The Russian Payment System

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Russia has embarked on a difficult transition from a monopolized command economy to a market economy. A necessary condition for a successful transition to an efficient market economy is the development of banking and financial markets. A crucial aspect of the development of Russia's domestic banking and financial markets is the payment system, which is used by enterprises and individuals to discharge obligations incurred in a market economy.

This paper describes some of the key concepts that underlie the operation of payment systems in market economies and applies these concepts to Russia's transition to a market system. Attention is given to the effects of payment operations, especially central bank payment operations, on the public's balance sheet. The respective roles of the private and public sectors in payment system development and the importance of marketplace competition in determining payment services are discussed. Special attention is given to the need for a large-ruble transfer system. Although the primary focus of the paper is the development of Russia's domestic payment system, attention is also given to the proposed new Interstate Bank, which is initially being designed as a multilateral clearinghouse for central banks to facilitate settlement of cross-border payments in the Commonwealth of Independent States.

There is no one pre-existing payment system model that can be prescribed for Russia. Many variables, some of which are unique and which involve local customs, public preferences, and legal norms,
must motivate the development of each country's payment system. Accordingly, this paper does not attempt to prescribe a particular model of the payment system for Russia. Rather, it attempts to illustrate the practical significance of key concepts of a payment system as they might be applied in Russia. The concepts described here, however, may be considered to be "universal," as they have been developed over the past several years by bankers from the developed economies of Europe, North America, and Asia. Accordingly, they are building blocks for the payment system in any developed, or developing, economy.

**Key Concepts of a Payment System and Their Application**

The payment system is the apparatus through which obligations resulting from economic activity are discharged by transfers of monetary value. Obligations can be discharged through the payment system using cash (ruble currency) or ruble deposits held in banks. For payments made using bank deposits, it is necessary to use some form of payment instrument—such as a paper or electronic credit or debit payment—to move funds.

For a debit payment, such as a check, the receiver of money (the payee) initiates an instruction to the bank holding the deposit of the sender of money (the payor), ordering the paying bank to pay. This is done by presenting a check, which must be honored by the payor, who is the customer of the paying bank, once the check is authenticated. For a credit payment, such as a payment order, the party making the payment initiates an instruction to his bank to pay money to the intended receiver by initiating a payment order. Obviously, the owner of the deposit held at the paying bank, which is used to make payments, has more control over the funds when a credit payment, such as a payment order, is used.

When using deposit money in banks to make payment, the process for discharging an obligation can be divided conceptually into two parts. The first part is clearing, the process by which payment information is conveyed between the payor and payee and between the banks holding the accounts of the two parties to the transaction. Once a payment is initiated, clearing should take place quickly and reliably.

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2This basic process would also apply to a payment demand order, the instrument that was commonly used in Russia for interenterprise payments until the summer of 1992. Payment demand orders are discussed below.
in order to maximize efficiency and minimize financial risk as funds are being transferred. Because they provide account services to the public, commercial banks play an important role as intermediaries in the clearing process. It is not essential, however, that banks actually perform all of the physical processing associated with the clearing of payments. This function can be equally well performed, and indeed frequently is performed, by data processing service bureaus.

The second part of the process for discharging an obligation using deposit money in banks is settlement, in which the actual transfer of monetary value associated with the payment is made. Banks, of course, play the key role in settlement because it is through the accounts held on their books that the transfer of monetary value occurs. Commercial banks settle for the nonbank public and sometimes for other banks with which they have correspondent account relationships. The central bank, where all commercial banks hold accounts, is often used by commercial banks as the settlement entity for interbank transfers.

A key settlement concept is that of finality. A final payment is an irrevocable and unconditional transfer that discharges the obligation to make the payment. Payments made by the irrevocable transfer of balances between accounts that commercial banks hold with the central bank are said to be made in central bank money. Because balances held with the central bank are free of credit risk (because the central bank by definition cannot fail), use of balances held with the central bank is the surest form of payment.

Settlement of payments occurs on either a gross or a net basis. In gross settlement, monetary value is transferred for the total amount of each individual payment. In net settlement, the banks exchanging payments offset the amounts they are due to pay to and receive from each other, and a single debit (net debtor) or credit (net creditor) position is calculated for each bank, across all the payments subject to the netting. The banks participating in the netting will transfer only the monetary value necessary to settle the net obligations, which is much less than the total of all the underlying, gross obligations. The offsetting of payable and receivable amounts can occur between two parties, called bilateral netting, or among many parties, called multilateral netting. Multilateral netting is the basis for the settlements that are resulting from transactions on a number of financial exchanges.

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and clearinghouses in Russia today. Accordingly, an understanding of netting and the benefits and risks it entails is a very important public policy issue in Russia.

Netting has a number of benefits, including economizing on the balances that need to be maintained to settle payment flows. At the same time, multilateral netting, in particular, results in a mutualization of risk among the participants in the netting arrangement. The failure of one net debtor bank to meet its settlement obligation arising from the multilateral netting can lead to the failure of the entire settlement, and consequently a failure to settle all of the gross payments included in the netting calculation. The mutualization of risk resulting from multilateral netting therefore has special systemic risk implications, which are described below.

