

ABSTRACT

Title of dissertation: NO CASH AND NO PURSE: EXPLAINING NON-MONETARY TRADE IN RUSSIA IN THE 1990S

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Why were most transactions in the Russian industry in the 1990s carried out without the use of money? Theories explaining the phenomenon, when carefully assessed, seem to have missing gaps in the argument or inadequate evidence. The present paper critically reviews the theories, suggests neglected considerations, proposes an alternative explanation, and empirically tests the hypothesis.

A large representative sample of Russian firms is used in the empirical part. TOBIT analysis shows that firms start to use non-monetary payments because of their liquidity problems. Further use of non-monetary payments is connected to *kartoteka*, a tax collection method of withdrawal of taxes from the firm's bank account.

NO CASH AND NO PURSE:
EXPLAINING NON-MONETARY TRADE IN RUSSIA IN THE 1990S

by
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Dedication

This work is dedicated to my parents, my wife Sarah, and daughter Caroline Clyde.

Acknowledgments

I would like to thank Prof. Peter Murrell for his inestimable help during my work on this dissertation. My participation in the research project “Inside the Transforming Firm,” sponsored by the TACIS program of the European Union, was made possible by Prof. John Earle, whom I would also like to thank for his advice and support. Serhiy Biletsky, my partner in data collection, and Yevgeniy Yuzefovich, with whom discussions inspired some ideas, deserve a special mention. Open Society Institute’s funding supported me throughout this research as well as made my study at the University of Maryland possible. Neither of the aforementioned people nor anybody else is responsible for this work but me. I thank, in alphabetical order, Prof. Clopper Almon, Dr. Tomas Dvorak, Prof. Charles Hulten, Prof. Gordon Phillips, and Prof. John Wallis.

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Russian President calls Prime Minister:

- *Dear Prime Minister, I do not understand our economy.*

- *Well then, let me explain it to you.*

- *I can explain it myself. I can't understand it!*

A Russian joke

Introduction

In 1999 I finished collecting data for a large survey of Russian enterprises. It was one of the largest surveys of the Russian manufacturing sector. 538 firms, located in 32 regions of Russia were interviewed with more than 300 questions about different aspects of their work. I found it particularly interesting that interviewed firms were often on *kartoteka* – that is, the firm's bank was under orders from the state to use all incoming deposits to pay taxes. The number of firms on *kartoteka* has increased to more than **two-thirds** of all firms by 1998. During the second half of the 1990s, firms were placed on *kartoteka* at an amazing rate: a quarter of all off-*kartoteka* firms every year on average.

I was also amazed at the number of non-monetary transactions happening in the Russian industry: **more than a half** of all transactions. Hypothesizing a possible link between the two phenomena, I have decided to explore what have caused the extraordinary volume of non-monetary transactions.

I have studied the literature and have learned that there are several hypotheses explaining the growth of non-monetary transactions in Russia. The liquidity hypothesis seemed the most plausible, and I have taken it as a starting point. The liquidity hypothesis states that barter and other non-monetary forms of payment (offsets and promissory notes – *veksels* in Russian) appear when a firm suffers from a shortage of liquidity, that is,

when the firm lacks monetary means to pay its obligations. This explanation seems logical, but why do not firms simply borrow money?

Marin and Schnitzer (1998) do not consider this question. Commander and Mumseen (1998), the authors of the liquidity hypothesis, have proposed that firms could not borrow money for a number of reasons, for instance because banks were lured by high interest rates offered by the state and thus diverted their resources to finance the state deficit. The virtual economy hypothesis does not have to answer this question, because its authors believe that firms do not lack liquidity. Firms rather lack “restructuring” according to Gaddy and Ickes (1998a and b).

First of all, I felt that the liquidity hypothesis needed better empirical support because, for instance, Guriev and Ickes (1999) did not find any relationship between liquidity and barter. Therefore, my first empirical exercise was to check for this relationship using my data. I felt that much of the debate in the literature was due to the lack of appropriate data, and since I spent much effort collecting one of the best and most comprehensive samples of Russian firms of the late 90s, I believed that my data would help to resolve discrepancies in the results of conflicting hypotheses.¹

I have found a relationship between barter and the lack of liquidity. This result is not surprising: two of the studied hypotheses assume this relationship; managers, answering a question about motivation for barter, often name the lack of money as their prime incentive.

Next, I have explored the question why firms are locked in non-monetary

¹ The data was collected under supervision of Prof. Earle from Stanford University whom I express much gratitude for the permission to use it for this research.

exchange, why such simple remedies as borrowing money did not work in Russia at that time. Although the Russian banking system was very undeveloped, and there were serious complications that made credit difficult to obtain (the moral hazard problem being the most obvious one), I felt that the link between the lack of liquidity – that seemed quite possible when Russian GDP declined by more than 40 percent during the 90s – and the widespread use of non-monetary exchange – more than half of all transactions – was due to some unstudied factor. I then turned my attention to *kartoteka*.

Kartoteka is a tool of tax authorities to collect overdue taxes. About two weeks after taxes are not paid, a firm's bank account is placed on what in Russian is called *kartoteka*. *Kartoteka* literally means a wooden box used in libraries. When someone borrows a book, a card (*karta*) is issued indicating who has borrowed that book and when the book has to be returned. A somewhat similar procedure is implemented when a firm does not pay taxes. The indebted firm is carded and an order to the bank is issued. The order directs the bank to transfer all incoming money to pay due taxes. Until due taxes are paid, the firm cannot use its money in the account.

Interestingly, the tax authorities did not seize assets because the bankruptcy law had just been introduced at that time and required a much lengthier and complicated procedure, whereas the practice of *kartoteka* was a well-established institution and simply required following an instruction.

If borrowing money is problematic, a firm on *kartoteka* has to pay and receive payments in non-monetary means. Indeed, I have found in my sample that being on *kartoteka* and the use of non-monetary payments are connected: *kartoteka* increases the use of barter (and all non-monetary means) by at least 10 percent.

Besides the strong link between *kartoteka* and the use of barter and all non-monetary means, even when the liquidity effect is removed, I have also studied firms with different exposure to non-monetary payments in regard to their incentives for the use of non-monetary payments. I have followed Polterovich (1999) and Earle and Sabirianova (2000), who have introduced the notion of institutional traps or bad equilibria during transition. Institutional traps or equilibria arise when there are major shocks to the economic system and a transitory, temporary unusual practice becomes institutionalized and widespread despite the fact that under normal circumstances such phenomena are merely non-existent.

In the case of Russia in the late 90s, such institutional trap was the use of non-monetary trade. Exposure to non-monetary trade had a special effect on firms as I have found. It changed firms' motivation regarding the use of non-monetary exchange: if the liquidity crisis was the prime motivation to employ barter and other non-monetary means for a firm accustomed to the monetary trade, the lack of liquidity did not have much impact on the firms that were actively trading in non-monetary means. Such firms were, in regard to their use of non-monetary exchange, primarily motivated by their *kartoteka* status.

How does this study fit into discussion about non-monetary trade in Russia? First of all, I have shown that *kartoteka* has significantly contributed to the use of non-monetary payments. The practice of *kartoteka* was mentioned in the previous research²

² Hendley, Ickes, and Ryterman (1998) write: "The State Tax Service estimates that 80 percent of firms have tax arrears. While this estimate is likely to be high, it does indicate that nearly all firms must confront the problem of blocked accounts, either their own or those of key trading partners, on a routine basis. In

but its effect was never quantified. This study not only quantifies this effect, which turned out to be very strong and significant – a tenth of variation in the use of non-monetary means – but it also shows that for firms using non-monetary trade on a regular basis *kartoteka* was the **prime** incentive for non-monetary trade.

Second, I have shown that empirical tests confirm the liquidity hypothesis. A carefully constructed test shows a significant negative relationship between the level of liquidity and the use of barter. Therefore, the virtual economy hypothesis rejecting the link between liquidity and non-monetary payments cannot be accepted.

Third, I have found that different forms of non-monetary payments behave differently with respect to liquidity and *kartoteka*. Barter responds strongly to these factors and drives the relationship for all non-monetary payments combined. A practice of cancellation of mutual debts without monetary payments (offsets) is associated with *kartoteka* but it has an indirect link to liquidity. *Veksels* turned out to be not responsive to *kartoteka* and liquidity but they were found to be related to the size thus suggesting that their nature is closer to conventional promissory notes. However, when all non-monetary forms were considered together, the effects of *kartoteka* and liquidity were the largest suggesting that these two factors are mostly important for the decision to avoid the monetary system as a whole.

My further narration will unfold in the following fashion. First I will introduce and discuss the data that I have collected. Second, I will define relevant terms used in this research. In the third chapter I will describe the general environment of Russian economy in the 1990s. Fourth, I will review and evaluate existing explanations. In the fifth chapter,

response, firms have developed the means to evade these restrictions.”

I will present results of my empirical analysis. In conclusion I will describe the situation with non-monetary transactions after the default of 1998, and will summarize my findings.

Chapter 1. Data

Introduction

One of the main obstacles to research of transition economies in general and Russia in particular, is data. It is hard to collect and even harder to insure acceptable quality. In the case of Russia, there are several problems that make gathering quality data especially difficult. Russia is big, there is no complete list of all companies, firms experience rapid changes that are not remembered or recorded, companies are reluctant to share information, the Military-Industrial Complex maintain secrecy³, and modern economic concepts are new to interviewers and company management understanding. Finally, companies may deliberately falsify information, especially financial.

Lack of high quality comprehensive data on Russian industry was the main motivation for the project “Inside the Transforming Firm.” To the best of my knowledge, there were no other extensive surveys of Russian industry since the 1994 World Bank survey⁴, which I had extensively worked with, and which gave some initial ideas for the design of the present survey.

Questionnaire design is the key element of a survey: if a question is not included or not understood, the resulting lack of data means that the project has failed. The other

³ Which is as big as 25% of all manufacturing companies, see Earle J. and I. Komarov (2001) Measuring Defense Conversion in Russian Industry, *Defense and Peace Economics*, Volume 12, Number 2.

⁴ Results of this survey are reported, for example, in Commander, S., Q. Fan, and M. Schaffer (editors) (1996) *Enterprise Restructuring and Economic Policy in Russia*, EDI Development Studies, Washington, World Bank.

important element is the choice of the organization implementing the fieldwork.

Fortunately, the Public Opinion Foundation (FOM), which is well known for surveys of public opinion during presidential campaigns with ratings closest to the fact,⁵ agreed to do this part of work.

Some researchers enjoy the privileged position of using existing data that already has been collected, entered and cleaned. This research is based on data which has been collected by the author who participated in every aspect of data collection. I have visited firms during pilot surveys. I have studied literature on laws and practices used by Russian firms. I have designed the questionnaire assuring that every question is well understood by the respondents and capture the concepts of interest. I have trained interviewers assuring their professional attitude, and I have cleaned the data so that most ambiguous cases are ruled out. It would be no exaggeration to say that I know the data.

The only deficiency is that at the time of the project I was only at a preliminary stage of my research of non-monetary transactions. Now, after studying the literature and giving the topic much time and thought, I would add more questions. However, the questionnaire is very comprehensive since it was designed for a variety of purposes and participants⁶, and thus I have much extra information, usefulness of which was unknown to me at the onset of the project.

Overall, the survey “Inside the Transforming Firm” is one of the most

⁵ For 1996 Russian presidential campaign, the prediction error was a matter of few percentage points.

⁶ Besides the many other participants of the project, I want to mention (in alphabetical order) Serhiy Biletsky, J. David Brown, John S. Earle, and Klara Z. Sabirianova who most actively worked on the survey.

comprehensive surveys of Russian industry. A team of trained interviewers visited 538 firms in 32 regions of Russia receiving answers to more than 300 questions in more than 70 percent of visits.

Survey “Inside the Transforming Firm”

This research makes claims pertaining to the whole of industry and, moreover, economy, so it is important to understand how the data was collected and how representative the sample is. This section addresses these issues and draws upon the report on the project.⁷

The Russian survey “Inside the Transforming Firm” was a survey of both enterprises and their managers, covering a wide variety of issues relevant to firm restructuring and performance.⁸ The survey collected *quantitative* information on the employment, costs, and finances of firms. Much of this information is routinely collected by the firms themselves, for the purpose of internal accounting (or for tax purposes) or for reporting to the Russian State Statistical Committee (*Goskomstat*). The survey relied upon the standardized variables that firms were using both to ensure comparability across firms and because special calculations for survey responses would have been unreliable and an excessive burden on respondents.

Many important aspects of the Russian situation, however, are not well captured

⁷ See full report in Biletsky *et al.* (1999).

⁸ This research has been undertaken with the support of the European Union’s Tacis-ACE Programme 1995. The project team is also indebted to the Russian European Centre for Economic Policy, in Moscow, for the use of office space.

by the standard accounting concepts. Thus, the quantitative information in the survey was supplemented by detailed *qualitative* interviews with managers, chief accountants, and personnel directors, in order to obtain estimates of the extent of several aspects of restructuring and of the factors bringing them about. Issues such as non-monetary payments, ownership structure, corporate governance, and personnel policies do not appear in official forms, yet our extensive pilot studies showed that there are common ways of understanding these concepts that are amenable to standardization across firms.

The success of any survey project depends on the quality of the connection between the researcher and the respondent, so that the theoretical hypotheses of social science can be reflected and therefore tested using the data supplied by respondents. The links in the connecting chain consist of the questionnaire, the sample, the fieldwork, the data entry, the data cleaning, and the analysis. The final product is no stronger than the weakest link in the chain, so much effort was put into each link.

The Questionnaire

The questionnaire⁹ used in the survey “Inside the Transforming Firm” was painstakingly developed for several years, with particular intensity during 1996-98. Questions were specified to test several hypotheses about the magnitude and the determinants of important dimensions of enterprise restructuring as well as to collect information on issues raised in the literature on transition. Several pilot studies were conducted as well as case studies, to determine the viability of each question. Much effort was devoted to ensuring that the quantitative concepts reflected current accounting

⁹ See the English version of the questionnaire in Appendix D.

practices (which was particularly complicated by the fact that these practices changed several times during the 1990s) and that the qualitative questions made sense to the respondents. Each section of the questionnaire was designed to be answered by a specific respondent in the firm, the manager with the most knowledge about the particular topic. The questionnaire was revised drastically several times to improve its quality and reliability, so that the final result is in fact one of the most valuable products of this research.

As to the topic of this research, most surveys ask about barter only or classify non-monetary transactions as barter and offsets. Our questionnaire offered a complete list of possible transaction options: barter, offsets, *veksels*, cash, monetary transfers, and other. The list was applied not only to the distribution of sales but also to the acquisition of inputs, dimension, which has not been much studied before but is important if you ask a question why in-kind payments are offered.

The Sample

Most studies of Russian enterprises employ samples that are small, non-randomly selected, and restricted to just a few regions of the country. The purpose of this research, however, was to enable inferences to be drawn about Russia as a whole, which requires a sufficiently large sample size, probability sampling, and a stratified design to include a diverse set of regions. Regional diversity is particularly crucial in the Russian context, given the large differences in local factor and product markets, in legal environments and infrastructure, and in industrial composition across the regions – Moscow versus the rest of Russia being the most notorious example.

No randomly drawn or regionally stratified sample existed before the beginning of this project. Moreover, there was no complete list of firms from which such a sample might be drawn.¹⁰ Reconciling the need to construct such a sample with the cost and time constraints of the project was one of the most difficult tasks.

The solution to this dilemma was to piggyback on the careful procedures, including sophisticated regional stratification, of the Russian Longitudinal Monitoring Survey. The used sample of firms covers 32 regions of the Russian Federation¹¹, and involves a random selection of employers with a probability proportional to firm employment. In this respect, it is a sample uniquely capable of permitting inferences to be drawn about Russia as a whole. The motivation for the sampling procedure is more fully described in a sub-section below, together with some analysis of the representativeness of the resulting sample.

The Fieldwork

The logistical and personnel requirements of a national survey in Russia dwarf those of other countries. The enterprises in our sample are scattered across all major regions, many of them in quite remote areas. Moreover, the interviewers live in the

¹⁰ In the early stages of the project, the plan was to re-interview the sample of companies studied in a World Bank survey of July 1994, but it proved impossible to identify these companies. In any case, the finally employed sampling procedure is arguably a significant improvement.

¹¹ Subjects of the Russian Federation are autonomous republics, autonomous territories (*okrugs*), provinces (*oblasts*), and territories (*krais*). These subjects are further grouped into 12 bigger regions that were used to construct regional dummies in this research.

regions and are therefore similarly scattered.

The project laid great stress on interviewer training, and supervisors and interviewers from all regions except St. Petersburg City and Leningradskaya Oblast (the supervisors trained interviewers in these locales) were brought to Moscow for intensive training sessions conducted by the author and Serhiy Biletsky. We also traveled to Kaluzhskaya Oblast, Krasnoyarsky Krai, Lipetskaya Oblast, Penzenskaya Oblast, Saratovskaya Oblast, Smolensk, Tambovskaya Oblast, Tula, and Voronezh to train the interviewers in these locations. The training sessions included a thorough explanation of the questionnaire and role-playing on the problems likely to be encountered during the fieldwork.

Fieldwork was carried out by the Public Opinion Foundation, with supervision and monitoring from the project team¹², including associates in several locations (particularly Chelyabinsk and Rostov).

The Data Entry and Cleaning

All completed questionnaires were first scrutinized by the project team as well as the Public Opinion Foundation coordinators. Inconsistencies were identified, and questionnaires returned for re-interviewing. When ready for entry, questionnaires were double entered and checked for consistency. A checking program was then applied to search for further inconsistencies in the data, again leading to a further cycle of re-interviewing.

¹² The author and Sergiy Biletsky most actively worked with the Public Opinion Foundation.

Sampling Procedures

The task of designing the sample for this study was particularly daunting. Russia is not only huge and heterogeneous, implying that any research purporting to draw conclusions about the country as a whole would have to cover 2 continents and 11 time zones and require very careful regional selection. But it also has no complete lists of enterprises from which a probability sample could be drawn. With great effort, we¹³ managed to obtain the *Goskomstat* Industrial Enterprise Registries, but this list omitted most small firms (with fewer than 100 employees) and even some larger ones. Given the large number of split-ups, spin-offs and other reorganizations that seemed to be taking place in Russian industry, we did not want to completely omit the smaller firms. At the same time, it is clear that the larger firms are more important in Russian manufacturing, so we did not want to sample small and large enterprises with equal probability.

Our solution to the problem of regional and intra-regional sample selection was to share the accomplishments of the sampling strategy of a household survey, the Russian Longitudinal Monitoring Survey (RLMS). The RLMS employs a multistage probability sample, starting from a list of 2029 *rayons*, allocated into 38 strata, of which Moscow City, Moscow Oblast, and St. Petersburg City were included with certainty (self-representing strata), while 35 other rayons were selected as primary sampling units (PSUs), one each from the other 35 strata, with a probability proportional to size. Secondary sampling units were selected within each PSU in proportion to the urban and rural population sizes. Within these areas, dwellings were enumerated and then drawn

¹³ Credit for this part is mostly owed to Sergiy Biletsky and David Brown.

randomly from a list.¹⁴

One of the little-known aspects of the RLMS is that workers are asked several open-ended questions about the nature of their jobs and employers. In examining the string variables containing those answers, we found that nearly every worker, particularly those employed in manufacturing firms, at one time or another reported the exact name of his or her employer. Our original sample consisted of the complete list of these employers, 538 firms. Thus, if the RLMS sample of households is a national probability sample, then our enterprise sample is a national probability sample of manufacturing firms in Russia, drawn with a probability proportional to employment.

