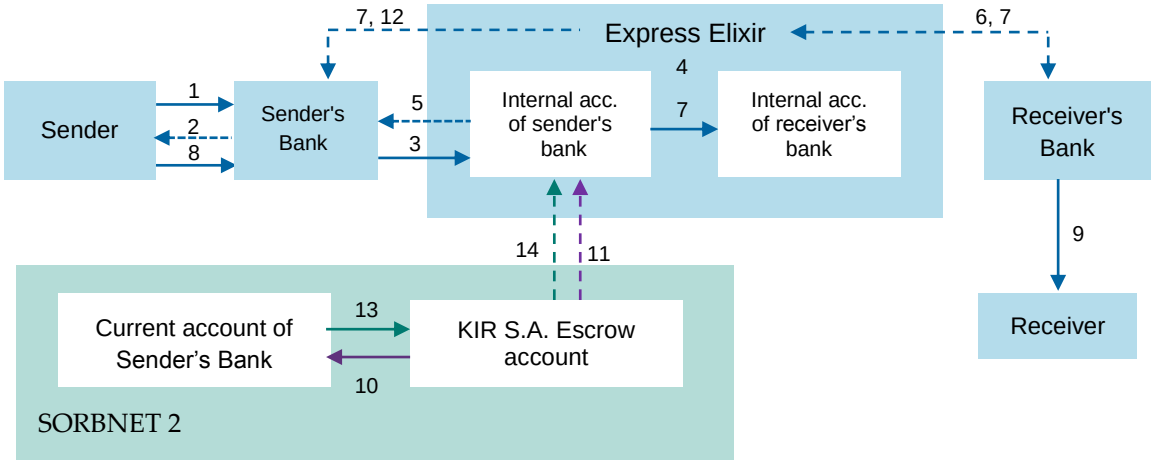
[35] Payment systems in which systemic risk exists are defined in the regulation of the Minister of Finance of 6 June 2003 concerning the defining of systems in which systemic risk exists (Journal of Laws of 2003 No. 106, item 998). Currently, the Elixir and Euro Elixir systems operated by KIR S.A. are classified in this group of systems pursuant to the aforementioned regulation.

law (Journal of Laws of 2015, item 128, uniform text) and it is used only for the needs of performing clearing in the Express Elixir system, and only funds entrusted to KIR S.A. by system participants may be collected on this account. In case a participant fails to provide the adequate funds (liquidity), the payment submitted by it to the system is rejected.

Funds used by the participant to credit the settlement account in the SORBNET2 system are automatically reflected in accounting terms by KIR S.A. on the internal account maintained in the Express Elixir system, whose balance determines whether a participant may submit payment orders. Clearing payments in the system is performed in real time, order by order. The balance of the internal account is changed dynamically, including the clearing of individual payment orders by the system. In the case of lack of liquidity on the internal account of the participant, its payment orders are rejected (the system is not provided with any queuing mechanism). Each of the participants defines the basic limit for its internal amount, determining the amount that the participant declares to pay to the settlement account upon accession to the system. More than one participant's unit may be assigned to a single internal account. Participants have a continuous access to information concerning the balances on their internal accounts and they are simultaneously obliged to monitor them. Besides, the rules of Express Elixir system operation stipulate the automatic notification of the participant of a low balance of the internal account, i.e. the fact of reaching the lower limit described below.

In the system, the process of liquidity adjustment is launched on a cyclical basis (once per day), resulting in the transfer of potential surplus over the defined basic limit from the settlement account of KIR S.A. to the account of a given participant in the SORBNET2 system, unless such a surplus is lower than the minimum amount to disburse, defined by the participant. As a result of this process, the balance of the internal account of a given participant is reduced by the surplus amount referred to above. The process of liquidity adjustment is performed on each operating day of the SORBNET2 system between 3.00 p.m. and 4.00 p.m. The moment the balance of the internal account decreases below the level defined as the lower limit (it may amount to at least 20% of the basic limit and may not be lower than PLN 500,000), the system operator will immediately inform the participant who is obliged to supply the settlement account with an additional amount. Information associated with transactions for a given day is communicated to participants on a daily basis in the reconciliation files. In such files, selected information concerning transactions processed in the system is also made available to participants' units and it may also serve the identification of any potential inconsistencies arising during the process of payment order execution in the system or on any side of the transaction. The full process of payments processing in the Express Elixir system is presented in Scheme 3.1.

Scheme 3.1 Process of payments processing in the Express Elixir system



Source: own study

Within the above process, the following activities are implemented:

1. The sender of the payment submits a payment order in its bank (Sender's Bank).
2. The Sender's Bank secures funds to cover such a payment order (e.g. blocks funds on the bank account of the payment sender – the method of implementation of the blocking mechanism can be selected at the system participant's discretion) and informs the payment sender of the acceptance of the payment order.
3. The sender's bank sends the payment order to the system. Such an order may not be cancelled as of its entry into the system.
4. The system verifies the entered payment order (performs the relevant technical and business validation, in particular, it checks whether the sender's bank holds sufficient funds on its internal account in the system).
5. In the case of positive verification, the system blocks funds on the internal participant's account in the amount equal to the amount of the payment order received and sends the confirmation of acceptance of this payment order to the sender's bank.
6. The system sends the message to the receiver's bank requiring authorisation. The receiver's bank performs the verification of the payee's account and if it is positive, sends a message to the system containing the confirmation of the authorisation.
7. Following the receipt of the message with authorisation confirmation, the system, in one operation:
   a) removes the blockade from the internal account of the sender's bank;
   b) debits the internal account of the sender's bank;
   c) credits the internal account of the receiver's bank.

   The information on the clearing of the payment order in the system is transmitted to the sender's bank and to the receiver's bank.

8. The sender's bank debits the account of the payment sender immediately after receiving the information referred to in point 7 from the system.
9. The receiver's bank credits the account of the payee immediately after receiving the information referred to in point 7 from the system.
10. Within the process of liquidity adjustment performed between 3:00 p.m. and 4:00 p.m. on operating days of the SORBNET2 system, KIR S.A. debits the settlement account of the system and credits participants' accounts in the SORBNET2 system with the amount constituting the surplus over the basic limit defined by the participant.
11. KIR reduces the balance of the internal account of a given participant by the amount of the paid surplus referred to in point 10.
12. Whenever the balance of the internal account falls below the lower limit of the participant, a special alert is sent from the system to the participant, with information that this limit has been exceeded.
13. In order to replenish funds above the lower limit, the participant debits its account in the SORBNET2 system and credits the settlement account of the system with the relevant account.
14. KIR increases the balance of the internal account of the participant by the amount supplying the settlement account in the system provided by the participant.

Types of fees

The basic fees charged to participants in the system include one-off fees for accession to the system and for connecting each additional participant's unit (over three) to the production environment. In terms of fees for submitted and settled payment orders, they are charged in a monthly cycle, and their level depends on the volume of orders executed in a given month by the participant – the bigger it is the lower is the unit price of the order – and on the value of a single order.

In terms of fees charged for settling instant transfers to end users of the system, their level depends on each of the banks - participants in the system. At present, the fee charged to individual clients by banks for the execution of this type of transfers is contained in the range from PLN 0 to PLN 10 maximum.

Role of the central bank

NBP, as the entity to operate the settlement account for the needs of the Express Elixir system, has been actively involved in the work aimed at defining the details of executing orders on this account. The cooperation with KIR S.A. mainly involved arrangements concerning the method of performing the liquidity adjustment process described above, using the current accounts of banks operated in the SORBNET system and the escrow account of KIR S.A. The solutions finally applied resulted, inter alia, in the necessity to make changes in the central module of the previous version of the SORBNET system as well as in preparing and providing KIR S.A. with the dedicated module enabling access to its escrow account. From the legal

point of view it was also necessary to prepare amendments to the agreement with banks concerning the conditions of opening and operating a bank account in the SORBNET2 system, and defining, in a separate agreement between NBP and KIR S.A., the rules of operating the escrow account. Besides the aforementioned cooperation, NBP also fulfils the role of the trustee institution towards the Express Elixir system and provides the systemic oversight.

The role of the trustee institution involves the aforementioned operation of the KIR S.A. settlement account by NBP in the SORBNET2 system, on which funds entrusted to KIR S.A. by participants are deposited for the needs of securing the clearing operations in the Express Elixir system. The balance of the escrow account may be only positive or equal to zero, whereas the account itself may be debited only by KIR S.A. on the basis of payment orders issued on its own behalf. On the other hand, crediting the account shall take place on the basis of payment orders issued by participants in the Express Elixir system. The debiting of the escrow account by KIR S.A. and its crediting by system participants may take place only from Monday to Friday during the operating hours of the SORBNET2 system.

The oversight role of NBP is based on the oversight of payment systems, including the Express Elixir system, by the President of NBP. In accordance with Article 16 item 1 of the Act on settlement finality, operating payment systems requires the approval of the President of NBP. In the scope of this task, prior to the launch of the Express Elixir system, NBP performed a comprehensive oversight assessment of the application for establishing a new payment system, submitted by KIR, in terms of ensuring the efficient and secure performance of the system and the compliance of the system operating rules with the Polish legal regulations. Based on the results of this assessment, in December 2011 the President of NBP issued the approval of operation of the Instant Payments Clearing System by KIR S.A. (as of March 2012 the name was changed into Express Elixir). Each potential change in the system rules of performance, where the intention to introduce the change must be reported to NBP by the entity operating the system, is also subject to the oversight assessment. Following the introduction of the change, the President of NBP issues an administrative decision on the approval or rejection of the change. While performing the oversight assessment, international standards developed by the Bank for International Settlements – CPs – are used. Until now, in relation to the Express Elixir system, the President of NBP has issued three decisions concerning the proposed amendments to the operating rules of the system, submitted by the system operator.

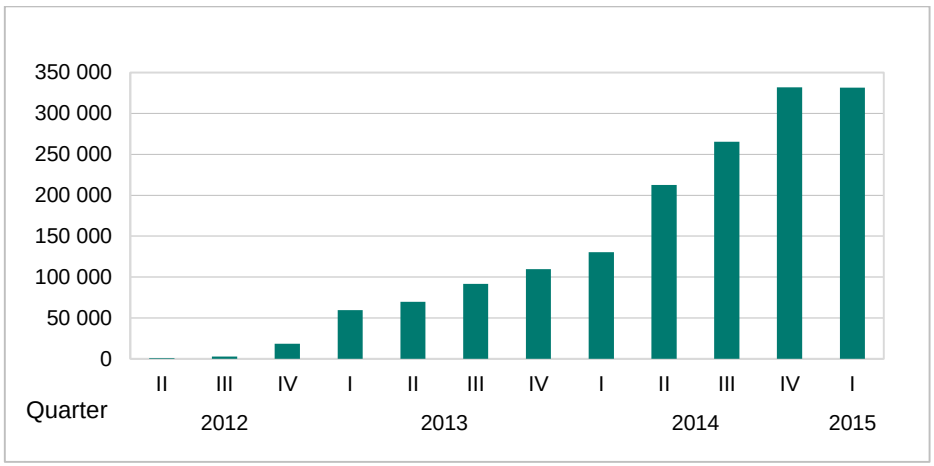
At this point, it should be also mentioned that currently work is carried out on the concept of NBP accession to the Express Elixir system. Participation of NBP in this system would enable the execution of payments with immediate effect for NBP clients for whom accounts in NBP Regional Branches are operated. However, the final decision on this issue has not been made yet and it shall require consultations with the Ministry of Finance.

Statistical data

In the first quarter of 2015 over 331 thousand payments with the total value exceeding PLN 1.454 billion were settled in the Express Elixir system. The average value of a single payment

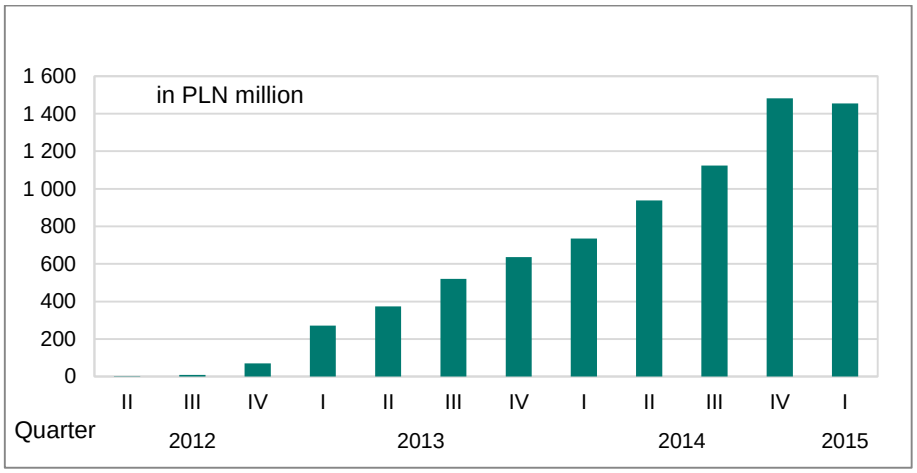
in this period amounted to PLN 4,387.90. Charts 3.1 and 3.2 present the volume of payments settled in individual quarters and their value.

Chart 3.1. Volume of payments settled in the Express Elixir system



Source: own study based on KIR S.A. data

Chart 3.2. Value of payments settled in the Express Elixir system

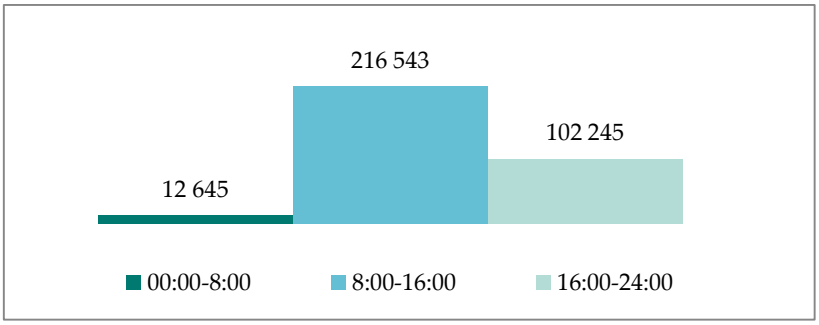


Source: own study based on KIR S.A. data

As shown in the charts above, both the volume and value of payments settled in the Express Elixir system rose sharply since the launch of the system until the fourth quarter of 2014. Only in the first quarter of 2015 did a slight decline of these values occur, as compared to the previous period. It may indicate a decrease in the dynamics of growth or its temporary stagnation at the current level of system participants.

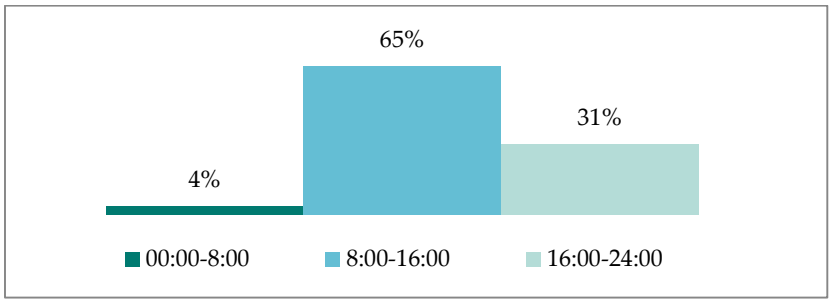
In terms of the volume of payments settled in the system, divided into three time bands of a day, in the 1st quarter of 2015, definitely the highest number of orders, i.e. as much as 65%, was executed between 8:00 a.m. and 4:00 p.m., and the lowest – 4% between 00:00 and 8:00 a.m. (Charts 3.3 and 3.4).

Chart 3.3. Volume of payments per time band settled in the Express Elixir system in the first quarter of 2015



Source: own study based on KIR S.A. data

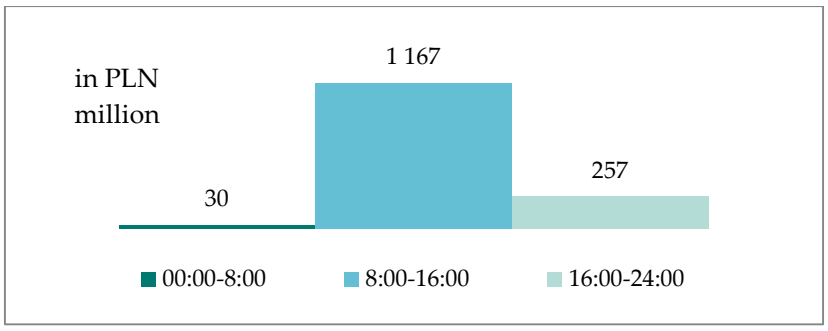
Chart 3.4. Percentage share of the volume of payments per time band settled in the Express Elixir system in the first quarter of 2015



Source: own study based on KIR S.A. data

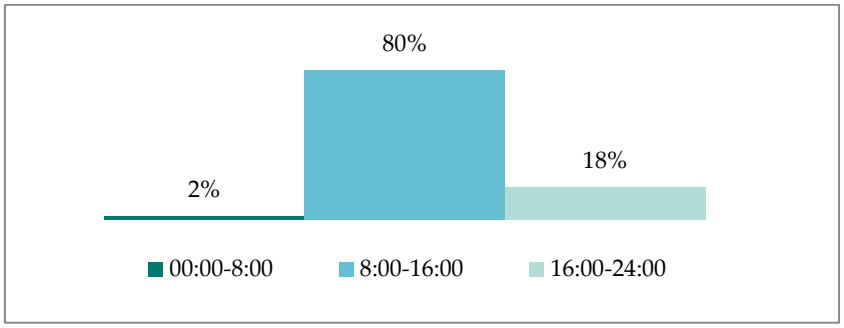
The value of payments settled in the time band 8:00 a.m. and 4:00 p.m., similarly to their volume, was also the highest and amounted to PLN 1.167 billion, and its percentage share in the value of all orders executed in the system amounted to as much as 80% (Charts 3.5 and 3.6).

Chart 3.5. Value of payments per time band settled in the Express Elixir system in the first quarter of 2015



Source: own study based on KIR S.A. data

Chart 3.6. Percentage share of the value of payments per time band settled in the Express Elixir system in the first quarter of 2015



Source: own study based on KIR S.A. data

System development

The statistical data presented above show that in terms of the volume and the turnover of settled payments, the system continues to develop, however, the volumes processed are still relatively low, in particular, as compared to those processed, e.g. in the Elixir system (cf. Chapter 3.4). The low number of system participants, currently only 10, significantly limits the range of the service and, consequently, does not contribute to the dynamic development of the system. Therefore, the system operator recognises achieving the "critical mass", i.e. covering the majority of banks' clients in Poland with the service, as the most important factor affecting the development of the system and dissemination of instant payments. Accession of consecutive participants results in a considerable increase in the volume of transactions and, additionally, the growing circle of potential senders and receivers of transfers enhances the attractiveness of the system in the eyes of other banks, not participating in the clearing earlier.

KIR S.A. assumes that a significant event in the development of Express Elixir will be the implementation of the clearing of P2P mobile payments generated from the level of the BLIK mobile application in 2015, which will open the possibility of making instant payments in mobile devices also to clients of those banks that do not offer Express Elixir transfers in traditional banking channels.