The settlement process gives rise to certain risks that must be managed by the parties to the payment transaction. These risks include liquidity risk and credit risk. Liquidity risk is the risk that the counterparty in a transaction who owes funds will not meet his obligation on time, thus reducing the liquidity of the recipient of the payment who may, in turn, have planned to use the funds to make further payments. Credit risk is the risk that the counterparty in a transaction who owes funds will not meet his payment obligation because of insolvency, leading to an actual loss of funds by the intended recipient of the payment.

Of primary interest from a public policy standpoint is a third type of risk—systemic risk—which includes the possibility that one bank’s inability to settle its payment obligations will cause other banks to be unable to meet their obligations, either to their customers or to other banks. In the case of mutualized risk, especially that resulting from multilateral netting arrangements, systemic risk involves “domino” or “knock-on” effects, with adverse consequences for the entire financial system and possibly the economy at large. Multilateral netting of payments must be accompanied by sound risk control procedures that help control systemic risk. Such risk control procedures should be embodied in legally binding contracts among the participants in the netting arrangement.4

Clearing and settling payments can be complex, especially in a large country such as Russia, where there are many banks distributed over a wide geographic area. An efficient payment system therefore

requires a high degree of cooperation and coordination among banks, which usually occurs through a clearinghouse. A clearinghouse is a legal entity, owned and controlled jointly by its member banks, whose primary function is to coordinate the exchange and settlement of payments among its members. The activities of the clearinghouse might be limited simply to coordinating the physical exchange of payments among banks, for example, by organizing efficient and speedy transportation of payment documents. Clearinghouses may also, however, provide processing services to their members, in which they may operate fairly large data processing and data communications systems to process payment instructions. Clearinghouses sometimes serve as settlement agents, acting on behalf of their members to calculate net settlement positions for an exchange of payment orders.

Special payment arrangements may be organized to support settlement resulting from trading in securities, foreign exchange, or commodities, to ensure that there is a value-for-value transfer at the designated time of settlement. The simultaneous transfer of value, say, money for securities, minimizes the risk to the parties in the transaction that they will give something up without receiving something in return. Payment versus delivery refers to a clearing and settlement mechanism that synchronizes delivery of the financial or physical asset underlying the contract with the payment for the asset. Because buyers and sellers in emerging markets will demand a reliable and safe settlement mechanism as a condition of their participation in these markets, payment versus delivery systems are important even in the early stages of development of Russia’s payment system. Indeed, settlement for purchases of government securities in the newly introduced public auctions conducted through the Moscow International Foreign Currency Exchange is based on the concept of payment versus delivery.

**Balance Sheet Effects of Payment Operations**

The timing of balance sheet credits and debits resulting from payments can have an important effect on the amount of liquidity supplied to the economy by the banking system. In the vernacular of banking, the balance sheet effects of differences in the timing of credits and debits from payments is referred to as payment system float.

If credits are systematically made before offsetting debits, the banking system will be providing liquidity to the economy, essentially in
the form of loans made through the payment system. Conversely, if debits are systematically made before offsetting credits, then liquidity will be withdrawn from the economy. In general, an efficient payment system should synchronize, on average, the timing of credits and debits arising from payments, thereby having a neutral overall effect on liquidity. Because central bank accounting practices for payments affect the liquidity of the entire commercial banking system, and thereby the nonbank economy, these practices are treated here in detail.

When the central bank operates part of the payment system and clears payments between commercial banks, as does the Central Bank of Russia, its balance sheet can reflect float vis-a-vis the commercial banking system. If the central bank credits the account of the bank receiving funds before it debits the account of the bank paying funds, debit float is created and the central bank increases the reserves of the commercial banking system, thereby increasing banks' lending capacity. Conversely, if the central bank debits the account of the bank paying funds before it credits the account of the bank receiving funds, credit float is created and the central bank decreases the reserves of the commercial banking system, thereby reducing banks' lending capacity. Similarly, if commercial banks debiting and crediting their customers' accounts do not make both settlement entries for a payment simultaneously, the balance sheets of commercial banks can reflect float vis-a-vis their customers.

The predominant payment instrument used in Russia today is the payment order. Under current procedures, the Central Bank of Russia debits the account of a commercial bank originating the payment order (note that the commercial bank has already debited its customer) upon receipt of the payment order. Some payment orders may take days or even weeks to reach the central bank office holding the account of the commercial bank receiving the payment order on behalf of its customer, who ultimately receives the payment, and the offsetting credit is not made until that time. Consequently, the Russian banking system generates a large amount of credit float as a result of current accounting practices combined with inefficiencies that result in long clearing times for payment instruments.

These accounting practices begin with the Central Bank of Russia and are carried forward by commercial banks. The result is a substantial reduction in commercial bank reserves and thereby a withdrawal of liquidity or working capital from the Russian economy, simply as a result of payment system operations. Moreover, because clearing times are quite variable, changing partly in response to random transportation delays, a good deal of uncertainty is introduced to the com-
mercial bank reserve management process. This uncertainty complicates Russian monetary policy, as it makes it more difficult for the Central Bank of Russia to estimate the total amount of reserves it supplies to, and that are demanded by, commercial banks.