Of course, over the course of data collection we learned that many companies went bankrupt, “stopped operations” – that is we would find a lonely guard who would tell us that no one works here any more, some firms could not be found, some have changed their names, some have merged or spun off. Some firms refused to participate. But 381 firm participated in the survey – response rate of over 70 percent – thus providing us with one of the best data sets on the Russian industry.

Before empirically checking representativeness relative to the whole of Russia in the next section, let us examine what the sampling procedure implies for representativeness. Obviously, if we had had information about employers for the whole population of Russia, we could have had the complete list of all employers. But the RLMS samples only a fraction of the whole population. Thus if the sampled employers

¹⁴ For more information about the RLMS sampling procedures, see M.S. Swafford and M.S. Kosolapov, “Technical Report: Sample of the Russian Federation, Rounds 5 to 8, Russian Longitudinal Monitoring Survey,” March 1999.

are not systematically different from the whole population along dimensions of interest, the sample can be said to be unbiased.

The designers of the RLMS claim that regions as well as urban and rural segments of the population of Russia are well represented in the RLMS sample. The first claim – regional representativeness of population – should insure regional representativeness of the employers' sample. Indeed, regional dimension of the sample, as we will see below, follows *Goskomstat* figures most closely. Although emphasis on the adequate representation of the rural population could bias representation of manufacturing firms, which obviously tend to be located in urban areas, we believe that the focus on the rural segment of population favorably distinguishes our sample from other surveys which never made any attempt to research firms in such remote rural arrears. We presume that a firm located in an urban area is different from the same kind of firm in a rural area.

Although the used sampling procedure cannot assure that our sample is representative, especially along multiple dimensions, the original sample, which we employed in the survey, covers over 6 percent of the manufacturing employment. Most samples of firms or people, including the RLMS, have much less than 5 percent representation.

Sample Representativeness

Now we turn to a description of the characteristics of the original sample by industry and region. Although our sampling procedure ensures a non-biased probability of entering the sample, conditional on the procedures of regional stratification, it does not guarantee (nor could it) representativeness along every dimension. The aim here is to

assess the representativeness of the sample relative to the population estimates available from official sources, namely the *Goskomstat* 1998 Statistical Yearbook¹⁵ and the *Goskomstat* 1998 Regional Yearbook which, it should be borne in mind, may also suffer from problems of reliability.¹⁶ Figure 1 shows the distribution of firms (as a percentage) by industry in the sample and the *Goskomstat* “population,” respectively.

The sample appears to be weighted towards firms in the power (electroenergy), fuel, and ferrous metallurgy, at the same time under-represented in wood and medicine sectors relative to the *Goskomstat* figures. It is notable that the sample and population proportions for machine building are almost exactly equal, at about 40 percent each. Another view of representativeness is shown in Figure 2, which contains percent of sample firms in population (as reported by *Goskomstat*) in each industry.

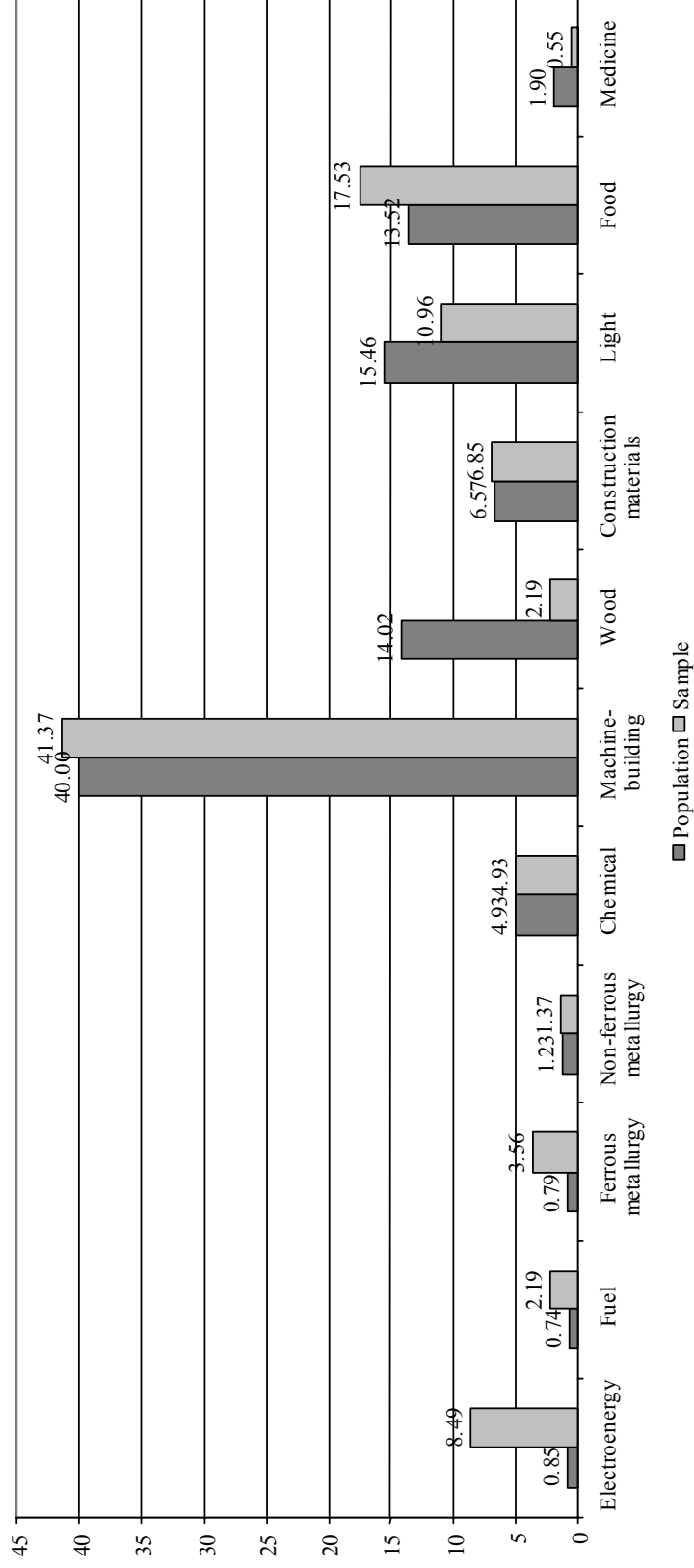
By both number of firms and industrial employment, electroenergy, fuel, and ferrous metallurgy sectors appear to be over-represented, while sectors such as wood and medicine (pharmaceuticals) are under-represented, relative to the *Goskomstat* reports. It should be remembered that our sampling procedure provided a weight on the probability of entry in proportion to the employment size of the firm, however; thus we also consider the distribution of employment implied by the sample, compared to that reported by *Goskomstat*. Figure 3 shows this.

The figure again shows that the sample is somewhat biased towards heavy industry.

¹⁵ Every year *Goskomstat* compiles an annual report on the Russian economy. The industry section of this report is based on data submitted by firms.

¹⁶ As it has been already noted, *Goskomstat* registries omit most of small firms.

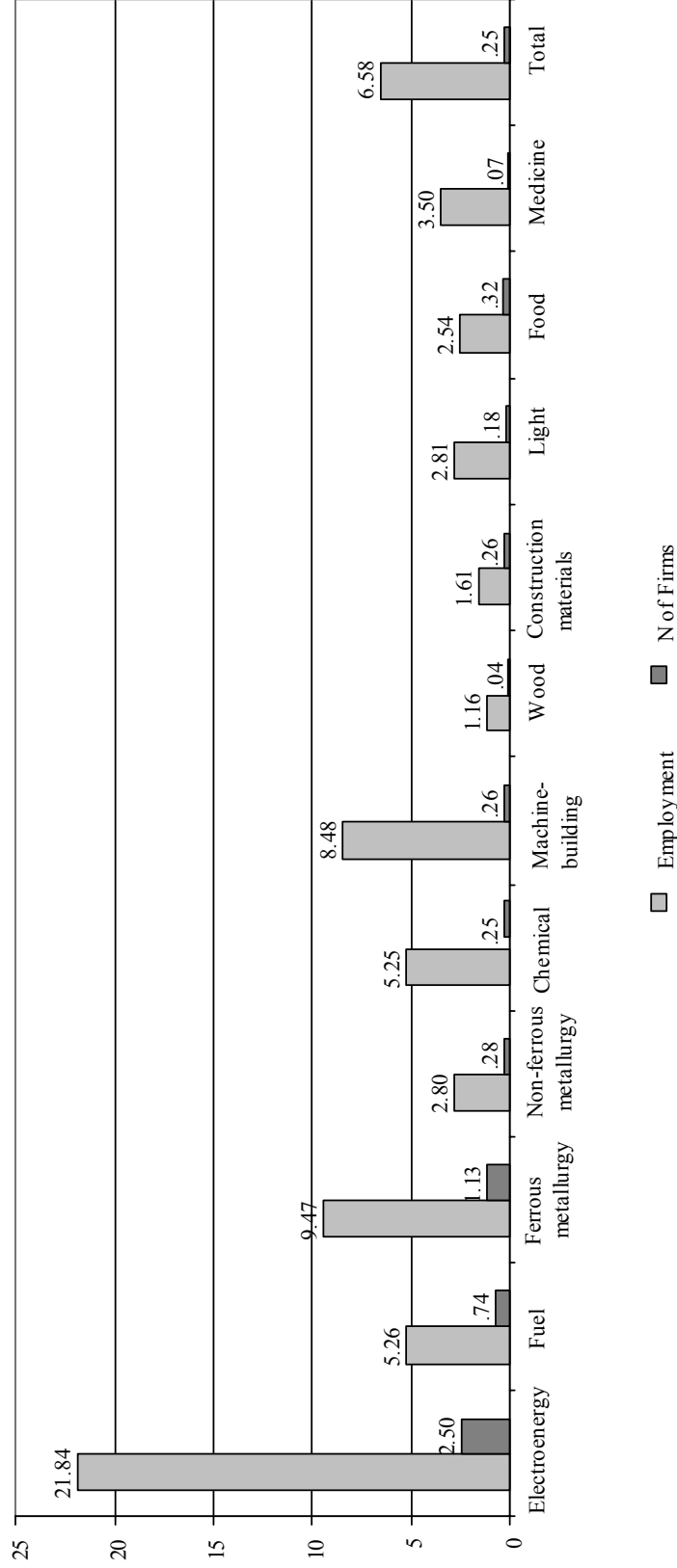
Figure 1. Distribution of Firms in Sample and Population by Industry



Note: The number on top of the bars is the percent of firms in a particular industry. The numbers sum up to 100 over industries.

Source: The population numbers are computed from the *Goskomstat* 1998 Statistical Yearbook, the sample numbers are computed from the original sample of 538 firms.

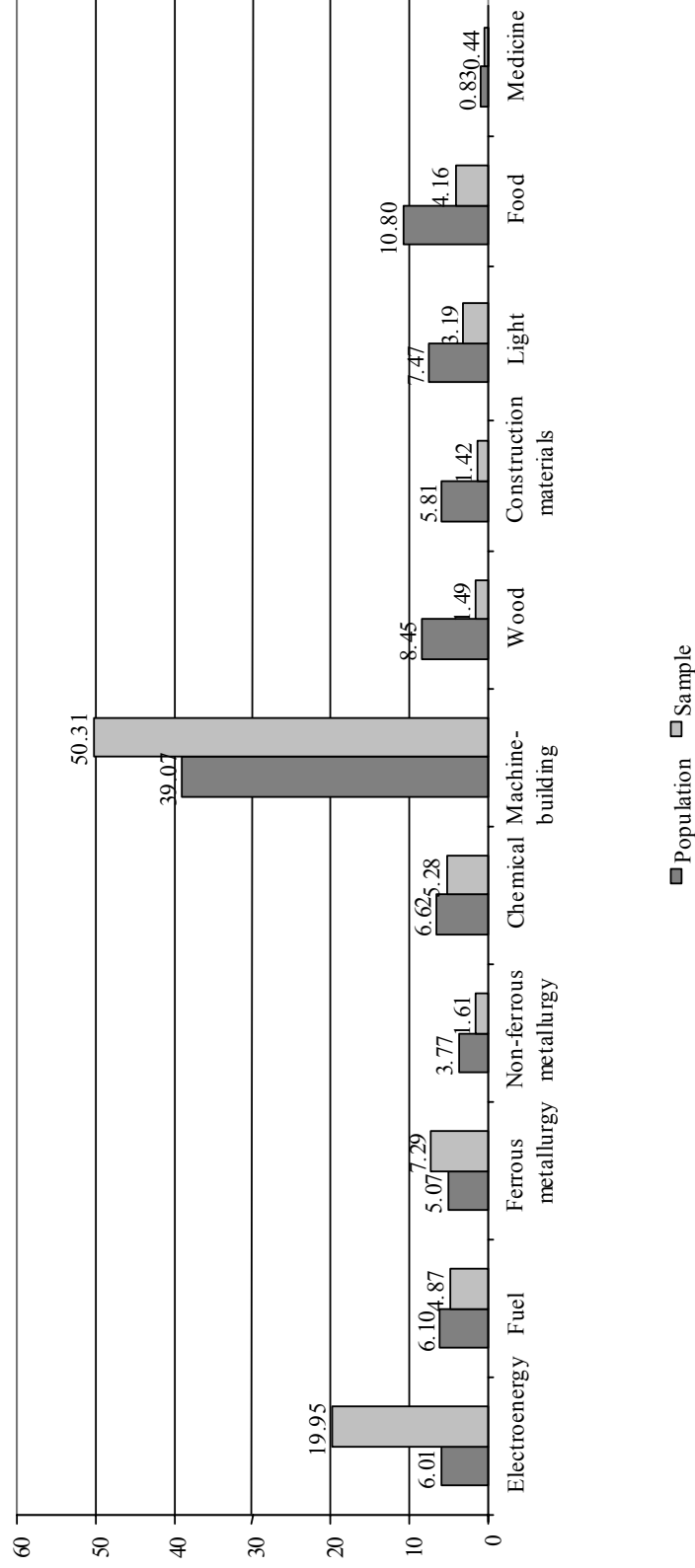
Figure 2. Percent of Sample Firms in Population by Industry



Note: The numbers on top of the bars are the percent of the sample employment relative to the population and the percent of the sample firms in the population.

Source: The population numbers are computed from the *Goskomstat* 1998 Statistical Yearbook, the sample numbers are computed from the original sample of 538 firms.

Figure 3. Distribution of Employment in Sample and Population by Industry



Note: The number on top of the bars is the percent of employment in a particular industry. The numbers sum up to 100 over industries.
 Source: The population numbers are computed from the *Goskomstat* 1998 Statistical Yearbook, the sample numbers are computed from the original sample of 538 firms.

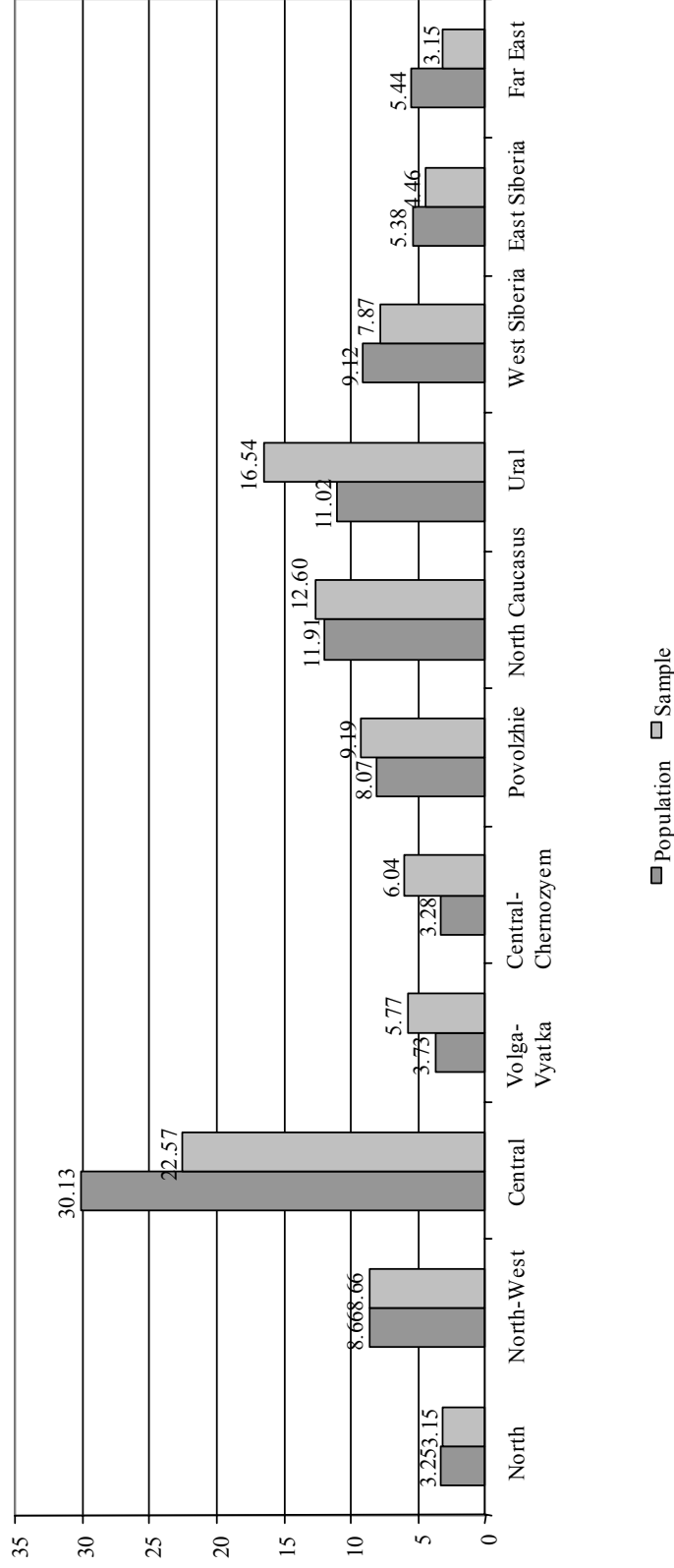
The weight by employment increases representativeness of the sample as compared to the weight by the number of firms. This fact implies that very small firms, as measured by employment, were excluded from the sample because of their low probability of entering it.

Perhaps because the RLMS sampling procedure contained an explicit stratification by region, the sample and population proportions are more closely aligned along this dimension. The distribution of the number of firms by region is shown in Figure 4. The Central region is slightly under-represented in the sample, relative to the *Goskomstat* figures, while the Urals and Central-Chernozym are slightly over-represented.

Another view of the distribution appears in Figure 5, showing the ratio in percentage terms of the number of firms and employment in the sample to the number reported by *Goskomstat*, by region. Consistent with the goals of the project, all regions are well represented, on average at about 6 percent of the population employment.

The distribution of employment across regions shows somewhat more variation in Figure 6. In particular, North and Siberia (both East and West) are under-represented, but Volga-Vyatka and the Urals are over-represented.