Establishing an interoperable link with foreign instant payments systems may also contribute to a more robust development of the Express Elixir system. The technical connection of the system with other instant payments systems in Europe could take place within the framework of the proposal presented by EACHA (the European Automated Clearing House Association), that KIR S.A. is an active member of (see more in Chapter 2.1). This solution would enable the exchange of payments with immediate effect between clients of banks from various EU countries, irrespective of the settlement currency. In terms of the Polish market, in a long-term perspective, the interoperability issue could also give a boost to the development of the service and it could be, for instance, achieved through the application of generally recognised norms and standards, such as ISO 20022. Assuming that the interoperability should enable sending transactions to banks which are not participants in any of instant payments systems present in the market, it could be achieved, e.g. through direct or indirect participation of non-banking payment institutions in the system. The information provided by KIR S.A. in the questionnaire addressed to it implies that the KIR S.A. expects the gradual, natural migration of payments executed in the Elixir system to the Express Elixir system, parallel to the dissemination of instant payments. This process will arise, inter alia, from the popularisation of P2P mobile payments and the competition from global payment operators. This process may be supported by the decision of the industry on the implementation of SEPA standards in domestic clearing processes, based on the Express Elixir system. It has also been observed that the reduction of the fee for payment execution charged by banks to end clients has a significant impact on the growth in the volume of transactions. In the opinion of KIR S.A., the dissemination of instant payments, whether via the Internet or by means of mobile devices, will contribute to the development of cashless transactions.

The potential participation of NBP in the Express Elixir system mentioned above would also provide a positive incentive for further development of this system and it could encourage successive commercial banks to join the system, consequently accelerating monetary transactions in Poland.

3.2. BlueCash payments system

The BlueCash Payments System was launched in November 2012 by the Blue Media company, as the second instant payments system in Poland[36]. Its characteristic feature is the possibility of executing payments not only between participants in the system but also processing payments made by a sender acting as a client of a system participant and a sender acting as a client of a bank which is not a system participant. The receivers of payments may include both a client of a system participant and a client of a bank which is not a system participant. Thus, payments in the BlueCash system may be executed within four various variants, depending on whether banks operating users' accounts (the sender and the receiver) are participants in the system or not. Below we present a detailed description of the BlueCash system, including information provided by Blue Media S.A. in answers to the questions contained in the questionnaire addressed by NBP to operators of instant payments systems.

Premises for the establishment of the system

The main premise for the establishment of the system was to meet the expectations of the market which, in the operator's opinion, showed need for services of this type. According to the opinion of the system operator, the biggest challenge during its building was the integration with banks' IT systems, due to the diversity of those systems and their specific performance features.

Business model

The BlueCash system is a solution aimed at transferring funds under various legal titles between the sender and the receiver, in real time, using mechanisms of the IT system and IT systems of the system participants. The final receiver of the instant payment service is a bank's client (a natural person or a corporate client).

Benefits for system participants and end clients

In the system operator's opinion, participation of a bank in the system enhances the competitiveness and attractiveness of its offer relating to electronic banking, including smaller entities, such as cooperative banks, building the image of a modern, technologically advanced bank, open to clients' needs and expectations. Moreover, the implementation of the system by the participant constitutes its source of additional revenue and makes available the infrastructure which can be used for the successive launching of services based on the instant transfer system.

[36] Prior to the launch of the BlueCash system, the Blue Media S.A. company provided the service of BlueCash fast payments, in which it acted as an intermediary transmitting orders of banks' clients through opening Blue Media S.A. accounts in such banks (cf. page 15).

From the clients' point of view, the instant transfer is an additional service offered by banks, constituting added value for clients. Offering a new service well received by clients meets the expectations of clients for whom the Internet environment is the natural place for using services, including banking services. The flexible solution allowing for the system being used not only by its participants, enhances the attractiveness of this system.

Necessary adjustments and entry barriers

The main system entry barriers on the banks' side, in accordance with their declarations, include high costs and labour intensity of the implementation and integration by providers of banking services. The operator of the system has indicated that the majority of implementation projects of the BlueCash system coincided with considerable changes the banks have gone through in the recent years, such as:

- changes in Internet banking,
- refreshing the services,
- adjustment to D Recommendation,

which required a significant involvement of the bank's resources, in particular, the IT departments.

Risk associated with the participation in the instant payments system

Blue Media S.A. has indicated a potential growth in the number of fraud transactions, due to the immediate nature of transaction execution, as a source of risk arising from processing payments through the instant payments systems on the participant's side. In order to mitigate the risk, Blue Media S.A., in consultation with the Polish Bank Association, prepared anti-fraud solutions which are defined in the internal document of the Company. Those solutions support the anti-fraud mechanisms in banks and may be implemented for individual participants interested in such support, however, they are not obligatory. In addition, each of the participants may create and use own anti-fraud solutions in the BlueCash system, provided that such solutions do not infringe the rules of operation in this system.

Types of payments and the method of payment initiation

The BlueCash system operates credit transfers and remittances both for banks acting as its participants and for banks which are not participants in the system. Payments may be generated via internet banking, by phone or in the bank's branch by individuals or companies. The additional option made available in the system is a possibility of making payments using the payee's mobile phone number, without knowing its bank account number. The system operates payment messages recorded in XML format, based on the ISO 20022 standard.

The information gained from the questionnaire indicates that payments most commonly executed through the BlueCash system include mass payments (for bills, invoices), payments for online shopping, repayments of loans, P2P payments and payments between own bank accounts of the same entity operated by various banks.

System availability and speed of payment execution

The system is available in the 24/7/365 mode. In practice, the execution of a payment may take up to 15 minutes, although the operator declares the payment execution time at a maximum level of 15 seconds. Some participants do not ensure 24-hour access to the system to their clients, switching off the system, e.g. for the weekend. There are also various approaches to the possibility of making/receiving payments by clients of banks which are not participants in the system. It is not possible to send payments to certain banks.

Types of participation

In the BlueCash system there is one type of participation. In accordance with the applicable regulations and considering the fact that no systemic risk exists in the BlueCash system, its participants may also include payment institutions or electronic money institutions acting as providers of payment services, within the meaning of Article 4 of the Act on payment services, which may be participants in the payment system within the meaning of Article 1 items 5 and 9 of the Act on settlement finality. Currently 60 banks are participants in the system, including 56 cooperative banks.

However, as mentioned earlier, access by clients of banks which are not system participants is also possible. Such banks have a status of cooperating banks in the system – they are not participants in the system, yet their internal electronic banking systems are integrated with the IT system of BlueCash under a separate agreement on cooperation, where each transaction is executed through the physical interbank funds transfer, using the standard bank transfer. The access to the system is possible also from the level of Internet external *pay-by-link* service and with the use of a bank transfer executed from the electronic banking level. External services are integrated with the IT system of BlueCash and enable the sender to order payment execution in the system to Blue Media S.A. The current number of entities to/from which payment orders may be submitted/received through the BlueCash system amounts to 76.

Transactions amounts limits

In the system, a maximum limit for a single order is set by the operator at the level of PLN 20,000. In practice, some banks apply lower limits to individual clients.

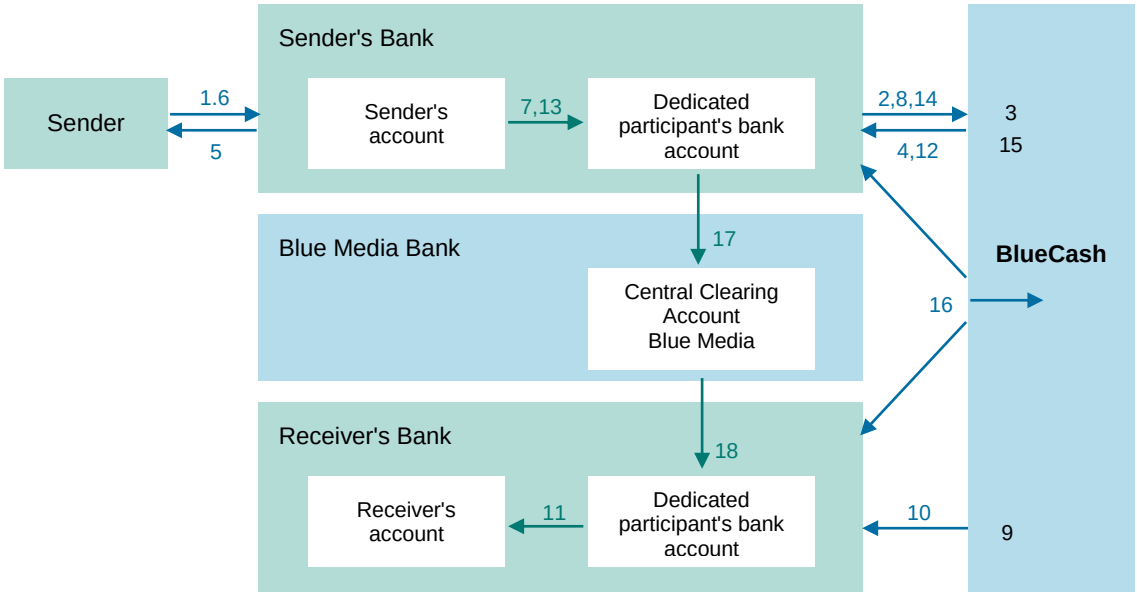
Clearing and settlement of payments

The BlueCash payments system belongs to the group of systems based on multilateral net settlement, performed in the currency of the commercial bank. Payments submitted in the system are executed on an on-going basis during the clearing cycle which starts at 00:00 and ends at 11:59:59 p.m. For the needs of performing clearing operations in the system, the so-called central settlement account (CSA) whose owner is Blue Media S.A. is maintained in the commercial bank, as well as dedicated f participants accounts (DPA), maintained by each of the participants in its own bank. Payments may be performed by participants only up to the debit limit defined by them in the agreement with Blue Media S.A. The participant is also obliged to maintain the adequate liquidity, constituting the security for payments executed during the clearing cycle on its DPA. If, upon submission of the order to the system, the DPA balance of the participant reaches a level below the determined debit limit, such an order will be rejected until the DPA balance grows to the level enabling the execution of the payment in compliance with the debit limit. The level of the pool of securities of a given participant is equal to at least a double value of the limit of its transactions. In order to guarantee the settlement of payments in case of liquidity problems of any system participant, Blue Media S.A. maintains an additional amount on the CSA at a level of 100% of the pool of securities of the participant holding the highest pool of securities, defined in the agreement on participation.

Due to the system's ability to execute payments generated by both banks being participants of the system and by clients of cooperating banks and external services, clearing transfer orders in the system may be performed in four different variants. Within the basic variant, where banks providing services to both the payment sender and the payment receiver are participants in the system, the sender generates the credit transfer to the bank in which it is a client, on the basis of the bank account agreement. As a result of this operation, the participant debits the sender's bank account and credits its own DPA or – depending on the solution selected by the participant – applies an adequate blockade on the sender's bank account equal to the amount of the order defined by the sender, subsequently executing this blockade (i.e. debits the sender's account and credits its DPA) only after receiving the correct status of payment order execution from the system. Subsequently, the participant submits the payment order to the system, based on which the payment order is generated from the system to the participant providing services to the payee. The receiver's bank debits its own DPA and credits the payee's bank account, leaving to its disposal the amount equal to the value of funds defined in the payment order by the sender of the payment. After closing the 24-hour clearing cycle, a clearing report is generated from the system, containing all operations arising from payment orders submitted in the system, generating liabilities and receivables for a given participant. In the summary of the report, a participant's balance is presented, resulting from the net set-off of liabilities and receivables towards Blue Media S.A., arising from payment orders, registered by it in a given clearing cycle. The clearing report is submitted to

participants and to Blue Media S.A. Based on the generated clearing report, the final settlement of the payment is performed, consisting in transferring cash to the CSA on the following clearing day (D+1) between 00:00 – 12:00 by participants holding a liability towards Blue Media S.A., and subsequently, in transferring cash in favour of participants towards which Blue Media S.A. holds a liability from the CSA by Blue Media S.A. from 12:01 p.m. – 4:00 p.m. The cash is transferred only if the participant's balance is positive or negative. If the balance amounts to "0", funds are not transferred between CSA and DPA. The settlement of payments in the BlueCash system takes place only on business days, i.e. from Monday to Friday, excluding banking holidays. If a clearing cycle takes place on a day other than business day, e.g. at the weekend, the settlement is performed on the nearest business day following this period. Scheme 3.2 presents the method of payment clearing according to the basic variant.

Scheme 3.2 Payment clearing process between participants of the BlueCash system



Source: own study based on Blue Media S.A. data

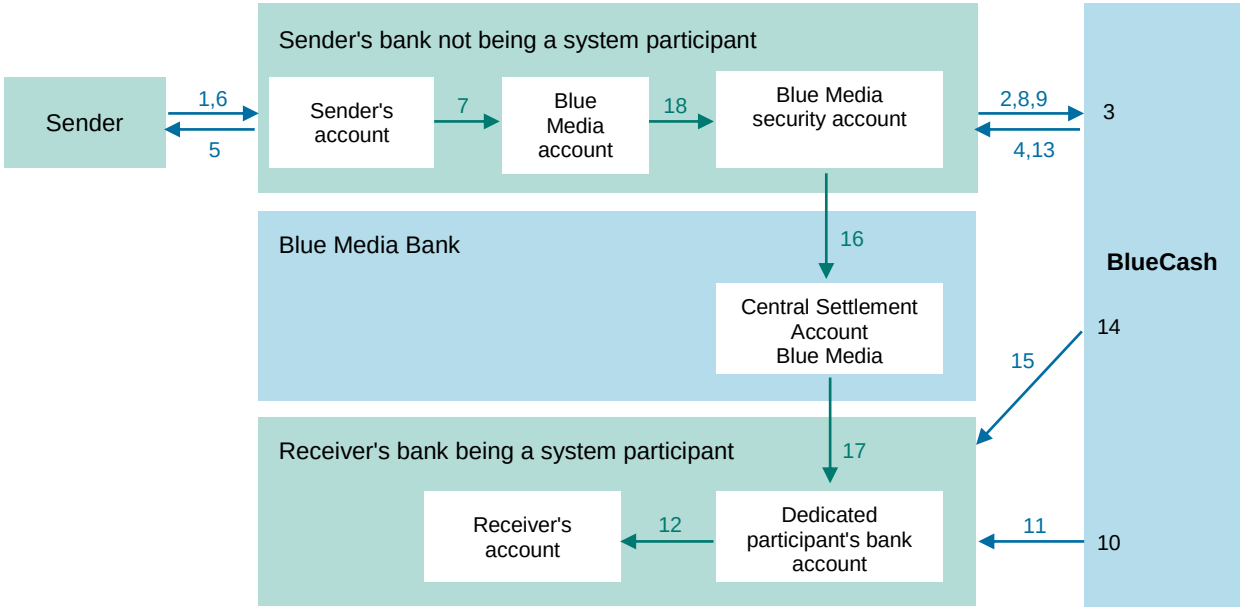
Within the aforementioned process, the following activities are implemented:

1. The sender of the payment submits a payment order in its bank (Sender's Bank).
2. The Sender's Bank submits a payment order to the system in the form of a message containing the data of the Sender and the Receiver and the transfer amount.
3. The system controls the integrity and authenticity of the payment order and the possibility of its execution and registers the order in the system.
4. The system transmits a positive answer to the Sender's Bank, confirming that the order may be executed.
5. The Sender's Bank informs the Sender of the correct acceptance of the order for execution and requests the Sender for authorisation.

6. The Sender authorises or rejects the order.
7. The Sender's Bank debits the Sender's Account and credits its Dedicated Participant's Account or applies the relevant blockade on the Sender's Account. As a result of debiting of the Sender's Account, the claim against the Sender's Bank for payment of the amount equal to the debiting of the Sender's Account arises on the Blue Media side.
8. The Sender's Bank replaces the Sender's data in the transaction details in the history of operation with the Blue Media data, and sends the message on authorisation of the order to the system. In the absence of authorisation, the Sender is informed by the Sender's Bank of the absence of authorisation.
9. In the system, the payment order to the Receiver's Bank is prepared. In the message transmitted in the payment order to the Receiver's Bank, data of Blue Media and the Sender's data are included.
10. The system sends the payment order to the Receiver's Bank, from which the obligation of the Receiver's Bank to credit the Receiver's Account arises.
11. The Receiver's Bank debits its Dedicated Participant's Account and credits the Receiver's Bank. As a result of the debiting of the Receiver's Account, a claim against Blue Media for payment of the amount equal to the crediting of the Receiver's Account arises on the Receiver's Bank side.
12. The system informs the Sender's Bank of the status of order processing in the history of the Sender's Account.
13. If the Sender's Bank selects the option to execute the order with blocking funds on the Sender's Account, the Sender's Bank executes the applied blockade, debiting the Sender's Account and crediting its Dedicated Participant's Account.
14. The Sender's Bank sends information on the correct execution of the blockade to the system.
15. Following the end of the clearing period, on the next day (D+1), a set-off of the participants' receivables and liabilities towards Blue Media is performed in the system.
16. In the system, a clearing report is generated and sent to Blue Media, the Sender's Bank and the Receiver's Bank, containing all the operations arising from payment orders, generating liabilities and receivables for a given participant, and the participant's balance.
17. Between 00:00-12:00 the Sender's Bank, holding a liability towards Blue Media, submits a payment order via the SORBNET2 system as a result of which its Dedicated Participant's Account is debited and the Central Settlement Account in Blue Media Bank is credited with the amount arising from the clearing report.
18. Subsequently, between 12:01p.m. - 4:00 p.m., Blue Media, holding a liability towards the Receiver's Bank, submits a payment order in the Blue Media Bank, as a result of which the Central Settlement Account is debited, and subsequently the Dedicated Participant's Account is credited via the SORBNET2 system with the amount arising from the clearing report.

Within the framework of the variant of clearing with the participation of banks which are not system participants, Blue Media S.A. opens a bank account in such banks, corresponding to DPA in terms of its functions, and a security account which serves as a risk management instrument. Within the framework of operating payments through banks which are not system participants, the sender's bank, based on a credit transfer submitted by the sender, debits its account and credits the account of Blue Media S.A. In the case of cooperating banks, information contained in the standard payment order executed between system participants is defined in the bank transfer submitted by the sender, in this case – a client of a bank which is not a participant, to Blue Media S.A. or from Blue Media S.A. to the receiver, in this case – a client of a bank which is not a participant in the system. Based on the credit transfer received from Blue Media S.A., a receiver's bank which is not a participant debits the bank account of Blue Media S.A. and credits the receiver's bank account. The settlement of the payment takes place through the CSA and the security accounts on which Blue Media S.A. maintains positive balances at a level ensuring efficient operation of the system. The methods of payment clearing according to the variant in which the payment is sent by a cooperating bank's client or from the level of the external service to the client of the participant's bank, are presented in Schemes 3.3 and 3.4 below.

Scheme 3.3 Payment clearing process in the BlueCash system for payments sent from the level of the cooperating bank to the bank being a system participant



Source: own study based on Blue Media S.A. data

Within the aforementioned process, the following activities are implemented:

1. The sender of the payment submits a payment order in its bank (Sender's Bank).
2. The Sender's Bank transfers the payment order to the system.

