The experience with payment system reform in Bulgaria

Alexander Zinzarski

Introduction

Starting in 1990, more than 25 countries in Central and Eastern Europe and the former Soviet Union faced fundamental structural changes not only in the financial markets, but in their overall political, social and economic structures. In fact, many systems of national importance had to be built from scratch rather than reformed: creating a system from scratch may indeed be termed an extreme example of reform.

The above statements were particularly valid for the banking systems in those dramatically reforming countries. As is well known, the socialist type of centrally planned economy provided for a single-tiered or mono-banking system. In such cases the central bank was usually the only commercial bank as well, and the payments running across the country were in fact intrabank payments between different branches of the same bank. Settlement did not exist.

Building a two-tiered banking system and an appropriate and sophisticated interbank payment and settlement system was indeed an extreme example of reforming the existing environment – very close to the case of building from scratch.

Facing such a situation, in which the normal continuation of processes is missing and a long series of radical steps needs to take place, we recognised that, first of all, as a general policy issue we had to make a choice between at least three possible ways of carrying out this major reform: the easy way; the fast way; and the right way. This policy task was, furthermore, complicated by the fact that these three ways may be defined or appear in practice in different manners.

A common example of the easy way would be to try and "buy" a payment system. This way of thinking sounds reasonable to many specialists and managers, who believe, or rather hope, that this process can be undertaken on a cash-and-carry basis by large, or very large,

commercial entities from the developed countries. Many tenders have been carried out during the last few years based on this kind of logic. The easy way usually either fails or produces poor results and takes much longer than predicted.

An example of the fast way could be: we will do it by ourselves, but why reinvent the wheel when we can copy one-for-one an already developed, sophisticated payment system. This approach does not take into account local circumstances, especially in a transition period, and it usually also fails and is not fast at all. Adopting something one-for-one, but in a completely different environment, takes more effort and is, in the end, more time-consuming than doing something from scratch.

There is always, of course, a right way. The problem has to be defined. We recognised that a simple definition, like for instance the counter-concept of the easy and the fast ways, is useful and works to a certain extent, but is not enough. So, in addition to the latter, we decided from a policy point of view to define the right way as an adaptation of three basic principles. It should be pointed out that these principles were derived from the country-specific environment in Bulgaria, and not from any internationally valid theory or standards.

Principle 1 is in fact the answer to the following question: what is the payment system? Is it the set of legislation, regulations, standards, critical decisions, bilateral and multilateral conventions and message system? Or it is rather the set of computers, software and telecommunications? We came down in favour of the first answer to this question. Establishing this already defines the areas of greatest efforts, attention, commitment of the institutions, etc.

Principle 2 relates to the choice of a competitive, administrative or cooperative model. As a major policy issue, seven years ago we decided in favour of the cooperative model. Its basic characteristics are well known. A big surprise for us was that it was easier to establish and start running the cooperative model than to maintain it continuously. This is a very important policy issue and at the same time represents a real danger of compromising the reform.

The third principle is that any domestic interbank payment and settlement system must be efficient from both the investment and the expense point of view. This must apply to the overall as well as the detailed design of the system. The design must be based on a series of analyses, which should include the full set of appropriate dimensions and

their values such as the number and types of banks, the number and infrastructure of branch offices, the payment instruments and frequency of their use and the available telecommunications infrastructure.

The Bulgarian interbank payment and settlement system BISERA (Banking Integrated System for Electronic Transfers) was developed during 1991–92. It has been in operation since October 1992. Two major upgrades were implemented in June 1995 and May 1996, defined as BISERA 2 and BISERA 3. The development of the BISERA system was based on the three major principles, on which a consensus was reached by the central bank of Bulgaria – BNB (Bulgarian National Bank) – and the community of Bulgarian commercial banks. The following is a brief description of the way the Bulgarian interbank payment and settlement system was reformed and developed during the last seven years.

Implementation of Principle 1

A domestic interbank payment and settlement system is founded chiefly on the relevant legislation, regulations, standards, critical decisions, bilateral and multilateral conventions and message system, and to a much lesser extent on computer hardware and software.

Legislation

The legislation governing BISERA is based mostly on the Law on the BNB, the Law on Banks and Credit Activity and the Bulgarian Commercial Law. Of importance in this context is the almost full independence of the central bank from the Government and even from Parliament (the BNB reports to Parliament but independently formulates and implements monetary policy). It has the right by law to define efficient payment mechanisms in the banking system. The BNB has full powers of supervision of the banks, and has sole legal authority to issue all types of bank regulations and standards, including for the payment and settlement system.