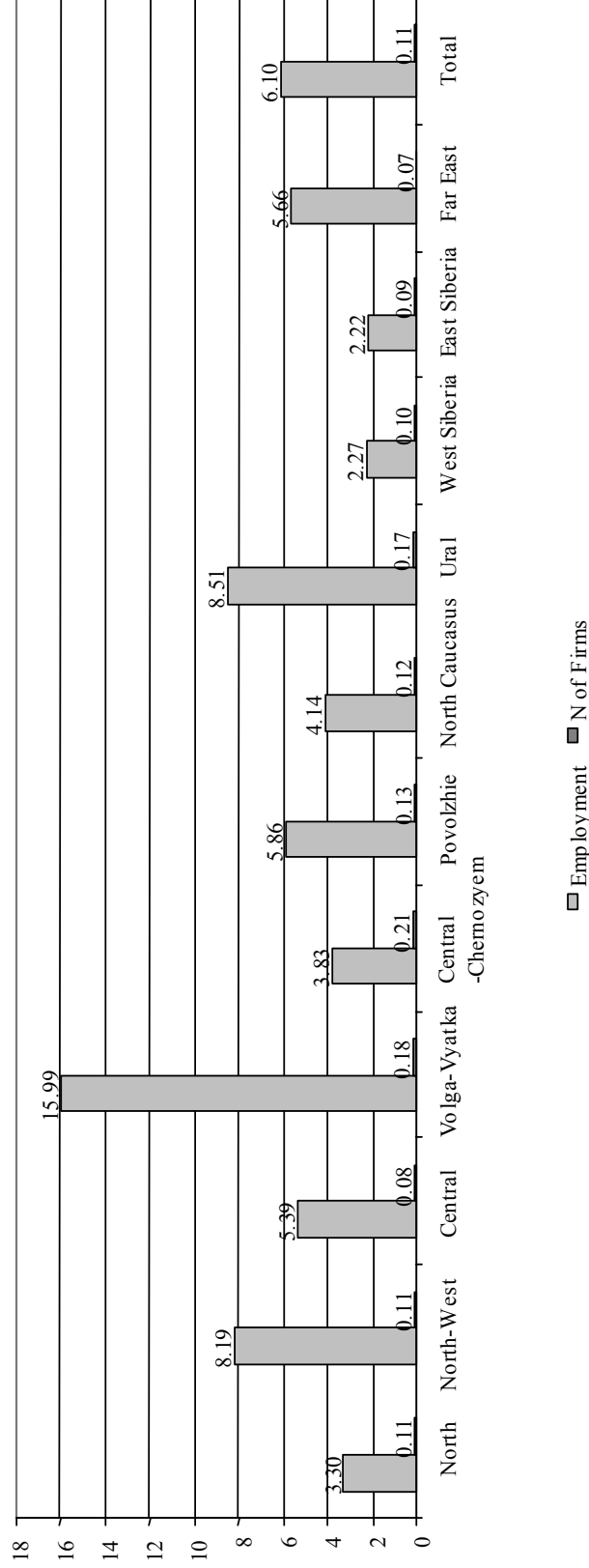
Figure 4. Distribution of Firms in Sample and Population by Region



Note: The numbers on top of the bars is the percent of firms in a region. The numbers sum up to 100 over regions.

Source: The population numbers are computed from the *Goskomstat* 1998 Statistical Regional Yearbook, the sample numbers are computed from the original sample of 538 firms.

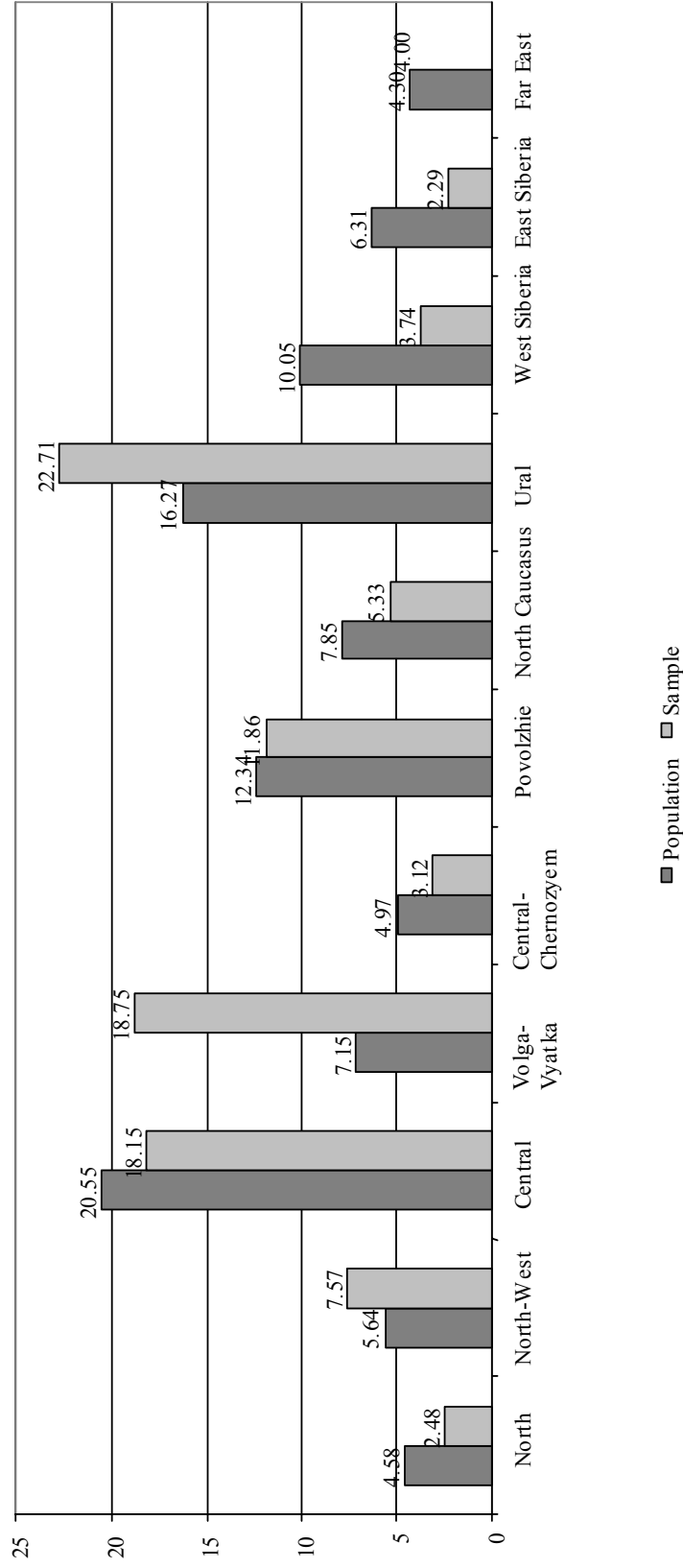
Figure 5. Percent of Sample Firms in Population by Region



Note: The numbers on top of the bars are the percent of the sample firms in the population and the percent of employment in the sample firms relative to the population.

Source: The population numbers are computed from the *Goskomstat 1998 Statistical Regional Yearbook*, the sample numbers are computed from the original sample of 538 firms.

Figure 6. Distribution of Employment in Sample and Population by Region



Note: The numbers on top of the bars is the percent of regional employment. The numbers sum up to 100 over regions.

Source: The population numbers are computed from the *Goskomstat* 1998 Statistical Yearbook, the sample numbers are computed from the original sample of 538 firms.

To summarize, the sample closely follows regional dimension when compared to *Goskomstat* numbers. As to the industrial distribution, the sample is somewhat biased towards heavy industry. However, one should keep in mind that *Goskomstat* numbers may be not the best benchmark (but the only available) since *Goskomstat* registries omit most of small firms. In any case, the sample covers 6 percent of the manufacturing employment that seems a relatively high representation of the manufacturing industry at least when compared to any other available survey data.

Summary

Data used in this paper can be said to be the best available. Besides, having participated in every aspect of obtaining this data, I am in a position to know its peculiarities. Such knowledge is usually unavailable to economists who work with data collected by other researchers. For instance, having designed some of the questions and having worked with Russian statistical concepts and all of the data which I managed to obtain (such as *Goskomstat* registries and *GNOZIS* database), I propose an arguably better measure of liquidity than that of Guriev and Ickes (1999). This measure is introduced in Chapter 4 of the present study, where the use of this measure radically changes the meaning of the liquidity hypothesis.

I have personally visited some firms and interviewed their management. Sometimes it was clear that despite years spent on designing the questionnaire, it still sometimes fails to capture the complex life of the present-day enterprises in Russia. Incompetence, inaccuracy, lack of records obscure getting reliable answers. Thus the

choice of the respondent, design of the questions, and training of interviewers proved to be the key to the success of the survey and this work in general since it relies heavily on empirics. My efforts spent on these key elements make me believe that the data offers reliable answers to the questions, with which an analyst of the Russian economy is confronted.

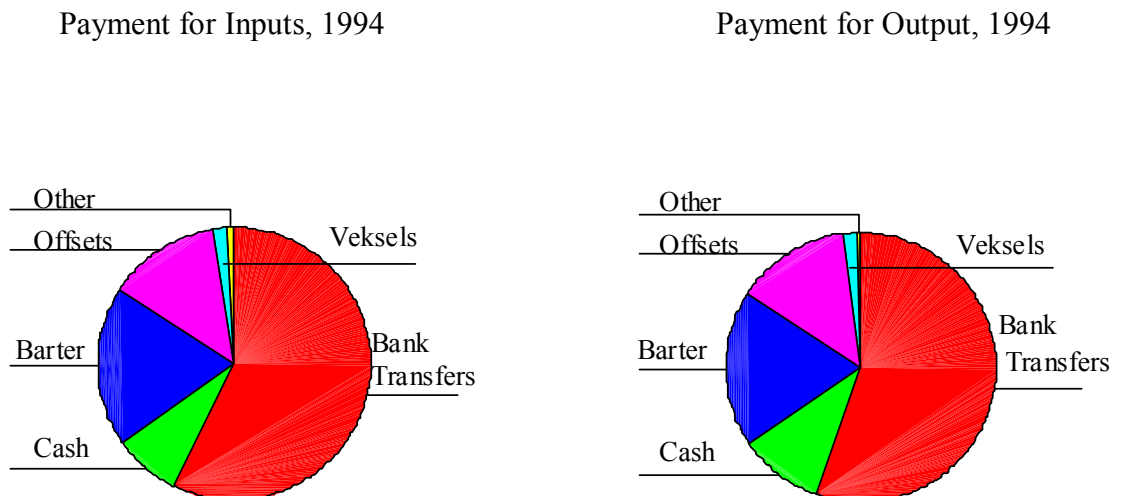
Chapter 2. Definitions

Introduction

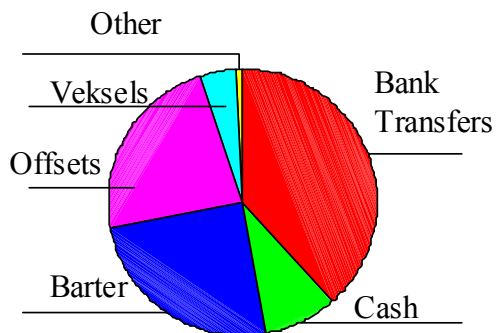
Russian reforms aimed at establishing a market economy in the place of a planned economy were accompanied by a few phenomena that puzzled economists. One of such phenomena is the use of non-monetary transactions in Russia in 1994-1998. By 1998, firms mostly used non-monetary (barter, offsets, *veksels*) payments instead of the monetary (bank transfers, cash) (see Figure 7).

What is a non-monetary transaction? In the Russian context, exchange of goods for goods (barter), goods for promissory notes (*veksels*), a swap of debts or exchange of goods for debt (offsets) are all examples of non-monetary transactions. Non-monetary transactions always involve a payment made in means other than money.

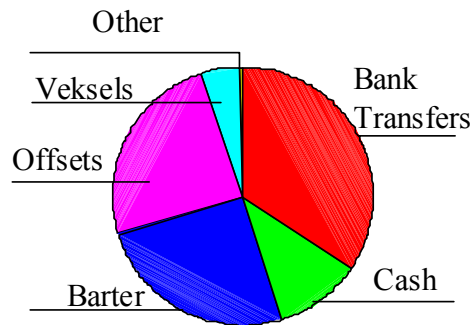
Figure 7. Decomposition of Payments, 1994 and 1998



Payment for Inputs, 1998



Payment for Output, 1998



Source: Author's calculations based on the "Inside the Transforming Firm" survey of summer 1999.

Barter

Barter is conventionally defined as a reciprocal exchange of goods without the use of money. It is important to distinguish when the goods received as a payment are used inside the firm from when the goods are re-sold for money, re-bartered, or exchanged for other non-monetary means of payment. In the latter use, goods play a role of the medium of exchange. In the former, goods satisfy wants of the firm. Aukucionek (1997) proposes that the barter goods in Russia are mostly used inside the firm.

It is also worth understanding the sides of barter exchange. Industrial firms can barter with each other, the government or other sectors of economy. Commander and Mumssen (1998) report the following partners in non-monetary transactions, listed in the ascending order of responses to the question about percent of different parties as a bartering partner:

1. utilities providers,
2. budget organizations,
3. processing industry,
4. transportation companies,
5. extracting industry,
6. wholesale trade.

Thus most barter transactions of industry happen between the industry and quasi-budget organizations but not within the industry itself.

When barter had just started to grow in Russia, a common barter transaction would also have some cash co-payment accompanying the payment in goods. As time passed, however, the share of pure barter (that is exchange of goods only) had grown. According to Aukucioneck (1997), barter transactions without the use of money accounted for 64 percent of all industrial barter transactions in 1997.

Barter in Russia had been rising to levels previously unknown in many other economies. Aukucioneck (1997) provides the following estimates: in 1992 industrial firms bartered 6 percent of their output; in the first half of 1997 this share was 41 percent. My estimates are lower but still exceptionally high: in 1998, 25 percent of output was bartered, a rise from 18 percent in 1994 (see Figure 7).¹⁷ Only two other transitional countries had higher shares of barter: Croatia (32.8 percent of GDP in 1999) and

¹⁷ Marin *et al.* (2000) cites the *World Business Environment Survey, World Bank-EBRD 1999*, and supplies the following estimates for barter in Russia: 1999 = 24.1 percent of GDP, 1996 = 23.5. Note that their and my estimates include all firms whereas some, e.g., Commander and Mumssen's (1998), include only firms with a positive barter share.

Moldova (26.3 percent).¹⁸ All other countries in transition experienced only a temporarily rise of barter. Estimates for Western economies are scarce but, according to Prendergast and Stole (1999), firms in developed market economies also use barter, especially in international trade where counter-trade is estimated at a minimum of 10 percent of the total trade volume.

Offsets

Offsets – (*vzaiimo*) *zachyoty* in Russian – usually refer to the mutual cancellation of debts, often involving more than two firms. Say Firm A supplies Firm B, Firm B supplies Firm C, Firm C, in turn, supplies Firm A. No firm pays money but writes off each other's debt. Thus Firm C writes off debt of Firm A, Firm B writes off debt of Firm C, and Firm A writes off debt of Firm B. Firms could also purchase each other's debt in the market.

There were nation-wide cancellations of debts in 1993 and later initiated by the government. The government on local (provincial and city) and federal levels cancelled its obligations against tax arrears, and thus offsets are known to be associated with settling accounts with the government.

However, firms also use offsets in settling accounts with each other, a good illustration of which can be found in Latynina (2000)¹⁹: “Let's take three enterprises.

¹⁸ As cited in Marin *et al.* (2000) from the *World Business Environment Survey, World Bank-EBRD 1999*.

¹⁹ Yuliya Latynina is a well-known Russian economic journalist working in Moscow Times daily and for TVS TV station now. She is the author of a series of popular books describing reality of doing business in Russia. These books are sometimes the best source of information about “unusual” economic practices,

Severstal makes steel for *Sevmash*. *Sevmash* uses this steel to make an oil-and-gas-extracting platform for *Gazprom*. In a monetary economy, *Gazprom* pays for the platform, *Sevmash* – for the steel, and *Severstal* pays *Gazprom* for the gas. In the Russian economy, *Gazprom* does not pay *Sevmash* for the platform, *Sevmash* does not pay *Severstal* for steel, and *Severstal* does not pay for gas. But in order to cancel its debts to *Gazprom*, *Severstal* delivers steel to *Sevmash*, and *Sevmash* makes the platform to cancel its arrears to *Severstal*.”

Offsets of debt among firms can be viewed as a further development of the non-monetary system of exchange.²⁰ A firm has an option to pay not only with money but also with its own or someone else's goods or debt. According to anecdotal evidence, there seems to be a rather developed market of inter-firm debt.²¹

Based on my data, the use of offsets in Russia grew from about 13 percent in 1994 to 26 percent in 1998 (see Figure 7).

such as her “Okhota Na Izyubria” (1999) which made some things about barter clearer to me.

²⁰ While working on this dissertation, the author shared a house with a close friend. Both of us were short of cash from time to time and thus received temporarily loans from each other. We also shared each other’s goods. In settling our accounts, we rarely used cash or monetary transactions like giving a check. Most of our debt was cancelled against goods, such as food, or services, such as international telephone calls. We, in effect, operated in a non-monetary economy. Presumably, this kind of behavior presupposes close friendship, i.e. *trust*, and ensured, by immobility, close proximity to each other, thus *lower enforcement costs*. Note the role of the *double coincidence of wants* since we had a large overlap of products we both used. Note also that we would ask a stranger for money in similar circumstances because non-monetary exchange opens up a room for cheating and subjective pricing.

²¹ See Commander and Mumssen (1998), Commander *et al.* (2000).

Veksels

Promissory notes – *veksels* in Russian – are commercial papers which state how much money will be repaid on a certain date in the future. The main difference – a Russian peculiarity²² – between a conventional promissory note and a *veksel* is that the latter, if issued by companies, is often redeemed in goods while the former is repaid only in money. Russian electricity-generating companies,²³ sometimes referred to as *AO Energos*, use *veksels* most extensively, “paying” their suppliers with promises of electricity delivery against submission of a *veksel*. Thus *AO Energos* basically get a free credit from their suppliers as suggested in Marin and Schnitzer (1998). Suppliers can trade such *veksels* in a secondary market if they cannot use them directly, although they cannot assure 100 percent of their face value and sell these papers with a substantial discount.²⁴ The discount is positively associated with a number of limitations on the *veksel* buy-back. For instance, repayment dates are usually far in the future, 10-20 years from the time when the *veksel* was issued. *AO Energos* use such limitations to effectively price discriminate debtors on their ability to pay in cash.

Banks are also famous for using *veksels* as a form of credit from their clients.

²² As noted by Schaffer (1999).

²³ See empirical evidence in Commander and Mumssen (1998).

²⁴ This situation can be modeled by a bilateral monopoly bargaining model where the value of good is different between trading parties. See, for example, Chatterjee K. and L. Samuelson (1983) Bargaining under Incomplete Information, *Operations Research*, No. 31, pp. 835-851. Their model may help explaining huge discounts observed in the *veksels* market.

Veksels in this case are usually 100 percent liquid bank obligations, e.g., *Sberbank veksels*, which play a role of quasi-money. Since such *veksels* are easily redeemed in money, they are much like other *monetary* instruments used by banks around the world, such as credit cards or (traveler's) checks. Such private money, which can be instantaneously turned into cash, emerges when it can perform functions that the government paper money cannot. For instance, there are legal restrictions on the amount of cash used in daily transactions that the bank *veksels* do not have. If compared from the liquidity standpoint of firms, the bank *veksels* and the government money are very close payment options and, when compared along this dimension, differ quite substantially from other payment instruments such as goods, debts, or commodity *veksels* that are all supposedly less liquid.

To summarize, a *veksel* is a commercial paper used as a payment that promises a delivery of either goods or money in the future. While there is some similarity between *veksels* and arrears – both are promises to pay in the future – there is an important distinction between them. *Veksel* is an *agreed* form of deferred payment whereas arrears or non-payments are *not*. Thus, arrears are a *violation* of the contract, while *veksels* are the contract.

