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World Bank Discussion Papers

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Meeting the Needs of Emerging Market Economies

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FOREWORD

Until very recently, interest in payment system issues has often been of secondary importance in the financial sector development agenda. This reflected a view that the payment system is essentially a mechanical process and that nothing more than an automation of commercial banks' back-office support function is required to achieve the goal.

Today, there is a growing perception in both the World Bank and its client countries that such a limited view underestimate the role payment systems play in the process of sound financial market development. Hence, payment systems modernization is becoming one of the priorities that needs to be addressed at an early stage to eliminate constraints for the later stages of financial sector development.

The Bank's experience in several transitional and developing countries, both successful and unsuccessful, sheds light on what need to be addressed and answered in payments projects, why and how. These valuable experiences must be effectively translated into an improvement in other payment systems projects. This paper by Mr. Setsuya Sato and Professor David Humphrey is one such effort. It was originally prepared to be presented at the World Bank Program on "Payment Systems in Financial Sector Development," which was jointly organized with the Federal Reserve Bank of Richmond under the initiative of the Financial Sector Development Department in April 1995. Given the positive response to this paper, and the ensuing debate it provoked, we decided to publish this paper to a wider audience.

We are sure this paper will prove to be of great interest to those who specialize in payment systems issues, as well as those with a broader interest in financial matters during transition and development.

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ABSTRACT

Market economies rely on the payment system to facilitate trade and exchange among enterprises and between enterprises and consumers in product markets. At the same time, the payment system is also used to transform domestic and international savings flows into productive investments through financial markets. Emerging market economies face the difficult task of attempting to simultaneously promote the development of product and financial markets, improve the efficiency of production, and mobilize domestic savings. These and other tasks are made easier when a cost-effective payment system exists which is responsive to user needs.

The primary issues associated with transforming and improving payment systems in formerly centrally planned and emerging market economies are discussed in this paper. Emphasis is placed on meeting the payment needs of consumers and enterprises, as users of payment services, and on the role played by the banking system and the central bank as supplier and/or regulator of payment services. The indirect role of country size, banking structure, and institutional framework are also discussed. These influences are illustrated by outlining the evolution of payment arrangements in various market economies.

The essential differences in payment systems between centrally-planned and market economies are outlined and both short-term and longer-term methods to improve these payment systems are noted. Distinctions among various payment instruments are made clearer by modeling the payment cycle and choices regarding alternative suppliers of payment services and the tiering of payment processing arrangements are discussed. Market needs in an evolving payment system are outlined by illustrating the different paths taken in Europe and the U.S. in the evolution of their payment systems. The benefits and costs of paper versus electronic payments, the role played payment pricing and float, and the interplay between commercial banks and the central bank in this process are also discussed. The paper ends with a survey of the many issues needing to be raised –from payment instrument design to cost recovery– to provide users with an effective payment system.

CONTENTS

INTRODUCTION

One of the challenges faced by transitional and developing countries is to transform and improve, both structurally and behaviorally, their payment system in order to meet the needs of emerging market economies. Financial institutions and markets rely on the payment system to cost-effectively mobilize, allocate, and transform domestic and international savings flows into productive investments. The payment system also transfers value from households and enterprises when goods and services, produced by these investments, are consumed. The efficiency of both of these tasks is highly dependent on the existence of a convenient, cost-effective, and low risk means of delivering payment information and transferring value from one entity to another, point-to-point, i.e., a payment system. The three essential elements of a payment system are:

(i) the initiation of instructions by a debtor to make a payment to a creditor (by check, bank or postal GIRO, debit or credit card, telephone call, or some other means);

(ii) the transfer of payment information (by post, courier, or electronic means) among banking institutions enabling the payor's institution to debit the payor's account and the payee's institution to credit the payee's account; and,

(iii) the settlement of the transfer of funds between banking institutions, usually through accounts held by banks at the central bank.

The purpose of this paper is to outline and discuss the major issues associated with transforming and improving payment systems in emerging market economies. A nation's payment system is intimately related to the development of money and capital markets and the implementation of monetary policy. In this sense, a payment system is somewhat analogous to an effective internal transportation system where the layout and connections between roads, highways, and other transportation modes in a country has a profound effect on the future pattern of trade and development in an economy. This is why a payment system project is regarded as a policy matter, not a simple technology issue.