The drain of working capital from the Russian economy resulting from systematic debiting of payments earlier than crediting, which is a direct result of the Central Bank of Russia's policies, can be ameliorated by adopting funds availability schedules for payments. Funds availability schedules would be calculated based on detailed analyses of clearing patterns between Central Bank of Russia and commercial bank offices throughout the country, resulting in estimated clearing times between pairs of offices. For any particular pair of offices, the debit to the account of the bank originating a payment would be deferred by the amount of time it is estimated to take to deliver the payment to the central bank office that credits the payment to the account of the commercial bank receiving the payment. On average, credits and debits would offset, and float would be reduced to near zero, leading to an increase in working capital for the Russian economy.5

Role of the Public and Private Sectors

Orderly development of Russia's payment system will benefit from a clear delineation of the roles of the private and public sectors. In this regard, the payment needs of the nonbank public will ultimately best be met by private organizations, such as commercial banks. Payment services are an essential component of the deposit and money management services that banks offer to their customers, including both enterprises and individuals. As in other markets, competition in the market for payment services will ensure that the public has access to the best available services produced as efficiently as possible. Moreover, a variety of payment services will be offered from which the public can choose.

Public policy responsibility for the payment system usually rests with central banks. Central banks are naturally interested in the payment system because it is a key component of the operation of financial markets and has important implications for the trading efficiency of the real economy. Moreover, the payment system is one of the first

5 This program was organized by the U.S. Federal Reserve with the cooperation of several other central banks, and sponsored by the International Monetary Fund and the Organization for Economic Cooperation and Development.
places where financial stress will manifest itself as firms in financial difficulty fail to meet their payment obligations. Of particular concern to central banks are clearing and settlement in financial markets where trading results in large payment obligations, such as the securities, commodity, interbank funds, and foreign exchange markets. It is in markets such as these that netting is often employed and that systemic risk is greatest. Indeed, multilateral netting is being widely employed by the regional financial exchanges and clearinghouses springing up in many regions throughout Russia.

The central bank will also participate in the payment system as a provider of interbank payment services. The stage of development of a nation's payment system will influence the extent to which the central bank needs to play a role in operating the interbank payment system. In the early stages of a market-based payment system, which is the situation in Russia today, it is necessary that the Central Bank of Russia play an active operating role. This is because the central bank has a functional network of offices and processing facilities in place that can tie the national economy together. The Central Bank of Russia also holds accounts for all commercial banks, which can be used for interbank settlement. In this manner, the Central Bank of Russia performs some of the functions of clearinghouses.

An active role by central banks in the operation of the payment system should be undertaken in a manner that does not restrict potential competition and that allows for the possibility of turning over operations to the private sector. Along these lines, there are important benefits from pricing the payment services that central banks provide to the banking industry. Prices for payment services should be set to recover at least the full cost of production of these services. Competition for interbank payment services will then be encouraged, or at least not discouraged, and efficiency and innovation will be stimulated. Moreover, because the users of services will have to pay fees based on the cost of production, these services will be used more wisely and will not be wasted. Overuse of a "free good" is a natural consequence of the subsidy provided by offering services without charging a fee.

As is the pattern in most former command economies, every branch of every bank holds an account with the central bank. An early priority in Russia is to introduce a streamlined accounting relationship between the Central Bank and the commercial banks, whereby the commercial banks assume greater responsibility for reserves and liquidity management and consolidate their account relationships with the Central Bank of Russia.
The Central Bank of Russia has recently formed a steering committee on the payment system with representatives of both the Central Bank and the commercial banking system. Advisors to the Central Bank from official institutions, such as the International Monetary Fund, the World Bank, and cooperating central banks will participate in the work of the steering committee. The primary role of the steering committee will be to evaluate major reform initiatives in the Russian payment system to encourage and coordinate worthwhile initiatives. Formation of this steering committee, which began its work officially in the summer of 1993, is a potentially major positive development that will help rationalize the collective efforts of Russia’s public and private sectors in achieving reform of the payment system.

As the transition to a market economy progresses in Russia, the operation of the interbank payment system might be organized by commercial banks themselves, through clearinghouses. Clearinghouses are a very important part of a national payment system and should be encouraged to the extent that they adhere to prudential standards of operation. As part of their coordinating role, clearinghouses can develop, propagate, and enforce rules and technical standards for handling payments. A legitimate concern of the central bank, however, is that private consortia of banks not be allowed to turn clearinghouses into exclusive clubs that unnecessarily restrict participation by potential members that meet financial and operational entrance standards. In short, it is not desirable to allow the development of de facto monopolies under the guise of clearinghouses.

The central bank also has a clear supervisory role in the payment system, including supervision of clearinghouses, because the stability of the financial system depends, in part, on the integrity of the payment system. One of the most important central bank oversight functions is to ensure that private participants employ proper measures to protect themselves against payment system risks, especially the risks that arise through participation in exchanges and clearinghouses that use multilateral netting.

### Large-Ruble Transfer Systems

With respect to wholesale payments, commonly referred to as large-value payments, the heart of the banking system in an advanced market economy is its large-value transfer system. The large-value transfer system should provide same-day settlement with finality. Such a system, if properly designed, can increase payment system efficiency and greatly reduce payment system risk.
A same-day settlement system with finality for ruble payments will encourage the development of money markets and contribute to the Central Bank of Russia's ability to perform its monetary control function. By allowing large blocks of money to be transferred reliably and safely on the same day in response to the demand for and supply of liquid assets, liquidity will be readily transferred from surplus to deficit enterprises. In this manner, trading of short-term, liquid funds, probably centered in the interbank market, will develop to help ease the working capital shortages that enterprises face.