In my sample, *veksels* were used as a means of payment in 5 percent of all sales in 1998, a rise from 3 percent in 1994 (see Figure 7).

Summary

The period from 1994 to 1998 is characterized by an increased use of non-monetary payments. By 1998 firms paid and received payments mostly in non-monetary

forms.

There are three basic forms of non-monetary instruments: barter, offsets, and *veksels*. Barter is exchange of goods without use of money. An offset is a mutual cancellation of debt. A *veksel* is a promissory note which can be repaid either in kind or in money. In 1998, barter and offsets comprised majority of non-monetary payments in roughly equal shares of 25 percent of all payment options, whereas *veksels* were used in about 5 percent of transactions.

Chapter 3. Russia's Economic Background

Introduction

Makarov and Kleiner (1999) claim that barter has been a feature of the Russian economy long before transition. In the Soviet Union, the sale of certain commodities was prohibited (monetary exchange was allowed only in the consumer goods market), so that the only permissible form of trade of extra-plan production among enterprises was barter. Makarov and Kleiner estimate the use of barter in the Soviet economy at about 5 percent of GDP. For markets such as real estate, barter was very common since bartering of housing was the only legal form of exchange, so all exchange of apartments in the Soviet Union was done through barter, often involving multi-party inter-regional chains that the author has experienced first-hand.

As statistics of the previous chapter suggest, the use of non-monetary payments has soared during the years of reform, particularly during 1994-1998. From the hypothesized 5 percent during the Soviet times, the use of non-monetary payments has risen to over 50 percent during transition.

Therefore, it seems clear that the rise of non-monetary exchange is connected to the transition and the economic environment of Russia during the period of major reforms. This chapter will describe Russia's economic environment in 1994-1998 and earlier, and will review major changes introduced to the economic organization of society during this period.

Possibly the most surprising part of the economic environment was the use of non-monetary payments. I will provide statistics on the use of non-monetary transactions

across industries, regions, and ownership categories that will provide us with some preliminary understanding of this phenomenon.

Russian Economy in Transition

Enterprises in Russia have experienced many shocks, both external and internal. The first external shock was liberalization of prices in January 1992 when setting prices became a decision of enterprise management. Deregulation of prices in the Russian economy has become widespread since 1990. For 1990, 62 percent of enterprises in my sample²⁵ reported that all their prices were controlled, whereas in 1998 the percent of such firms had decreased to 16 percent. The percent of firms with no price control grew from 25 to 65 percent over the period of 1990-1998. Liberalization of prices was the first important element in the sequence of reforms that has followed.

Liberalization of prices set off an initial price jump that later was followed by accelerating inflation fueled by the money-printing press. A World Development Indicators (WDI) report shows inflation of over 300 percent in 1994. Inflation had been moderated by 1997 (15 percent as reported in WDI), when the ruble was denominated by 1,000. During this period, payments in money had an obvious disadvantage as compared to payments in goods if the monetary payment was not adjusted for inflation.

The Soviet central distribution system started to disappear in the beginning of 90-ies so that enterprises had to insure supplies and deliver output according to signed contracts. This change set off some disorganization of activity that was further fueled by the collapse of the CMEA trade and trade within the former Soviet Union. Contracting

²⁵ Any number given without source citation is calculated from the sample of firms described in Chapter 2.

difficulties are central to the explanation of barter by Marin and Schnitzer (1998), which will be reviewed in the next chapter.

Moreover, according to Ivanenko (2002), the Central Bank credit policy has been dramatically changed. In the past, the supplier's account was automatically credited by the Central Bank when the delivery documents signed by the customer were presented at a bank. Now, firms had to insure that their customers pay for the delivery and no automatic credit was given. Thus firms had to sell their output to the final users first in order to have funds to pay their suppliers, who, in turn, would then have funds to pay further downstream. Without working capital, which was presumably eroded by high inflation, that was a big change in the payment system.

Not only the economic environment but also the internal organization of firms was changing. The laws permitting lease-buyouts and worker ownership had already been introduced in the Soviet Union. Later, mostly in 1994, majority of enterprises were privatized under the Mass Privatization Program. Most privileges in the Program were given to workers, so investors stayed away from the process. In 1994, according to my sample, 51 percent of firms became predominantly insider owned, 27 percent remained state owned, and 15 percent became owned by outsiders.

Since 1994 the ownership structure has been changing in favor of outside owners. The average insider and state shares had fallen to 36 and 22 percent respectively, the outsider share had grown to 37 percent by 1998. However, as statistics on non-monetary transactions will demonstrate later in the section, the growing private share did not provide enough incentives for the use of monetary payments.

The banking system has proven to be fragile and undeveloped. Firms witnessed

two major financial crises: in August of 1995, and in August of 1998, and at least two large exchange rate devaluations (October of 1994 and August of 1998). The Russian financial crisis in August of 1998 led to bankruptcy of many banks and was echoed in other parts of the world.

The crisis was prompted by the borrowings of the government to finance its fiscal deficit through the sale of treasury bills (GKO's), the real yield on which had been exceptionally high, well over 10 percent, and often going over 50 percent. Banks used this opportunity to re-direct their resources from the industry to the government, which received over 45 percent of total lending by commercial banks in mid-1998 as documented in Commander and Mummsen (1998).

Thus credit to the private sector was quite low, under 10 percent of GDP²⁶ on average during this period. For comparison, OECD countries, on average, had around 80 percent in 1995. The Russian Federation ranked 101 in the 1996 World Development Indicators study of ratios of credit to GDP, with Japan leading the ranking with 207 percent. All transitional countries had higher ratings except Armenia, Moldova, Kazakhstan, and Belarus. The lack of adequate supply of credit is the backbone of Commander and Mummsen's (1998) hypothesis explaining the growth of non-monetary payments. Their argument will be reviewed in the next section.

Over the same period, real incomes of workers and the aggregate demand were falling. For the period from 1990 to 1998, GDP had declined by more than 40 percent as reported in a WDI study. The authors of the virtual economy hypothesis (Gaddy and Ickes (1998a)) believe that much of the manufacturing sector of Russia is value-

²⁶ In my sample, the credit to sales ratio in 1998 was .24.

destroying under market conditions, and that only the government-sanctioned use of barter helps them to be afloat. This argument will also be reviewed in the next section.

With financial position of Russian firms worsening, firm arrears had become widespread. According to my sample, 58 percent of firms in 1994 and 72 percent in 1998 had overdue payables or receivables. The ratio of receivables as well as payables to sales had doubled from 1994 to 1998. The percent of overdue payables was two times higher than the percent of overdue receivables in 1994 and 1998, meaning that Russian firms were on average net debtors, and, as further investigation shows, they are mostly indebted to the government.

From 1994 to 1998 tax arrears had grown twofold and comprised 34 percent of all arrears (the largest category was arrears to other firms – 41 percent). 90 percent of firms in my sample had overdue tax payments in 1998.

The government, as a measure to increase tax collection, introduced *kartoteka*. If taxes are not paid within 17 days of the due date, tax authorities block firm's account (the account is placed on *kartoteka*, hence the name), so that all money that comes into the account gets re-routed to the government to pay firm's overdue tax obligations. The collection procedure is more cumbersome in the case of other creditors since it requires a court decision whereas *tax authorities enjoy a privileged position of having a direct access to firm's account without a court decision*.

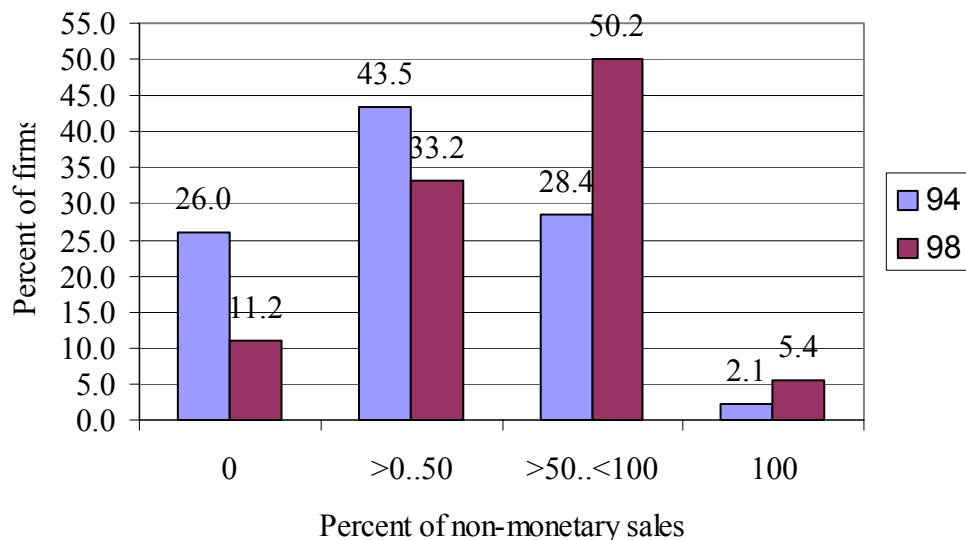
With a large number of enterprises having overdue taxes, such a radical tax collection measure creates a strong incentive to avoid the use of the formal banking system. Indeed, as empirical evidence of Chapter 5 will demonstrate, *kartoteka* is the main factor that perpetuated the use of non-monetary payments, and barter in particular.

Despite financial losses of firms in 1994-1996²⁷, less than 1 percent of firms in the sample had bankruptcy procedures initiated against them over this period. In 1996-1999 this percentage had somewhat increased, to 3-6 percent. Bankruptcy procedures in Russia, according to the law, are a 3- or 4-stage process, each stage lasting about a year. Obviously, bankruptcy had not yet been an effective debt collection mechanism against non-viable firms.

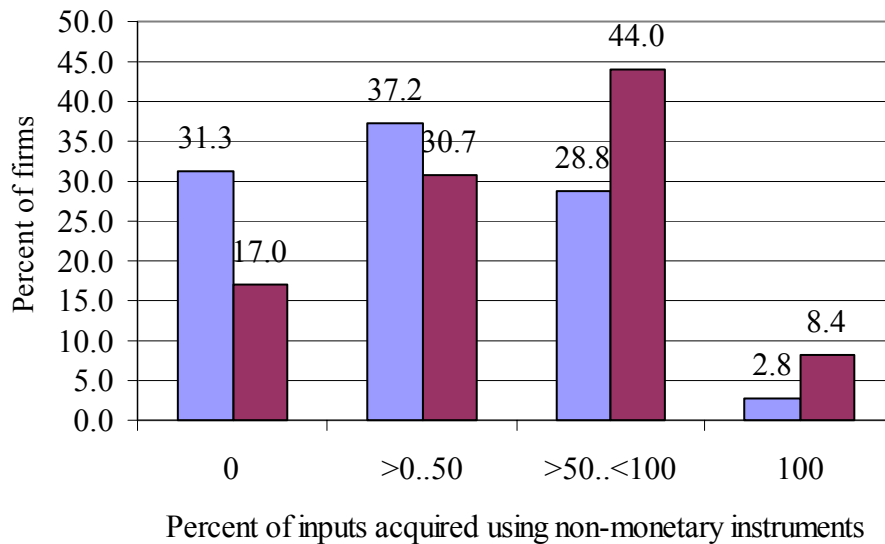
Non-Monetary Payments in Russia in 1994-1998

The most surprising element of the economic environment of 1994-1998 was the dramatic use of in-kind payments. Moreover, as Figure 8 demonstrates, the use of non-monetary payments had been increasing from 1994 to 1998.

Figure 8. Change in Intensity of Non-Monetary Transactions, 1994 and 1998



²⁷ Average non-weighted ratio of costs to sales in my sample was 1.14 (1.10) for 1994 (1998).



Source: Author's calculations based on the "Inside the Transforming Firm" survey of summer 1999.

The category of firms which collected only monetary payments for their sales and paid only in money for inputs had shrunk by approximately a half by 1998. At the same time, the category of firms which used only non-monetary payments had grown by more than two times. Other categories of firms had also demonstrated extraordinary growth in the use of non-monetary payments.

All branches of industry had actively used non-monetary payments (see Table 1). Electricity, fuel, wood, and construction materials branches of industry lead the distribution with an average unadjusted share of non-monetary payments of about 40-50 percent in 1994 and about 70-80 percent in 1998. The lowest shares were in food, light, and non-ferrous metallurgy: under 30 percent in 1994 and about 35-50 percent in 1998.

Table 1. Industry Distribution of Non-Monetary Payments (NMP), 1994 and 1998

Regions	Non-		Monetary		Payments in:			
	Inputs 98 Mean	Freq.	Inputs 94 Mean	Freq.	Output 98 Mean	Freq.	Output 94 Mean	Freq.
Electricity	.814	29	.659	25	.783	30	.572	24
Fuel	.769	8	.375	4	.703	8	.400	4
Wood	.761	7	.517	6	.834	7	.502	6
Construction								
Materials	.721	25	.432	23	.756	25	.389	25
Machine-								
Building	.544	138	.396	126	.548	138	.400	131
Ferrous								
Metallurgy	.520	11	.283	10	.538	11	.290	11
Chemical	.515	17	.333	16	.575	17	.314	17
Medicine	.500	2	.500	2	.525	2	.425	2
Other	.476	5	.120	5	.616	5	.120	5
Light	.445	39	.270	35	.498	40	.290	36
Food	.344	63	.196	58	.349	63	.222	59
Non-Ferrous								
Metallurgy	.320	5	.124	5	.538	5	.076	5
Printing	.246	7	.143	7	.283	7	.057	7
Other								
Manufacturing	.033	3	.050	3	.067	3	.083	3
Total	.525	359	.348	325	.543	361	.343	335

Source: Author's calculations based on the "Inside the Transforming Firm" survey of summer 1999.

All regions got involved in non-monetary exchange as shown in Table 2. The lowest shares of non-monetary payments are observed in North-West (mostly St. Petersburg) and Central (mostly Moscow) regions, 22 and 31 percent in 1994, and under 40 in 1998. The highest shares are found in East Siberia, more than 75 percent of all payments.

Table 2. Regional Distribution of Non-Monetary Payments, 1994 and 1998

Regions	Non-		Monetary		Payments in:			
	Inputs		Inputs		Output		Output	
	1998	1994	1998	1994	1998	1994	1998	1994
	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.
East Siberia	.752	15	.400	14	.768	15	.429	15
Ural	.681	60	.419	53	.698	59	.401	54
Volga-Vyatka	.673	20	.400	20	.665	21	.366	20
West Siberia	.626	29	.392	28	.680	29	.362	28
Povolzhie	.622	31	.432	24	.616	32	.401	26
North Caucasus	.575	48	.310	46	.565	48	.299	47
North	.561	11	.454	7	.557	11	.379	7
Far East	.446	12	.281	10	.358	12	.302	10
Central- Chernozym	.404	23	.313	23	.512	23	.422	23
Central	.373	78	.310	72	.387	79	.283	76
North-West	.271	33	.219	29	.335	33	.270	30
Total	.526	360	.347	326	.544	362	.342	336

Source: Author's calculations based on the "Inside the Transforming Firm" survey of summer 1999.

An important question is whether the use of non-monetary payments is determined by ownership. Table 3 presents the distribution of non-monetary sales by un-weighted ownership categories. The framework for constructing ownership categories relies upon classification in Earle, Estrin, and Leshchenko (1996). First, I sort all ownership types into three big groups: the state, the outsiders and the insiders. The dominant category is the one greater than 30 percent, and the sum of percents in other ownership categories. For example, "managers" is the dominant category if the managers' share is greater than 30 percent and the sum of the outsiders and the state shares. Everything else that does not fit into this definition is classified as indeterminate.

Table 3. Dominant Ownership and Non-Monetary Payments, 1994 and 1998

Dominant Ownership 1998	Non- Monetary Payments in:			
	Output 98		Inputs 98	
	Mean	Freq.	Mean	Freq.
Other firms	.577	63	.552	61
Federal gvt	.579	42	.581	44
Local gvt	.551	26	.533	26
Workers	.496	86	.452	86
Indeterminate	.563	81	.556	80
Managers	.581	17	.560	17
Persons	.557	34	.547	34
Foreigners	.387	13	.401	12
Avg/Total	.544	362	.526	360
Dominant Ownership 1994	Output 94		Inputs 94	
	Mean	Freq.	Mean	Freq.
Other firms	.440	24	.530	22
Managers	.430	6	.316	5
Federal gvt	.419	58	.427	53
Persons	.337	7	.264	7
Indeterminate	.334	103	.319	103
Workers	.309	110	.321	107
Local gvt	.256	25	.304	26
Foreigners	.130	3	.150	3
Avg/Total	.342	336	.347	326

Source: Author's calculations based on the "Inside the Transforming Firm" survey of summer 1999.

Dominant Ownership: All ownership types are sorted into three big groups: the state, the outsiders and the insiders. The dominant ownership category is the one, which is greater than 30 percent and the sum of percents in other ownership categories.

By 1998 firms under any ownership used non-monetary payments. Not surprisingly, foreigners did not use non-monetary payments extensively, although more than 38 percent of their sales were paid in non-monetary form. For comparison with other works, Commander and Mumssen (1998) have found that the state firms avoid barter but

Guriev and Ickes (1999) have found no statistically significant differences among ownership types.

I have also investigated the use of non-monetary payments by *de novo* firms (Table 4). I define *de novo* firms according to two definitions: *de novo 1* – firms that were established after 1986, and *de novo 2* – firms that had a major reorganization after 1986 (were spun off or merged).

Table 4. Use of Non-Monetary Payments by *De Novo* Firms

Firms	Year	Mean Share of Non-Monetary Payments in Sales	No. of cases
<i>De novo 1</i>	1994	.16	8
	1998	.41	11
<i>De novo 2</i>	1994	.37	108
	1998	.59	120
All	1994	.34	336
	1998	.54	362

Source: Author’s calculations based on the “Inside the Transforming Firm” survey of summer 1999.

Definitions: *De novo 1*: firms founded after 1986. *De novo 2*: firms re-organized after 1986. All: all firms in the sample which reported a non-missing value for non-monetary payments.

It appears that *de novo 2* firms are not much different from an average firm, but *de novo 1* firms seem to use less non-monetary payments than an average firm.

Summary

Falling inflation and an undeveloped banking system characterize the macroeconomic climate in Russia over the period of 1994-1998. The banking system was

still very much undeveloped and was hit at least twice by financial crises as well as two large devaluations of the ruble. There was very limited credit provided to the industry from the banking sector.

The post-privatization ownership structure has started to change, with the outsiders share growing but having a little impact on the industrial output, which had continued to fall. Firms' financial position had deteriorated and their debt levels had risen.

Non-payment of taxes had been growing. The government has introduced *kartoteka*, a collection method of tax debt. The cases of bankruptcy were almost unknown prior to 1998.

The use of non-monetary transactions had been growing. More and more firms got involved in non-monetary exchange. Firms had intensified their use of non-monetary transactions.

Non-monetary transactions are apparently not an industry specific phenomenon, all branches of industry use non-monetary payments. Construction materials industry had used non-monetary exchange most intensely. Food and other branches closer to the consumer market had lower levels of use of non-monetary payments.

Non-monetary exchange is also found in all regions, but lower shares are detected in Moscow (Central region) and St. Petersburg (North-West). In-kind exchange does not seem to be a purely regional phenomenon.

Firms of all ownership types and even *de novo* firms had used non-monetary transactions rather intensely in 1998. Ownership does not seem to determine the use of non-monetary transactions.