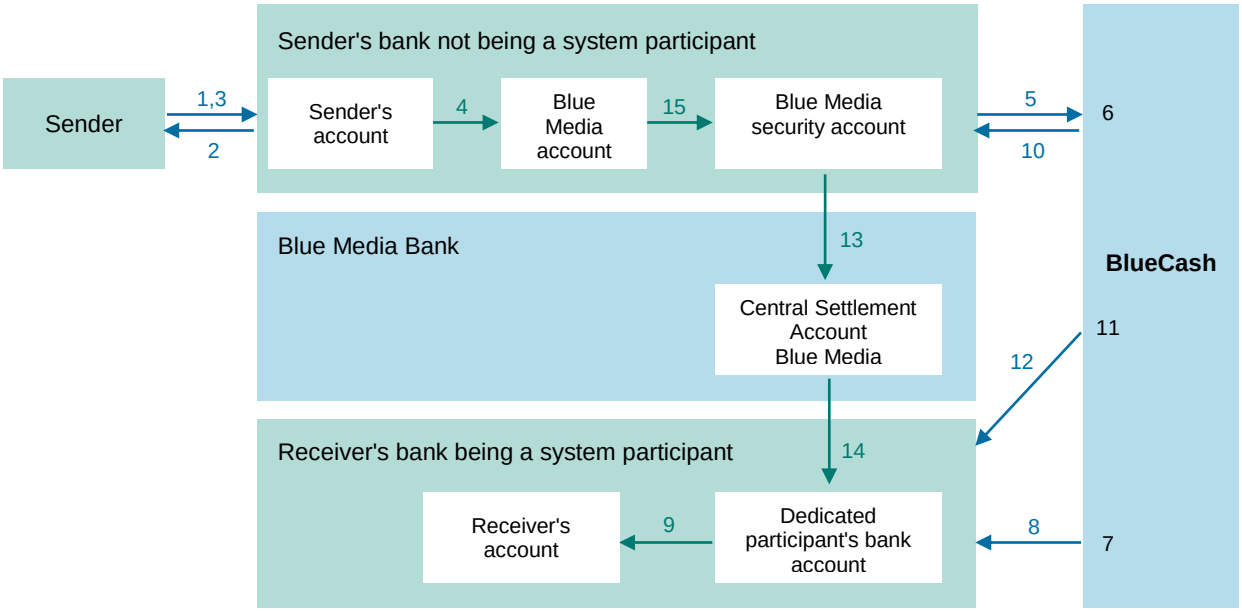
3. The system controls the integrity and authenticity of the payment order and the feasibility of its execution. The system rejects the registration of the payment order if, at the moment of payment initiation, the balance maintained by Blue Media on the Security Account might be exceeded, or if, at the moment of payment initiation, the limit of transactions between the Participant and the Receiver's Bank is exceeded.
4. The order is registered in the system and information on the possibility of its execution is submitted to the Sender's Bank.
5. The Sender is re-directed to the execution of the interbank transfer from the Sender's Account to the Blue Media Account in the Sender's Bank and it is requested to authorise it.
6. The Sender authorises the credit transfer.
7. If authorisation has been granted, the Sender's Bank debits the Sender's Account and credits the Blue Media Account with the amount indicated by the Sender, arising from the credit transfer[37].
8. The Sender's Bank sends information on the correct transfer order to the Blue Media account.
9. The Sender's Bank replaces the Sender's data in the transaction details in the history of operation with the Blue Media data, and sends a message about the authorisation of the order to the system. In the absence of authorisation, the Sender is informed by the Sender's Bank of the absence of authorisation.
10. In the system, the payment order to the Receiver's Bank is prepared. In the message transmitted in the payment order to the Receiver's Bank, data of Blue Media and the Sender's data are included.
11. The system sends the payment order to the Receiver's Bank, from which the obligation of the Receiver's Bank to credit the Receiver's Account arises.
12. The Receiver's Bank debits the Dedicated Participant's Account and credits the Receiver's Bank with the amount arising from the payment order. As a result of the crediting of the Receiver's Account by the Receiver's Bank, a claim against Blue Media for payment of the amount equal to the crediting of the Receiver's Account arises on the Receiver's Bank's side.
13. The system informs the Sender's Bank of the status of order processing in the history of the Sender's Account.
14. Following the end of the clearing period, on the next day (D+1), a set-off of the Participants' receivables and liabilities towards Blue Media is performed in the system.
15. From the system a clearing report is sent to the Receiver's Bank, containing all the operations arising from payment orders, generating liabilities and receivables for a given Participant, and the participant's balance.
16. Between 00:00-12:00, Blue Media, holding a liability towards the Receiver's Bank, arising from payment orders directed from outside the system to the Receiver's Bank in a given

[37] In the absence of authorisation, the Sender is informed thereof by the Sender's Bank. Depending on the model adopted in the External System of the Sender's Bank, the Sender may then correct the entered authorisation code (the number of attempts is defined in the External System) if the rejected authorisation arises from a faulty entry of the authorisation code.

clearing period, submits a payment order to the Sender's Bank, as a result of which the Blue Media Security Account in the Sender's Bank is debited, and subsequently the Central Settlement Account in the Blue Media Bank is credited via the SORBNET2 system with the amount arising from the clearing report.

17. Subsequently, between 12:01p.m. - 4:00 p.m., Blue Media submits a payment order in the Blue Media Bank, as a result of which the Central Settlement Account is debited, and subsequently the Dedicated Participant's Account in the Receiver's Bank is credited via the SORBNET2 system with the amount arising from the clearing report.
18. The surplus arising on the Blue Media Account in the Sender's Bank is transferred to the Blue Media Security Account in the Sender's Bank on the next calendar day, thus replenishing the balance maintained on this account.

Scheme 3.4 Payment clearing process in the BlueCash system for payments sent from the level of external service to the bank being a system participant



Source: own study based on Blue Media S.A. data

Within the aforementioned process, the following activities are implemented:

a) pay-by-link transfer

1. A form is presented to the Sender, containing, inter alia, a field for selection of the bank from which the Sender will make the payment. The External Service re-directs the Sender directly to the website of the selected bank. The Sender logs into the Internet banking service and selects the account from which the amount due is to be transferred. The remaining data required for the execution of the transfer (the Receiver's information data, number of the Receiver's Account, the amount and date of transfer execution) are filled in automatically owing to the data exchange system between the bank and Blue Media.

2. The Sender's Bank requests the Sender's authorisation of the credit transfer.
3. The Sender authorises the credit transfer.
4. In the case of positive authorisation, the Sender's Bank executes the interbank transfer, crediting the Blue Media Account operated by the Sender's Bank[38]. After the approval of payment execution, the Sender is re-directed back to the External Service.
5. In the parallel process, the Sender's Bank transmits the status of transfer execution to the system (ordered/rejected).
6. The system checks the feasibility of order execution.
7. In the system, the payment order to the Receiver's Bank is prepared.
8. The system sends the payment order to the Receiver's Bank, from which the obligation of the Receiver's Bank to credit the Receiver's Account arises.
9. The Receiver's Bank debits its Dedicated Participant's Account and credits the Receiver's Bank.
10. The system informs the Sender's Bank of the status of order processing in the history of the Sender's Account.
11. Following the end of the clearing period, on the next day (D+1), a set-off of participants' receivables and liabilities towards Blue Media is performed in the system.
12. The system submits a clearing report to the Receiver's Bank, containing all operations arising from payment orders, generating liabilities and receivables for a given Participant, and the participant's balance.
13. Between 00:00-12:00, Blue Media, holding a liability towards the Receiver's Bank, arising from payment orders directed from outside the system to the Receiver's Bank in a given clearing period, submits a payment order to the Sender's Bank, as a result of which the Blue Media Security Account in the Sender's Bank is debited, and subsequently the Central Settlement Account in the Blue Media Bank is credited via the SORBNET2 system with the amount arising from the clearing report.
14. Subsequently, between 12:01p.m. - 4:00 p.m., Blue Media submits a payment order in the Blue Media Bank, as a result of which the Central Settlement Account in the Blue Media Bank is debited, and subsequently the Dedicated Participant's Account in the Receiver's Bank is credited via the SORBNET2 system with the amount arising from the clearing report.
15. The surplus arising on the Blue Media Account in the Sender's Bank is transferred to the Blue Media Security Account in the Sender's Bank on the next calendar day, thus replenishing the balance maintained on this account.

b) classical credit transfer

1. A form is presented to the Sender, containing, inter alia, a field for selection of the bank from which the Sender will make the payment. The External Service provides all the

[38] In the case of the lack of authorisation, the processing of cash transfer transaction is interrupted.

required information required for the correct execution of the transfer to the Blue Media Account. The Sender logs into the electronic banking service of its bank and selects the account from which the amount due is to be transferred. The Sender enters all data itself, based on the data presented in the External Service.

2. The Sender's Bank requests the Sender’s authorisation of the credit transfer.
3. The Sender authorises the credit transfer.
4. In the case of positive authorisation, the Sender's Account is debited and the Blue Media Account is credited.
5. The BlueCash IT system, based on the history of the Blue Media Account, verifies the status of the transfer ordered by the Sender.
6. The system checks the feasibility of order execution.
7. In the system, the payment order to the Receiver's Bank is prepared.
8. The system sends the payment order to the Receiver's Bank, from which the obligation of the Receiver's Bank to credit the Receiver's Account arises.
9. The Receiver's Bank debits its Dedicated Participant's Account and credits the Receiver's Bank.
10. The system informs the Sender's Bank of the status of order processing in the history of the Sender's Account.
11. Following the end of the clearing period, on the next day (D+1), a set-off of participants’ receivables and liabilities towards Blue Media is performed in the system.
12. From the system a clearing report is sent to the Receiver's Bank, containing all the operations arising from payment orders, generating liabilities and receivables for a given Participant, and the participant's balance.
13. Between 00:00-12:00, Blue Media, holding a liability towards the Receiver's Bank, arising from payment orders directed from outside the system to the Receiver's Bank in a given clearing period, submits a payment order to the Sender's Bank, as a result of which the Blue Media Security Account in the Sender's Bank is debited, and subsequently the Central Settlement Account in the Blue Media Bank is credited via the SORBNET2 system with the amount arising from the clearing report.
14. Subsequently, between 12:01p.m. - 4:00 p.m., Blue Media submits a payment order in the Blue Media Bank, as a result of which the Central Settlement Account in the Blue Media Bank is debited, and subsequently the Dedicated Participant's Account in the Receiver's Bank is credited via the SORBNET2 system with the amount arising from the clearing report.
15. The surplus arising on the Blue Media Account in the Sender's Bank is transferred to the Blue Media Security Account in the Sender's Bank on the next calendar day, thus replenishing the balance maintained on this account.

The remaining two of the four clearing variants, i.e. participant – non-participant and non-participant – non-participant, constitute the combination of the two variants described above. Moreover, in the BlueCash system it is also possible to clear cash payments and to execute cash transfers using the receiver's mobile phone number.

Types of fees

In the system, a one-off fee is charged to participants for connecting to the system and fees are charged for orders executed in the system. In terms of fees charged for executing the immediate transfer to end users of the system, their level depends on each of the banks – participants of the system, cooperating banks and external services making this service available. At present, the fee charged to individual clients by banks for the execution of this type of transfers is contained in the range from PLN 0 to PLN 10 maximum. For corporate clients, such fees are usually higher, amounting to the maximum of PLN 15.

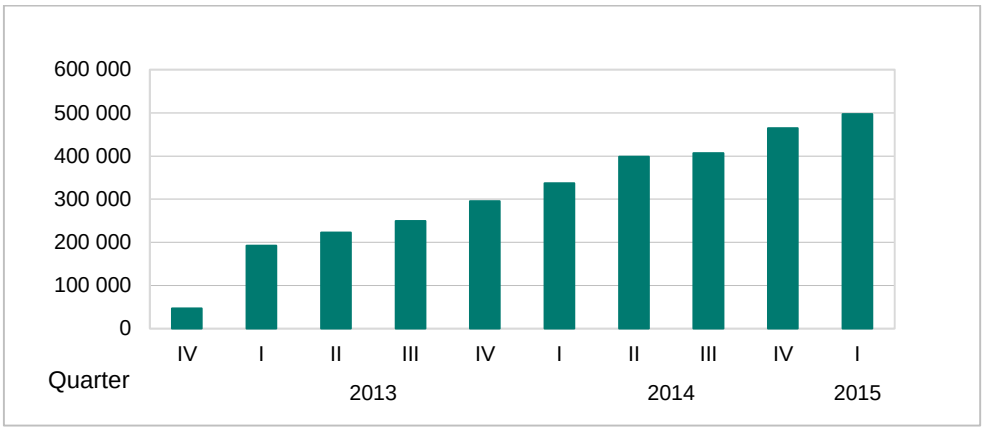
Role of the central bank

In relation to the BlueCash system, as in the case of other payment systems, NBP plays the oversight role. In the scope of this responsibility of the central bank, prior to the launch of the system, in connection with the request submitted by Blue Media S.A., a comprehensive oversight assessment of the system was performed to ensure the efficient and secure performance of the system and the compliance of the system operating rules with the Polish legal regulations. Based on the results of this assessment, in November 2011, the President of NBP, as the authority providing oversight of payment systems, issued the approval for Blue Media S.A. to operate the BlueCash payments system. The changes in the rules of the system operation, reported by Blue Media S.A., were also subject to the oversight assessment. Until now, in relation to the BlueCash system, the President of NBP, as the authority providing oversight of payment systems, has issued two decisions concerning the proposed amendments to the operating rules of the system, submitted by the system operator.

Statistical data

In the first quarter of 2015 almost 500 thousand payments with the total value of almost PLN 403 million were settled in the BlueCash system. The average value of a single payment in this period amounted to PLN 809.77. Charts 3.7 and 3.8 present the quarterly number of payments settled in individual quarters and their value.

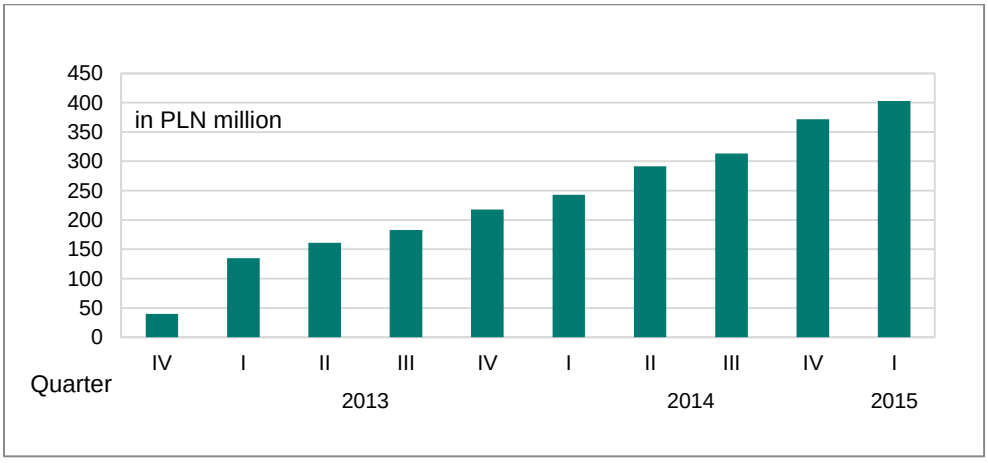
Chart 3.7. Volume of payments settled in the BlueCash system



Source: own study based on Blue Media S.A. data

It should be noted that only approximately 30% of orders settled in the BlueCash system were exchanges between direct participants of the system, whereas the remaining part is received by banks holding the status of cooperating banks (see more in Chapter 3.4).

Chart 3.8. Value of payments settled in the BlueCash system



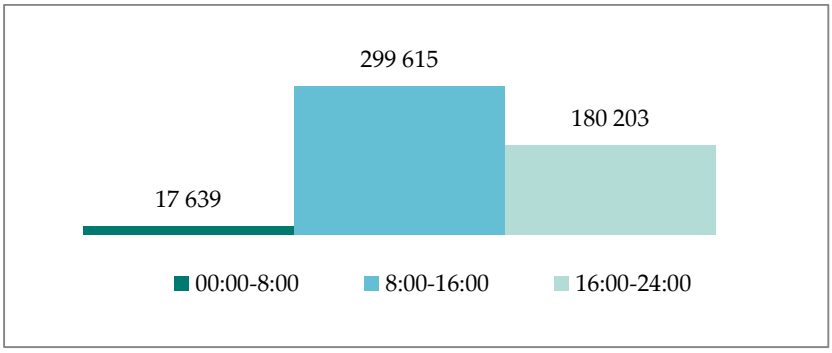
Source: own study based on Blue Media S.A. data

The presented data show that both volume and the value of payments settled in the BlueCash system have been rising since the moment of its launch. The growing number of system participants and cooperating banks from which and to which the payments may be received/sent certainly contributes to this situation.

In terms of the volume of payments settled in each of the three time bands of a day, in the 1st quarter of 2015, definitely the highest number of orders, as much as 60%, was executed

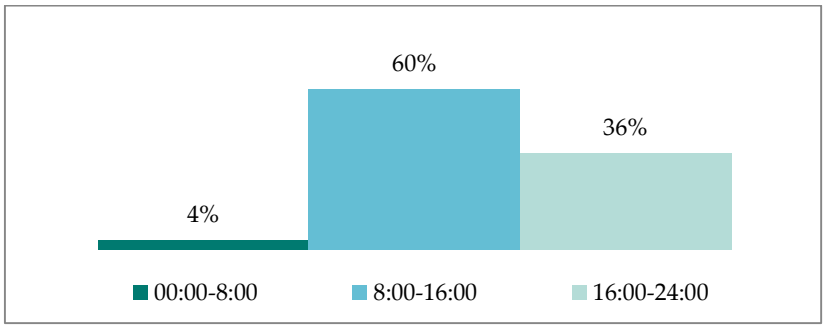
between 8:00 a.m. and 4:00 p.m., and the lowest – 4% – between 00:00 and 8:00 a.m. (Charts 3.9 and 3.10).

Chart 3.9. Volume of payments per time band settled in the BlueCash system in the first quarter of 2015



Source: own study based on Blue Media S.A. data

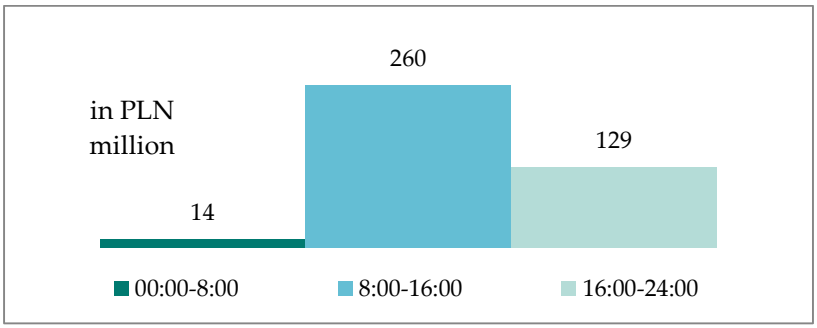
Chart 3.10. Percentage share of the volume of payments per time band settled in the BlueCash system in the first quarter of 2015



Source: own study based on Blue Media S.A. data

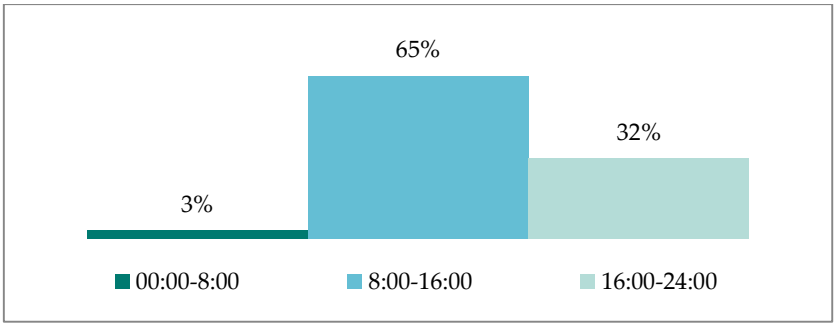
The value of payments settled in the time band between 8:00 a.m. and 4:00 p.m., similarly to their number, was also the highest and amounted to PLN 260 million, and its percentage share in the value of all the orders executed in the system amounted to 65% (Charts 3.11 and 3.12).