Markets for short-term funds exist in Russia today in rudimentary form on some organized exchanges but especially in the over-the-counter market. Limitations on interbank settlement, however, have stunted the development of these markets. For example, minimum maturities for interbank funds and large corporate deposits are measured in weeks, because it may take several days or more to settle a transaction using traditional payment methods when the counterparties are located in the same city. This settlement delay is much larger, and the timing of settlement more uncertain, when the counterparties are located in different regions.

With a same-day settlement system, participants in the interbank funds and corporate deposit markets will be able to shorten the time gap between trading and settlement, providing a foundation for the development of new types of money market instruments that require speedier settlement. Final same-day settlement will also contribute to the development of a securities market, including the market for government securities, by providing an assured method of payment for securities transfers.

An active interbank funds market in Russia will be the primary vehicle used by banks to manage their reserves held with the Central Bank of Russia. Equilibrium between the supply of and demand for bank reserves will be governed by the price of the reserves that banks lend to and buy from each other. This price will be a short-term, probably overnight, interest rate set in the market for bank reserves. This overnight rate on interbank funds will be an important monetary policy indicator to the Central Bank of Russia, revealing how loose or tight the market is for reserves. Combined with the development of a government securities market, an overnight interbank funds market will greatly enhance the effectiveness of new monetary policy tools of the Central Bank of Russia. By buying (selling) government securities, the Central Bank of Russia will be able to add (withdraw) reserves to the banking system, and the effects of its actions will be visible through changes in the overnight rate in the market for interbank funds, which, in turn, will influence other interest rates. The
market for interbank reserves will ensure that the overall supply of reserves is allocated to the banks needing reserves, and thus the effects of purchases and sales of securities will be more predictable. The development of the interbank funds and government securities markets, however, is possible only if a large-ruble transfer system is introduced.

The large-ruble transfer system should be operated by the Central Bank of Russia. It should be a gross settlement system and operate in what computer experts call "real time." Because settlement is gross, that is, payment-by-payment, counterparty credit risk can be assessed directly and final settlement for large numbers of underlying payments need not be delayed owing to concerns about the ability of one institution to meet its obligation, which is a risk in netting schemes.

A central bank gross settlement system operating in real time minimizes the time delay between the initiation of a payment and its final settlement. Of course, the Central Bank of Russia would take on a large burden in operating such a system, as it would guarantee the finality of all payments it agrees to settle. The Central Bank of Russia must be exceedingly careful, therefore, to define and build the operational controls that allow it to manage its credit risk vis-à-vis the users of the large-ruble transfer system.

Development of the Russian Payment System

Payment system development can be explained as consisting of four stages. These stages, which represent different ways to carry out a transaction or market exchange, are (1) barter; (2) cash (physical money); (3) deposit money; and (4) deposit money combined with a credit system. Russia is somewhere between stages two and three—between cash and deposit money. There are, however, clear signs of falling back to stage one—barter. Barter is especially evident in transactions involving firms in different states of the former Soviet Union. Settlement for these cross-border transactions has become more difficult as the ruble zone dissolves and the new countries adopt their own currencies, which are nonconvertible.

8Recent advances in computing and communications technology have significantly reduced the cost barriers to the establishment of real-time computer systems. The skills necessary to apply these techniques in the Russian banking system are readily available in Russia today.
The performance of any payment system that is based upon a monetary unit, whether that unit is in the form of cash or deposit money, depends critically on the public's acceptance of the monetary unit. In periods of high inflation, the value the public attaches to money diminishes, to the point where money loses its usefulness as a store of value and medium of exchange. In these circumstances, public preferences would shift to a more primitive system, based on barter, or a system based on use of foreign currencies. High inflation undermines the public's confidence in a nation's money and leads to use of barter or foreign currency.

An efficient payment system was not important in Russia under state socialism and the old monobank system. Production and the physical flow of goods between enterprises were governed by the state plan. The financial component of the physical flow was simply a record-keeping procedure determined by the product of planned physical units times their respective administered prices. Within the parameters of the physical plan, credit was automatic and payments were assured through the Gosbank. Because of this, enterprises did not need to have a speedy payment system, nor was it necessary to assess the creditworthiness of other enterprises to which goods were sent or from which goods were received.

The Russian payment system at the time of emergence from state socialism was technologically underdeveloped and did not have the institutions and institutional relationships that could respond to the needs of a market economy. In a market economy, the payment system must respond to complex economic relationships in which time is critical. Moreover, the providers of payment services, especially commercial banks, must be prepared to manage the credit risk that arises in connection with meeting the payment needs of their clients. Likewise, the central bank must be prepared to manage its credit risk vis-à-vis the commercial banks to which it provides settlement services.