Our goal is to provide a framework in which the basic elements important to transforming a payment system are explained (for the novice) and their interrelationships shown (for the informed reader). In this process, a number of questions are in effect posed and answered, such as:

- What are the main problems raised in transforming a payment system in formerly centrally-planned economies?
- How similar or different are payment systems in different market economies?
- What are the main risks in making large value, inter-enterprise payments and how can they be minimized?
- What are the specific steps taken when making a payment with different payment instruments and how can this process be improved?
- How have payment systems evolved in developed countries and what does this imply for emerging market economies?
- Why might electronic payments be favored over paper-based non-cash payments?
- What information is needed to properly plan for payment system improvements?

In what follows, the broad, major differences in payment systems between centrally-planned and market economies are first outlined and ways to improve the functioning of the payment system in transitional economies are noted. Although the example of payment systems in centrally-planned economies is used to contrast this difference, the problems identified are applicable to developing countries as well. Second, to gain a deeper understanding of some of the more complex payment system issues faced by transitional economies (as well as developing countries), a detailed model of the payment cycle is presented. With such a model, choices among alternative access, communication, and security arrangements become clearer and it is easier to see where and how different payment instruments fit into the national payment cycle. Third, the needs of an evolving and market-driven payment system are outlined. The importance of a country's legal and institutional structure is illustrated by contrasting the different evolutionary paths taken by the U.S. and European payment systems over time. The paper ends with a discussion of the many issues needing to be raised –from payment instrument design to cost recovery– to provide users with an effective payment system. Lastly, an Appendix provides a summary checklist of information needed to adequately plan for payment system change.

I. DIFFERENCES IN PAYMENT SYSTEMS IN CENTRALLY-PLANNED AND MARKET ECONOMIES

Transitional economies are moving from being centrally-planned to being market-directed. To appreciate the structural and behavioral changes that payment systems in transitional economies face, it is necessary to first have a basic understanding of how payment systems actually operate in both centrally-planned and market economies. While there are some similarities in payment system operation between centrally-planned and market economies, the differences are more numerous. These differences, of course, are where the problems lie for transitional economies.

1. The structure and operation of payments in centrally-planned economies

Central planning in a government-owned mono-banking system. Centrally-planned economies have a single or mono-bank structure. While superficially it may appear that many different banks exist –with some focusing on providing agriculture credits, others focusing on raising domestic savings, and still others handling import and export transactions– these banks are all government owned and controlled and do not compete with one another.

The primary purpose of banks in a centrally-planned economy is to monitor the plan. The plan assigns production and output goals across state enterprises in a balanced manner. The separate goals are made internally consistent through the application of input-output techniques. Given a set of planned final demands, consisting of planned levels of production of all goods and services for consumer, military, government, investment, and export use, input-output models determine the level of state enterprise outputs needed (directly and indirectly) to satisfy the plan.

The plan determines the allocation of all of the output produced to the sectors of final demand and also plans the use of labor, physical capital, and materials inputs by state enterprises. Thus the plan embodies virtually all of the production and distribution decisions that would have been made separately by individual firms and households interacting in a market economy.

While the plan monitoring, allocation, and performance functions could be performed in physical terms, and indeed were historically, it is easier to perform these functions in value terms. Once prices are developed and assigned to all the inputs and outputs in the physical or quantitative plan, a duplicate financial plan in value terms is obtained. Not only is monitoring simplified, but this procedure also permits some choice regarding input mix in

production and output mix in consumption. While many prices are set to approximate scarcity, and thus true costs, many others are set to achieve certain social goals (such as providing low cost housing or inexpensive basic foodstuffs).

The role of the payment systems: monitoring the plan. The primary responsibility for monitoring the financial plan is vested in the banking system. Each enterprise is allowed only one (zero-interest) account with the state bank through which all of its transactions are made. A **gross settlement** system is employed whereby each transaction is settled separately as it occurs. Thus the payment system provides a comprehensive record of all enterprise transactions. Each transaction can be traced and compared to the financial plan and deviations from the plan, once identified, lead to corrective action to ensure compliance. (**Box 1** contains a brief discussion of payment clearing versus settlement and an illustration of gross versus net settlement.)