Chart 3.11. Value of payments per time band settled in the BlueCash system in the first quarter of 2015



Source: own study based on Blue Media S.A. data

Chart 3.12. Percentage share of the value of payments per time band settled in the BlueCash system in the first quarter of 2015



Source: own study based on Blue Media S.A. data

System development

Since the moment of its launch, the system has been observed to develop steadily, both in terms of the number of participants and the volume of payments settled. However, similarly to the Express Elixir system, these volumes are still relatively low, in particular in comparison to those executed in the Elixir system. Provided that the upward trend in the number of participants is maintained, further growth of payments executed in the system can be expected, especially given that the domestic payment institutions show interest in participation in the system.

The answers provided in the questionnaire imply that Blue Media S.A., as the domestic payment institution, assumes the possibility of executing remittances in the system in the future. On the other hand, in a longer term, it does not exclude establishing an interoperable link with domestic and foreign payment systems; however, this is conditioned on creating a sound business basis. Such activity would boost the development of instant payments systems and, first of all, it would be beneficial to the end clients of this service. Moreover, Blue Media

S.A. shows interest in the extension of the scope of the payment system it conducts to other currencies, including the euro, in particular, from the perspective of the work carried out in the EU related to the creation of cross-border solutions for instant payments systems. However, it considers the introduction of such a functionality as depending on a business approach based on the analysis of the solutions ultimately adopted. With the current technological capacity, Blue Media S.A. cannot see any reason why instant transfer should not become a standard payment form. In a shorter or longer period, however, no other changes in the rules of the system performance are envisaged.

Among factors conducive to the faster development of the system, the questionnaire mainly points to the reduction of system implementation costs on the part of banking system providers. The acceleration of the instant payments system development is also the effect of market mechanisms and competition among banks. A decrease in prices for end clients results in the growing popularity of the service and, consequently, the possibility of further reduction of the rates. In the system operator's opinion, parallel operation of two or more instant payments systems stimulates the development of this segment rather than causing its fragmentation. Systems present in the market do not exclude each other and contribute to the promotion of the service and, consequently, to the continued development of this segment of payments.

3.3. The P2P mobile payments service in the BLIK system

The BLIK Mobile Payments System was launched in February 2015 by Polski Standard Płatności sp. z o.o. (hereinafter referred to as the PSP), established by six commercial banks: Alior Bank S.A., Bank Millennium S.A., Bank Zachodni WBK S.A., ING Bank Śląski S.A., mBank S.A. and PKO Bank Polski S.A. The service of clearing with BLIK system participants is provided by KIR S.A., ensuring also the IT infrastructure required for the implementation of the project. At the beginning, it should be indicated that within the BLIK Mobile Payments System, it is possible to distinguish the payment system within the meaning of Article 1 item 1 of the Act on settlement finality and the services provided within the payment scheme . The P2P payment service is included in the second of the aforementioned categories.

Currently, the BLIK system enables the execution of payments in sales points equipped with POS terminals and on the Internet, and the withdrawal of cash from ATMs. Payments of this type are cleared in the BLIK payment system, and then directed to the Elixir system operated by KIR S.A., which is settled in the SORBNET2 system. Due to the adopted model, settling for those payments are not executed with immediate effect. However, in the near future, PSP plans the implementation of a new service, based on enabling the initiation, from the level of applications used by end users of the BLIK system, of P2P payments, using the mobile phone number of the payee, instead of its bank account number. Such a payment would be subsequently sent directly for settling in the Express Elixir system operated by KIR S.A. This

solution will enable the immediate execution of the payment between the application users holding accounts in various banks. The BLIK payments system is not an instant payment system, however, due to the immediate nature of P2P payments executed through it, the description and the analysis of this service are also included in this report. As in the case of the BlueCash system, answers contained in the questionnaire addressed to the BLIK system operator were used for the preparation of the description.

Premises for the implementation of the P2P payments executed with immediate effect

Significant factors influencing the decision on the implementation of the P2P immediate payments service in the BLIK system included client convenience s as well as the popularity and availability of smartphones, which, in the system owner's opinion, is greater than access to modern banking services, allowing for the creation of a real alternative to cash payments. Moreover, in the questionnaire addressed to it, PSP indicated that P2P type instant payments will mainly constitute the extension and harmonisation of the transfer services using a mobile phone number, already offered by banks. The reason is that they are currently implemented under various rules, and the introduction of the P2P payment in the BLIK system will be an attempt at their harmonisation.

Challenges related to the implementation of the P2P payment service with immediate effect

In response to the questions contained in the questionnaire addressed to the system owner, many problems and challenges of legal, organisational and technical nature have been indicated, encounted at the stage of design and implementation of the P2P payment service in the BLIK system.

The legal problems faced by PSP resulted mainly from the requirement to correlate legal regulations related to the rules of making transfers to a phone number by individual banks participating in the system, whereas the organisational issues were associated with the interpretation of the PSP status in the future, as the operator of P2P payments in the system, in the context of the Banking Law and regulations related to personal data protection. In terms of obstacles of technical nature, some of the problems indicated included the necessity to determine and correlate the transaction process and its registration, and the change of the assignment of a bank account number to a specific phone number.

Use of the Express Elixir system for settling of P2P type payments

As mentioned before, PSP, as the entity creating the BLIK system, decided to establish cooperation with KIR S.A. in order to gain the possibility of settling P2P payments with immediate effect in the Express Elixir system. Using the existing solution instead of building a new one generates, in its opinion, lower costs and does not require additional time for the development of the system from scratch. On the other hand, for participants in the system, adopting such a solution means incurring lower adaptation costs associated with the

operation of P2P payments and the comfort of applying the clearing standards of KIR S.A., generally known in the banking environment.

Benefits for system participants and end clients

Above all, participation in the BLIK system and enabling the execution of P2P type payments with immediate effect increases banks' competitiveness. In PSP's opinion, this service constitutes a new, cheaper, remote and more direct channel of rendering services to bank's clients. Mobile applications are relatively cheap to develop and easy to modify for business needs, which allows banks to maintain the profit margin on cashless transactions amidst declining revenue. As mentioned above, the system is also attractive for participants in terms of its implementation costs, as well as being easy and fast to implement. The bank may connect to the system, holding its own mobile application, following the fulfilment of the requirements defined in the system, and it will also be able to use a ready application made available to participants by PSP through the so-called *white label*, enabling fast connection to the system and making the service available to all of the bank's clients. The P2P payments service will be made available to each participant, on the basis of a single alias base common for all participants, ensuring an on-line access to current data on the bank account number assigned to a given mobile phone number.

A great advantage to the end users of this service will be its popularity and easy access via smartphone, currently owned by practically every bank client. The owner of the system highlights a very high level of security, both for the phone and for the mobile application, against their unauthorised use, guaranteed by the use of such mechanisms as PIN, passwords or biometrics. In order to make the transaction itself effective, it must be also performed in the defined manner, whereas the client must confirm it (YES/NO option), or additionally enter a PIN number for the transaction above the determined limit. P2P payments may constitute a real alternative to cash payments. A half of all retail transactions on the Polish market are executed below the threshold of PLN 50 and they are almost entirely made in cash. Mobile payments, mPOS and P2P transactions may replace this kind of transactions in a convenient and secure manner.

Necessary adjustments and entry barriers

Prior to the accession to the system, each participant must change its current proprietary solution used for the implementation of mobile payments to the solutions designed for the needs of implementing the P2P service in banks participating in the BLIK system. In some cases, this is associated with the development of a new product by the bank, or replacement of the previous solution by a new one. Due to the fact that the P2P payments will be directed for clearing in the Express Elixir system, the BLIK system participant offering such a service must be simultaneously a participant in the Express Elixir system.

Risk associated with the participation in the instant payments system

Polski Standard Płatności manages the system which enables the performing, in favour of banks, of activities associated with generating the BLIK code required in the authorisation process of mobile transactions and maintaining the alias base. On the other hand, risks connected with performing mobile transactions concentrate on banks. However, the P2P payment service will be available only to registered participants and each bank has in place its own procedures for the authorisation of the user's application. It means that the service will be performed in the secure environment of payers and creditors.

Types of payments and the method of payment initiation

The P2P payments service in the BLIK system will be based on the possibility of making a P2P payment between two users of the mobile application, using the mobile phone number of the payee, to which the bank account number defined by it with due advance will be assigned in the alias base. It means that the payment sender will not have to know the payee's bank account, and for the execution of the payment it will be sufficient to know the receiver's mobile phone number.

System availability and speed of payment execution

The P2P payment service will be available in the 24/7/365 mode. In connection with the fact that the payment will be directed for settling in the Express Elixir system, it will be executed within a dozen or so seconds following the moment of order submission in this system. However, some participants of the Express Elixir system do not ensure 24-hour access to the system to their clients, switching off the system, e.g. for the weekend, for the time of processing the day closure, and restricting access to the system to corporate clients only, therefore, it may be supposed that delays or problems with execution of the transaction will emerge in such cases.

Types of participation

In the BLIK mobile payments system, both direct and indirect participation is possible. An indirect participant clears its transactions in the BLIK system through a direct participant. In accordance with the applicable regulations, the participants of the payments system may include entities acting as providers of payment services, within the meaning of Article 4 of the Act on payment services, which may be participants in the payment system within the meaning of Article 1 items 5 and 9 of the Act on settlement finality. As in the case of BlueCash and Express Elixir systems, in the BLIK system there is no systemic risk and its participants may also include payment institutions or electronic money institutions.

Currently, the direct participants in the BLIK system include six commercial banks which established the PSP company and three participants representing non-banking acquirers .

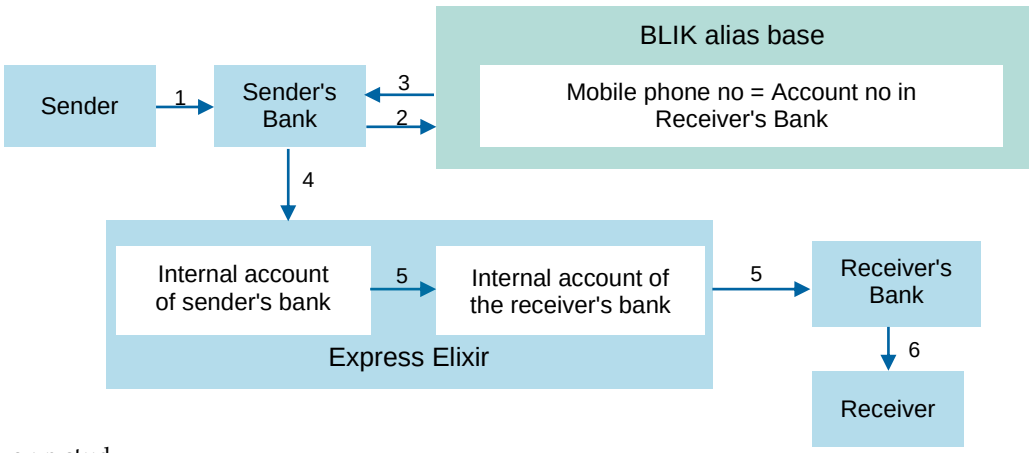
Transaction amount limits

At the moment, no information is available concerning the use of potential transaction amount limits for a single order by the BLIK system operator for P2P mobile payments. Such a limit will be defined by each of the issuers. It is known that as P2P payments will be settled in the Express Elixir system, the maximum amount of the cap will be no higher than that applicable in the system operated by KIR S.A., which amounts to PLN 100,000.

Clearing and settlement of payments

The BLIK mobile payments system will enable the performance of the P2P type payments with immediate effect between the users of a mobile application holding accounts in various banks, using a mobile phone number. The executing of payments will take place with the use of the Express Elixir system, which means that the BLIK system will act as a kind of access platform for the execution of P2P payments through the Express Elixir system. In order to execute this kind of payments, a participant in the BLIK system will also have to be a participant in the Express Elixir system. In the case of an indirect participant, the possibility of making P2P payments by its clients will be conditional upon clearing with the intermediation of the direct participant who is a participant in the Express Elixir system. Users of the mobile application willing to use the service of P2P payments in the BLIK system must link their bank account number with the mobile phone number beforehand. In this way, the alias base will be created in the system, containing phone numbers of registered users with the relevant bank account numbers linked with them. This base will be maintained on the infrastructure managed by KIR S.A. In Scheme 10.5 below the process of performing a P2P payment generated from the level of the BLIK mobile application is presented.

Scheme 3.5 Process of performing a P2P payment generated from the level of the BLIK system



Source: own study

Within the aforementioned process, the following activities will be implemented:

1. The sender of the payment submits a payment order in its bank (sender's bank) through the bank mobile application, using the mobile phone number of the payee.
2. The sender's bank, being a participant in the Express Elixir system, communicates with the BLIK system alias base.
3. The sender's bank receives the receiver's bank account number from the alias base and supplements the credit transfer with this data.
4. The sender's bank sends the order together with the receiver's bank account number for settling in the Express Elixir system.
5. Settling of the order takes place in the Express Elixir system.
6. The receiver's bank credits the payee's account.

Types of fees

Due to the fact that the service has not been implemented yet, the rules on charging fees for this service to system participants and the level of fees charged for this type of service to end users is unknown.

Role of the central bank

In relation to the BLIK mobile payments system, NBP fulfils the role of a the overseer. In this capacity, prior to the launch of the system, in connection with the request submitted by PSP to NBP for approval to operate the system, a comprehensive oversight assessment of the system was performed, in terms of ensuring the efficient and secure performance of the system and the compliance of the BLIK system operating rules with the Polish legal regulations. Based on the results of this assessment, on 12 November 2014, the President of NBP, as the authority providing oversight of payment systems, issued the approval for PSP sp. z o. o. to operate the BLIK mobile payments system. In connection with the fact that P2P payments generated from the BLIK system level will be transferred for settling by the Express Elixir system, it was also necessary to perform changes in the rules of operation of the latter system, enabling such a manner of P2P payments execution. Those changes were also subject to the oversight assessment by the President of NBP, and as a result, KIR S.A. obtained approval for their introduction. On the other hand, the service of P2P mobile payments generated from the level of the BLIK system has not been subject to the oversight assessment by the President of NBP, due to the fact that such payments are not cleared in the BLIK payments system, therefore, they do not constitute its part. They form part of the BLIK payment scheme, within which payment services based on, inter alia, issuance of payment instruments, are provided by banks as providers of payment services. The rules of settlement of P2P mobile payments in the Express Elixir system were an element of the assessment performed by the President of NBP as part of the oversight over this system. The approval of the President of NBP for the

introduction of changes in the Express Elixir system associated with the clearing of the aforementioned payments was issued on 26 February 2015.

System development

At the moment, the operator of the BLIK system is not planning to introduce any changes in its rules of operation before the implementation of the service. However, it cannot be excluded that the introduction of new services may impose their change. Nevertheless, the assessment in this area will be undertaken after conducting relevant analyses referring to the final shape of the services implemented. No potential migration of a part or all of the payments currently directed to the Elixir system to the settlement with immediate effect in the Express Elixir system is also envisaged.

PPS believes that it would be important to introduce regulations adjusting the banking secret to the contemporary reality of trade, which could eliminate the legal risk associated with the requirement to apply the currently binding regulations in this scope. Moreover, the security of data of people using the P2P service could be enhanced if the obligation to enter certain data which is not necessary for booking an economic event, such as a P2P transfer, was excluded from the regulations determining the standards of an accounting document.

From the owner's perspective, the establishment of an interoperability link with other systems would contribute to the development of the system. It would offer greater possibilities of acquiring system participants due to lower costs for such participants as well as broader possibilities of service use by both system participants and end users. The extension of the system's scope to other currencies also remains an issue of PSP's interest. Participants in the system operate clients' accounts in various currencies and merchants make available ATMs enabling cash withdrawal, e.g. in Euro. It is one of the factors supporting the idea of system development by adding new currencies. The next stage of the system development in the future may be also the operation of cross-border transactions.

As mentioned before, mobile P2P payments may create a real alternative to low-value cash payments. However, in order to achieve such an effect, it is above all necessary to increase the range of the service through accession of consecutive banks and non-banking institutions issuing payment instruments to the system.

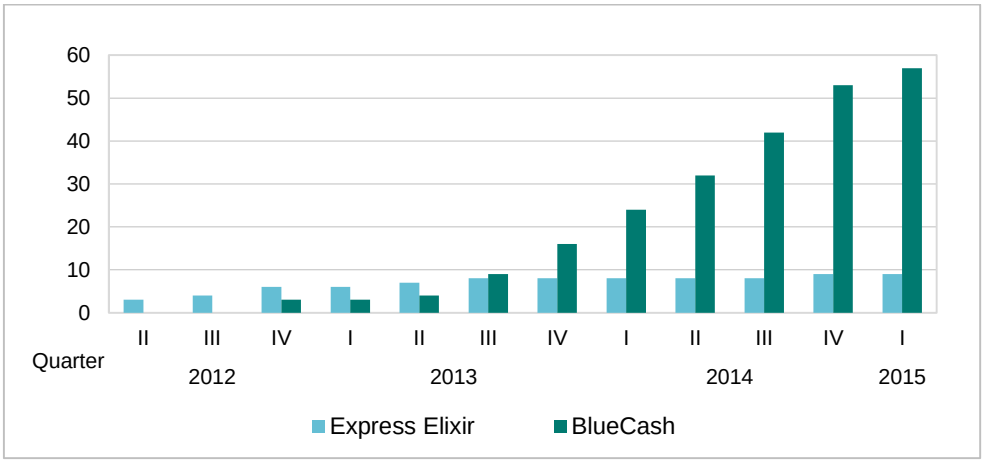
3.4. Comparison of BlueCash and Express Elixir payments systems and their role in the Polish payment system

The descriptions of the Express Elixir and BlueCash systems presented earlier show that there are many differences between the systems, related mainly to the methods of performing clearing and settlement. In the BlueCash system, clearing is performed on a net basis, with the settlement conducted on the following day, in commercial bank money. On the other hand, in

the Express Elixir system, payments are settled in real time, based on funds deposited on the escrow account of KIR S.A. in the SORBNET2 system, i.e. in central bank money. Rules of access to the systems are also different, as well as the levels of transaction amount limits applied to a single order. However, besides the differences, there are also certain similarities, such as using transaction limits for participants, mechanisms securing the performance of settling in the system in the form of participants' funds deposited on special accounts or, finally, the method of payment initiation by the sender.

A significant difference between the systems is also visible in the structure of their participation. Chart 3.13 presents the number of participants in BlueCash and Express Elixir systems in individual quarters, starting from the moment of launch of the systems.