Overall, non-monetary exchange seems to be an economy-wide phenomenon. Factors pertaining to the economy as a whole must be initiating such widespread use of non-monetary instruments.

Chapter 4. Literature Review

Introduction

Prior to the rise of non-monetary exchange in Russia and other transition countries, there have been only a few studies of non-monetary payments. There have been a lot more studies of monetary transactions and money. Indeed, money has been invented a long time ago. First historical records describing money in the form of silver bars date back to the reign of Hammurabi in Egypt, 1792-1750 BC.

Governments and private entities had issued money. Timberlake (1987) describes a widespread use of what was called “scrips” (notes) in colonial America. Most wages in remote mining areas were paid in the company scrips, which could be redeemed in a company store. The use of scrips and other company-issued money was legal at that time that, according to Timberlake, contributed to the extensive use of such private money.

Most studies of money and monetary exchange considered barter as a prehistoric form of trade, starting with Jevons (1875), who argued that the main function of money is to eliminate a need for barter.

However, one can imagine an ideal barter economy where there is no need for money. Such barter economy is possible, argues Madden (1975), if there are a great enough number of barter transactions.

More practical studies of the modern barter contributed to our understanding of causes of barter in international trade and developed economies. Marin and Schnitzer (1995) explain 10-15 percent of reciprocal exchange in international trade as a solution to the moral hazard problem of highly indebted developing countries. Prendergast and Stole

(1996), and Magenheim and Murrell (1988) conclude that barter in developed economies is used when prices are sticky (due to obligations to existing customers, for example), in which case barter helps to lower prices in a non-obvious way. Stodder (1998) makes another interesting contribution, reporting counter-cyclical behavior of barter in developed countries.

But the real challenge for the modern economics is the phenomenon of abnormally extensive use of non-monetary transactions by firms in Russia and some other transition economies. The discussion is centered on three main hypotheses.

The first hypothesis links the rise and proliferation of non-monetary payments to the liquidity and credit squeeze in the economy (Commander and Mumssen (1998), Brana and Maurel (1999), Ellingsen (2000), Commander *et al.* (2000)). The second hypothesis claims that barter²⁸ is a superior committing device when contract enforcement is weak (Marin and Schnitzer (1999), Marin *et al.* (2000)). The third hypothesis disputes the first hypothesis on the ground that firms just pretend to be

²⁸ Commander and Mumssen (1998) and Pinto *et al.* (1999) combine all non-monetary forms under the common name “barter” on the ground that, as most explicitly stated in Commander and Mumssen, offsets and promissory notes are, in essence, derivatives of barter or, at least, very close substitutes. This research supports this view; the focus of this research is avoidance of the formal monetary system. Any form of non-monetary payment is a way to avoid a payment with money. In the light of this consideration, this study uses the word “barter” to refer to any non-monetary payment where there is no explicit explanation that only the barter form of payment is considered. Using barter as a common name does not, however, imply that all non-monetary forms are the same. Important differences among them have been noted in Chapter 2. Moreover, as empirical tests will later demonstrate, *veksels* are quite different from other forms of non-monetary payment.

liquidity constrained whereas the main cause of barter is resistance to restructuring (Gaddy and Ickes (1998a and b), Guriev and Ickes (1999), Pinto, Drebensov, and Morozov (1999)).

In the next three sections I will critically review these hypotheses. I will also briefly review other arguments found in the literature. A conclusion will summarize the literature review.

Liquidity Hypothesis

Commander and Mumssen (1998) and, later, Commander, Dolinskaya, and Mumssen (2000) use a survey of about 300 Russian firms in their analysis of barter. While there is no explicit model in either paper, both papers offer a verbal argument and provide empirical analysis.

The main idea of these papers is that barter arises when companies face liquidity problems and cannot borrow money. Liquidity problems arise when firms lack working capital to finance current operations. Barter is viewed as a substitute for bank credit for a liquidity-constrained firm. Indeed, if the recipient of barter goods cannot sell or use barter goods right away, it has effectively granted a credit to the supplier of barter goods. However, if credit in money is associated with a risk of non-payment, barter avoids this risk because the recipient of barter goods gets the goods right away instead of waiting for a monetary payment “later or never.” This is the essence of the liquidity hypothesis.

Developing the argument, Commander *et al.* (1998) finalize their reasoning arguing that barter reallocates credit among firms, thus improving their overall efficiency, but it does not create credit inside industry. The authors propose that the state sector is

and was the net creditor²⁹ of the production sector. Credit is given as a rolled over debt (i.e. tolerance of arrears) and acceptance of in-kind payments for taxes and utilities.

Commander *et al.* (2000) have used data from their survey to find support for the liquidity hypothesis. Despite various regressions, the measure of liquidity is based on a subjective opinion of managers about the financial state of the firm and thus results of such analysis can be misleading, especially taking into account counter-evidence found in Guriev and Ickes (1998).

Committing Device

Marin and Schnitzer's hypothesis (1999), later further developed by Marin, Kaufmann and Gorochofskij (2000), explains the rise of barter as a solution to the moral hazard problem of firms with regard to the firms' monetary payment for supplies when the payment enforcement system is weak, and when the supplier and the customer are locked in a bilateral monopoly situation. A formal model explains the argument.

Without going too much in detail, the argument unfolds as follows. Several assumptions are made. The first assumption is that the supplier and the customer are in a bilateral monopoly situation so that the value of the input outside their relationship is zero. Second, the customer is assumed to be liquidity and credit constrained (alike the first hypothesis) so that the customer cannot pay for the input delivery on the spot but only when the final good, produced from the input, is sold. Third, the payment enforcement system is assumed to be very costly.

These assumptions create a moral hazard problem. The customer has a strong

²⁹ Indeed, recall from the previous chapter that firms are on average net debtors.

incentive to divert its monetary payment from the deal once its output is sold.

Anticipating such behavior on the part of the firm, the supplier may refuse to deliver inputs in the first place. In a situation like this, the customer may ensure that the transaction will happen, according to Marin and Schnitzer, delivering a “barter good” as a payment for inputs. A mutually beneficial transaction takes place and the overall output decline in the Russian economy is less pronounced.

The authors acknowledge the fact that the customer may cheat the supplier with the barter good as it would with the monetary payment. However, in the model, the supplier can prevent the customer from selling the barter good elsewhere. A particular mechanism behind this proposition is left unexplained.

Although assumptions made in the argument seem to have validity in the case of Russia, where bilateral monopoly situations should be quite common, conclusions do not seem to be well justified. The supplier obviously has an incentive to insure that his delivery is paid for but the authors simply *assume* barter’s superior enforcing properties to justify the use of barter. The authors explain that goods are less anonymous than money, so it is easier to enforce barter contracts. However, Russian commercial laws treat barter and monetary transactions similarly – any obligation must be paid. Central to the argument “weak contract enforcement” is an issue in other countries. Barter, however, did not become the dominant mode of exchange there.

Marin and Schnitzer’s empirical tests of the argument use regression analysis explaining firm’s growth by the size of arrears and the share of barter in sales. Considering statistically significant relationships, use of barter seems to be negatively related to firms’ growth that is quite opposite to the model’s prediction. The model’s

prediction – the reverse relationship – was found significant in one specification only, for firms having arrears larger than 40 percent of sales. This result does not appear to be robust as also an omission of the “bankdebt” variable gives an opposite and significant sign. Validity of their test is also questioned by a very small, only 24 observations, size of the sample.

It thus appears that although the weakness of the legal system and the structure of the economy are responsible for a part of the growth of barter in Russia as my later tests will demonstrate, Marin and Schnitzer’s argument does not satisfactorily explain why barter is used instead of a monetary payment.

Virtual Economy

The virtual economy hypothesis stands out as the one with the strongest assumptions. The manufacturing sector is assumed to be destroying value, i.e. manufacturing firms are assumed to produce goods, which sell for less than the cost of their production.

Gaddy and Ickes call the Russian economy a virtual economy because prices are distorted through barter thus making it possible for survival of otherwise inefficient manufacturing sector. To make the argument work, Gaddy and Ickes argue that all economic agents prefer the virtual economy to the real one.

They propose that barter is a chosen survival strategy for unviable manufacturing firms in Russia (Gaddy and Ickes (1998a)). The unviable manufacturing firms initiate, support, and survive through barter and the virtual economy instead of exiting or restructuring. The government also supports the virtual economy because those employed

in manufacturing are perceived as an important part of the electorate. Through the foreign trade and price controls, the government manipulates the extracting sector (Gaddy and Ickes (1998b)),³⁰ which has nothing to do but to follow the government's objectives.

The virtual economy argument has become very popular.³¹ The most controversial assumption, which has attracted much attention, is the value-destroying nature of the Russian manufacturing.³² The authors justify this assumption referring to the Soviet past when manufacturing goods were over-priced and resources under-priced.

However, the majority of manufacturing companies may *appear* value destroying if a large part of their costs is a payment to the energy sector *monopolies*. Unfortunately, the problem of monopoly pricing did not receive much attention in the argument, whereas it can be important. The manufacturing sector may *seem* value-destroying as long as it purchases energy from natural monopolies at *monopoly* prices and not at *the marginal cost* that would make the manufacturing sector value-adding. Of course, the world and domestic prices of energy differ when compared at the exchange rate, but the whole system of domestic prices is different from that of the world. Interestingly enough, a study by Guriev and Ickes (1999), which supposedly further develops the virtual economy argument, *assumes* that the Russian energy monopolies price above the marginal cost (see more on this point in the next section).

³⁰ See a formal critique of Gaddy and Ickes' four-sector virtual economy model (1998b) in Makarov and Kleiner (1999).

³¹ See the newly published book by Gaddy and Ickes (2002) "Russia's Virtual Economy".

³² As it is proposed in Menshikov's letter (2000), the very concept of value destruction does not seem adequate. A better term, from the economics standpoint, is depression.

According to the virtual economy paradigm, Russian manufacturing firms survive by inflating their prices so that, at the end, the extracting sector has to pay for their inefficiency. However, Marin *et al.* (2000) did not find unfair terms of barter trade between the extracting and manufacturing sectors in their empirical analysis.

Guriev and Ickes (1998) is probably the most direct empirical study of the virtual economy hypothesis. This study has examined the relationship between barter and labor productivity. I have repeated exact tests used by Guriev and Ickes and have received results similar to theirs: labor productivity was found to be associated with a larger share of barter in sales.³³ Guriev and Ickes' interpretation of this finding is that it supports the virtual economy argument: low productivity firms sell for barter whereas high productivity firm sell for money. However, another explanation is also possible: low liquidity (=less productive if a firm is reluctant to adjust employment³⁴) firms resort to barter.

Overall, the virtual economy hypothesis makes an important contribution to the economic debate about the fate of the Russian economic reform. Indeed, much needs to be done to become a developed market economy. Hence the critical view of Russian manufacturing sector draws attention to its problems. However, when non-monetary payments are considered, the virtual economy hypothesis does not provide a convincing argument why they have grown so much. As in the case with the unjustified assumption in Marin and Schnitzer, the authors here also make an unjustified assumption about

³³ It is also a good test of my data in relation to other data. Results are reported in Appendix C.

³⁴ Russia had surprisingly high employment levels (about 95 percent) despite severe depression (40 percent decline of GDP) in 90s.

barter's superior masking properties that make Russian economy virtual.³⁵

Other Explanations

Besides the three main hypotheses reviewed above, there are other studies, which either develop peripheral arguments of these hypotheses or combine them in some way. Brana and Maurel (1999), for instance, claim to find evidence that “good” firms use non-monetary payments as a substitute for credit and liquidity shortage, following Commander and Mumssen (1998), while “bad” firms use non-monetary payments as a way to avoid costly restructuring as in Gaddy and Ickes (1998a and b).

Pinto, Drebensov, and Morozov (1999) claim that Russian economy still experiences non-trivial soft budget constraints that manifest themselves through the tolerance of non-payment of taxes and implicit subsidization of the manufacturing sector through barter with extracting sector.

Guriev and Ickes (1999) use a model by Guriev and Kvasov (1999) in the empirical tests to claim that barter can be a form of price discrimination. In the model, by assumption, the monopolist offers two types of sale contracts, one for cash, and the other for barter.³⁶ An implication of this assumption is that the average value of output received

³⁵ It seems possible to imagine a system where monetary prices are distorted to the same extend.

³⁶ Does *Gazprom* (and other natural monopolists) indeed offer a menu of contracts? My conversations with managers of *AO Altaienergo* suggest that natural monopolies do not offer a menu of contracts from which the buyers self-select but do the selection themselves based on the history of relations with a particular firm. Knowledge, which is certainly imperfect, of the financial situation of a buyer, dictates a method of payment. Firms in deep distress pay with their output or in *veksels* whereas profitable firms are demanded cash only.

through barter is higher than the monopoly's marginal cost. In effect, Guriev and Kvasov assume my earlier point of criticism regarding the value-destroying nature of the manufacturing sector: *the manufacturing sector appears to be value-destroying as long as it purchases inputs from the extracting sector at a monopoly price but not at the marginal cost.*

In any model of price discrimination, another implicit assumption is the separation of markets. It means that buyers cannot or are not willing to re-trade the monopoly good among themselves. In the case of barter, this assumption can be questioned since there is a thick intermediaries market for barter goods. For evidence, see Commander, Dolinskaya, and Mumssen (2000).

Most of studies attribute a secondary role to the tax evasion³⁷ as a cause of non-monetary exchange, except for the claim of Kuznetsov (2000) regarding the development of a “new industrial organization.”³⁸ To date, empirical evidence on tax evasion,

³⁷ Taxes are named problem number *one* of doing business in Russia in the survey by *Expert*, No. 42, 1999, pp. 23-28. Korostikova T. (2000) “Kormushka Dlia Bankrotov I Chinovnikov,” in *Argumenty i Fakty* weekly, No. 3, 2000 cites newspaper *Paninter*, No. 6, May 1999 regarding information about existing textile concern “Paninter”. With a gross profit margin of 25 percent, the concern is unprofitable: it still owes 28,000 rubles in taxes under the tax regime of that time.

³⁸ Pavel Kuznetsov (2000) from the Center for Economic Reform at the Government of the Russian Federation calls the non-monetary system a “new industrial organization.” Firms are implicitly – for the tax police and, unfortunately, for researchers – integrated into a coherent system, where financial flows are separated from physical flows so that researchers, as well as the tax police – cheating on taxes being named the *prime* cause of this system – observe non-monetary exchange and indebted firms while untaxed unnoticed monetary income is generated in some affiliated company.

unfortunately, is available only in the form of managers' answers to a direct question on tax evasion (see, for example, Commader and Mumssen (1998), Hendley, Ickes, and Ryterman (1998), Aukucionek (1997), Pinto *et al.* (1999), Marin *et al.* (2000)), which is thus subject to an under-reporting bias.

Theoretical studies suggested that barter and other forms of non-monetary payments have become institutionalized³⁹ in Russia. The main contribution to the argument has been made by Russian economists,⁴⁰ most notably, Polterovich (1999). In a simple model Polterovich shows that if *transaction costs* of barter decline with the number of participants, two equilibria can be supported: monetary, where no agent uses barter, and barter, where everyone uses barter. Introduction of, what Polterovich calls, *transformation costs* ensures multiple equilibria, where any level of barter can be supported as a Nash equilibrium. Furthermore, Polterovich develops a useful set of tools to describe what he calls an *institutional trap* – an inefficient stable equilibrium emerging during transition as a response to major shocks to the economic system.

It is important to draw attention to one of the first policy-oriented studies of barter by Hendley, Ickes, and Ryterman (1998). They have closely examined taxation and payment systems in Russia, blaming their fundamentals for the growth of barter. While there was very limited empirical evidence supplied in support of their conclusions, the *kartoteka* phenomenon has been defined, described, and attributed a role in the growth of barter. However, without providing convincing empirical evidence, the question “By how

³⁹ The most explicit examples are Guriev and Ickes (1998) and Pinto *et al.* (1999). See also a work on institutionalization of wage arrears by Earle and Sabirianova (2000).

⁴⁰ See also a work of Makarov and Kleiner (1999).

much does *kartoteka* influence barter?" has remained open. The present study will not only answer this question, but will also demonstrate that *kartoteka* is a very important factor facilitating the growth of barter and non-monetary payments.

Summary

Before the rise of non-monetary exchange in Russia there has been only a few studies of non-monetary exchange. Barter is often regarded as a pre-historical form of exchange that was replaced by a more efficient monetary exchange where there is no need for a double coincidence of wants. Barter existing in developed economies was usually regarded as a way around contractual obligations or as a solution to the moral hazard problem of the cash starved partner on the other end of transaction. James Stodder (1998) has also found evidence for counter-cyclical behavior of barter in developed countries.

There are many studies of non-monetary exchange in Russia. Most studies, however, can be attributed to one of the three main hypotheses. The first hypothesis links the rise of barter to the lack of credit and liquidity in the manufacturing sector. Firms with liquidity difficulties and no access to credit use non-monetary transactions with other firms to compensate for non-existing credit. They barter with the government to receive implicit subsidies through higher barter prices. The present study supports the liquidity argument, and will provide evidence on the liquidity causes of barter.

The second hypothesis explains the use of barter and other non-monetary transactions as a solution to the moral hazard problem when firms are locked in a bilateral trade. Barter is claimed to be a superior committing device when contract

enforcement is weak. However, superior committing properties of barter are not well justified in the argument. Assumptions of the model do not cover all of the manufacturing. Besides, the empirical evidence is not comprehensive. Therefore, this hypothesis, providing an interesting contribution to the study of barter, does not satisfy the question “Why there was an explosion of barter trade in Russia?”

The third hypothesis claims that barter is an element of a new economic organization called the “virtual economy.” Unviable manufacturing firms survive through bartering with extracting monopolies. I have offered counter evidence and criticism of this hypothesis.

Overall, all three hypotheses provide useful insights for the explanation of the growth of non-monetary trade in Russia. However, the reviewed hypotheses suffer from the lack of empirical support or from weak arguments. The overall goal of the present study is not only to present a comprehensive explanation for the growth of non-monetary payments, but also, and may be most importantly, to find other factors which contributed to the growth of non-monetary economy in Russia and which have been missed in the previous research. Such attempt will be undertaken in the next chapter.

Chapter 5. A Contribution to Explanations of Non-Monetary Exchange

Introduction

Despite the many, often contradictory, explanations about the rise of non-monetary exchange reviewed in the previous chapter, several questions still remain unanswered. Among them:

- Does the lack of liquidity indeed cause non-monetary trade?
- If so, can the lack of liquidity alone explain the growth of non-monetary payments?
- What makes non-monetary exchange so stable?

Using two data sources – the survey described in Chapter 1, and the balance sheet data of most Russian firms collected by *Goskomstat* – as well as observations about the environment in which firms operated and still operate in Russia, I will propose some possible answers to these questions.

In what follows, I will first return to the liquidity hypothesis. It seems the most obvious point to start – liquidity is mentioned in all of the reviewed works. Some researchers view it as important, other view it as misleading.

In the first section, I will re-test specification offered by Guriev and Ickes who treat the liquidity argument as misleading. Contrary to Guriev and Ickes's results, my data, in the same setting, supports a link between liquidity and non-monetary payments.

In order to strengthen support for the liquidity argument, I construct an additional test using information about large and medium size firms in Russia. This test strongly supports the liquidity argument: liquidity matters and it is an important factor behind the

growth of non-monetary trade.

Next I look for other factors that could have contributed to the growth of non-monetary trade. The practice of tax collection, *kartoteka*, seems to be an obvious candidate for inspection. As I have mentioned before, *kartoteka* should have an important effect on the use of non-monetary trade.