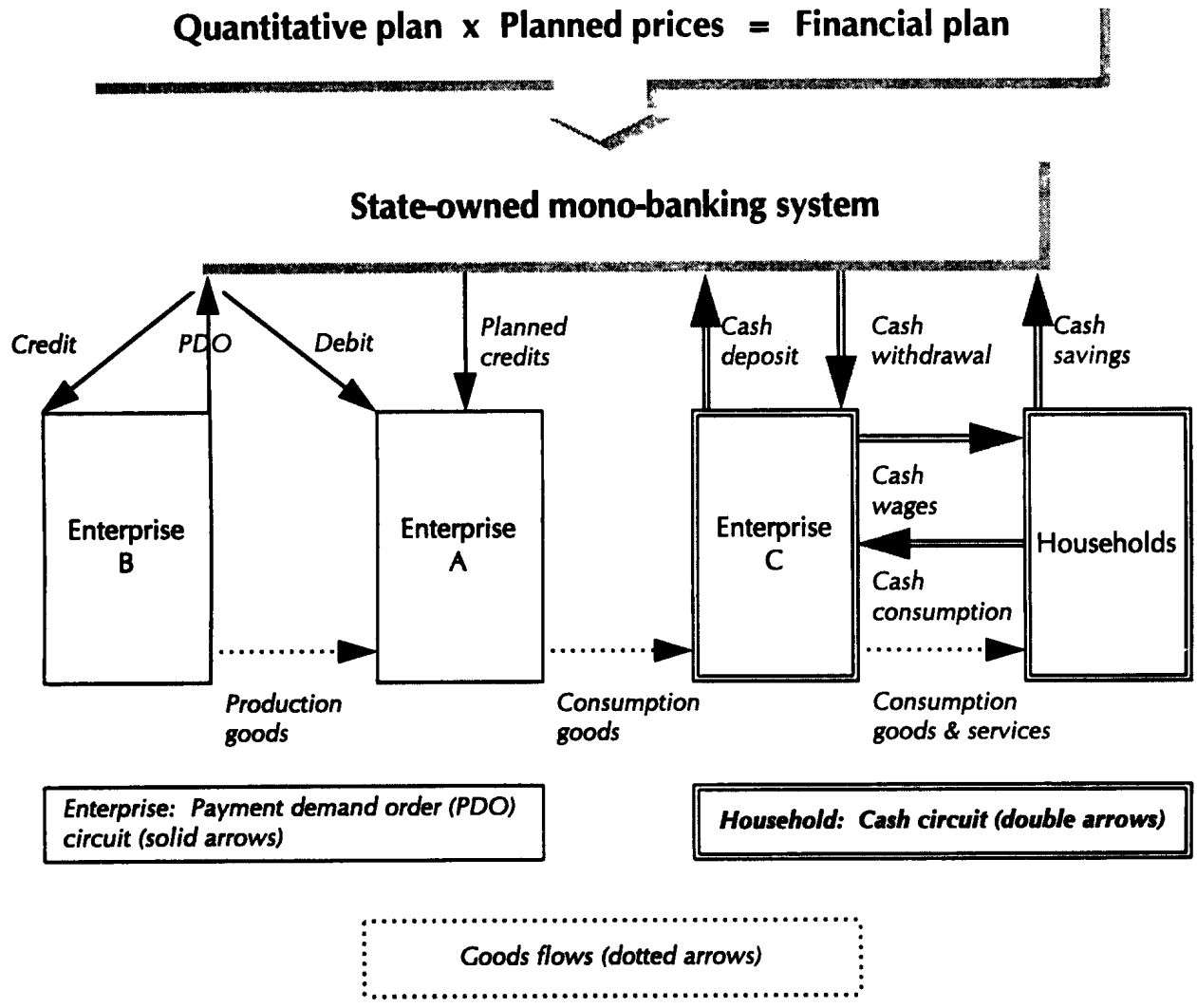
Two separate payment circuits are contained in the financial plan: non-cash credits and debits for enterprises and cash payments for households. These two payment circuits are illustrated in **Figure 1.**[1/] Following the non-cash circuit of the financial plan (solid arrows), banks create and issue credits to the state enterprises. Enterprises use these credits to purchase physical capital for investment, pay for labor employed, and compensate other state enterprises for the portion of their output used as an intermediate input to produce the planned output.

Only when enterprises are making wage payments to labor are cash withdrawals allowed. This initiates the cash circuit of the financial plan (double arrows) used by the household sector. The cash received by labor is by far the primary payment method used by this sector in consumption and saving transactions. However, cash transactions are not easily monitored. Conformity to this circuit of the financial plan is ensured by monitoring the non-cash transactions between state enterprises producing output for the household sector (Enterprise A) and those enterprises responsible for distributing this output to households through retail or other outlets (Enterprise C). Thus household use of cash is indirectly monitored by the flow of goods and services.