Chart 3.13. Number of participants in Express Elixir and BlueCash systems



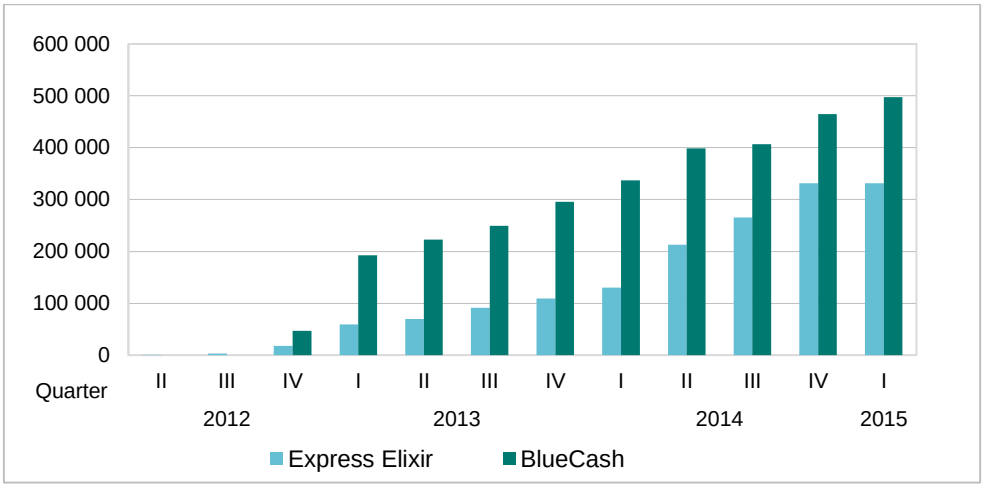
Source: own study based on Blue Media S.A. and KIR S.A. data

In the 1st quarter of 2015, relatively few banks, namely ten, were direct participants in the Express Elixir system . These are rather bigger banks which are participants in other payment systems, such as SORBNET2, Elixir, TARGET2-NBP or Euro Elixir. Five cooperative banks also have access to the Express Elixir system through an associating bank. Participants in the BlueCash system represented a much bigger group of 57 banks, however, the majority of them, as many as 53, were small cooperative banks with a local range. It is the large number of cooperative banks which are direct participants in the BlueCash system that is an interesting phenomenon, never before observed in other payment systems. Their participation in the BlueCash system may arise from the lack of necessity to hold an open account in the SORBNET2 system, which is the prerequisite for participation in the Express Elixir system. On the other hand, in the Express Elixir system, cooperative banks may participate in the system through the so-called associating banks, which hold such accounts in the SORBNET2 system and are already participants in the Express Elixir system (whereas SGB-Bank S.A. became its participant only as of 20 April 2015). However, the condition to hold an account in the

SORBNET2 system may be a serious obstacle in the context of access to the Express Elixir system in relation to other entities interested in participation in instant payments systems, such as non-banking payment institutions, including cash offices or clearing agents acting as intermediaries in executing payments. Although they are not participants, cooperating banks operate in the BlueCash system, and it is possible to transfer payments by and to their clients through the BlueCash system.

An essential issue showing the differences between the systems is the volume of payments settled in those systems. Chart 3.14 presents the comparison of both systems in terms of the quarterly number of orders executed in the period from the launch of the systems until the first quarter of 2015 inclusive.

Chart 3.14. Volume of payments settled in the Express Elixir and BlueCash systems



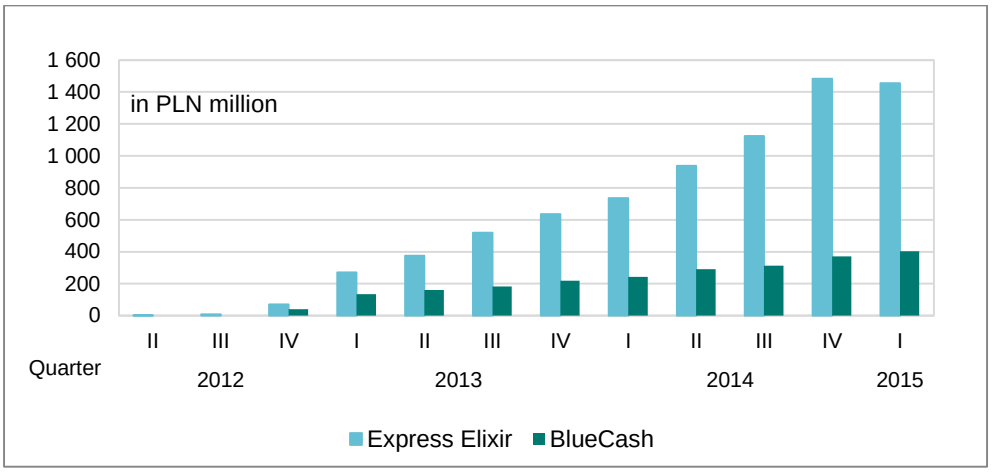
Source: own study based on Blue Media S.A. and KIR S.A. data

It can be seen that in terms of this indicator, a definitely higher number of payments is executed in the BlueCash system. In the first quarter of 2015 the share of BlueCash in the total volume of payments settled in instant payments systems reached approximately 60%, whereas for the Express Elixir system it was 40%. From the beginning of BlueCash system launch, its share in this number was definitely higher than that of the Express Elixir system and still at the beginning of 2014 it exceeded 70%. However, since then, this share has been falling steadily.

The opposite is true for the value of payments settled in both systems, i.e. a definitely higher share in this indicator exists on the Express Elixir system side, which, at the moment of its launch amounted to over 50%, whereas at the end of 2014 and in the first quarter of 2015 it has already reached almost 80%. It should be noted that, e.g. in the fourth quarter of 2014, only 34% of the number and 32% of the value of all the transactions executed in the BlueCash

system was exchanged between direct participants in the system, whereas the remaining part, i.e. 66% of the number and 68% of the value of transactions, respectively, is received by banks holding the status of cooperating banks. In Chart 3.15 the comparison of the quarterly value of orders executed in both systems is presented.

Chart 3.15. Value of payments settled in the Express Elixir and BlueCash systems



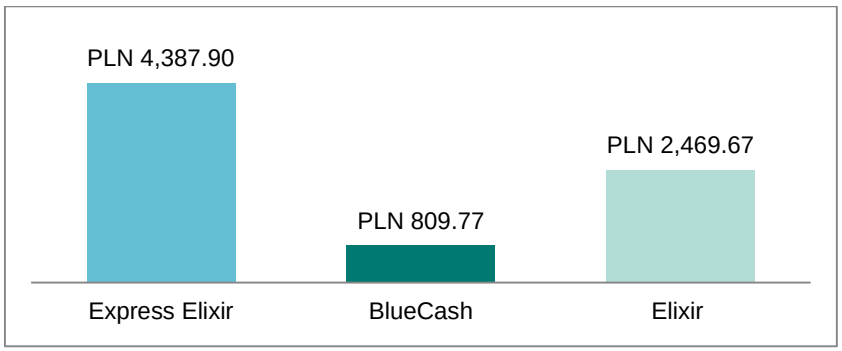
Source: own study based on Blue Media S.A. and KIR S.A. data

At this point, it should be noted that both the volume of payments settled and the turnover of the instant payments systems under analysis are relatively low and – comparing to the biggest Polish system of retail payments, i.e. Elixir – they are even marginal. The daily volume of transactions executed in the Elixir system is disproportionately higher than the number of transactions executed in both instant payments systems jointly. In order to illustrate this disproportion even better, it can be indicated that the volume of payments settled in the Elixir system in March 2015 amounted to almost 148 million, whereas the volume of payments settled in this month in the Express Elixir and BlueCash systems jointly reached a mere 297 thousand. A similar situation refers to the turnover of those systems: the turnover of the Elixir system in the same month exceeded PLN 360 billion, whereas the aggregate turnover of Express Elixir and BlueCash systems reached over PLN 714 million. Looking at the quarterly number of transactions executed in the Elixir system which, over a period from the fourth quarter of 2012 to the fourth quarter of 2014, ranged from approx. 375 million to 421 million orders, it can be stated that, at least so far, the phenomenon of migration of a significant part of payments executed in the Elixir system to the instant payments systems has not taken place, which occurred, e.g. in the case of the British FPS system.

The next difference between the systems is also visible in the average value of a single order settled in the system. It is much higher in the Express Elixir system. In the first quarter of 2015 it amounted to PLN 4,387.90 whereas for the BlueCash system, the same indicator reached the level of PLN 809.77. Interestingly, this value for the Express Elixir system is also significantly

higher than the value for the Elixir system which amounted to PLN 2,469.67 in the corresponding period. The foregoing figures indicate that in the BlueCash system a higher number of low-value transactions is performed. The reason for this may be a higher interest in the service among individual clients as well as small and medium-sized enterprises, making payments of a relatively low value. The difference in the transaction amount limits in both systems is also of significance to the average value of a single payment, being five times lower in the BlueCash system as compared to the Express Elixir system. Chart 3.16 presents the average value of a single order settled in Express Elixir, BlueCash and Elixir systems in the first quarter of 2015.

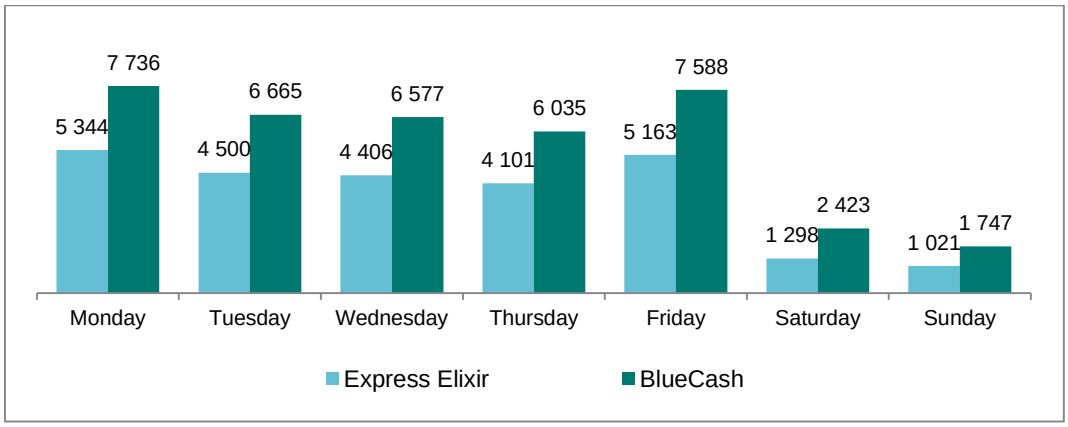
Chart 3.16. Average value of a single payment in the first quarter of 2015 in Express Elixir, BlueCash and Elixir systems



Source: own study based on Blue Media S.A. and KIR S.A. data

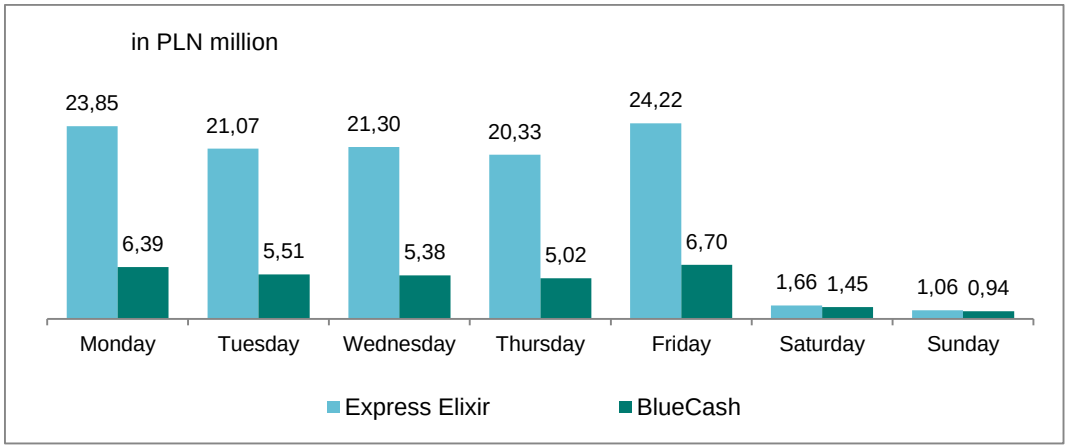
The indicator showing the number of orders settled on individual days of the week is also interesting. It shows that the lowest number of payments is settled in both systems at the weekend. The highest number of orders is settled on Monday and Friday. Initially, it could seem that it is due to the unavailability of other payment systems, such as Elixir or SORBNET2 during the weekend, that a higher number of payments will be settled at the weekend as compared to business days in instant payments systems. However, the reality is completely different (Charts 3.17 and 3.18).

Chart 3.17. Average daily volume of payments settled on individual days of the week in Express Elixir and BlueCash systems in the first quarter of 2015



Source: own study based on Blue Media S.A. and KIR S.A. data

Chart 3.18. Average daily value of orders settled on individual days of the week in Express Elixir and BlueCash systems in the first quarter of 2015.



Source: own study based on Blue Media S.A. and KIR S.A. data

The information presented above indicates that the share of instant payments systems in the market of retail payments in Poland is still marginal. However, both systems are at the initial stage of their development and, for the time being, their role in the Polish payment system is still relatively low. Such a situation stems from the limited availability and range of this service and the fees which may discourage banks' clients to choose this type of payments more frequently. This situation could be improved significantly by the limitation or complete waiver of fees for executing instant payments and using this channel, e.g. for payments via the Internet (*pay-by-link*) as well as enabling access to the system in the form of indirect participation to banks and non-banking payment institutions. On the other hand, it results from the information provided by PONIP and the e-Commerce Poland Chamber of Digital

Economy (Izba Gospodarki Elektronicznej e-Commerce Polska) that the current solutions in this scope, from the point of view of payment institutions and many *on-line* merchants, are sufficient, and the most important aspect for them is the receipt of payment execution confirmation by the client, rather than the immediate crediting of the payee's account (e.g. an online shop). It is similar for tax and social security (ZUS) payments, for which the date of making (submitting) the payment is recognised as the date of fulfilling the liability, instead of the day of crediting the receiver's account. The e-Commerce Poland Chamber of Digital Economy (Izba Gospodarki Elektronicznej e-Commerce Polska), in its position submitted to NBP concerning instant payments systems, also states that the application of instant transfers is not a proposal required by the e-commerce sector and it would significantly contribute to its development. On the other hand, the answers of operators of instant payments systems to questions contained in the questionnaire addressed to them indicate that, after all, there is some interest in the participation of non-banking payment institutions in instant payments systems.

The need to develop a single common scheme for clearing instant payments at the national level, indicated by bankers in the questionnaire survey, as well as the interoperability link of systems, enabling transfer of payments between participants, could contribute to a significant development of this service. Under such circumstances, each payment message would have the same structure, irrespective of the system it was cleared in. This would prevent any problems related to service identification by banks' clients. On the other hand, a possibility to execute a payment between participants of two payment systems would extend the range of the service and limit the need of banks' participation in both systems simultaneously, as it is sometimes the case now. The opportunity for instant payments systems may be also the incorporation of P2P mobile payments into their clearing scheme – an example of the Express Elixir system and P2P payments generated by end users of the BLIK system.

Summing up, at this stage of development of instant payments systems operating in Poland, they should be perceived as creating an additional possibility for fast execution of payments and supplementing banks' offer, rather than as a common alternative to traditional retail payments systems. From the operator's side, on the other hand, such systems make the next step in the development of those entities, offering them the opportunity of business development and implementation of innovative clearing products.

In Table 3.1. below, differences between BlueCash and Express Elixir systems are listed, whereas Annex 2 contains the comparative specification of selected instant payments systems operating in Poland and in the EU (Part I) as well as instant payments systems worldwide (Part II).

Table 3.1. Comparison of Express Elixir and BlueCash systems

	Express Elixir	BlueCash
System operator	KIR S.A. (a clearing house within the meaning of both the Act on Banking Law and the Act on the settlement finality)	Blue Media S.A. (a clearing house within the meaning of the Act on the settlement finality)
Transfer executed in a seconds	Yes	Yes (in the direct model) In the case of cooperating banks, crediting the payee's account may take up to 15 minutes
System available 24x7	Yes some banks do not ensure 24 h access, e.g. switching off the system for the weekend and offering it only to corporate clients	Yes some banks do not ensure 24 h access, e.g. switching off the system for the weekend
Transfer executed directly	Yes	Yes (in the direct model) No (in the case of cooperating banks)
Maximum value of transfer	PLN 100,000	PLN 20,000
Settlement	Due to the adoption of the prefunding model, the interbank settlement is not performed in the system, within the meaning of Regulation no. 13/2013 of the President of NBP of 24 May 2013 concerning the method of performing interbank settlements. The source of liquidity are the funds deposited on the escrow account of KIR S.A. operated by NBP in the SORBNET2 system, i.e. in the central bank money.	Deferred net settlement performed in the commercial bank on the next calendar day (D+1). The source of liquidity is the commercial bank money.
Credit risk mitigation method	Deposit model (prefunding)	A collateral pool maintained by each participant on the dedicated participant's account, equal to at least a double value of the limit of transactions set for it. Additional collateral pool maintained by Blue Media on the Central Settlement Account equal to 100% of the level of security pool of the participant holding the highest pool of securities, defined in the participation agreement.
Possibility of monitoring the level of funds in the system	Yes (Ognivo and mechanism of alters informing of events related to internal accounts)	Yes (IT system of BlueCash enables on-going monitoring of the level of liabilities and receivables amount as well as the level of security granted by the participant and Blue Media)
System range	Only system participants (currently 10 participants – mainly bigger commercial banks and associations of cooperative banks)	System participants (currently 4 commercial banks and 53 cooperative banks) and cooperating banks – currently 16
Participants'	Defined by participants. A possibility for the participant to define its unavailability	Defined by the system regulations for system participants. In the case of

	Express Elixir	BlueCash
availability hours	in the system, e.g. during the weekend.	cooperating banks, dependent on the time of availability of banking systems where Blue Media has open accounts.
Defined time of service and participants' availability	Yes (defined in specifications and system regulations)	Defined by the system regulations In the case of cooperating banks, dependent on the time of availability of banking systems where Blue Media has open accounts.
Impact of external factors on participants' availability	None	In the case of intermediation of cooperating banks, the availability depends on the conditions of internal transfer execution in a given bank.
Transfer guarantee	Yes	Yes (whereas in the case of cooperating banks, depending on effectiveness of execution of two intra-bank transfers)
The transfer contains information on sender and receiver	Yes	Yes (in the case of cooperating banks, data of Blue Media S.A., transfer sender and receiver are provided)
Who provides liquidity in the system	Banks	Banks in the direct model Blue Media in the case of cooperating banks
Payments processed	Credit transfer	Credit transfer, cash payment, possibility of making payments using the payee's mobile phone number
System compliant with the ERPB definition [39]	Yes	Yes (in the direct model) No (in the case of cooperating banks)
Additional features	Planned implementation in 2015 of P2P type mobile payments based on the so-called alias base maintained by PSP within BLIK system. Sender's Bank may use base collections of the Elixir system while displaying receiver's bank name.	Possibility of accepting payment order both from a sender acting as a client of a system participant and a sender acting as a client of a bank which is not a system participant, and accepting orders by both a receiver acting as a client of a system participant and a receiver acting as a client of a bank which is not a system participant.