Regulations of the payment and settlement system

The regulations governing the BISERA payment and settlement system are based mostly on the "Ordinance of Payments" issued by BNB. It

covers the basic definitions of the payment instruments, settlement principles, finality and irrevocability of payments, the set of basic rights and obligations and other general rules in the payment process, including definitions of the bank accounts through which payments are performed.

Standards

The BUS (Banking Unified Standard) standards are based on the Ordinance of Payments and define and describe all concrete steps in the payment process. They form an integral part of the Ordinance of Payments and can be modified and/or extended by the issue of new standards by the BNB at any time.

Critical decisions

As a general approach to the design of the basic principles and rules of BISERA we adopted the well-known method of defining questions and trying to find the best possible answers for the particular banking and economic environment in Bulgaria. For this purpose, during 1990 a special formal unit, approved by the BNB and called the PMU (Project Management Unit), was established and drew up a BISERA questionnaire with about 100 questions and answers, considering a number of key areas including legal regulations, banking regulations, regulations for the execution of payments, regulations on settlement and conventions, security, information and technological regulations, requirements for the telecommunications technology, risk management and the tariff system.

Out of the long list of issues to be addressed, a special set of so-called critical decisions were isolated and dealt with at senior management level, including the PMU and the BNB management. Some of the major questions we resolved are discussed below.

Should the interbank clearing procedures be separated into a high-value/low-volume mechanism and a low-value/high-volume one?

It was decided not to build two separate systems. One of the possible reasons why developed countries have separate systems is that 5% of the number of payments often represents 95% of the value of interbank funds transfers (the so-called 5 to 95 rule). This reflects the importance in these countries of financial market transactions involving securities, money

market instruments and foreign exchange. Also, the number of retail transactions in interbank arrangements in these countries is very high, reflecting the rapid move from cash to non-cash payment methods by bank customers. However, the risk of systemic disturbances in (net) settlement arrangements for low-value transfers (e.g. unwinds) is probably limited in developed countries since banks there are typically liquid. Finally, it may be economic to have separate systems in developed countries even if it means greater investment and operating costs and introducing separate risk control mechanisms.

The situation in Bulgaria, and possibly in most other transition countries in Eastern Europe and the former Soviet Union, is different. In Bulgaria, for instance, 80% of the volume of interbank funds transfers represents 20% of the total value of transfers, so that difficulties with high-volume clearings can have more significant effects on the settlement of interbank fund transfers. Also, the liquidity position of banks is low and can cause funding problems even for relatively small interbank settlement obligations. Financial market activity, for instance securities market trading, will take some time to develop in countries in transition. Finally, the total number of interbank payment transactions is low (in Bulgaria 60,000 to 100,000 per day) compared with developed countries. There are no clear reasons to expect that volumes will rise to levels seen in developed market economies. Investing in separate interbank payment systems for the present and foreseeable volumes would therefore be uneconomic.

The lack of experience with risk management in Bulgaria – as elsewhere in Eastern Europe and the former Soviet Union – is obvious. This is a key concern of central banks in countries in transition given the high level of domestic inflation and the need for a restrictive monetary policy stance, the chronic illiquidity of banks and the bouts of financial speculation and the resulting difficulties with bad loans. This calls for simple and efficient procedures to deal with payment system risk which are easier to implement in an integrated system.

Should a net or a gross settlement procedure be applied?

It was decided to opt for a gross settlement system to be operated with (overnight) batch processing (with settlement in the morning of the next day). We analysed the advantages and disadvantages of net and gross

settlement in terms of liquidity requirements, systemic risk and settlement finality. The following considerations influenced our decision:

- introducing well-defined bilateral credit limits in a net settlement system would be almost impossible since this would require a high degree of automation and sophisticated information technology including real-time information flows between the banks as well as experience in monitoring intraday positions;
- introducing overall multilateral limits for participants in a net settlement system would be equally difficult;
- it could not be expected that banks would be able to quickly integrate their payment business with their treasury and internal risk management;
- it was doubtful whether banks could be persuaded to enter into loss-sharing agreements (for instance on the lines of those of CHIPS);
- the BNB was not willing to accept the risk related to net settlement procedures (e.g. standby liquidity facilities to "lubricate" the system);
- it was not recommendable to allow information on non-final transactions (i.e. those not settled during the day) to be transmitted to the receiving banks so that the ultimate recipient of the funds could credited;
- given the chronic illiquidity of banks reliance on unwind provisions to deal with settlement failures would be useless;
- it would be possible and helpful to reduce the disadvantage of gross settlement procedures in terms of higher liquidity needs by designing a proper queuing mechanism even if the system was not working in real time but through file transfers one or more times during the day;
- it would be possible and helpful to split large-value transfers into two or more parts without requiring too much sophistication on the part of the banks;
- withdrawal of transactions before settlement would be possible only in real time or with multiple transfers during the day;
- it was possible to provide for on line monitoring of banks' current account with the central bank even with multiple file transfers during the day;
- it would be quite possible to define and apply different priorities for payment transactions apart from the first-in-first-out (FIFO) principle in a batch processing environment.

Thus, for our environment, and presumably as in many Eastern European and former Soviet Union countries, we came to the conclusion that while there were almost no possibilities to reduce the disadvantages of a net settlement scheme in the near future, it was quite possible to limit the disadvantages of gross settlement mechanisms to an acceptable degree from the beginning.

Should all payment instruments be cleared and settled through the same mechanism?

We decided yes. It would mean that the system (BISERA) should be devised with a proper message system that would allow the clearing and settlement of different payment instruments.

Should the system allow the transmission of interbank instructions only from one central point (e.g. head office or main data-processing centre) for each bank or should bank branches be allowed to connect?

We opted for the second solution. It was recognised that this would require an appropriate accounting mechanism to keep track of the position of each branch of each participating bank as well as of the overall position of each bank. A properly constructed message system would allow the processing of interbank as well as intrabank transfers.

How long should be the lag between the debiting of the payer's account and the crediting of the payee's account?

It was agreed that the debiting of the payer's account and the crediting of the payee's account should be for the same value date. Payment instructions would be collected on the day prior to the settlement date and processed during the following night (batch). Information on the settled transactions would be available to the receiving bank on the morning of the settlement day with mandatory crediting of the payee's account by 08:00 the next day.

This required specific regulations defining the settlement cycle, the proper definition of the finality of payments and its consequences, a strict schedule for BISERA clearing operations and final settlement in the accounts of the BNB, and the inclusion of penalty provisions in the conventions governing the system.

What should be the operating environment?

It was agreed to construct from the beginning a fully electronic system. The exchange of data media would be used for backup purposes only. A specialised X.25 network was built for the whole banking system, called BANKNET.

Who should operate the BISERA system?

It was agreed to set up a joint stock company – called Bankservice – owned by all the participating banks and the BNB.

Should there be single or multiple verifications of payment messages?

Payment messages would be checked both at the entry point (bank branch) and at the settlement centre. An extended set of verifications would be used (about 120 checks at both levels).

Should priorities be given to payment instructions?

The FIFO rule would be applied for all payments. A court ruling relating to transactions between the BNB and a commercial bank necessitated a strict application of this rule (though it applied to interbank transfers for banks' own proprietary transactions). The FIFO time stamp would be created at the sending bank's branch at the moment of debiting the payer's account.

Conventions

The various conventions governing the system can be distinguished between multilateral (for instance with respect to settlement) and bilateral (e.g. the application of penalties); mandatory (for instance those relating to interbank aspects) and voluntary (e.g. intrabank aspects); and contractual (for instance those involving the banks and Bankservice) and regulatory (e.g. the relationship between the BNB and the banks). All the conventions are reflected in the BUS standards, the BISERA user manual and the contracts between the banks and Bankservice.

Message system

The message system is one of the most important parts of any interbank

payment and settlement system. At the start of live implementation of the BISERA system in 1992 we had a very simple and non-sophisticated message system consisting of about ten different messages only. Furthermore, the messages were fixed-length and did not allow any flexbility or improvement (for instance with respect to input, processing and output information). We faced a great need to improve the message system. The basic question was whether to develop a comprehensive message system (based on S.W.I.F.T. standards, for instance) or to adopt a temporary solution (fast and cheap) and to survive with it until a kind of global European standardised payment and message system was put in place in the future. Our choice was for the temporary solution. This was successfully developed and implemented in 1995.

The message system is based on file transfer technology and has a well-defined organisation and structure. It consists basically of three different levels: fields, messages and segments.

There are twenty different types of field including those for bank codes (choice of six different types of bank code); dates (choice of thirteen different types of date, such as date of document registration, date of accounting, date of creation, deadline date of letter of credit, date of settlement); and account numbers (choice of six different types of account number distinguishing, for instance, bank account numbers for payers and for payees).