In order to quantify the effect of *kartoteka*, I run several tests which show that *kartoteka* was an important factor determining the level of non-monetary payments. About 10 percent of the use of non-monetary payments appears to be linked to being on *kartoteka*.

Lastly, taking both liquidity and *kartoteka* into account, I investigate their effects on non-monetary payments. I find that liquidity is an important initiator of non-monetary exchange, whereas *kartoteka* contributes to its continuous use.

Revisiting the Liquidity Hypothesis

In many surveys, the liquidity problem was the most common answer of managers to the question about the reasons for barter.⁴¹ Although this answer is probably biased upwards, for example to induce state assistance, it is intuitively clear that if a firm did not

⁴¹ For instance, Commander and Mumssen (1998) present the following most important reasons as measured by the percent of answers to the question about reasons for non-monetary trade:

<u>Reason</u>	<u>Barter</u>	<u>Offsets</u>	<u>Veksels</u>
Liquidity of partner	74	73	66
Liquidity at own firm	72	73	68

have money to pay for inputs, barter is a good option to continue operations under the economic conditions in Russia in 1994-1998: severely limited credit and the bankruptcy (payment enforcement) mechanisms that did not work. Recall from Chapter 3 that the issued credit was below 10 percent of GDP and that less than one percent of firms were under bankruptcy proceedings. At the same time losses were widespread.

Interestingly, in liquidity crisis a barter transaction can be preferred to a regular (monetary) transaction by the producer of the barter good and its supplier. Liquidity crisis of the producer means that it is very costly for him/her to wait for the sale of the barter good. Hence, there are gains from trade – the waiting time of the sale – that can be divided. I offer an example of such a situation in Appendix B. However, in order for the argument to work, one has to assume liquidity problems and the unavailability of external financing.

To date, empirical analysis of the liquidity hypothesis has given contradictory results. Commander *et al.* (1998, 2000), using an indirect measure of liquidity, have presented evidence for a link between illiquidity and non-monetary transactions. On the other hand, a study by Guriev and Ickes (1999), found no significant relationship between liquidity and barter.

Why do Guriev and Ickes' results show no relationship? Are their results an effect of the particular data sets they use? To answer these questions I have put their specification for a test using my data. I have followed their specification⁴² as closely as possible:

⁴² A rationale for this specification is briefly discussed in Guriev and Ickes (1999) and I will not repeat it here since the mere purpose of this exercise is to re-test their results using new data.

$Barter\ in\ sales\ 98_i = a_0 + a_1\ Liquidity\ 96_i + a_2\ Size\ 97_i + a_3\ Exports\ 98_i + A_4\ INDUSTRY\ DUMMIES_i + \epsilon_i$, where⁴³

Barter in sales 1998 is the ratio of barter to output,

Liquidity 96 is the ratio of the ‘monetary means’ item from the balance sheets that encompasses cash, money in the current ruble account, money in the foreign currency account, and ‘other monetary means’ to total revenue in 1996,

Size 97 is a log of employment in 1997, and

Exports 98 is exports to the West as a ratio of output in 1998.

I report the results of the test in Table 5 below.

Table 5. Liquidity and Non-Monetary Payments: Repeating Guriev and Ickes’ Test

<i>Dependent</i> →	Barter in sales 1998 SITF			Barter in sales 1996 G&I
<i>Independent</i> ↓	Tobit: M.E.	Tobit: Coef.	OLS	OLS
Liquidity 96	-.012*** (.005)	-.031*** (.012)	-.021** (.009)	-.02 (.12)
Size 97	.002 (.009)	.005 (.025)	.007 (.020)	.014 (.011)
Exports 98	-.140*** (.037)	-.361* (.216)	-.303* (.168)	-.18** (.07)
Tobit: Pseudo R² OLS: R²		.115	.118	.16
N		185		350
N (depvar=0)		46		na
N (depvar=1)		1		na

⁴³ The summary statistics and the precise definitions of variables that I use are given in Appendix A.

Notes:

1. M.E. = marginal effect. Standard errors are in parentheses. Results for the industry dummies and the constant are not reported.
2. Bold indicates significance at a level of 10 percent or less. Significance: ***=1 percent, **=5 percent, *=10 percent.
3. SITF=results from “Survey ‘Inside the Transforming Firm’” of 1999, G&I = results from Guriev and Ickes (1998).
4. Pseudo $R^2 = S/(S+Var_hat)$, where $S=stddev(X'b_hat)*(N-1)/N$, $stddev$ = standard deviation, b_hat is a matrix of ML estimates of coefficients, and Var_hat is a ML estimate of variance. This is a measure of McKelvey and Zavoina (1975) which is proved the most applicable to the Tobit model, see Veall, M.R. and Zimmermann, K.F. (1994) “Goodness of fit measures in the Tobit Model”, *Oxford Bulletin of Economics and Statistics*, 56.

I report results of the TOBIT regression, which is a more appropriate specification because the measures of barter are limited from below and above, and thus the OLS regression has non-conventional error terms. OLS estimates are given only for direct comparison with Guriev and Ickes (1998) results.

Results of the tests suggest that barter is influenced by past liquidity problems: the more money is in the firm’s possession, the less barter it uses.

Guriev and Ickes (1998) claim to have an unbiased measure of liquidity, constructed from companies’ financial statements. I have also used companies’ financial statements to construct my liquidity measure.⁴⁴ Therefore this discrepancy in results should be attributed to differences in data.

⁴⁴ The liquidity measure was constructed from the balance sheets data reported in the database *GNOZIS*, which is a commercial database of all large and most medium size companies in Russia.

Liquidity Matters

To build up further support for the liquidity hypothesis, I have decided to strengthen every aspect of the test reported in the previous section. First, I have acquired a database collected by *Goskomstat* in 1997-99, consisting of the balance sheets of most large and medium size Russian companies. Thus I have substantially increased the sample size since I have found a way to proxy for non-monetary payments using these data.

Second, I have reconstructed the measure of liquidity. The old measure did not take into account claims on firm's liquidity. "Monetary holdings" were simply adjusted by the firm's size (sales or revenue). The new measure pays more attention to firm's net financial standing using "payables" as a weight for the same numerator. As a result,

Liquidity (LIQ) = End of Year Monetary Balance / Payables,

or how much money there is at the end of year per one ruble of payables.

To illustrate this measure, let's consider two firms with the same monetary holdings (or even same volume of sales). The firm having less accounts payable will have a higher liquidity index – it has more unclaimed cash which can be used for purchases. The other firm, on the other hand, is constrained in purchases given its account payable are enforceable. If the liquidity hypothesis is true, it is more likely that the second firm will engage in non-monetary trade.

With this measure of liquidity, which is identical to a "coefficient of liquidity" used in standard financial calculations in Russia,⁴⁵ I have tested its relation to non-

⁴⁵ Defined as "an indicator of the ability of a company to promptly settle its short-term financial liabilities."

monetary sales, defined as:

$$\mathbf{Non-Monetary\ Sales\ (NMS) = 1 - (Monetary\ Sales / All\ Sales)}$$

To give this test more credibility I have also included last year's reported profit per employee (PE) as a variable capturing company's financial standing. This variable can potentially influence the amount of used non-monetary sales (if under-performing companies use a greater proportion of sales in non-monetary form).

To control for other firm specific characteristics, size (measured by a log of 1997 employment), location, and industrial affiliation are also included in the analysis.

Since, according to the balance sheets data, about 18 percent of companies did not use non-monetary forms of trade in 1998, I estimated the following equation using one-side TOBIT:

$$\mathbf{NMS98 = a1NMS97 + a2LIQ97 + a3PE97 + b1size97 + b2region + b3branch + error\ term}$$

Estimates of the coefficients of this equation show by how much a firm's previous year's liquidity influenced its following year's level of non-monetary payments. Other variables also taken into account include:

- previous year's non-monetary payments
- last year's profitability
- size
- location
- industrial affiliation.

Sometimes it is translated as a quick or cash ratio (and from Russian it can be translated as a "coefficient of absolute liquidity").

Table 6 reports the estimation results.

Table 6. Liquidity and Non-Monetary Payments: New Test

Variable	Coefficient
NMS97	0.194*** (0.018)
LIQ97	-0.202*** (0.017)
PE97	0.000 (0.000)
size97	0.040*** (0.004)
C	0.175*** (0.028)

Dummy variables

Regional		Industrial	
Variable	Coefficient	Variable	Coefficient
	0.134***		0.066***
ELECTRO	(0.032)	NORTH	(0.020)
	0.015		-0.067***
FUEL	(0.023)	NORTHW	(0.022)
	0.083***		0.162***
FMETAL	(0.026)	VVYATKA	(0.022)
	-0.142***	CCHER	0.100***
NFMETAL	(0.028)		(0.025)
	0.057***		0.108***
CHEMICAL	(0.020)	POVOL	(0.018)
	0.021		0.065***
WOOD	(0.030)	NCAU	(0.020)
	0.136***		0.217***
CONMAT	(0.031)	URAL	(0.016)
	0.082***		0.145***
LIGHT	(0.026)	WSIB	(0.018)
	-0.318***		0.117***
FOOD	(0.019)	ESIB	(0.024)
	-0.080***		0.051**
OTHER	(0.026)	FEAST	(0.023)

Pseudo R2 = 0.24

N = 4899

N (depvar=0) = 765

Notes:

1. What is reported are the marginal effects of the TOBIT regression. Standard errors are in parentheses. Bold indicates significance at a level of 10 percent or less. Significance: ***=1 percent, **=5 percent, *=10 percent.
2. In the set of dummy variables, the omitted categories are the central region and the machine-building industry.
3. Collinearity diagnostics, according to D. Belsley, E. Kuh, and R. Welsch (1980), did not indicate any critical problems (condition number is 16.06).
4. Marginal effects are computed by LIMDEP using the following formula: $\partial E[y_i|x_i]/\partial x_i = \beta \times \text{Prob}(0 \leq y_i^* \leq 1) = \beta[\Phi((1-\beta'x_i)/\sigma) - \Phi((- \beta'x_i)/\sigma)]$, where β is the estimated vector of coefficients, σ is the estimated standard deviation of the distribution, y_i^* is the latent (unbounded) variable, y_i is the observed (bounded) dependent variable, Φ is CDF of normal distribution, x_i is the vector of means of independent variables. In effect, the coefficients are scaled down by a factor, which could be very roughly approximated by the proportion of non-limiting observations.

The main result is that last year's liquidity is found to be associated with non-monetary sales. Despite other possible determinants of a firm's non-monetary sales (such as previous year's non-monetary sales, profitability, size, regional and industrial association), liquidity stands out as the significant factor negatively associated with the future use of non-monetary means of payment.

There is a concern that this result is indicative of a simple identity $NMS=1-MS$, where MS and NMS are measures of the ratio of monetary and non-monetary sales in total sales, respectively.

If the constructed measure of liquidity (LIQ) and a measure of monetary sales in

total sales (MS) were closely related (also across 1998 and 1997), then the reported finding would simply confirm the above identity.

Are LIQ and MS closely related? Collinearity diagnostics of the explanatory variables show that LIQ and NMS (or 1-MS) do not appear to be collinear. Therefore, across firms, there is no trivial linear or near-linear relation between these two measures.

The lack of this relation can be explained by how these two measures are constructed. It is hard to imagine that a company's payables and sales behave in some trivial fashion (move in opposite directions?), although some very limited assumptions can be made in regard to monetary income over the year and the amount of monetary holdings at a particular date (move together?).

Another interesting result of the regression is the disassociation of last year's profitability and the following year's non-monetary payments. Profit per employee is a commonly used measure of a firm's viability. The finding that the share of used non-monetary payments is linearly independent of a firm's previous year profitability leads to the tentative conclusion that the use of non-monetary payments is not connected to the distress a firm is in. In other words, there is no systematic variation between profitable and unprofitable firms in regard to their use of non-monetary payments. Moreover, if profitability is moving in the same direction as productivity, this finding provides additional counter evidence to the "virtual economy" hypothesis.

It is also important to note that profit per employee and the liquidity measure appear not to be collinear, as is supported by the BKW⁴⁶ test. This suggests, therefore, that a firm's liquidity problems and profitability (possibly even viability and

⁴⁶ D. Belsley, E. Kuh, and R. Welsch (1980).

productivity) are not related.

To summarize, the most important finding is that illiquidity has an effect on the use of non-monetary payments. This raises two questions: why there was a dramatic decline of liquidity and what is the mechanism connecting illiquidity and non-monetary payments? Ivanenko (2003)⁴⁷ proposes an answer to the first question: illiquidity is a consequence of the “unavailability of external funds” in Russia in the late 1990s.⁴⁸ The second question is addressed in the following section.

Kartoteka

The present work is the first study to closely investigate the effect of *kartoteka*, a routine tax collection method of withdrawing overdue taxes from a firm’s bank account. One of the first studies of barter – a paper by Hendley, Ickes and Ryterman (1998) – cautions about the possible negative effects of this tax collection method. Lack of data prevented these authors from making any definite conclusion about the magnitude of the effect of *kartoteka*, and thus *kartoteka* was attributed a necessary but secondary role. This study goes much further: it not only quantifies the effect of *kartoteka*, but also decomposes it for firms with different exposure to non-monetary payments. Most importantly, I will show that the effect of *kartoteka* is one of the prime factors influencing the level of non-monetary payments – especially for firms which are

⁴⁷ Ivanenko V. “Access to Liquidity and Non-monetary Trade”, *Post-Communist Economies*, 16(1), March 2004.

⁴⁸ Similar claims are also made in *The Gaidar Institute’s* annual reports. See, for example, <http://www.iet.ru/archiv/zip/1993.zip> for 1993 (In Russian).

accustomed to the use of non-monetary payments.

All of the other studies of non-monetary payments, the most important of which I have reviewed in Chapter 4, do not consider *kartoteka* explicitly, and none of them quantify its effect on non-monetary payments. A reason for this could be that *kartoteka* is not a well-known institution for those who do not closely study taxation practices in Russia. Also, given disorganization of the government enforcement mechanisms in Russia during the late 1990s, it is hard to predict *a priori* how strong an effect *kartoteka* has on non-monetary payments.

I begin the investigation with Table 7, which shows the annual flows of firms to and from *kartoteka*. It is broken down by firms on and off *kartoteka* at the end of the previous year.

Note that the number of firms on *kartoteka* has been steadily increasing from year to year. If at the end of 1991 less than 8 percent of firms were on *kartoteka*, by 1998 this number has had grown by more than 8 times. In 1998, the majority – more than 66 percent – of firms in my sample were on *kartoteka*. The sample has good representative qualities, as I have described in Chapter 1, so I would argue that the **majority of industrial firms in Russia were on *kartoteka* by 1998.**⁴⁹

Moreover, *kartoteka* is a stable phenomenon. No less than 55 percent (75 percent on average) of firms, which got on *kartoteka* in year t-1, remained on *kartoteka* in year t.

Furthermore, firms not on *kartoteka* are the ones that were not on *kartoteka* in the previous year. On average, 97 percent of the firms off *kartoteka* in the current year stayed

⁴⁹ Note also, recalling Chapter 3, that by 1998 the majority of transactions of Russian firms were carried out in non-monetary means.

off *kartoteka* the previous year.

Lastly, flows off and on *kartoteka* are drastically different: on average, 25 percent of the firms off *kartoteka* in the previous year went on *kartoteka* in the next year, whereas, on average, only 3 percent of the firms on *kartoteka* in year t-1 went off *kartoteka* in year t.

Table 7. The Rising Importance of *Kartoteka*

	Year								Average over years
	91	92	93	94	95	96	97	98	
Percent of firms on <i>kartoteka</i> as % of total	7.78	12.82	21.88	35.88	48.48	59.62	66.39	66.67	39.94
	100	100	100	100	100	100	100	100	100
of which On <i>kartoteka</i> the previous year, % of firms on <i>kartoteka</i>	88.89	57.78	55.84	62.20	72.57	79.26	87.65	93.50	74.71
Off <i>kartoteka</i> the previous year, % of firms on <i>kartoteka</i>	11.11	42.22	44.16	37.80	27.43	20.74	12.35	6.50	25.29
Percent of firms off <i>kartoteka</i> as % of total	92.22	87.18	78.13	64.12	51.52	40.38	33.61	33.33	60.06
	100	100	100	100	100	100	100	100	100
of which On <i>kartoteka</i> the previous year, % of firms off <i>kartoteka</i>	0.31	0.33	1.09	0.00	1.08	3.40	4.07	13.01	2.91
Off <i>kartoteka</i> the previous year, % of firms off <i>kartoteka</i>	99.69	99.67	98.91	100.00	98.92	96.60	95.93	86.99	97.09
Total number of firms	347	351	352	354	361	364	366	369	358

Source: Sample calculations.

Note: Sample is made consistent for year-to-year comparisons.

Based on these observations, I conclude that firms were pushed onto *kartoteka* over the period of 1990-1998. The pushing factors were quite strong over this period, with the exception of 1998 when the inflow onto *kartoteka* had slowed (although it was still larger than the outflow). Over the same period, firms had only very weak incentives or opportunities to get off *kartoteka*.

Recall from Chapter 3 that firms go on *kartoteka* when the tax debt becomes greater than a certain threshold for a certain period of time. Can firms avoid getting on *kartoteka*? Yes, if their tax obligations are promptly met. In the environment of the late 90s in Russia, when the bankruptcy law did not yet punish those who did not honor their obligations, firms may have had an incentive to give a higher priority to a payment to suppliers, for example, than to a payment to the tax authorities. In a way, not paying the government can be a survival strategy for firms when credit is unavailable. Indeed, the worst that can happen for non-payment of taxes is *kartoteka* which can be avoided by an alternative (and legal) route – non-monetary methods of payment. My interviews with a tax inspector in Novosibirsk confirm that most firms had such priorities.

For firms on *kartoteka*, incentives to be in the monetary zone drastically diminish. It does not mean that cash is less desirable; it means that using a bank account is not an attractive option. For example, a recipient of a bank transfer on *kartoteka* cannot use the money for anything because it will be taken as a payment for overdue taxes. For such a firm it is better to receive a non-monetary payment (let alone to make one). Note that if the other side to a transaction is a liquid firm off *kartoteka*, the firm on *kartoteka* may ask the liquid firm to pay in non-monetary means. Thus, *kartoteka* helps to spread the use of

non-monetary means.

Kartoteka rules were, and still are, quite strict. In essence, the banks had to follow the government rules on a moment's notice from a tax authority clerk. Interestingly, a somewhat similar tax enforcement system is in place in the United States. If income taxes are not paid, an Internal Revenue Services clerk may issue a bank levy which instructs the bank to freeze money in the account of the delinquent taxpayer on the date the levy is received and make a transfer to the IRS after 21 days. However, there is a possibility of negotiation or a court hearing.

In the case of *kartoteka*, negotiation is also possible. But negotiation usually concerns only a temporary relief from the *kartoteka* status, often for one incoming payment only. The American bank levy system is a one-time shot (another levy is needed to initiate another withdrawal), whereas the Russian system requires a withdrawal of the *kartoteka* notice through another notice. Otherwise, the *kartoteka* status remains in effect.

The Russian Civil Code states that certain claims must be honored before the tax claims. The Civil Code gives a higher priority to payments ordered by the court for cases regarding compensation for work-related health damage and for contracted work. But such claims seem minor, whereas tax claims concern a large portion of income.