Source: own study based on information provided by Blue Media S.A. and KIR S.A.

[39] https://www.ecb.europa.eu/paym/retpaym/shared/pdf/2nd_eprb_meeting_item6.pdf?b70bbb40c47214b15692369b71765d2b

3.5. Results of the questionnaire survey addressed to banks

In order to elicit the opinion of the Polish banking sector concerning instant payments system for the needs of this report, a questionnaire survey has been performed. The questionnaire was divided into three parts. The first part was related to general issues and it was addressed to all banks – both participants and banks which are not instant payments systems participants. The second part contained questions addressed to banks which are instant payments system/systems participants, whereas the third part – to banks which are not participants. 19 banks took part in the questionnaire – 15 participants in instant payments systems and 4 banks which are not such participants. This part of the report constitutes a summary of the results of the said questionnaire addressed to banks and presents conclusions arising from the answers provided.

Instant payments systems participants

Instant payments systems participants operating in Poland include 67 banks. 57 banks are participants in the BlueCash system (including 53 cooperative banks), whereas 10 are participants in the Express Elixir system. Two banks are participants in both systems simultaneously.

Need for instant payments

All the banks surveyed, including those which are not participated in instant payments systems, indicated that there is a demand, in particular among individual clients, for the provision of the instant payments service. Clients expect banks to offer the innovative service of instant payment, in order to be able to quickly fulfil their liabilities at any moment.
Four banks surveyed which are not participated in the instant payments system declared their plan to join this system.

Kind of payments executed in the instant payments systems

The answers provided by banks indicate that instant payments are most commonly used by their clients for making mass payments, e.g. invoices or bills. Repayments of loans take the second place, followed by payments for online shopping and remuneration. Mobile P2P payments should be also added to the above catalogue.
Clients select instant transfers when the situation requires immediate booking of funds on the payee's account, often in emergency situations, e.g. when timely repayment of a credit instalment is required. This service is more frequently used by individual clients than by business. As far as the share of instant payments is concerned, in terms of both quantity and value, it does not exceed 5% in overall payments executed by clients of a given bank. Banks usually use lower transaction amount limits per single order for their clients, as compared to the limits determined by the system operator – for the Express Elixir system it amounts to PLN 100,000 and for the BlueCash system – PLN 20,000.

Benefits from the participation in the instant payments system

All the banks covered by the survey unanimously indicated the tangible benefits associated with their participation in the instant payment system. Offering such a product, first of all, increases the competitiveness and recognition of the bank, and meets the expectations of innovation-oriented clients. It also enables the bank to gain additional revenue. Through the participation in the instant payments system, banks build their image of modern, technologically advanced institutions, open to clients' needs and expectations. These benefits are the main reason underlying banks' decision to participate in such a system.
In terms of benefits for natural persons and economic entities using this kind of service, it currently regarded by them rather as a supplementary option to settle their debts in situations when immediate execution of a payment is required.

Necessary adjustments and entry barriers

Accession to the instant payments system is associated with the necessity to undertake due adjustment measures and, according to many banks, to incur high costs of their implementation by participants. In particular, such measures refer to banks' technical infrastructure, including IT systems which require integration with the system operator. It was also necessary to adjust access channels for clients to the execution of immediate transactions.
In terms of joining the system, many banks mention high costs of accession to the system. Besides, higher costs of system operation must be also added, as compared to other payment systems. Another barrier may be the requirement to maintain additional liquidity for the needs of securing clearing operations performed in the system (it refers to both the BlueCash and the Express Elixir system).

Pricing policy and fees

This product is treated by the majority of banks as a premium service, thus, positioned higher than a standard credit transfer. Accordingly, all banks charge additional fees for the execution of this type of transfer. Although some banks offer packages of free transfers, after the using them they charge fees for each consecutive transfer. Most of banks differentiate fees depending on the type of client, charging higher fees to business clients. In many cases, the fee also depends on the type of channel used for the processing of payments. The cheapest payments are usually initiated from the level of Internet banking, followed by payments made in a bank's branch, whereas payments via a telephone consultant are most expensive. Fees for a single instant transfer, excluding free packages, do not exceed PLN 10 for individual clients, whereas for business clients the maximum fee amounts to PLN 40.
As indicated above, the level of fees charged by banks for instant transfers is quite high and rather discouraging in terms of frequency of use of this type of payments. When the client does not rely on the fast execution of a payment at any price, he/she would certainly choose a

standard credit transfer, which is a free service in practically every bank. One of the reasons justifying the application of a fee for the execution of an instant transfer by banks may be the higher cost of participation in such a system as compared to other payments systems, indicated by the majority of banks. Another reason for such a state of affairs may be also the requirement to conduct changes in a bank's infrastructure, associated with the participation in the instant payments system which, in many banks' opinion, results in significant costs. Finally, banks also pay attention to higher unit cost of an instant transfer, as compared to the standard credit transfer executed in the Elixir system. The reason may be the requirement to maintain additional liquidity for the needs of securing clearing operations performed in the system, indicated by some banks (it refers both to the BlueCash and to the Express Elixir system). Increasing of the number of participants in those systems and the resulting dissemination of this form of payment may lead to the reduction or total waiver of fees.

Weaknesses and risk associated with participation in the system

In spite of many advantages and benefits arising from this solution, instant payments systems also have their defects and weaknesses. One of the weaknesses most commonly listed by banks are the above mentioned high costs of implementation and maintenance of the service, including the requirement to maintain additional liquidity for the needs of securing clearing operations performed in the system. In the case of the Express Elixir system this is associated with lost benefits due to keeping funds by banks on a non-interest-bearing escrow account with NBP and the failure to recognise such funds as the reserve requirement. Due to the immediate nature of payments, in systems of this type there is increased risk of funds fraud and the exposure to the so-called *phishing* attacks[40]. In this context, banks recognise the risk of a growing number of fraudulent transactions. The BlueCash system, according to the opinion of several banks, poses a risk associated with intermediation in transferring third party funds. A weakness of instant payments systems in Poland is their current range of operations, arising from the relatively limited number of participants in such systems. It significantly restricts the use of this type of payment instrument. Another problem is the various availability of the service in individual banks – some of them switch off the service, e.g. during the weekend or at night. Moreover, no consistent standard for the clearing of instant payments is available – the co-existence of two systems with various standards, on the one hand, strengthens competition and contributes to the development of the service. On the other hand, in many banks' opinion, it leads to market fragmentation and lack of recognition of this type of services among banks' clients.

Parallel operation of two instant payments systems

Respondents were divided on the impact of parallel operation of two instant payments systems on the faster development of this payment market segment. Half of them claim that

[40] *Phishing* is a method of fraud in which an offender impersonates another person or organisation in order to solicit specific information in a fraudulent manner (e.g. log-in data to Internet banking) or persuade a victim to execute specific activities.

competition stimulates development, and the systems present in the market do not exclude each other and contribute to the promotion of the service. Competition has also a positive impact on fees, contributing to their reduction, and on banks' costs. The existence of two payments systems may also raise the quality of services rendered by their operators. However, according to the opinion of the other group of banks, parallel operation of instant payments systems contributes to market fragmentation and lack of recognition of this type of service among banks' clients. Another consequence of this can also be that the application of two systems, operating in different ways, may be less transparent from the client's perspective and result in restricting the universal nature, availability and range of the service expected by the client. The solution to this problem may be the development of a single common scheme of clearing for this kind of payments at a national level and the interoperability link of systems enabling the transfer of payments between participants.

Required changes and further development of the systems

Taking into account the aforementioned weaknesses and risk involved in the instant payments systems, the surveyed banks perceive a clear need to introduce changes in the rules of operation of those systems. The proposals refer mainly to the harmonisation of instant payments clearing rules mentioned above, e.g. through the development of a single common scheme of clearing for this kind of payments at a national level and the establishment of the interoperability link between the domestic and foreign instant payments systems. In banks' opinion, this would lead to a faster development of this segment of the payment market, gaining cost synergies and increasing transparency for clients and, consequently, a broader application of the service. In terms of ensuring higher availability and a broader range of system operation, opinions were presented in the answers, related to the necessity of providing 24/7/365 access to the service by all participants in the system, and even obligatory participation of banks in the Express Elixir system. An important issue raised by banks is also enabling the execution of instant payments at a cross-border level. On the other hand, some banks propose continuous monitoring of the existing sanction lists or creation of such lists for the needs of instant payments systems in order to enhance the security of transactions. One of the banks proposed that the banking environment in Poland should consider, in the near future, a possibility of partial migration of payments from the Elixir system to the Express Elixir system, analogically to e.g. the United Kingdom (cf. Chapter 9.1). However, it should be noted that in the British Faster Payments Service system clearing is performed on a net basis, whereas executing of payments in the Express Elixir system takes place in real time, based on funds deposited on a settlement account in the SORBNET2 system, which requires a higher liquidity demand from its participants.

A detailed summary of the results of the questionnaire survey is included in Annex 1 to this report.

4. Summary

The information presented in this study shows that instant payments systems may play an important role in the domestic payment system and they may play a significant role in retail payments, as it happened e.g. in the United Kingdom, or rather supplement existing solutions and enable payments with immediate effect, against an additional fee – as in the case of e.g. Polish systems. It should be expected that those systems will belong to the most dynamically developing branches of the payment market over the forthcoming years, and their number, role in retail clearing and dissemination will grow.

Below, the summary of the conducted analysis of instant payments systems is presented, including the directions of Polish systems development.

1. Premises underlying the setting-up of instant payments systems

The main premise underlying the creation of instant payments systems is the demand for acceleration of retail payments execution, enabling the flow of funds between the accounts of the sender and the receiver in close to real time, in practically any term, not restricted by the system working hours.

2. Methods of instant payments

The execution of payments with immediate effect is possible, first of all, through the payment systems. Such systems are divided into instant payments systems with deferred net settlement, most commonly performed in the central bank, systems based on real time settlements of the RTGS type, operated by central banks and systems based on a deposit model, in which clearing is performed based on deposits accumulated by participants, maintained on a dedicated account (usually in the central bank). Besides instant payments systems, the execution of payments in this mode is possible by means of internal bank transfers between accounts operated in the same bank, and P2P mobile payments performed using a dedicated application for smartphones between the users of this service.

3. Role of the central bank

Central banks play a key role in relation to instant payments systems. They are often involved in activities related to the creation of such systems or stimulate the market to undertake them. Some central banks decide to set-up such systems themselves or enable retail payments to be settled in the RTGS systems operated by them. In many cases they also act as settlement agents, performing the settlement of payments earlier cleared in instant payments systems by external operators. On the other hand, by providing the oversight of instant payments systems, central banks ensure their efficient and secure performance. The **creation and operation of an instant payments system without the participation of a central bank (in one of the aforementioned roles) is practically impossible.**

4. Results of the questionnaire survey of banks

The results of the questionnaire survey have above all confirmed that both among banks and their clients there is **demand for execution of payments in the immediate mode in Poland**. **The benefits of participation in such a system** include increased competitiveness and recognition of the bank, and the ability to meet the expectations of innovation-oriented clients. Offering such a service also makes it possible to gain additional revenue for the bank as a result of such activity. All the banks charge additional fees for the execution of this type of transfer. Some of them offer packages of free transfers; however, after their utilization, they charge fees for each consecutive transfer. Most banks differentiate fees depending on the type of client, charging higher fees to business clients. **For clients, the instant payment service is chiefly an additional possibility of fulfilling their liabilities** in situations when immediate execution of such a payment is required. **This product is treated by the majority of banks as a premium service and it is positioned higher than a standard credit transfer.**
Instant payments are most commonly used for making mass payments, e.g. invoices or bills. Repayments of loans take the second place, followed by payments for online shopping and disbursement of remuneration. This service is more frequently used by individual clients than by business clients. Banks usually use lower amount caps for their clients for a single order, as compared to the cap determined by the system operator.

A weakness of instant payments systems operating in Poland is their limited range of operations, arising from the relatively low number of participants and high costs of accession to the system. Besides, higher costs of system operation, as compared to other payment systems, are also involved. In order to ensure higher availability and broader range of system operation, opinions were presented related to the necessity of providing 24/7/365 continuous access to the service by all participants of such systems, with no weekend or technical breaks. Some clients of banks have no recognition of this type of service or awareness of its benefits.

The banks covered by the questionnaire survey see a clear need **to introduce changes in the rules of operation of instant payments systems.** The proposals refer mainly to the harmonisation of instant payments' clearing rules and the establishment of the interoperability link between the domestic and foreign instant payments systems.

5. Directions of further development of instant payments systems in Poland

In the context of development of instant payments systems in Poland, the key question is the target role they should play in the Polish payment system. Should their role be marginal, as it currently is, and should payments executed through such systems still be treated as a paid premium service, or should they grow significantly through the common application of this payment instrument and migration of at least some part of payments currently executed in other retail payments systems, such as Elixir, to such systems? It seems that, at least in a short-term perspective, the situation of this service on the Polish market will tend to remain mostly

unchanged, while ultimately those systems are not bound to become an alternative to the existing solutions used for clearing retail payments, serving as their supplementation. It mainly results from the specific nature of the Polish payment system where execution of the payment on the same day, e.g. in the Elixir or SORBNET2 system, was possible much earlier, before instant payments systems were created. It can be assumed that in the nearest period **the growth in the number of instant payments will continue. However, in order to enhance this growth, it is advisable to undertake measures aimed, first of all, at the extension of the scope of the service, which is currently relatively limited**. **Accession of consecutive direct participants, as well as enabling the indirect participation form by instant payments system operators, harmonisation of instant payments' clearing rules through establishing a single standard of the payment message for this type of payments on the national level, irrespective of the system, as well as establishment of the interoperability link between domestic and foreign instant payments systems should have a significant impact on the development of such systems**. Otherwise, the current development trend may be inhibited and, in a longer-term perspective, it may result in the lack of interest of banks and their clients in this type of services. The dynamic development and potential dissemination of mobile payments systems, in particular, in the scope of P2P payments, may also create a certain competition for instant payments and it may have an adverse impact on their development. On the other hand, the rapid development of instant payments systems and the potential migration to such systems of payments so far executed in other payment systems, may pose a threat to the latter, resulting in the "cannibalisation" effect, that is their partial or full absorption by instant payments systems, as indicated by the case of Switzerland or the United Kingdom. In connection with the foregoing, determining the ultimate role of those systems in the domestic payment system is a key issue, in order to prevent undesirable effects.

5. Proposed actions supporting development of instant payments systems in Poland

Taking into consideration the analysis of instant payments systems conducted in this material, the results of banks' questionnaire survey and the resulting conclusions, a proposal of actions aimed at supporting the development of instant payments systems in Poland, the extension of their range and availability as well as gradual spreading of the instant transfer service was formulated. It is presented below.

NBP suggests considering the following actions to be taken in this scope:

1. **Participation of further banks in instant payments systems in direct form.**
2. **Extension of the instant payments service to all groups of clients – both business and individual clients, by banks acting as participants in instant payments systems.**
3. **Extension of access hours to instant payments systems by banks acting as participants in instant payments systems through limiting the constraints in service availability, e.g. during the weekend or on bank holidays.**
4. **Actions to be taken by instant payments systems operators in cooperation with their participants, aimed at the establishment of a single payment message standard, and the establishment of the interoperability link between domestic instant payments systems in order to enable transfer of payments between participants in various systems.**
5. **Taking actions by instant payments systems operators aimed at enabling the participation of domestic payment institutions in their systems in indirect form or, to the extent possible, in direct form.**
6. **Participation of instant payments systems operators in international initiatives aimed at the development of a clearing scheme enabling the execution of payments with immediate effect between the EU countries, and inclusion of those systems in the said scheme.**
7. **Taking actions by participants and operators of instant payments systems aimed at the promotion of instant payments and raising clients' and merchants' awareness of the existence of this service.**

List of boxes

List of schemes

List of figures

List of tables

List of charts

List of abbreviations

24/7/365 (24x7x365)	24 hours, 7 days a week, 365 days a year
3CB	Banque de France, Deutsche Bundesbank and Banca d'Italia
APCA	Australian Payments Clearing Association
BACS	Bankers' Automated Clearing Services (British system of retail payments)
BiR	Betalningar i realtid (Swedish instant payments system)
BIS	Bank for International Settlements
CPs	Core Principles for Systemically Important Payment Systems
CRR	Central clearing account (in the BlueCash payments system)
DCA	Direct Corporate Access (Payment orders of business clients in the FPS system)
DRU	Dedicated participants' accounts (in the BlueCash payments system)
EACHA	European Automated Clearing House Association
ECB	European Central Bank
EPC	European Payments Council
ERPB	Euro Retail Payments Board
ESCB	European System of Central Banks
ETS/STS Link	Enhanced Transmission Service/SWIFTNet Transmission Service
FED	Federal Reserve System
FIM	File Input Module
FIFO	First in first out
FPS	Faster Payments Service (British instant payments system)
FPSL	Faster Payments Scheme Limited
FSS	Fast Settlement Service
HCE	Host Card Emulation
ISO	International Organization for Standardization
KIR S.A.	Krajowa Izba Rozliczeniowa S.A. (National Clearing House)
LLSA	Liquidity and Loss Share Agreement
mPOS	Mobile point of sale (Mobile payment terminal mPOS)
MSC	Merchant Service Charge
NBP	Narodowy Bank Polski (National Bank of Poland)
NETS	Northern European Transaction Services
NNP	New Payments Platform (Instant payments system in Australia)
P2P	Peer-to-peer, person-to-person (Payments performed between natural persons)

PFMIs	Principles for financial market infrastructures
PONIP	Polska Organizacja Niebankowych Instytucji Płatności (Polish Organisation of Non-Banking Payment Institutions)
POS	Point of sale
PSB	The Payments System Board (operating in Australia)
PSP	Polski Standard Płatności sp. z o.o.
PSSC	Payment Systems and Settlement Committee
RITS	Reserve Bank Information and Transfer System (RTGS System of Reserve Bank of Australia)
RTC	Real-Time Clearing (Instant payments system in the Republic of South Africa)
RTPC	Real-Time Payments Committee
RTGS	Real-Time Gross Settlement
SGB	Spółdzielcza Grupa Bankowa (Cooperative Banking Group)
SEPA	Single Euro Payments Area
SIC	The Swiss Interbank Clearing (Swiss instant payments system)
SWIFT	Society for Worldwide Interbank Financial Telecommunication
SWOT	Strengths, Weaknesses, Opportunities, Threats
EU	European Union
XML	Extensible Markup Language

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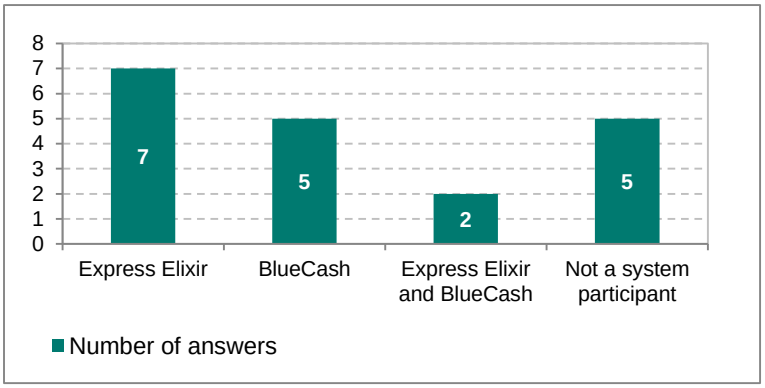
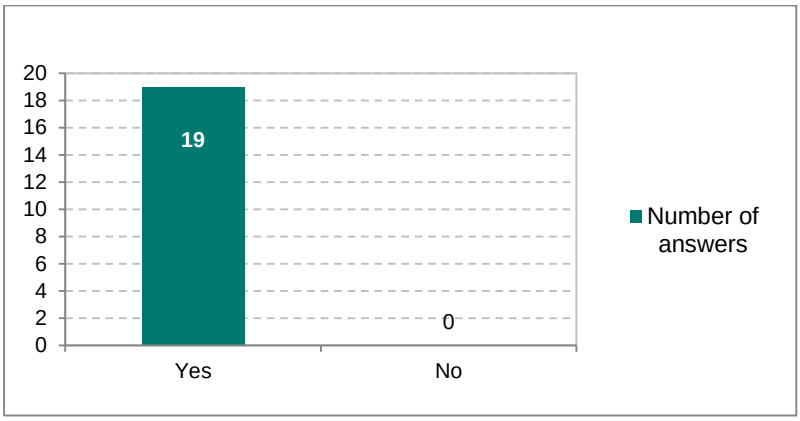
Annex no. 1 Questionnaire – Banks' answers

PART I – GENERAL QUESTIONS ADDRESSED TO ALL BANKS

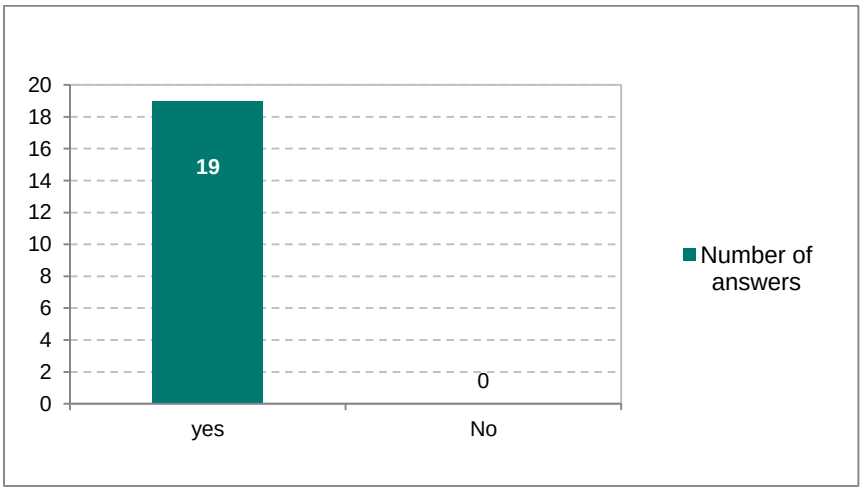
1. Is your bank a participant in the instant payment system / systems currently operating in Poland?