In principle messages are split into categories, groups and types. This message system is very flexible. New messages or modifications of the present messages can be created and implemented at any time.

Implementation of Principle 2

A sophisticated domestic payment and settlement system should not (and most probably cannot) be developed, implemented and operated purely by administrative and regulatory procedure and with 100% central bank ownership. It will be much more successful if created via cooperation (including ownership) between the central bank and the community of commercial banks in the country.

Following well-established and successful models from the developed countries (Switzerland's Telekurs and many others), at the beginning of 1989 we took the decision to create a common joint stock company

owned by the central bank and commercial banks and dedicated to the development and operation of the payment and settlement system, banking telecommunication infrastructure and banking automation. This is Bankservice Plc.

To ensure its success, the model we created for this joint venture followed the basic principle of separating the powers and defining the relative independence of the parties involved.

In our case the three different parties have the following independent powers in general: the commercial banks have the right to decide what and how many common interbank payment and information systems are to be developed and operated without competition between themselves, as well as the basic parameters of those systems; the BNB has the right to define and fix all rules of the interbank payment and information systems (it is also the only official issuer of all regulations and standards for those systems); and Bankservice has the right to decide on and implement the technical solutions for these systems. These rights are established in the Statute of Bankservice Plc.

Implementation of Principle 3

A successful domestic interbank payment and settlement system, comprising all the elements referred to in the brief description above (legislation, regulations, standards, critical decisions, conventions, risk management tools, message system, design, application programming, hardware, system software and telecommunications environment) cannot be purchased on a cash-and-carry or 100% turnkey basis.

For the most part, especially as regards the most important regulatory aspect, it should be defined and developed in the country, keeping in mind both specific domestic arrangements and best practice from the developed countries. In this respect, consultation and transfer of know-how are needed and are very useful, but only from companies and/or people with the relevant experience.

The second, also very important, technical part should be analysed, defined, contracted, delivered and installed on a professional tender basis.

Most of the aforementioned major steps were successfully undertaken in Bulgaria during the period 1990-96 with the implementation of the

BISERA 1, BISERA 2 and BISERA 3 systems. As a result, the current BISERA 3 system has the following major characteristics:

- 100% electronic transfer of all payment and information messages through the system. BISERA does not move any paper or media; this channel is tested and available for backup purposes only. All transfers are made via the common X.25 telecommunication network BANKNET, the property of Bankservice Plc. BISERA 3 processes all types of credit and debit payment instrument defined in the Ordinance of Payments.
- There is a two-level system for verification of all payment and information messages, first at the entry points and secondly at the settlement centre, with an extended set of verification checks at both levels: about 120 different checks serve to verify all fields and the total contents of all types of payment and information message.
- Payment and information messages enter the system from branches and/or from the head offices of the banks; a sophisticated set of information about the settlement results is addressed to the supervisory and monetary policy departments of the BNB.
- Settlement is on a gross basis. Every individual payment transaction is directly booked to the current (reserve) accounts of the two banks involved with the central bank: debiting the account of the payer's (sending) bank and crediting the account of the payee's (receiving) bank. The overdraft limits for each bank defined daily by the central bank are calculated automatically.
- There is an efficient queue management system based on a FIFO stamp for each transaction initiated. At the moment every payment transaction is generated on the spot and the payer's account at the bank (bank branch) is debited. Non-settled transactions are queued as so-called waiting payments, kept in the settlement system and processed again the next day according to their FIFO priority.
- The maximum duration of the payment process for each individual transaction, including debiting of the payer's account with the payer's bank and crediting the payee's account with the payee's bank, is 24 hours for credit transfer type transactions (payment orders), and 48 hours for debit transfer type transactions (direct debits, cheques).

Consideration has been given to further adapting the BISERA system (BISERA 4). The following changes have been agreed on to date:

- Final settlement at the central bank at around 4 p.m.
- Continuous transfer and settlement of payment transactions during the day, in two stages:
  - multiple or continuous file transfer;
  - transaction processing.
- Online monitoring of the current (reserve) accounts of the banks with the central bank.
- Advanced cash management at the head offices of the banks and the central bank.
- Possibility of withdrawing transactions before the final settlement cut-off by means of well-established revocability definitions and procedures.
- Continuous operation of the system 24 hours a day, seven days a week.
- Extending and improving the message system.
- Improving the queue management system to include different priorities.