The *kartoteka* system was later also imposed for the unconditional withdrawal of payments for water, waste disposal, and the use of other utility services. *Kartoteka* was a draconian measure, given that the majority of companies in Russia in the late 90s lacked liquidity.⁵⁰ *Kartoteka* deprived companies from using the banking system: money

⁵⁰ See Ivanenko (2003).

received in the account would simply disappear in the *kartoteka* “pigeonhole”.⁵¹

Can firms get off *kartoteka* once they are on it? Yes, if it is worth paying the increased tax debt to gain access to the formal banking system. However, until the flow of liquidity resumes at a reasonable rate or the tax debt is restructured, it can be cheaper to continue to use the non-monetary system than to get into the monetary zone. The costs of the non-monetary system are larger than that of the monetary system due to complex trade arrangements and the lack of adequate information about the profitability of transactions.⁵² However, for the switch to the monetary zone, one has to compare the transaction costs of the non-monetary system and the costs of getting off *kartoteka*, or transformation costs⁵³, which can be larger. In the late 90s, the penalties for the non-payment of taxes were large⁵⁴, so the tax debt quickly became a burden, which was hard or impossible to eliminate.

Without a sharp and continuous decline of firms’ liquidity in the late 90s,

⁵¹ *Kartoteka* in Russian literally means “a catalog system”, often used in libraries. Notes about borrowed books (or claims on funds) are stored in a pigeonhole.

⁵² My father was once hired as a consultant to help assess the profitability of complex barter-offset arrangements.

⁵³ The terms “transformation costs” and “transaction costs” used in this manner have been introduced by Polterovich (1999).

⁵⁴ Penalties for the delay of tax payments were approximately equal to the Central Bank refinance rate. Thus, once a firm defaults on tax payments, the tax debt builds up interest as if the firm had borrowed from a bank. For the delay of a payment to the Pension Fund, for instance, the penalty was 0.3 percent of the debt for every day of delay, that is 109.5 percent annually (the average Central Bank refinance rate over the period 1994-1998 was 110.5).

kartoteka would not have played a central role in the facilitation of non-monetary trade. In essence, *kartoteka* is that missing link in the literature that connects illiquidity and non-monetary payments. Note that with recovery of liquidity inflows⁵⁵ after 1998, the number of firms on *kartoteka* went down.⁵⁶

Kartoteka is also an institutional factor; its effect fits into Polterovich's (1999) theory of institutional traps. It is something that cements an existing condition, complicating it so much that a shock is needed to get an economy out of such a non-monetary equilibrium. In Russia, this shock was the devaluation of the ruble and the default of 1998, after which the Russian economy started to re-monetize.

Kartoteka and Non-Monetary Payments

To test the relationship between *kartoteka* and non-monetary payments, I use an

⁵⁵ As has been documented, the use of non-monetary payments had been increasing over the period 1994-1998. However, in 1999, for the first time since the beginning of reforms, the opposite tendency was observed. Tsukhlo (2000) of the Institute for the Economy in Transition (*Gaidar* Institute) reports: "Based on answers to the dynamics of monetary and barter demand, one can obtain an index of substitutability for one and the other. Substitution of barter by monetary demand happens if the growth of monetary sales is accompanied by a decrease or non-increase of barter trade; non-growth of monetary sales – by a decrease of barter. As our calculations show, from August 1998 to January 1999 barter demand had substituted monetary demand. But its intensity, which peaked in October of 1998, has been declining. In February 1999, the substitution of barter for monetary demand was observed for the first time. This tendency has been observed ever since. In February 2000, the index of substitutability reached its maximum: the monetary demand substituted barter demand in 23 percent of enterprises, the reverse process happening only in 7 percent." This statement is based on a monthly survey of industrial companies.

⁵⁶ I will talk more about the state of affairs since 1998 in the Conclusion.

explanatory binary variable capturing *kartoteka* status at the end of year as it is reported by firm's managers (0=off *kartoteka*, 1=on *kartoteka*), and a set of control variables, in regressions explaining the use of non-monetary payments for the purchase of inputs and for the sale of output. In the simplest test, the results of which are reported in Table 8 below, the control variables are the lagged liquidity measure defined in the previous chapter, the firm size measured by the log of employment, and dummies for industry affiliation and location:

$$NMP_{98i} = a_0 + a_1 Kartoteka_{97i} + a_2 Liquidity_{97i} + a_3 Size_{97i} + A_4 INDUSTRY AND REGION DUMMIES_i + \epsilon_i$$

Here, the year of measurement is at the end of the variable name. *Kartoteka 97* is defined above, and *NMP* is the share of non-monetary payments in purchases or sales, and it is constructed using managers' answers to the question about the percent of purchases/sales conducted in non-monetary and monetary means.

Since an OLS regression assumes an unbounded dependent variable, the test should use the TOBIT regression, which assumes a latent dependent variable, not limited by 0 and 1. I should note that this is the only study, to the best of my knowledge, which is free of the statistical (non-conventional error terms) and interpretational (analysis of OLS coefficients) mistakes of other empirical investigations of non-monetary trade.

Since *liquidity* was found to have a close connection to non-monetary payments, it is used as an independent variable in the regression explaining the use of barter and other non-monetary instruments. The additional rationale for its use is that it takes the liquidity effect off *kartoteka*. Thus, the coefficient on *kartoteka* measures not the lack of liquidity but the effect of having the bank account "blocked" by the tax authorities.

The firm's **size**, **industry** affiliation, and **location** are the usual firm characteristics and control variables in analysis of firm behavior.

Table 8. *Kartoteka* and Non-Monetary Payments: Initial Assessment

Side	Dep.var →	NMP	Barter and Offsets	Barter	Offsets	Veksel
	Indep.var ↓					
Inputs	Kartoteka 97	.177 *** (.043)	.162 *** (.043)	.094 ** (.037)	.065 * (.037)	.054 (.039)
	Liquidity 97	-.067 (.121)	-.095 (.125)	-.174 (.234)	-.026 (.081)	.016 (.047)
	Size 97	.013 (.016)	.014 (.016)	.008 (.013)	.011 (.013)	.033 *** (.012)
	Pseudo R²	.304	.287	.272	.147	.345
	N	210	209	209	210	210
	N depvar=0	25	27	55	61	131
	N depvar=1	15	9	3	2	0
Output	Kartoteka 97	.159 *** (.041)	.140 *** (.038)	.086 *** (.031)	.051 * (.031)	.007 (.024)
	Liquidity 97	-.059 (.077)	-.064 (.100)	-.147 (.222)	.002 (.065)	-.007 (.027)
	Size 97	.032 ** (.015)	.018 (.013)	.003 (.012)	.010 (.011)	.021 *** (.007)
	Pseudo R²	.464	.405	.319	.263	.579
	N	213	213	213	213	213
	N depvar=0	16	20	52	47	107
	N depvar=1	9	5	1	1	0

Notes:

1. What is reported are the marginal effects of the Tobit regression. Standard errors are in parentheses. Results for the constant, the industry and regional dummies are not reported.
2. Bold indicates significance at a level of 10 percent or less. Significance: ***=1 percent, **=5

percent, *=10 percent.

Being on *kartoteka* the year before is associated with a greater use of barter in the following year: this holds true considering offsets and barter together, and all types of non-monetary payments combined. Note that the strength of the relationship increases from barter to the combination of barter and offsets. The strongest relationship is found for the effect of *kartoteka* on all types of non-monetary payments combined. Therefore, *kartoteka* is mostly related to the decision to stay away from the monetary system as a whole.

One may argue, however, that this relationship between *kartoteka* and the use of non-monetary payments does not mean that *kartoteka* **influences** the use of non-monetary payments. For instance, a reverse causality may be at work. The use of non-monetary payments in the past may lead to both *kartoteka* and the future use of non-monetary payments.

To check for this possibility, I also include the 1994 level of non-monetary payments in the regression. Results of this specification are reported in Table 9.

Table 9. Kartoteka and Non-Monetary Payments: Reverse Causality?

Trans. side	<i>Dep.var</i> →	NMP	Barter and Offsets	Barter	Offsets	Veksels
	<i>Indep.var</i> ↓					
inputs	NMP 94	.540 *** (.067)	.556 *** (.066)	.777 *** (.069)	.649 *** (.082)	.131 (.107)
	Kartoteka 97	.150 *** (.048)	.127 *** (.046)	.061 (.039)	.047 (.035)	.024 * (.014)
	Liquidity 97	-.044 (.048)	-.080 (.050)	-.155 * (.091)	-.026 (.036)	.007 (.013)
	Size 97	.009 (.020)	.014 (.019)	.017 (.012)	.000 (.014)	.009 *** (.001)
	Pseudo R²	.526	.554	.758	.499	.360
	N	190	190	190	190	190
	N depvar=0	24	26	49	57	120
	N depvar=1	12	6	2	1	0
output	NMP 94	.428 *** (.065)	.478 *** (.067)	.678 *** (.073)	.513 *** (.084)	.200 * (.110)
	Kartoteka 97	.150 *** (.043)	.125 *** (.043)	.052 (.038)	.069 ** (.033)	.006 (.017)
	Liquidity 97	-.022 (.045)	-.033 (.047)	-.133 (.084)	.011 (.035)	-.001 (.014)
	Size 97	.023 (.018)	.016 (.018)	.001 (.015)	.005 (.013)	.006 *** (.002)
	Pseudo R²	.613	.524	.718	.547	.587
	N	194	190	194	193	193
	N depvar=0	16	19	46	44	100
	N depvar=1	8	5	1	1	0

Notes:

1. What is reported are the marginal effects of the Tobit regression. Standard errors are in parentheses.

Results for the constant, the industry and regional dummies are not reported.

2. Bold indicates significance at a level of 10 percent or less. Significance: ***=1 percent, **=5 percent, *=10 percent.

Overall, these results are consistent with those in Table 8. They are a little lower on significance and values, but even the greatest difference – for all non-monetary payments⁵⁷ – is small, a mere 2.7 percent. It is interesting to note that *kartoteka* has approximately the same “contribution” (in the range of 15-18 percent) to the explanation of growth (from 1994 to 1998) as well as to the level (in 1998) of non-monetary payments across firms.

Even though *kartoteka* has withstood the reverse causality test, my results raise another question: What if *kartoteka* and non-monetary payments are consequences of some other force? Do “good” firms not use non-monetary payments and stay away from *kartoteka*, whereas “bad” firms do both?⁵⁸

One way to define “good” firms is to use a measure introduced in the previous section – profit per employee. Although profits exhibit great variation (due to the formation of markets, for instance) it is an adequate measure of a firm’s success.⁵⁹

⁵⁷ It is also the most interesting (“staying away from the banking system”) as far as *kartoteka* is concerned.

⁵⁸ Economic studies have proved that simultaneity may matter a great deal in seemingly “conventional” settings. For instance, a study inspecting simultaneity of teen drinking and school attainment has supplied evidence that the relationship between the two reflects correlation rather than causation. See Dee, T. and Evans, W. N. (2003) "Teen Drinking and Educational Attainment: Evidence from Two-Sample Instrumental Variables (TSIV) Estimates" *Journal of Labor Economics*, 21, 1, 178-209. Unfortunately, in this study it was not possible to apply the usual approach to the simultaneity problem – the use of instruments.

⁵⁹ I have chosen this measure after experimenting with many others (and their combinations): cost, productivity, sales (growth, per employee), investment, state assistance, etc. All of them yielded the same

Table 10 reports the results of re-estimation with this “viability” measure as an independent variable.

Table 10. *Kartoteka* and Non-Monetary Payments: Another Factor at Work?

Trans. side	<i>Dep.var</i> → <i>Indep.var</i> ↓	NMP	Barter and Offsets	Barter	Offsets	<i>Veksels</i>
inputs	NMP 94	.539*** (.067)	.556*** (.066)	.780*** (.069)	.645*** (.082)	.130 (.107)
	<i>Kartoteka</i> 97	.139*** (.049)	.115** (.047)	.054 (.040)	.041 (.036)	.023 (.014)
	Liquidity 97	-.036 (.040)	-.069 (.094)	-.131 (.838)	-.020 (.432)	.008 (.213)
	Profit/Emp 97	-.050 (.039)	-.052 (.038)	-.046 (.041)	-.029 (.028)	-.008 (.016)
	Size 97	.009 (.020)	.013 (.019)	.017 (.012)	.000 (.014)	.009*** (.001)
	Pseudo R ²	.534	.564	.767	.507	.364
	N	190	190	190	190	190
	Ndepvar=0	24	26	49	57	120
	Ndepvar=1	12	6	2	1	0
output	NMP 94	.427*** (.065)	.478*** (.067)	.678*** (.073)	.513*** (.084)	.192* (.109)
	<i>Kartoteka</i> 97	.145*** (.044)	.118*** (.044)	.048 (.038)	.064* (.033)	.009 (.016)
	Liquidity 97	-.018 (.032)	-.028 (.069)	-.123 (.670)	.016 (.285)	-.002 (.242)
	Profit/Emp 97	-.018 (.027)	-.024 (.027)	-.017 (.022)	-.019 (.024)	.009 (.008)
	Size 97	.023 (.018)	.016 (.018)	.001 (.015)	.005 (.013)	.006** (.003)
	Pseudo R ²	.616	.603	.721	.553	.613
	N	194	193	194	193	193
	Ndepvar=0	16	20	46	44	100
	Ndepvar=1	8	5	1	1	0

basic finding.

Notes:

1. What is reported are marginal effects of the Tobit regression. Standard errors are in parentheses. Results for the constant, the industry and regional dummies are not reported.
2. Bold indicates significance at a level of 10 percent or less. Significance: ***=1 percent, **=5 percent, *=10 percent.
3. Collinearity diagnostics, according to D. Belsley, E. Kuh, and R. Welsch (1980), did not indicate any critical problems (condition number is always less than 30).

Here, there is also a decrease in the magnitude and significance of coefficients but again it is minimal: about 1 percent maximum. The profitability variable is found to be insignificantly related to non-monetary payments. Although some other unobservable firm characteristics may be simultaneously influencing profits, being on *kartoteka*, and the use of non-monetary payments, not much can be done beyond this test to control for this – there are limitations imposed by available data.

In all the above tests *kartoteka* showed a certain influence over the use of non-monetary payments. It is not surprising when a tax office clerk has more control of the bank account than the firm does! Should this not influence a firm's decision to use non-monetary payments?

Consider the following situation. Imagine a sudden drop in liquidity. Now a firm can buy only half of what it used to. It cannot borrow and no one is lending. This is, more or less, the situation in which Russian firms operated in the late 90s according to Ivanenko (2003).

In such circumstances, turning to non-monetary means of trade is a good option (also if prices are sticky). Incentives to choose this option increase if the banking system is “unavailable” due to unpaid tax obligations. In other words: *kartoteka* matters – firms

choose non-monetary trade **because** of *kartoteka*.

Focusing attention on the reported marginal effects (coefficients scaled by the estimated probability that the latent dependent variable falls within 0 and 1)⁶⁰, I conclude that about 11-12 percent of barter and offsets happened because a firm was on *kartoteka* the year before. *Veksels* seem to be unrelated to *kartoteka*, but contribute to the effect of *kartoteka* when all non-monetary payments are considered together. The effect of *kartoteka* on all non-monetary payments is the strongest: **Firms on *kartoteka* will use non-monetary payments by 13-14 percent more the following year.**

Coefficients on liquidity are found to have correct signs, but they are insignificant. It thus appears that there is a certain interplay between *kartoteka* and liquidity (as it should be by the definition of *kartoteka*). Analysis in the next section will clarify this interaction.

Another significant coefficient indicates that larger firms use more *veksels*. *Veksels*, therefore, are quite different from barter and offsets: they are mostly unrelated to *kartoteka* and liquidity indicators (coefficients on these factors are insignificant and small). Clearly, *veksels* are a special form of non-monetary payments mostly influenced by the size of a firm.

The lack of liquidity or being on *kartoteka* does not motivate firms to use more or less *veksels*. However, liquidity and *kartoteka* seem to have a stronger effect on all non-monetary payments when *veksels* are considered jointly with barter and offsets. This

⁶⁰ A marginal effect equals the derivative of the dependent variable with respect to the change in the right hand side of the equation, evaluated at the estimated coefficients and the mean value of the independent variables.

indicates that the option to use *veksels* is important for the decision to avoid the use of the monetary system as a whole.

The use of *veksels* was advocated on the government level as a measure to lessen non-monetary payments and arrears. The argument was that when a firm's debt is formalized on paper – remember *veksels* are, in essence, commercial papers stipulating the amount of debt – this paper, not physical goods, would be the medium of exchange. However, as suggested by this research, *veksels* did not become such a medium of exchange at that time: their use was only about 5 percent of all modes of exchange. Obviously, credibility played an important role here. Repeating a citation from Commander and Mumssen, firms preferred “goods now versus money later or never,” even when money was promised in the form of a *veksel*.

To summarize the empirical results of this section, I am making the following observations.

1. *Kartoteka* is a robust, significant predictor of non-monetary exchange. The effect of *kartoteka* is always quite significant and large, especially when all non-monetary payment options are considered. This finding suggests that *kartoteka*, in the environment of 1994-1998, had ***strongly*** and ***significantly*** contributed to the growth of the non-monetary economy.

2. *Veksels* are found to be a ***special kind*** of non-monetary payments, positively related to a firm's size but not related to *kartoteka*. This finding suggests that *veksels* are instruments closer to credit as they are by definition and that they are rather different from barter and offsets. This differentiates the present study from other research, which considered *veksels* jointly with barter. Nonetheless, *veksels* seem to factor in the decision

to avoid the monetary system as a whole: when *veksels* are added to the list of non-monetary payment options, the marginal effect of *kartoteka* increases. Thus, having an option to use *veksels* matters for the effect of *kartoteka*.

Finally, non-monetary payments, and barter in particular, are much influenced by institutional factors (approximated by the previous level of non-monetary payments).

Kartoteka Cements Non-Monetary Exchange

In this section I will investigate the effect of *kartoteka* in relation to liquidity. I have shown that liquidity is an important explanatory variable for non-monetary payments, as is *kartoteka*. Now I will answer the question: How do these two most important factors – liquidity and *kartoteka* – affect the behavior of firms with different exposure to non-monetary payments?

The idea that the factors initiating and perpetuating non-monetary exchange are different has already been suggested by some researchers (e.g. Guriev and Ickes (1998) and Polterovich (1998)). Firms may have various motivations to use non-monetary payments for the first time and on a repetitive basis.

One can imagine various motivations for the **first use** of barter and other non-monetary means, but, obviously, the strongest motivation is the lack of cash.

A firm working with non-monetary means on a **repetitive basis** obviously has extremely limited liquidity resources. Scarce cash quickly puts the firm on *kartoteka*. *Kartoteka*, in turn (as I have discussed in section above), provides a great disincentive⁶¹

⁶¹ Based on their interviews with banks and firm managers, Pinto, Drebensov and Morozov (1999) argue that *kartoteka* can be easily avoided by opening multiple bank accounts or channeling transactions through

to return to the monetary system.

My hypothesis is that lack of liquidity is the strongest motivation for the initial use of in-kind payments. For their continued use *kartoteka* is the prime motivation.

Since I have observations on non-monetary payments for two points in time, 1994 and 1998, I can test for the difference between firms that did use (“Incumbent”) and did not use (“Entrant”) non-monetary payments in 1994. I use the past level of non-monetary payments as a selection criterion because it appears to be the strongest, institutional factor affecting the use of non-monetary payments.