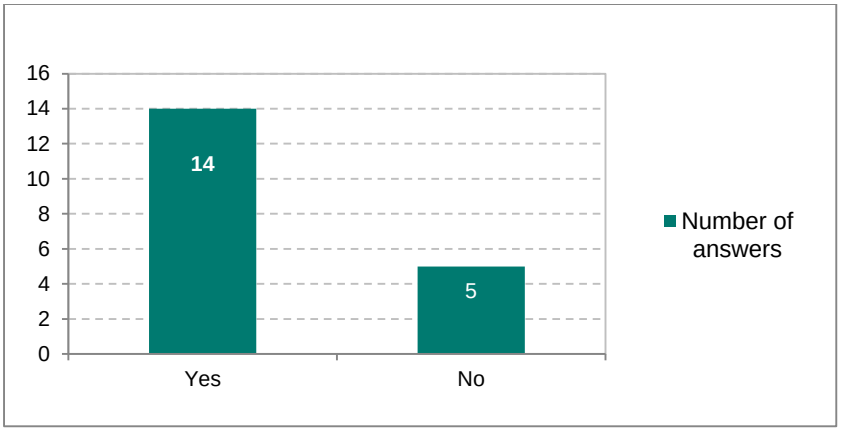
2. In your opinion, is there demand for the operation of instant payments system currently in Poland?



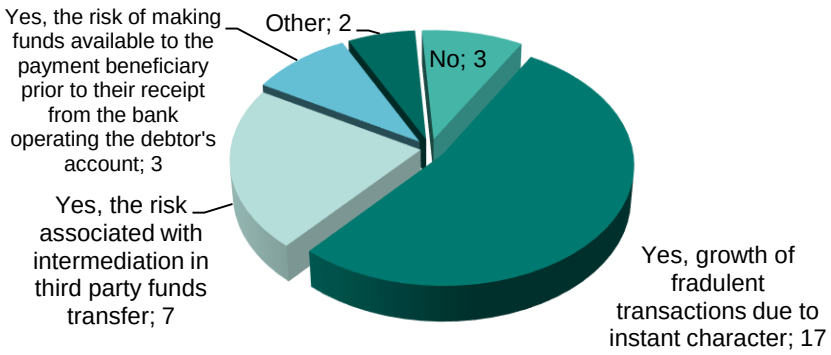
3. Are there any benefits arising from participation in the instant payments system from the point of view of your Bank?



4. Are there any weaknesses of participation in the instant payments system from the point of view of your Bank?



5. Do you perceive any risks on the system participant's side (bank-payer or bank-creditor/) arising from making payments through the instant payments system?



6. What factors determined your Bank's decision to participate or not to participate in the instant payments system?

Accession of the bank to the instant payments system resulted from the need to:

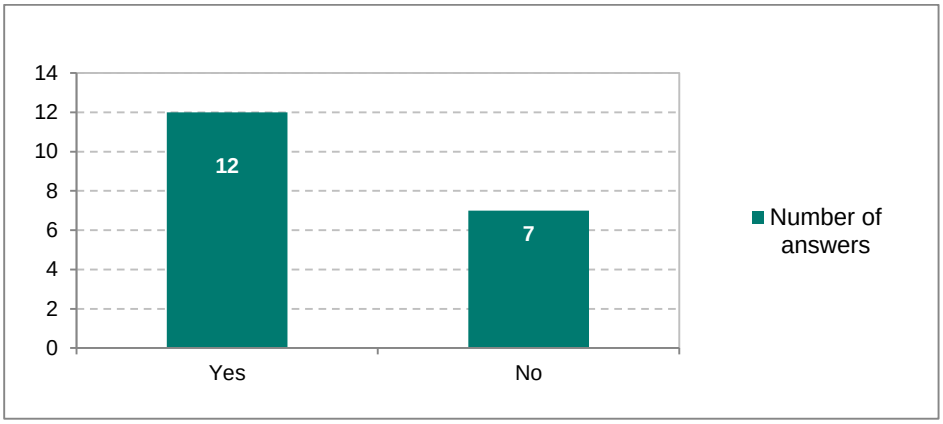
- extend the bank's offer;
- increase the bank's competitiveness;
- meet clients' needs;
- gain new source of income;
- accelerate clearing.

Banks do not accede to the instant payments system due to:

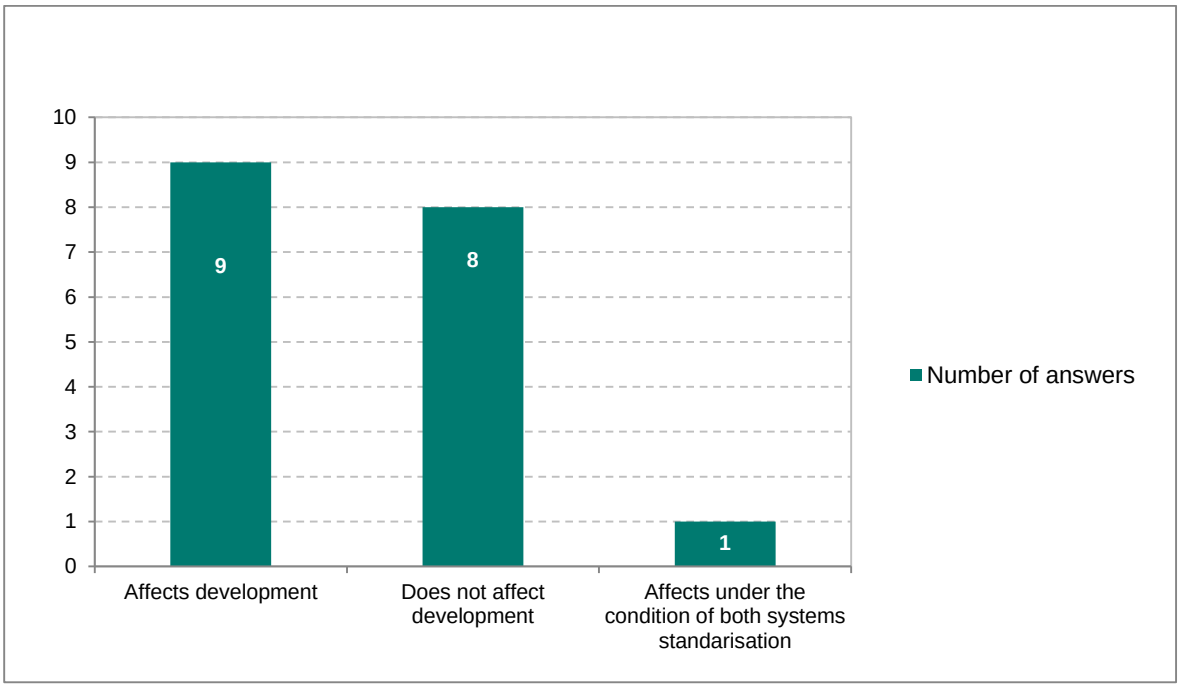
- limited IT design resources;
- costs associated with building and performance of the system;
- existing limited demand;

- technical conditions.

7. Do you perceive the need to improve operating rules of the instant payment system / systems currently operating in Poland?

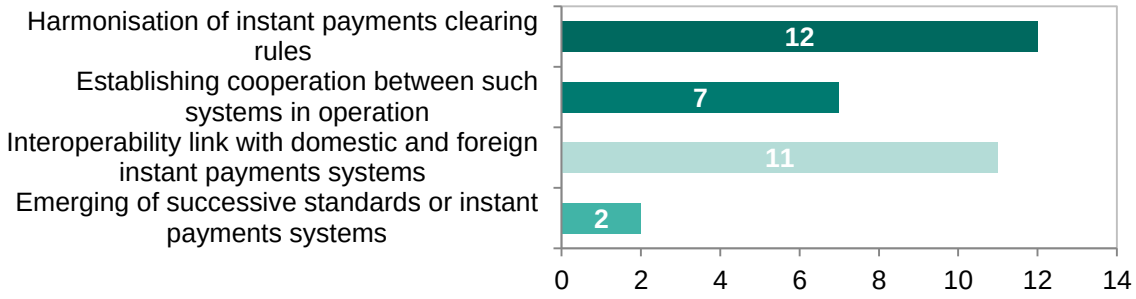


8. In your opinion, does the parallel operation of two instant payments systems in Poland support a faster development of this segment of the payment market (through the growth of competition) or, on the contrary, does it contribute to market fragmentation?

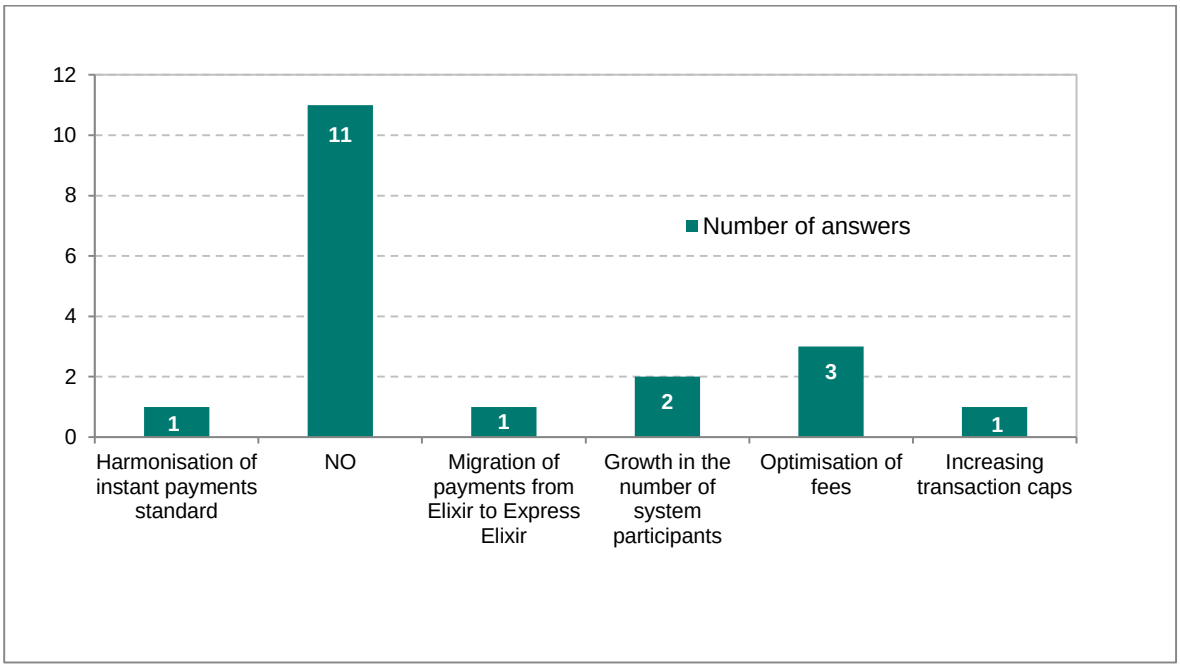


9. In your opinion, should the development of the instant payments system in Poland be associated with the following events:

   - establishment of consecutive schemes or systems of instant payments?
   - interoperability link with domestic and foreign instant payments systems?
   - establishing the cooperation between operating systems of this type ?
   - harmonisation of instant payments clearing rules, e.g. through the development of a single common scheme of clearing for this kind of payments at a national level?



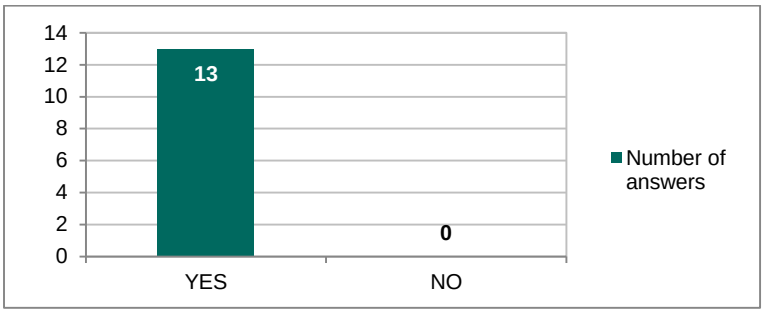
10. Do you have any suggestions, comments or observations concerning the subject of instant payments systems?



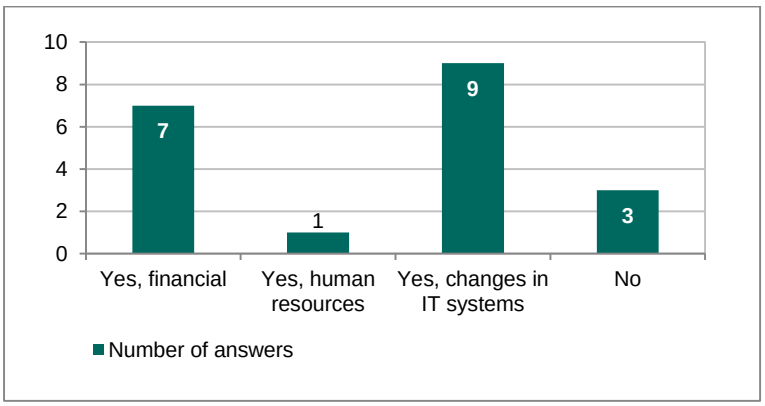
PART II – QUESTIONS TO BANKS –INSTANT PAYMENTS SYSTEMS PARTICIPANTS

One of the banks did not answer this set of questions due to the relatively short, in its opinion, period of operation of this service in the bank.

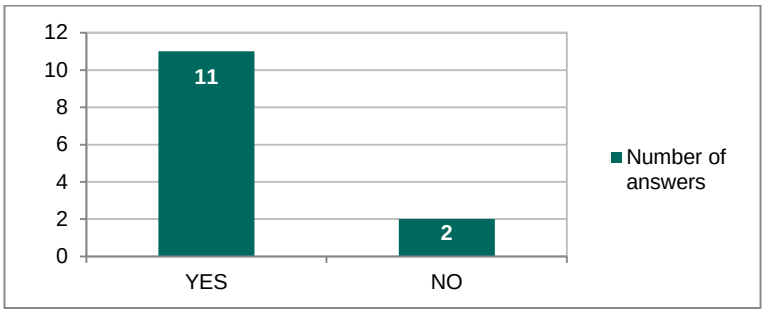
11. Does participation in the instant payments system increase your Bank's competitiveness?



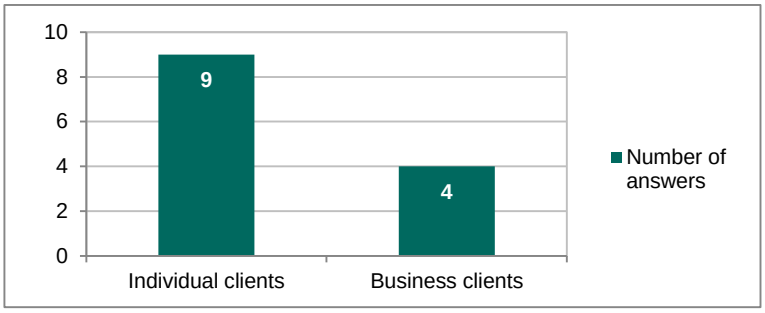
12. Did accession to the instant payments system require your Bank to incur high expenditures (e.g. financial, human resources) or to perform significant changes in the IT systems of your Bank?



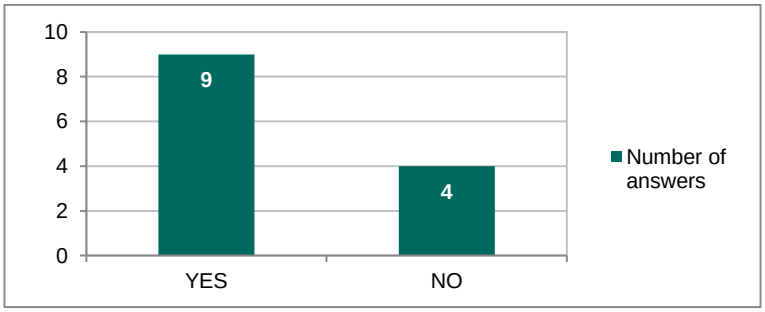
13. Does your Bank enable sending orders through instant payments systems to both individual and business clients?