Three types of payment instruments are used in Russia today: cash, payment orders, and checks. The payment demand order, a debit payment instrument, was traditionally the most heavily used instrument for transferring funds among enterprises. Payment demand orders, however, were forbidden by the Central Bank of Russia beginning in July 1992, owing to the difficulty this instrument caused businesses in managing counterparty credit risk. The Central Bank of Russia, consistent with the prevailing view in market economies, evidently determined that debit instruments are inherently more risky than credit instruments, and for this reason has forbidden their use, at least for large-ruble interenterprise payments.
Almost all retail payments in Russia are made using cash. Although cash has many virtues as a payment instrument, its vulnerability to theft and counterfeiting, unsuitability for making payments over long distances, and awkwardness for large-value purchases, such as consumer durables, are serious drawbacks. Accordingly, Russian consumers need a more efficient payment instrument to supplement their use of cash.

Attempts have recently been made to encourage the use of checks in Russia. In 1992 particular emphasis was placed on the so-called Russia check, which was introduced in the form of a book that had a preauthorized ruble limit placed on each check and on the total number of all checks in the book. The Russia check was offered to the public by the commercial banking system but designed, and its introduction organized, by the Central Bank of Russia. These checks are prepaid and cannot be used for transactions over a certain value. The Russia check was designed to reduce bank overdrafts, which pose an especially great risk in Russia because of the long time it takes to collect a check.

Long collection times have led to serious abuses of the check in Russia. In particular, counterfeiting has proved to be a serious problem with the check, just as it can be a serious problem with cash. The Central Bank of Russia has responded to the rise in counterfeiting by placing severe restrictions on the use of the Russia check, including limitations restricting its use to local areas. Consequently, the Russia check has not succeeded in giving consumers and businesses an effective new payment vehicle.

Successful introduction of checks will require adoption of careful verification methods by those who accept checks for payment, including individuals, enterprises, and banks. For checks to become useful, it is imperative that collection times be shortened so that opportunities to commit fraud are limited. Moreover, the law and its enforcement should be strengthened, if necessary, to deter counterfeiting. Efforts are now under way to pilot a new checking scheme that is based on a carefully constructed set of rules that clearly sets out the rights and responsibilities of the users of checks and the allocation of financial risks among the users of checks. In addition, a speedy collection system based on check truncation is being used in the pilot. This pilot, which involves the Central Bank of Russia and a group of regional commercial banks with electronic data connections to the Central Bank, could provide a breakthrough in efforts to introduce an efficient noncash form of payment for broad use in the economy.
The economy of the former Soviet Union was highly decentralized and determined, to a large extent, by fiat, not by competitive markets. This is reflected in the wide geographic dispersion of the component elements of the manufacturing and assembly process for goods, creating a high degree of economic interdependence among regions of the country. These economic interdependencies remain even though the political structure has changed and several separate countries have emerged from the former Soviet Union. Although it is likely that these economic interdependencies will change over time in response to market forces, the current reality is that there are unusually high payment flows between and among the states of the former Soviet Union that reflect traditional economic patterns.

The foregoing discussion of the domestic payment situation in Russia generally applies also to the other states of the former U.S.S.R., as these nations until recently all functioned under the same monobanking regime. Many of the payment patterns that have been described also apply to interstate payments within these states. Now, however, special difficulties have arisen about the timeliness and reliability of interstate payments. The interstate payment difficulties are attributable not only to the physical operation of the payment apparatus, which needs improvement, but, in addition, to inefficiencies in interbank settlement, that is, the transfer of value among banks to achieve settlement for interstate payments.

A discussion of interbank settlement for interstate payments must take into account two factors. First, the Russian Federation has a structural surplus in its trade with the other republics of the former Soviet Union. Accordingly, over the long run, trade positions must come into balance or settlement for interstate payments between Russia and the other republics must be financed by sources outside the interrepublican trade matrix. Second, many of the countries that have emerged from the former Soviet Union have left, or are in the process of leaving, the ruble zone and are well on their way to adopting their own currencies. Ruble deposit money held with commercial banks located in these different countries no longer trades at parity. Accordingly, there is a de facto separation of most ruble currencies, which further complicates interbank settlement. In essence, payment and settlement for transactions between economic actors in the states of the former Soviet Union pose issues similar to those arising in connection with cross-border, multicurrency payment and settlement in other nations, including those with convertible currencies. An
important difference, of course, is that these republics' currencies are not convertible.

In January 1993, the heads of state of the majority of countries that are members of the Commonwealth of Independent States signed an agreement to form an Interstate Bank. At least initially, the primary function of the Interstate Bank will be to serve as a multilateral clearing and settlement organization for the central banks of the countries that are members. The monetary unit that will be used to settle payments through the Interstate Bank will be the Russian ruble. The central banks of the countries that are members of the Interstate Bank will hold deposits with it denominated in Russian rubles. Besides credit obtained directly from the Central Bank of Russia, which is the central bank of issue for the settlement currency, these deposit balances can be increased only by transfers among member countries (buying and selling of bank funds held on deposit at the Interstate Bank) or by purchasing Russian rubles in the foreign exchange market.

The Interstate Bank holds considerable potential to facilitate the efficiency of interstate payments through multilateral netting. At the same time, the mutualization of risk that arises in connection with any multilateral netting arrangement must be carefully managed. Further, clear arrangements must be set up by which the currencies of the member countries in the Interstate Bank can be converted into Russian rubles in the market.

The operation of the Interstate Bank will necessarily depend on efficient settlement facilities, that is, large-value transfer systems operated by the Central Bank of the Russian Federation and the central banks of the countries that are members of the Interstate Bank. The large-value transfer systems are needed for the settlement of foreign exchange deals involving the Russian ruble and other "soft" currencies in which trade is denominated and for which payment and settlement will ultimately occur through the Interstate Bank.