The two payment circuits of the financial plan rely on paper payment instruments: households use cash while enterprises use paper-based payment demand orders (PDOs). A PDO is a debit-based instrument similar to a check except that it is initiated by the receiver of the funds (the payee) not the sender (the payor). Thus a PDO is the paper equivalent to an electronic direct debit in a market economy. (As background, **Box 2** *(see page 8)* outlines the difference between a debit transfer and a credit transfer.)

1/ *See page 5.*

Figure 1: Two payment circuits in centrally-planned economies



Box 1: Payment clearing and gross and net settlement

*Payment **clearing** is the process by which payment information is transferred among banking institutions so that the payor's account is debited and the payee's account is credited. This includes the initial processing of the payment request by a bank, its physical or electronic transfer within or between banks that are involved in the transfer, and the debiting and crediting of the payor's and payee's accounts. Although accounting entries have occurred, funds have not really moved between the payor's and payee's accounts until **settlement** occurs.*

*Settlement involves the actual movement of funds among banks, usually in the form of balances held by banks at the central bank, to extinguish the payment obligation. **Gross settlement** occurs when each transaction is settled separately (in real time) as it occurs and is bilateral in nature. Consider the following four sequential transactions for various payors and payees of Banks A, B, and C:*

1. *Bank A owes Bank B $150 million;*
2. *Bank B owes Bank A $75 million;*
3. *Bank B owes Bank C $10 million; and*
4. *Bank C owes Bank A $150 million.*

*With gross settlement, each of the four bilateral payments are settled in the order that they are made. Under a **net settlement** arrangement, the number of settlement transactions is reduced by settling all four payments simultaneously as a group, rather than separately. Here only the net position among all participants needs to be settled. The net position is determined by adding up all the credits to a bank– no matter who they are from –and subtracting all the debits– no matter who they may go to. In this sense, net settlement represents a multilateral payment arrangement, not a bilateral one. Considering all four payment transactions, the total credits, total debits, and the net position would be:*

Banks	Credits	minus	Debits	equals	Net position
A	75 + 150	-	150	=	75
B	150	-	75 + 10	=	65
C	10	-	150	=	-140

To effect net settlement, C's account with the central bank would be debited by $140 million and these funds would be placed temporarily in a special settlement account. Only when all the net debits have been placed in the settlement account would this account itself be debited to generate the net credits of $75 million and $65 million, respectively, for A's and B's accounts with the central bank. Since all payments are settled simultaneously under net settlement, it is necessary to wait until all payments are known before net settlement occurs. Thus, unlike gross settlement, net settlement incorporates a risk that a bank in a net debit position (Bank C above) may fail sometime during the day before settlement occurs. The risk associated with a settlement failure is discussed in more detail in the text.

PDOs represent a request for payment and are directly tied to inter-enterprise trade. Once goods have been received by a purchasing enterprise (Enterprise A –the payor), the supplying enterprise (Enterprise B –the payee) deposits shipping documents, title of ownership, and a multiple copied PDO at its branch of the state bank to initiate the payment transaction – debiting the payor's account (A) and crediting the payee's account (B). The payee's branch will typically extend 85% of the amount being collected in the form of an interest free loan to the payee (B) prior to the actual transfer of funds. The loan is extinguished and the remaining 15% of the transaction value is obtained after the funds have been transferred to the payee's branch, after which the title of ownership passes to the purchasing enterprise (A).

Each party to the payment transaction has to approve and retain a copy of the PDO –from the initiating enterprise, to the various branches of the state bank involved in the transaction, to the receiving enterprise. As well, all enterprise transactions are elaborately coded. Coding is used to determine the precise source and purpose of the credits created by the state bank for the enterprise as well as the purpose and nature of payments made by the enterprise in drawing down these credits. In effect, the payment system not only transfers value but also records and retains the equivalent of bank loan and firm product invoicing information of a market economy.