14. What kind of clients send the highest number of instant payments through your Bank?



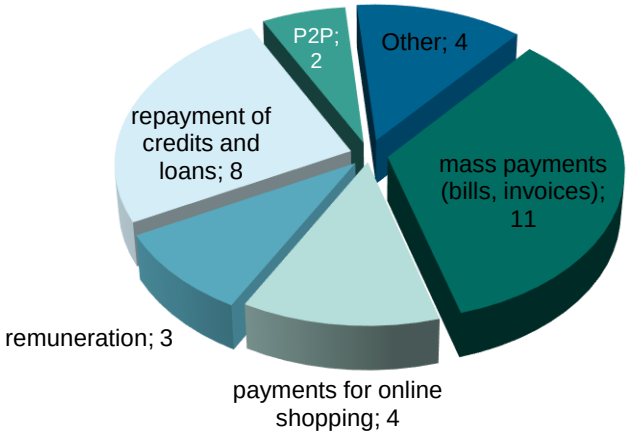
15. Do clients of your Bank actively use the functionality for sending instant payments?



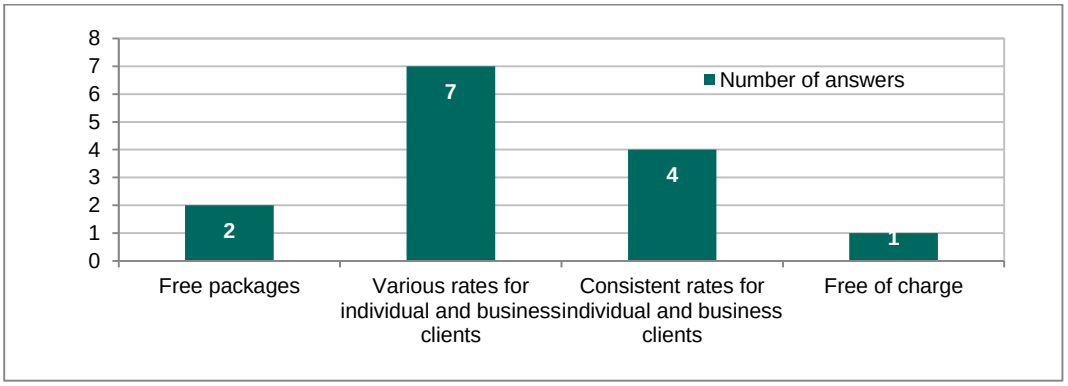
16. What is the share of instant payments in total payments executed by your clients (in terms of quantity and value)?
    - 0 – 5%
    - 5 – 10%
    - 10 – 15%
    - Other (state the level)

    The respondents (13 banks) chose the first answer, i.e. 0 - 5%.

17. What kind of payments are most commonly executed by your Bank's clients through the instant payments system/systems?
    - mass payments (invoices, bills)
    - payments for online shopping
    - remuneration
    - credits/ loans repayment
    - tax, administrative payments
    - P2P
    - Other (state what)



18. What is the pricing policy of your Bank in relation to instant payments?
    Do you offer, e.g. packages of free transfers, various fee rates for individual clients and business clients?



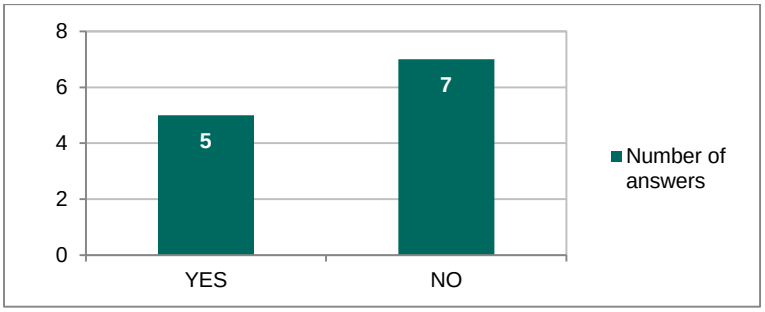
19. What is the level of fees for executing payments through the instant payments system/systems by your Bank's client?

Fees charged by banks are very diversified, ranging from PLN 0.00 to PLN 40.00. The level of commission charged depends on:

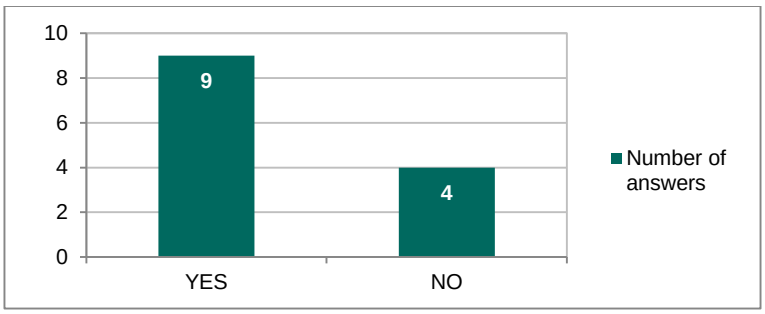
- type of client:
  - individual,
  - business,
- payment method:
  - Internet,
  - telephone,
  - branch,
- and, to a lesser extent, the amount of the payment. Large-value orders are more expensive.

The lowest fee will be paid by individual clients, from PLN 0 to 10, mostly PLN 5. The highest amount of commission is charged to corporate clients, up to PLN 40. Transfers via the Internet are the cheapest. For making and instant transfer in the branch, clients will pay up to PLN 20.

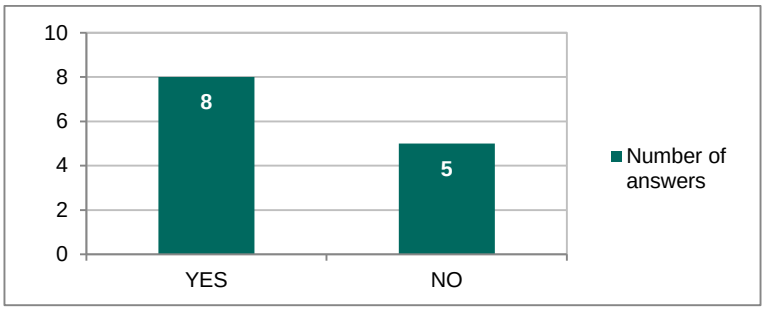
20. Is the pricing policy of your Bank in relation to instant payments offered to clients strictly linked with costs incurred by the Bank due to participation in this type of system (e.g. the policy of covering costs by revenues)?



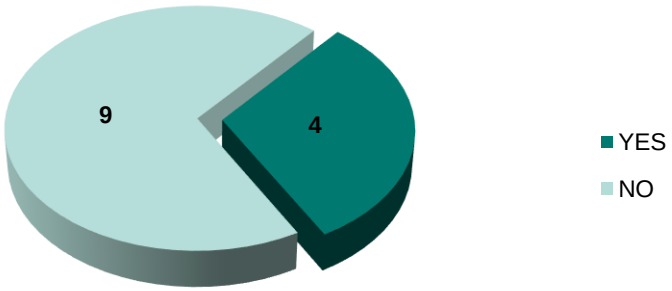
21. Are costs incurred by you due to participation in the instant payments system higher than in other retail payments systems?



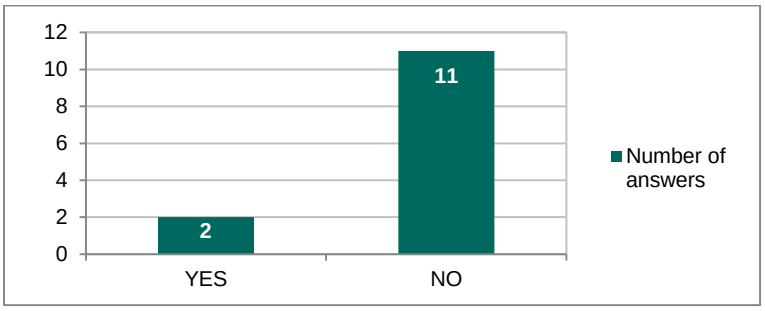
22. Do you treat this product as an exclusive and, consequently, more expensive method of payment execution, or as a typical transfer?



23. Do you intend to additionally promote the use of this channel of payment transfer by clients, e.g. through reducing or total waiver of fees for execution of such transactions?



24. Do you expect migration of payments so far settled in other systems to the instant payments system/ systems in the future?



25. If you participate in more than one instant payment system, what is the reason?

Due to the fact that the above question refers to only two banks covered by the survey, their answers, in accordance with Article 38 item 2 of the Act of 29 June 1995 on public statistics (Journal of Laws of 2012 item 591, uniform text) cannot be published in this summary.

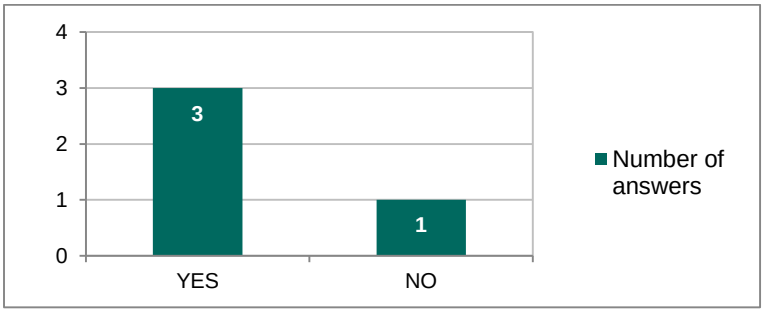
PART III – QUESTIONS TO BANKS-NON-PARTICIPANTS IN INSTANT PAYMENTS SYSTEMS

26. Why isn't your Bank a participant in the instant payments system?

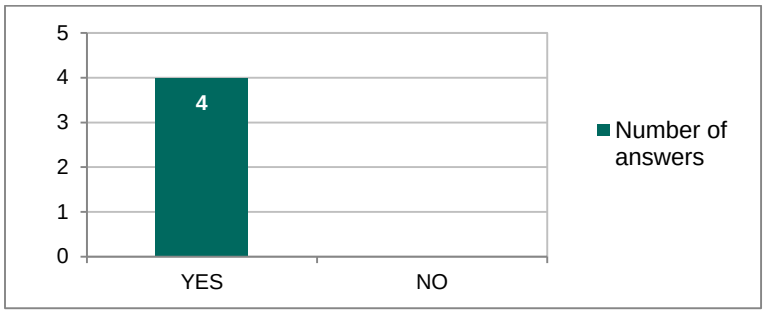
Banks do not accede to the instant payments system due to:

- limited IT design resources;
- costs associated with building and performance of the system;
- existing limited demand;
- technical conditions;
- additional operating risks.

27. In your opinion, are there any external or internal barriers or circumstances which determine your Bank's decision not to be a participant in the instant payments system?



28. Does your Bank plan to become a participant of the instant payments system?



Annex no. 2 Part I Comparative summary of selected instant payments systems operating in Poland and in the EU

Country	United Kingdom	Denmark	Sweden	Poland	Poland
System name	Faster Payments Service	Straksclearing	Betalningar i Realtid (BiR) (Payments in Real Time)	Express Elixir	BlueCash payments system
Entity in charge of the system	Faster Payments Scheme Ltd (non-profit organisation)	Danish Bankers Association	Bankgirot (Swedish clearing house owned by 7 commercial banks)	KIR S.A.	Blue Media S.A.
System operator	Vocalink Ltd	NETS	Bankgirot	KIR S.A.	Blue Media S.A.
Role of the central bank	1. Settlement agent. 2. Overseer. 3. Trustee institution.	1. Settlement agent. 2. Overseer.	1. Cooperation in system creation. 2. Settlement agent. 3. Overseer.	1. Overseer. 2. Trustee institution.	1. Overseer.
Date of launch	May 2008	November 2014	November 2012	June 2012	November 2012
Method of performing clearing & settlement in the system	System with deferred net settlement performed in the central bank 3 times during the operating day (7:00 a.m., 1:05 p.m., 3:45 p.m.).	System with deferred net settlement performed 6 times during the day in the central bank based on dedicated sub-accounts (settlement accounts) operated by the central bank at the main bank's RTGS account.	System based on the deposit model (prefunding). The source of liquidity are the funds deposited on the escrow account of system operator operated by Swedish National Bank in the RTGS - RIX system, i.e. in the central bank money.	System based on the deposit model (prefunding). The source of liquidity are the funds deposited on the escrow account of KIR S.A. operated by NBP in the SORBNET2 system, i.e. in the central bank money.	System with deferred net settlement performed in the commercial bank on the next calendar day (D+1) with the use of the central settlement account operated for Blue Media S.A. in the commercial bank, acting as the settlement agent.
Types of operated payments	1. Credit transfers. 2. Standing orders. 3. Forward-dated payments.. 4. Direct corporate access payments.	Credit transfers.	Individual credit transfers executed via smartphones – Swish application	Credit transfers.	Credit transfers and cash payments.

Annex no. 2 Part I Comparative summary of selected instant payments systems operating in Poland and in the EU

Country	United Kingdom	Denmark	Sweden	Poland	Poland
Method of payment initiation	Smartphone (mobile payments), telephone, internet banking, bank's branch. Direct corporate access payments are performed through a dedicated solution, the so-called Secure-IP solution, in which messages have the same structure as in the BACS system.	Internet banking	Mobile application for smartphones.	Internet banking, bank's branch, telephone.	Internet banking, bank's branch, telephone.
System availability	24/7/365	24/7/365	24/7/365	As a rule, 24/7/365, however, some banks do not ensure 24h access, e.g. switching off the system for the weekend and offering it to corporate clients only.	As a rule, 24/7/365, some banks do not ensure 24-h access, e.g. switching off the system for the weekend.
Speed of payment execution	Several minutes in the case of direct participants. Maximum 2 hours in the case of indirect participants. The process of confirmation of payment receipt by the beneficiary's bank lasts up to 15 seconds, from the moment of making the payment by the bank of payment sender.	Several seconds.	15 seconds.	Up to a dozen or so seconds.	A dozen or so seconds (10-15 sec)
Types of participation	1. Direct. 2. Indirect in correspondent form.	1. Direct. 2. Indirect.	1. Direct. 2. Indirect.	Direct.	1. Direct. 2. Cooperating banks.
Applied payment messages	ISO 8583	ISO20022	ISO20022	ISO20022 (additional possibility of using the CSV format based on Elixir system format).	ISO20022
Transaction amount limits	GBP 100,000 (PLN 527,000) However, in practice all banks apply much lower limits (in particular, for retail clients such limits amount to GDP 25,000 max.).	DKK 500,000 (approximately PLN 280,000) Banks may set lower limits.	None	PLN 100,000	PLN 20,000

Country	United Kingdom	Denmark	Sweden	Poland	Poland
Specific features of the system	In order to guarantee the settlement of the system, participants concluded a special additional agreement, i.e. Liquidity and Loss Share Agreement (LLSA). It regulates the rules of loss coverage and ensuring liquidity in the system in the case of disruptions in payment execution by one of the system participants. In the Bank of England, a dedicated fund is maintained for securing financial resources in case of lack of liquidity of any of the participants. The total amount of collaterals submitted by participants must cover 100% of the net sender cap of the largest system participant submitting payments. In the system, caps related to the maximum debit position of the participant in the clearing cycle are also applied – in the case of exceeding the cap, the payment is rejected by the system;	The settlement is performed in connection with two other payments systems whose operator is NETS. Funds deposited on sub-accounts of banks designed for the settling of instant payments are classified by the central bank as the reserve requirement.	System dedicated to P2P mobile payments processing.	Operation of the system is based on a deposit model (prefunding) with the central role of the settlement account supplied by participants with the amounts declared by them which, within the limits defined in the system, simultaneously determine the liquidity of individual participants and a participant's units in the system. The settlement account operated in the SORBNET2 system for KIR S.A. is an escrow account. Planned implementation in 2015 of P2P mobile payments based on the so-called alias base maintained by PSP within BLIK system. The sender's Bank may use base collections of the Elixir system while displaying the receiver's bank name.	The BlueCash payments system makes it possible to accept a payment order both from a sender acting as a client of a system participant and a sender acting as a client of a bank which is not a system participant, and to accept orders by both a receiver acting as a client of a system participant and a receiver acting as a client of a bank which is not a system participant.

Annex no. 2 Part II Comparative summary of selected instant payments systems operating worldwide

Country	Australia	Switzerland	South Africa
System name	New Payments Platform (NPP)	Swiss Interbank Clearing (SIC)	Real-Time Clearing - RTC
Entity in charge of the system	12 institutions – members of the NPP – will act as the entity controlling and managing the clearing platform (including the Reserve Bank of Australia) (the so-called common utility).	Swiss National Bank	Pasa, the Payment System Management Body
System operator	The operator and entity responsible for building the NPP clearing platform is the SWIFT organisation. The operator of the FSS module, where settlement will be performed, is the Reserve Bank of Australia.	SIX Interbank Clearing Ltd (SIC Ltd)	BankservAfrica (Clearing house)
Role of the central bank	1. Cooperation in system creation. 2. Settlement agent. 3. FSS module operator. 4. Overseer.	1. Owner and entity managing the system. 2. Settlement agent. 3. Overseer.	1. Settlement agent.
Date of launch	Planned implementation – mid-2017	June 1987	March 2007
Method of performing clearing & settlement in the system	Real-time settlement system. Payments are settled in the basic clearing module whereas the settlement is performed in the dedicated module operating at the RTGS system of the central bank.	Real-time settlement system, RTGS type.	Clearing is performed on a net basis. Settlement of the system is performed every hour in the central money bank.
Types of operated payments	In the initial phase of its performance, the system will only operate credit transfers.	1. Retail customer payments (the sender and the receiver are not banks) – credit transfers. 2. Interbank payments (the sender and the receiver are banks-participants of the system). 3. Service payments (payments initiated by such entities as the securities settlement system, or Swiss National Bank which has the right to debit the account of one participant and credit the account of the other participant).	Credit transfers.
Method of payment initiation	At the moment – lack of information concerning the payment initiation method	Internet banking, bank's branch, telephone.	Smartphones – mobile payments, internet banking.

Country	Australia	Switzerland	South Africa
System availability	24/7/365	24/7/365 The clearing day starts at 5:00 p.m. and ends at 4:15 p.m. on the next day.	As a rule 24/7/365, however, it depends on individual participants.
Speed of payment execution	The process of payment processing shall last 3 seconds maximum whereas its settlement – an additional 1.5 seconds. Crediting the payee's account may take a little longer.	In real time.	Up to 60 seconds.
Types of participation	1. Direct. 2. Indirect.	Direct.	Lack of detailed data on participation.
Applied payment messages	ISO 20022	SWIFT FIN	ISO20022
Transaction amount limits	No information is available concerning plans related to the application of transaction amount limits in the NPP system.	None.	Until 4:00 p.m. – ZAR 5 million (approximately PLN 1.45 million), after 4:00 p.m. – ZAR 250,000 (approximately PLN 7,000)
Specific features of the system	Payments will be transferred to the clearing module through *overlay services* or through system participants holding open accounts in the central module of the RITS and in the FSS module, who will be able to send orders directly to the clearing module, without the participation of *overlay services*. Payments are first cleared directly between two participants on a clearing platform, and then their settlement is performed in the FSS module operated at the RTGS system of the central bank.	In the system, three threshold hours for submission of orders apply, the so-called *cut-off times*. The first cut-off time is set at 3:00 p.m., the second – at 4:00 p.m., whereas the third one – at 4:15 p.m. The period between individual cut-off times enables the participants to acquire potential additional liquidity for the settling of transactions waiting in the queue. During this time, further submission of orders to the system by participants is also possible. After 4:15 p.m. all non-settled payments waiting in the systemic queue are cancelled and the procedure of operating day closing starts.	Payments in the system are mainly performed by means of generally available smartphones, which contributes to the growth in banking penetration ratio of South African citizens, which is relatively low.

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