As currently envisioned, the Interstate Bank will support settlement only for payments channeled through the clearing systems operated by the central banks of the member countries of the Commonwealth of Independent States. In fact, however, "international" correspondent banking relationships are being established within the Commonwealth of Independent States, and in some cases these private arrangements account for a large share of cross-border payments. A pattern that appears to be emerging is for trade taking place under official, or governmental, agreements to be settled through the central banking system with private trade being settled through the
commercial banking systems. At some point, the institutional benefits of an organized multilateral clearing and settlement arrangement, such as that supported by the Interstate Bank, should be opened to the commercial banking system.

Conclusions

The development of the payment system is a necessary part of the development of Russia’s banking and financial markets, including the interbank funds and government securities markets. Payment system development is also necessary to support efficient trading in goods and services. Consequently, payment system development needs to be a high priority in Russia’s transition to a market economy. Enhancing cross-border, multicurrency settlement involving the soft currencies of the states of the former Soviet Union through new, specialized institutions such as the Interstate Bank also warrants early attention.

Russia’s current payment system is still based primarily on cash, and it has shown signs of moving to barter and use of foreign currencies. Increasing the operational efficiency of the current, paper-based payment apparatus and adopting accounting methods that reduce the drain on working capital resulting from the operation of the payment system are high priorities. Use of availability schedules and the formation of clearinghouses are straightforward ways to address these challenges. Finally, an electronic large-value transfer system based on real-time computer processing, operated by the Central Bank of Russia, will contribute substantially to the development of the markets for interbank funds and government securities and will enhance the Central Bank of Russia’s ability to carry out monetary policy.

The methods for enhancing the Russian payment system described in this paper are well within the current technological and financial capabilities of the Russian banking system. A clear delineation of the roles of the private and public sectors will help stimulate these enhancements.
Comment

David B. Humphrey

The two papers, "Payment System Reform in Formerly Centrally Planned Economies" and "The Russian Payment System," are both concerned with the need to improve the operation of, and reduce the risk on, large-value payment systems in formerly centrally planned economies. To note only the most important aspects, improvement of domestic large-value payments in these countries is needed for efficient enterprise exchange, safe interbank payments, development of a liquid money market, mobilization of domestic savings, and improved monetary control.

The first paper by Folkerts-Landau, Garber, and Lane provides an excellent discussion and summary of the many complex issues associated with payment reform, the best I have seen in a single paper. The second paper by Summers focuses directly on the issue of payment reform in one country—Russia—and contains a rich discussion of the operational details of how large payments are actually made today in a formerly centrally planned economy. Overgeneralizing, it could be said that the first paper is essentially theoretical whereas the Summers paper is essentially practical, although both range over the same broad topics associated with payment reform.

Reform of large-value payment systems in formerly centrally planned economies involves a trade-off of "trust" (a willingness to extend credit) with "discipline" (the need to settle credit extensions in good funds). But trust creates moral hazard from credit extensions whereas discipline is associated with reducing systemic risk from a settlement failure.

Both papers ask an important question: What is the appropriate division of payment risk among (1) individual banks on a payment network, (2) all banks together on the network, and (3) the government or the central bank? Although it explicitly poses this question and notes many of the issues involved, the Folkerts-Landau paper does not provide an answer. And, although the Summers paper does provide an answer to the question, the logic is not spelled out. My task will be both to attempt to answer the question and to spell out the logic. In doing so, I shall note some specific areas where one or the other of the papers could usefully be clarified.

Three Types of Payment Finality

When large values are being transferred, it is absolutely essential that the parties to the transaction clearly understand when, and the
conditions under which, the transaction is final or cannot be reversed. In practice, there are a number of points at which a payment may or may not be final once funds are sent and the receiver is notified on a large-value payment network.

First, there is sender finality, where the sender cannot reverse the transaction once it has been made. All major large-value net or gross settlement networks have this type of payment finality. Second, there is settlement finality, which has been and still is an important, unresolved, and contentious issue on a number of existing large-value net settlement networks in Europe. Settlement finality seeks a method to "guarantee" that the movement of settlement funds will not be reversed and that the settlement will not be unwound and recalculated. Settlement finality can be guaranteed by the central banks, as is typical on a gross settlement network (such as Fedwire in the United States or the Swiss Interbank Payment System—SIC—in Switzerland) or by the posting of high-quality, liquid collateral that could be used to obtain funds necessary to cover the failure to settle by a participant on a net settlement network (such as CHIPS in the United States). While many large-value networks have settlement finality, others do not.

Last, there is receiver finality. Receiver finality exists when a receiving bank cannot take back funds received that customers are allowed to use either before or after settlement. No major network has receiver finality, largely because receiving banks do not wish to give up their right to attach funds received for a customer in one account to cover possible overdrafts of that same customer in a different account or to compensate the bank for a loan default by the customer.