State guarantees: no credit risk for payment receivers. Under the financial plan, credit creation, enterprise payments, and banking system viability are all essentially guaranteed by the state. Credit creation and its allocation to enterprises is dictated by the financial plan and thus is not constrained by the availability of domestic savings or household deposits in the banking system. The credit created by the banking system is used by enterprises to pay other enterprises and inject cash into the household sector. Since all enterprises are owned by the state, inter-enterprise payments merely represent a transfer of credits from one part of the state to the other. Such an arrangement is similar to an intra-firm transaction in a market economy. Thus inter-enterprise payments are intra-state payments. Intra-state payments pose no real risk of loss for payment receivers nor for the banking system that is transferring credits from one state account to another.

As well, with gross settlement of enterprise payment transactions, one account is debited before another account is credited. If credits in the account to be debited are insufficient, extra credits are often made available by the state bank, reducing the incidence of enterprise liquidity problems.

Box 2: The difference between a debit and a credit transfer

Non-cash payments can be either ***debit transfers*** *or* ***credit transfers.*** *The conventional way to distinguish between them depends on who –the payor or the payee– is actually initiating the transfer of funds from the payor's account to the payee's account. However, a second important distinguishing characteristic concerns whether or not the payment being made is provisional (and therefore subject to reversal) or is final when made. A common debit transfer instrument is the paper check while a common credit transfer is a paper or electronic GIRO payment. Debit and credit transfers are illustrated in* ***Figures A*** *and* ***B*** *below.*

As shown by the arrows in ***Figure A,*** *a* ***debit transfer*** *involves going from the payor who writes a check, to the payee who receives the check, to the payee's bank where the check is deposited, to the payor's bank who finally pays the check if there are sufficient funds in the payor's account. If the funds in the payor's account are insufficient, then the check is returned by reversing the path it took to be collected and presented for payment.*

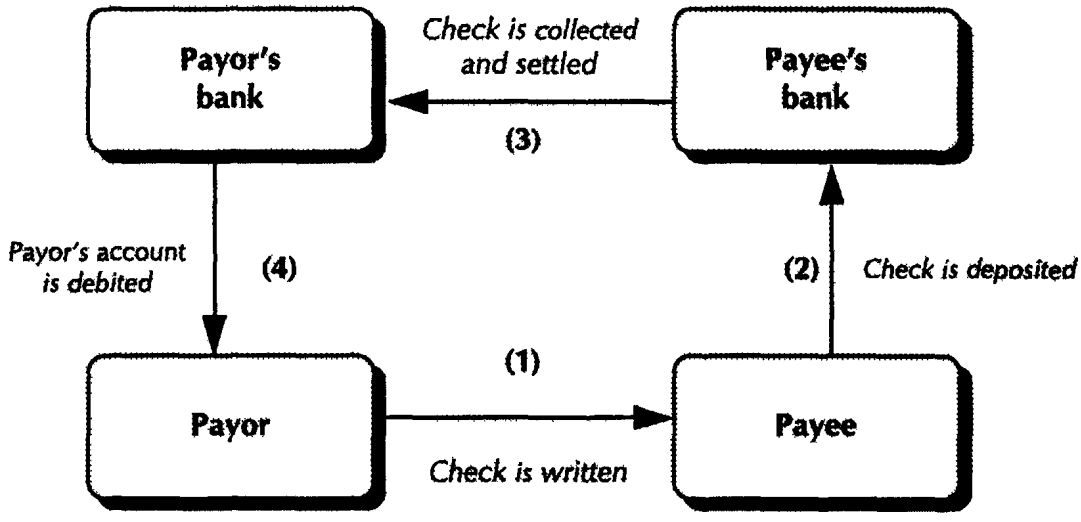
While the payor writes a check to initiate the payment cycle, it is the payee (or its agent bank) who is actually initiating the transfer of funds from the payor's account to the payee's account. The payee is in effect saying "debit the payor's account" which starts the funds transfer process, so a check is a debit transfer instrument. Importantly, there is risk to the payee in accepting a check as payment: the payor's bank may refuse to pay the check if the funds in the account are insufficient to cover the debit. Thus a check is only a provisional payment instrument which can be returned unpaid.