"Guidelines" for Assigning Risk

The question posed above deals with the assignment of the risk of, and hence responsibility for, settlement failure on either a net settlement or a gross settlement large-value payment network. In this regard, it is useful to outline some guidelines for risk assignment applied in the insurance industry and found in case law. In general, liability should be borne by the party in the best position to (1) absorb, spread, and/or insure against the cost or risk of settlement failure; (2) detect, control, and prevent settlement failures; or (3) provide good funds for the payments being sent, thereby ensuring settlement. The first guideline is, in effect, a "deep pockets" approach to risk assignment. It would be unacceptable on a payment network because it implies that the ability to pay among sending bank, receiving bank, or central bank determines the liability for a settlement failure. Because
the party with the deep pockets may not also be the party that creates the risk, moral hazard is created. Such an approach to risk assignment therefore would increase the probability of a settlement failure, worsening the situation rather than improving it.

The second guideline is more reasonable in that the party best able to intervene and prevent a settlement failure is the party to which the liability would be assigned. In practice, this party is most likely the receiving bank. The receiving bank is in a good position both to assess the likelihood that the sending bank may fail to settle, if this likelihood is deemed to be strong, to intervene by not releasing to the customer funds received before settlement. If the sending bank fails to settle, the receiving bank thus need not be placed in the illiquid position of having already released funds to the customer and be required either to retrieve these funds immediately or to find financing elsewhere to fund a settlement shortfall. Although seemingly reasonable, this guideline has not been the one most followed on payment networks: it places liability for a settlement failure on the party that did not cause the failure and so, like the first guideline, creates moral hazard.

The third guideline is the one typically applied on payment networks because it can address the moral hazard problem. Sending banks are typically required to pay for their net debits by obtaining covering funds (on SIC and BOJ-NET in Japan) or pay for central bank credit extended to cover their net debit (on Fedwire in 1994). The exception is CHIPS, where receiving banks provide collateral to cover a settlement failure. Receiving banks on CHIPS have made a credit judgment to receive funds—up to a real-time enforced bilateral net credit limit—from each of the other participants on the network.

In sum, sending banks have usually, but not always, been assigned the major responsibility for "guaranteeing" against a settlement failure. On some other large-value networks, where senders or receivers do not yet play this role, the central bank—by design or default—is assigned the risk of settlement failure, creating moral hazard.

Settlement Finality Versus Daylight Overdrafts

On a net settlement system, payment debits and credits are made against a zero balance account and so daylight overdrafts are an inherent operational problem on those networks with end-of-day settlement. If settlement is next day or next week, overnight overdrafts will exist as well. But even with daylight (or overnight) overdrafts, there are ways to ensure settlement finality.
On net settlement systems, there can be shared sender responsibility for a settlement failure, as currently exists on CHIPS. Participant banks on CHIPS post high-quality, liquid collateral with the central bank based on a pro rata share of each bank's internally determined limit on intraday credit that it would be willing to extend to a sending bank. The total collateral posted is set so that it covers the largest net debit of any one participant. In addition, there is a "cap" or maximum value established for each participant's net debit. This net debit cap is enforced on a real-time basis so that the collateral posted on CHIPS would always be sufficient to cover the failure to settle of any one participant. This point is unclear in the Folkerts-Landau paper, which states "... in the event of a large failure to settle, [the posted collateral] ... may provide CHIPS insufficient resources to settle, so its promised 'settlement finality' is not foolproof." What the authors mean to say is that in the event of multiple failures to settle on the same day—a very unlikely event—the posted collateral may or may not be sufficient, depending on the net debits of those participants who fail to settle. This is the only settlement risk that currently exists on CHIPS, and the consensus view has been that this remaining risk is acceptable considering the added costs of other settlement finality alternatives.

One alternative collateral arrangement that eliminates even the small remaining settlement risk on CHIPS would have required each sending bank to post collateral sufficient to cover its own net debit, and where the real-time net debit cap would be set equal to this posted collateral for each participant so it could not be exceeded. It was determined that the total posted collateral under this alternative would have been so large as to affect significantly the liquidity of the participant banks and reduce earnings. A large portion of the high-quality, liquid government security assets that could be used as CHIPS settlement collateral were already tied up as assets required to be pledged against state, local, and federal government deposits at participant banks. Thus only a portion of the government security assets on bank balance sheets were actually free to be used as CHIPS collateral. And, of that portion that was free, most of it was already used to collateralize overnight federal funds borrowings through repurchase agreements (repos).

Repos are a cheaper source of overnight borrowings than are standard federal funds because they provide collateral for the overnight loan. Thus, transferring the collateral used for repos to CHIPS would incur a yearly extra funding cost equal to the spread between the repo and the federal funds rate times the value of the collateral transferred. In addition, if this available collateral was less than needed, partici-
pant banks would have to reduce either government deposits (freeing up collateral that could be shifted to CHIPS) or future lending to business (to purchase more securities to be used as CHIPS collateral). In either case, earnings would have fallen. Government deposits are a cheaper source of funds than are the purchased funds that would replace them, and business loans, even after adjusting for the risk of loan losses, earn a higher return if only because their longer maturity is associated with a historically upward-sloping yield curve. For these reasons, it was cost effective to reduce the CHIPS collateral requirement from that of covering the sum of all participant net debits to the level that would cover the largest possible net debit of a single participant.

On a gross settlement system the central bank typically provides for settlement finality. If reserve or clearing balances are insufficient during the day, payments are still made over Fedwire with the central bank providing the daylight credit necessary to transfer the funds and simultaneously guarantee the settlement. The cost of providing settlement finality here will involve (in 1994) a price for the total value of central bank daylight credit provided, which is the sum of all bank net debits, rather than a price applied against only the largest net debit of a single participant. In this sense, pricing daylight overdrafts is very similar in concept to having all network participants provide collateral for their own net debits, a solution seen to be more expensive than the shared posting of collateral on CHIPS.

Finally, on the SIC gross settlement system, reserve or clearing balances are always sufficient to effect settlement, otherwise the payment is not made. The cost of an SIC system appears to be the opportunity cost of holding idle reserve or clearing balances, a cost which, if only an overnight funds market exists, equals the overnight funds rate and is therefore quite high.

Fortunately, cheaper alternatives exist, and I will note three of them. First, payments can be netted outside a payment network with the underlying payment instrument acting as collateral for the transaction. This approach has been taken for settlement of bankers' acceptances and commercial paper in the United States (and may later be applied to bank certificates of deposit). Second, payments for future delivery of, say, foreign exchange can be netted by contract novation so that only the net amount due at the settlement date is transferred over a large-value payment network rather than the sum of all the previous gross positions. These types of "institutional adjustments," along with others of a similarly creative nature, reduce substantially the need to purchase priced central bank daylight credit or to hold idle balances for clearing purposes. They also serve to
reduce the realized cost of settlement finality for banks on these networks.

Third, partial payments may be instituted when a given single payment would be so large as to be rejected on SIC (owing to insufficient balances) or would lead to use of priced daylight credit on Fedwire. Partial payments are, in certain instances, already being used on SIC. Partial payments save costs by reducing the level of idle balances needed to make payments on SIC and, at the same time, reduce the probability of a payments "gridlock" associated with holding lower balances. Such an arrangement requires some added expense for reconciling payment flows to determine when the entire payment has been received, however. But this expense is not large and already exists for government security transfers on Fedwire where partial delivery of securities against payment has for some time been required (to reduce the cost of securities failures), and the maximum limit on a securities transfer is $50 million. Such developments could usefully be noted in the Folkerts-Landau paper, which focuses on the possibility of a payments gridlock on SIC, or on Fedwire with binding net debit caps, and does not mention that the gridlock issue is already being dealt with effectively.

**Settlement Finality in Formerly Centrally Planned Economies**

The above discussion makes reasonably obvious the choice of how best to implement settlement finality in formerly centrally planned economies. As noted, on net settlement systems such as CHIPS, daylight overdrafts are inherent, but the systemic risk of a settlement failure can be "controlled" by the posting of high-quality, liquid collateral. The CHIPS solution has the lowest cost because it conserves the need for collateral, compared with an arrangement where each sending bank posts collateral sufficient to cover its own net debit. However, three factors argue against the use of the CHIPS solution for formerly centrally planned economies.

First, there is a severe lack of high-quality, liquid collateral in these economies that can be used to guarantee settlement finality on a net settlement system. Second, the CHIPS solution requires receiving banks to be able carefully and accurately to determine the credit risk involved in receiving funds from other network participants. At present, both the information and the credit assessment ability needed for this are severely constrained. Third, the shared posting of collateral to cover the maximum net debit of any network participant, while con-
serving the need for collateral, still contains systemic risk in the event of multiple failures to settle on the same day. Although this residual risk is judged to be exceedingly small for banks on CHIPS, it would not be so judged for banks in formerly centrally planned economies. For these reasons, the CHIPS solution and the alternative arrangement of each sending bank posting collateral sufficient to cover its own net debit are both likely to be unworkable until a sufficiently large, sophisticated, and liquid money market arises in these countries.

This leaves a gross settlement system for large-value payments in formerly centrally planned economies. This is the same conclusion reached in the Summers paper, probably for the same reasons. Summers, however, seems to favor a Fedwire type of solution, as he talks about a gross settlement system run by the Russian central bank with finality and "... operational controls that allow it to manage its credit risk [or overdrafts]." In my view, Fedwire may not be a useful model. Overdrafts should not be free, and the provision of priced central bank credit is unlikely to lead to the types of low-cost institutional changes in payment practices envisioned in the United States. It has been determined that institutional change in the operation of the interbank federal funds market could virtually eliminate daylight overdrafts, and hence central bank risk, on Fedwire. Pricing daylight credit is expected to lead to such overdraft-reducing behavior as the substitution of term for overnight federal funds and the use of continuing contracts and rollovers in place of one-day funds. The possibility also exists of netting using contract novation for multiple gross flows outside a payment network, to be settled by a single net transfer over Fedwire. These and other responses to pricing require a sophisticated money market, a precondition not met in formerly centrally planned economies.

For these reasons, the most workable outcome consistent with minimizing systemic and central bank risk is likely to be a gross settlement system similar to that of SIC. The potential problem of payments gridlock, as noted earlier, can be addressed using a system of standardized partial payments and should not therefore pose a practical problem and, in any event, would allow lower reserve or clearing balances to be held than would otherwise be necessary. In the longer run, as solvency information on banks in these economies becomes more accurate, credit assessment abilities improve, and sophisticated money markets develop, these countries can consider potentially lower-cost collateral arrangements similar to those that now exist on CHIPS.