A ***credit transfer*** *follows a different route. As seen in* ***Figure B,*** *a payor instructs his GIRO to transfer funds from his account to the payee's account. The payor is in effect saying "credit the payee's account" to start the actual funds transfer process, so a GIRO payment is a credit transfer. If the funds in the payor's account are insufficient, the transfer never takes place. Thus return items do not exist within a GIRO framework. As a result, when funds are received in the payee's account, they are good and final funds (not provisional).*

With a GIRO payment, the entire transaction occurs within a single organizational structure –the postal or bank GIRO– so the funds transfer and settlement process is both simpler and less expensive than with a debit transfer system where interbank payment and settlement is the rule. A paper-based check (debit transfer) system is both more costly and contains more risk of fraud and loss than does an electronic-based GIRO (credit transfer) system. However, a GIRO system requires either an aggregated banking system and/or a great deal of cooperation among banks to work properly. Countries with a highly disaggregated banking system and little cooperation (such as the U.S.) have not been able to develop an effective GIRO system and thus rely on checks.

Figure A: Illustration of a debit transfer

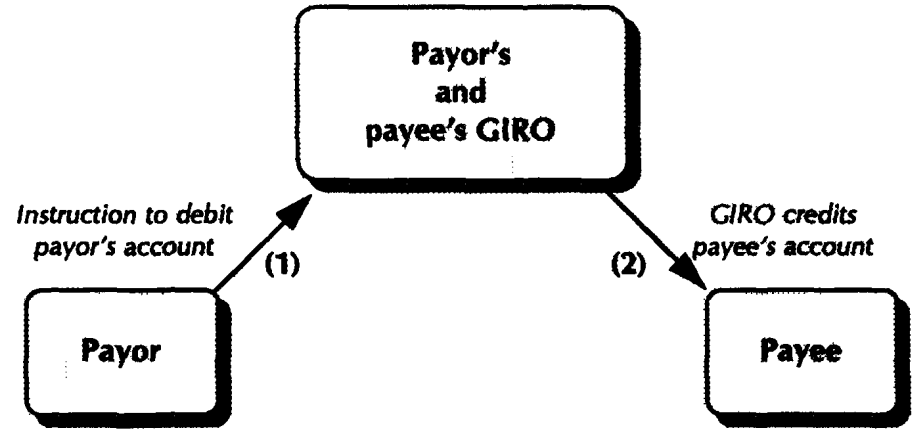
Check: A debit transfer



Solid line: Route of forward collection, Point 1 to Point 4.
Route of returned items, Point 4 to Point 1.

Figure B: Illustration of a credit transfer

GIRO: A credit transfer



Solidline: Route of forward collection Point 1 to Point 2. There are no return items.

Time insensitivity of payments. Enterprise balances are held in state bank accounts that pay no interest. Thus there is no incentive to reconfigure the auditing function of the payment system so that this need is met while also providing for timely payment and settlement of enterprise transactions. As well, no important penalty is imposed when enterprises fail to make payments in a timely manner. For these reasons, payments are not viewed as being time-critical and the notion of a time value for money is undeveloped. Consequently, large value payments among enterprises, or between an enterprise and a foreign supplier, can take days to complete. While such a system is acceptable in a centrally-planned economy where no interest is paid and funds essentially move from one state agency to another, such payment delays would place an unacceptably large opportunity cost on payment receivers in a market economy where money has a time value.

Limited need for comprehensive legal, accounting, and communications infrastructure. As enterprise payments are transfers from one state agency to another, there is only a limited need for payment laws and regulations that determine the rights and liabilities of the parties to a payment transaction. This need is limited because there is really no credit risk or time value of money involved in a payment transaction. If credit risk existed and money had a time value, the legal structure would have to be expanded to spell out the conditions under which payors and payees, respectively, would be liable for losses due to enterprise failure or delayed payments.

In monitoring the financial plan, the separate branches of the state bank are relied upon to individually collect, account for, and report enterprise payment information to a central agency. In this capacity, each branch office effectively operates as if it were a separate bank since enterprise accounts are not centrally managed and controlled. Thus there is little need for a communications infrastructure that could rapidly process and transmit payment or other information among branches of the state bank. Indeed, payment information is in paper form and physically transported between branches using the post office and other non-time-critical transportation methods. Domestic commercial airline flights or even dedicated motor courier, common in a market economy, are not used.

Cash-based retail payments. Currency is the primary method of payment for the household sector and is supplied through cash wage payments by enterprises. Since enterprise output allocated to the household sector is determined by the plan, any excess of currency in circulation over the assigned value of the output supplied to this sector is absorbed as forced savings. Although households can deposit excess currency in banks and earn an interest return, this return is controlled by the plan and no short-term money market instruments exist which could pay a higher rate.