In constructing the test I interact the variables of interest with a dummy variable equaling to 1 if the firm used non-monetary payments for output in 1994, and 0 otherwise. To be more precise, if the firm used only monetary payments for output in 1994, $Kartoteka_{970} = Kartoteka_{97}$, and 0 otherwise. If the firm used some non-monetary payments for output in 1994, $Kartoteka_{971} = Kartoteka_{97}$, and 0 otherwise. I have adjusted the measure of liquidity analogously. In the rest, the test is similar to the one, results of which are reported in Table 9.

a related firm. However, this evidence also suggests that these actions impose extra costs on the sale of output or the payment for inputs. An alternative and *legal* way is to directly use non-monetary payments.

Table 11. Difference Between the Entrant and Incumbent Firms

<i>Dependent</i> → <i>Independent</i> ↓	NMP		1998		Barter		Offsets 1998		Barter		1998		Offsets		1998		<i>Veksels</i>	
	inputs	output	inputs	output	inputs	output	inputs	output	inputs	output	inputs	output	inputs	output	inputs	output	inputs	output
<i>Kartoteka</i> 970	-.005 (.060)	.111* (.067)	.001 (.058)	.101 (.064)	-.022 (.034)	.001 (.038)	.013 (.059)	.069 (.046)	.022 (.066)	-.026 (.043)								
<i>Kartoteka</i> 971	.181*** (.034)	.167*** (.044)	.138*** (.033)	.134*** (.041)	.059*** (.020)	.071*** (.023)	.071* (.038)	.036 (.031)	.092** (.043)	.037 (.027)								
Liquidity 970	-.312** (.142)	-.458*** (.164)	-.303** (.137)	-.393** (.156)	-1.007* (.574)	-1.930*** (.729)	-.093 (.133)	-.064 (.109)	-.612 (.603)	-.118 (.101)								
Liquidity 971	-.029 (.042)	-.016 (.048)	-.053 (.043)	-.027 (.047)	-.053 (.036)	-.056 (.039)	-.012 (.042)	.013 (.033)	.032 (.037)	.000 (.025)								
Profit/Emp 97	-.024 (.030)	.003 (.029)	-.023 (.029)	-.004 (.027)	-.008 (.018)	-.003 (.016)	-.032 (.032)	-.012 (.022)	-.008 (.039)	.027* (.015)								
Size 97	.001 (.016)	.026 (.016)	.003 (.015)	.016 (.015)	-.002 (.010)	-.000 (.010)	.010 (.014)	.007 (.011)	.028** (.014)	.015* (.008)								
Pseudo R ²	.368	.464	.403	.343	.383	.472	.167	.287	.398	.704								
N	190	190	190	190	190	190	190	190	190	190								
N (depvar=0)	24	15	19	26	49	45	57	42	120	97								
N (depvar=1)	12	8	5	6	2	1	1	1	0	0								
Significance	of the Wald tests:																	
<i>Kart</i> 970= <i>Kart</i> 971	.001	.387	.579	.013	.013	.048	.305	.451	.250	.120								
Liq970= Liq971	.050	.009	.021	.073	.094	.008	.552	.483	.286	.254								

Notes:

1. What is reported are the marginal effects of the Tobit regression. Results for the constant, the industry and regional dummies are not reported.
2. Standard errors are in parentheses. ***=1 percent, **=5 percent, * =10 percent significance. Bold indicates significance at a level of 10 or less.
3. Significance of the Wald test speaks in favor of rejection of hypothesis.
4. Collinearity diagnostics, according to D. Belsley, E. Kuh, and R. Welsch (1980), did not indicate any critical problems (condition number is always less than 30).

Significant coefficients and the Wald tests suggest that lower liquidity seems to be the strongest motivation for barter for the entrant firms (i.e. those that did not use non-monetary payments in 1994). The same holds true for barter and offsets together, and all non-monetary means combined. As for *kartoteka*, it seems that the entrant firms on and off *kartoteka* do not employ non-monetary payments differently.

For the incumbent firms, which used non-monetary payments in 1994, lower liquidity loses importance as an initiator of non-monetary payments. Being on *kartoteka*, however, becomes an important incentive for their use.

Therefore, liquidity causes the initial use of non-monetary means. Firms adjust to the use of non-monetary exchange and are placed on *kartoteka*. *Kartoteka* makes the use of the non-monetary system an attractive option, while at the same time making it very difficult or nearly impossible to switch to the banking system.

Summary

In this chapter I have shown that a firm on *kartoteka* chooses a higher level of non-monetary payments than a firm off *kartoteka*. *Kartoteka* is found to be the strongest factor in the decision to choose the level of non-monetary payments for firms using non-monetary payments on a repetitive basis. *Kartoteka* is a significant

factor despite its possible relation to liquidity. By controlling bank accounts, tax authorities create a very strong disincentive for firms to use the banking system.

It appears that the majority of Russian firms in the 90s experienced a sharp drop in liquidity that caused the initial use of non-monetary payments. Further use of non-monetary trade was connected to *kartoteka*, where most of the illiquid firms were placed by the late 90s. Due to the large tax arrears, it was very hard for firms to exit *kartoteka* and non-monetary trade.

Conclusion

By the end of the 90s non-monetary trade in Russia embraced more than a half of all transactions. The speed at which firms were turning to non-monetary means was astonishing. Transition to the market economy has taken an unexpected root in Russia.

When such a phenomenon takes place, usually there is no conventional theory available. This attracts new research: numerous articles and books were written on this topic in the 90s. However, when one attempts to piece all this literature into one coherent story, it feels like an unattainable goal. Answers explaining the growth of non-monetary trade have been many: no money, no restructuring, no enforcement... Different answers, often conflicting with each other. For instance, the most intuitive liquidity hypothesis was challenged by the virtual economy argument which viewed the “no money” story as misinterpreted.

Without my own research I found it confusing to understand and explain why various forms of non-monetary exchange substituted monetary transactions and what fueled their growth. Besides, if the use of non-monetary payments was growing in the late 90s, this tendency has reversed after 1998 that was not anticipated by any theory.

Luckily, I was an organizer of a large survey of Russian companies in 1999. Much effort has been put into design and organization of this survey that covered most Russian regions and all manufacturing branches. The survey asked about 300 questions about different firm’s activities. Possibly, collecting and preparing such data was one of the main challenges of this study.

I have used this data to offer a comprehensive explanation for the growth of non-monetary exchange. The data have supported several significant relationships, confirming my initial hypotheses. I have shown that the lack of liquidity played a

primary role in initiating non-monetary exchange. Furthermore, firms accustomed to non-monetary exchange were found to be motivated to use barter and non-monetary payments mainly by being on *kartoteka*.

Although the liquidity argument has been proposed in the literature, it was challenged by the virtual economy hypothesis. Thus my first task was to clarify the relationship between liquidity and non-monetary payments. Using several carefully prepared datasets, such relationship was established.

Marin and Schnitzer (1998) offered a hypothesis linking the lack of liquidity to the use of non-monetary payments. The link was seen in the superior payment enforcing properties of barter. However, unjustified assumptions of this hypothesis have substantially weakened this argument. The relationship between illiquidity and non-monetary payments remained unexplained. I argue that this relationship works through *kartoteka*, a practice of controlling bank accounts by the tax authorities.

It is suggestive what managers had to say about possible reasons for obstacles to doing business in Russia. Not the lack of demand, not low investment – taxes and regulations, state policies⁶² were named the number one reason for making it difficult to work. This study confirms the managers' claims. A sudden nation-wide tightening of liquidity has caused a large drop in firms' liquidity that was followed by the use of non-monetary exchange. Large penalties coupled with a practice of *kartoteka*, made it very costly to use the banking system, and so the price the government had to pay for these policies was a shift of transactions into non-monetary economy.

New findings suggest two, possibly different, policy measures aimed at decreasing the use of non-monetary payments. One measure should be aimed at

⁶² As found in a survey about obstacles to doing business in Russia organized by *Expert* magazine and reported in No. 42, 1999, pp. 23-28.

preventing firms from exiting the monetary zone. The other measure should deal with firms that are not in the monetary zone. As I have shown, the two groups of firms (in and out the monetary zone) have different motivation in their selection of the level of barter and non-monetary payments. The monetary group would be more responsive to factors stimulating their higher liquidity position. For the second group, any anti-*kartoteka* measure seems to be a way to decrease the use of non-monetary payments. The two measures could coincide, for instance in a large positive demand shock that happened in 1998. But the second group of firms needs a larger liquidity shock since it has to deal with elimination of the hanging overdue tax debt in order to achieve a *kartoteka*-free status that would stimulate returning to the monetary exchange.

In 1999, for the first time since the beginning of reforms, it was recorded that the use of non-monetary payments had declined. Tsukhlo of Institute for the Economy in Transition (The *Gaidar* Institute) reports the following data in *Expert*, No. 27, 2001:

Table 12. Percent of Non-Monetary Payments in Sales by Industry

Industry	1997	1998	2000	2001		
				Jan	Mar	May
Electricity	na	na	48	15	10	13
Ferrous Metals	73	54	27	26	16	15
Non-Ferrous Metals	14	4	27	24	29	15
Chemical	66	68	44	36	26	29
Machine Building	69	62	43	38	29	31
Wood	52	41	46	34	34	31
Construction Materials	69	85	69	49	45	42
Light	58	52	42	32	28	25
Food	37	51	41	19	32	25
All Industries	61	57	42	34	28	27

Source: Lab for marketing research of the Institute of Transition.

For the industry as whole, the use of non-monetary means of payment had declined by more than a half from 1998 to 2001. What has changed since 1998?

Since 1998 the Russian economy has started to grow at about 5 percent annually. *Financial Times* editorial of October 30, 2001 ascribes the growth of the economy to three basic factors: the extraordinary weakness from which the economy has grown, the rise in oil prices, and the structural reform. The editorial continues, “Russia's devaluation and debt default in 1998 was a blessing in disguise.”

Indeed, after a large devaluation of the ruble in August 1998, domestic demand has switched to cheaper Russian goods. High oil prices have led to inflow of cash to the extracting sector and thus to the state. Liquidity has started to flow downstream, improving financial position of all branches:

Table 13. Growth in Percent by Industry Since 1998

Industry	Jan-Sep 2001 to Jan-Sep 2000	2000 to 1999	1999 to 1998
Electricity	101.5	101.8	100.2
Fuel	106.2	105.0	102.4
Ferrous Metallurgy	99.9	115.6	114.4
Non-Ferrous Metallurgy	105.1	111.3	108.5
Chemical and Petrochemical	106.6	114.3	121.7
Machine Building and Metal Processing	107.7	115.5	115.9
Wood and Paper	102.5	109.5	117.2
Construction Materials	105.4	107.6	107.7
Light	105.1	122.0	120.1
Food	108.1	107.1	107.6
Medicine	97.2	118.9	109.6
Other	105.6	108.3	109.1

Source: *Goskomstat*

The growth in demand and sales has improved the liquidity position of firms. Although the practice of *kartoteka* has remained in place, firms' tax debts have been

restructured and partly written off.⁶³ Evidence shows that firms have started to get off *kartoteka*: the percent of firms on *kartoteka* has dropped to 50 percent in 1999.⁶⁴

An infusion of liquidity, a decline of firms on *kartoteka*, and a greater use of the bankruptcy law have changed the equilibrium state of Russian economy. The number of monetary transactions has started to grow.

Although events observed after 1998 are consistent with explanations proposed in this study, further research is needed, to clarify causes of the liquidity crisis, for instance. Moreover, how stable is the achieved monetary equilibrium? Will Russian economy ever return to the non-monetary equilibrium? The author plans to find answers to these questions in his research on the current state of Russian economy.

⁶³ 18 percent of tax arrears were unconditionally written off in 1998. Calculations are based on my data.

⁶⁴ Under a new initiative, firms in the described sample will be re-interviewed annually. Data for 1999 and later years are still being processed. *Kartoteka* 1999 is one of the first readily available variables from a new wave.

Appendices

A. Definitions and Basic Statistics of Used Variables

Variable	Description	Purpose
NMP Sales 98	Share of non-monetary payments in 1998 sales	Dependent variable
NMS 98	Share of non-monetary sales in 1998 (calculated from appendix to balance sheets)	Dependent variable
NMS 97	Share of non-monetary sales in 1997 (calculated from appendix to balance sheets)	Measures institutionalization
NMP Inputs 98	Share of non-monetary payments in 1998 payment for inputs	Dependent variable
NMP Sales 94	Share of non-monetary payments in 1994 sales	Measures institutionalization
NMP Inputs 94	Share of non-monetary payments in 1994 payment for inputs	Measures institutionalization
Barter Sales 98	Share of barter in 1998 sales	Dependent variable
Barter Inputs 98	Share of barter in 1998 payment for inputs	Dependent variable
Barter Sales 94	Share of barter in 1994 sales	Measures institutionalization
Barter Inputs 94	Share of barter in 1994 payment for inputs	Measures institutionalization
Offsets Sales 98	Share of offsets in 1998 sales	Dependent variable
Offsets Inputs 98	Share of offsets in 1998 inputs	Dependent variable
Offsets Sales 94	Share of offsets in 1994 sales	Measures institutionalization
Offsets Inputs 94	Share of offsets in 1994 inputs	Measures institutionalization
Barter and Offsets in Inputs 98	Share of barter and offsets in 1998 payment for inputs	Dependent variable
Barter and Offsets in Sales 98	Share of barter and offsets in 1998 sales	Dependent variable
Barter and Offsets in Inputs 94	Share of barter and offsets in 1994 payment for inputs	Dependent variable
Barter and Offsets in Sales 94	Share of barter and offsets in 1994 sales	Dependent variable
<i>Veksels</i> Sales 98	Share of <i>veksels</i> in 1998 sales	Dependent variable
<i>Veksels</i> Inputs 98	Share of <i>veksels</i> in 1998 inputs	Dependent variable
<i>Veksels</i> Sales 94	Share of <i>veksels</i> in 1994 sales	Measures institutionalization
<i>Veksels</i> Inputs 94	Share of <i>veksels</i> in 1994 inputs	Measures institutionalization
Liquidity 96	Ratio of 'monetary means' item from the balance sheet that encompasses cash, money in the ruble current account, money in the foreign currency account, and 'other monetary means', to total revenue in 1996	Measures liquidity (scaled by revenue)
Liquidity 97	Ratio of 'monetary means' to payables at the end of 1997	Measures liquidity (per ruble of debts)
Liquidity 970	=Liquidity 97 if NMP Inputs 94=0, 0 otherwise	Measures Liquidity 96 only for firms which did not use non-monetary payments in 1994
Liquidity 971	=Liquidity 97 if NMP Inputs 94>0, 0 otherwise	Measures Liquidity 96 only for firms which did not use non-monetary payments in 1994
<i>Kartoteka</i> 97	On <i>kartoteka</i> in 1997 = 1, 0 otherwise	Measures transaction costs of using the monetary system

<i>Kartoteka</i> 970	= <i>Kartoteka</i> 97 if NMP Inputs 94=0, 0 otherwise	Measures <i>Kartoteka</i> 97 only for firms which had not used non-monetary payments in 1994
<i>Kartoteka</i> 971	= <i>Kartoteka</i> 97 if NMP Inputs 94>0, 0 otherwise	Measures <i>Kartoteka</i> 97 only for firms which had used non-monetary payments in 1994
Profit per employee 97	Profit/employment in 1997 (in 10,000 rubles)	Measure firm's viability
Cost	Ratio of costs to sales	Measures firm's internal finances
Log Labor Productivity	Log of labor productivity	Measures performance
Log of Employment 97	Log of employment in 1997	Controls for size
Chemical	Chemical industry = 1, 0 otherwise	Controls for industry specificity
Construction Materials	Construction materials = 1, 0 otherwise	Controls for industry specificity
Electroenergy	Electroenergy = 1, 0 otherwise	Controls for industry specificity
Ferrous Metals	Ferrous metals = 1, 0 otherwise	Controls for industry specificity
Food	Food = 1, 0 otherwise	Controls for industry specificity
Fuel	Fuel = 1, 0 otherwise	Controls for industry specificity
Light	Light = 1, 0 otherwise	Controls for industry specificity
Medicine	Medicine = 1, 0 otherwise	Controls for industry specificity
Non-Ferrous Metals	Non-Ferrous Metals = 1, 0 otherwise	Controls for industry specificity
Wood	Wood = 1, 0 otherwise	Controls for industry specificity
Machine Building	Machine building = 1, 0 otherwise	Omitted category
North	North = 1, 0 otherwise	Controls for regional specificity
North-West	North-West = 1, 0 otherwise	Controls for regional specificity
Povoljje	Povoljje = 1, 0 otherwise	Controls for regional specificity
Volga-Vyatka	Volga-Vyatka = 1, 0 otherwise	Controls for regional specificity
Central-Chernozym	Central-Chernozym = 1, 0 otherwise	Controls for regional specificity
North Caucasus	North Caucasus = 1, 0 otherwise	Controls for regional specificity
Urals	Urals = 1, 0 otherwise	Controls for regional specificity
West Siberia	West Siberia = 1, 0 otherwise	Controls for regional specificity
East Siberia	East Siberia = 1, 0 otherwise	Controls for regional specificity
Far East	Far East = 1, 0 otherwise	Controls for regional specificity
Central	Central = 1, 0 otherwise	Omitted category

Variable	Obs.	Mean	Std. Err.	95% conf.	interval
NMP Sales 98	362	.544	.017	.509	.579
NMP Sales 94	336	.342	.017	.307	.376
NMS 98	5077	.570	.005	.560	.580
NMS 97	4970	.110	.004	.102	.118
NMP Inputs 98	360	.526	.019	.487	.564
NMP Inputs 94	336	.342	.017	.307	.376
Barter and Offsets in Inputs 98	357	.479	.019	.442	.516
Barter and Offsets in Sales 98	360	.492	.017	.459	.526
Barter and Offsets in Inputs 94	324	.325	.019	.288	.362
Barter and Offsets in Sales 94	332	.325	.017	.292	.359
Barter Sales 98	361	.247	.014	.219	.276
Barter Sales 94	334	.186	.012	.162	.210
Barter Inputs 98	358	.247	.015	.217	.277
Barter Inputs 94	325	.191	.013	.164	.218
Offsets Sales 98	361	.243	.013	.217	.269
Offsets Sales 94	333	.136	.010	.116	.157
Offsets Inputs 98	358	.230	.014	.202	.258
Offsets Inputs 94	324	.133	.011	.111	.155
Veksels Sales 98	361	.050	.006	.038	.062
Veksels Sales 94	333	.016	.003	.009	.022
Veksels Inputs 98	359	.041	.005	.030	.053
Veksels Inputs 94	324	.014	.003	.008	.021
Liquidity 96	219	1.062	.164	.739	1.385
Liquidity 97	232	.155	.060	.036	.274
Liquidity 97 (*)	5125	.119	.010	.101	.138
Liquidity 970	340	.021	.006	.008	.034
Liquidity 971	273	.106	.051	.005	.206
Kartoteka 97	369	.667	.024	.618	.714
Kartoteka 970	325	.148	.020	.109	.186
Kartoteka 971	370	.535	.026	.484	.586
Profit per employee 97 (*)	5453	2.865	.905	1.090	4.640
Log of Employment 97	365	2.843	.035	2.773	2.913
Chemical	377	.047	.010	.026	.069
Construction Materials	377	.068	.013	.043	.094
Electroenergy	377	.082	.014	.054	.110
Ferrous Metals	377	.034	.009	.016	.052
Food	377	.169	.019	.131	.207
Fuel	377	.021	.007	.006	.035
Light	377	.108	.016	.077	.140
Medicine	377	.005	.003	-.002	.012
Non-Ferrous Metals	377	.013	.005	.001	.024
Wood	377	.021	.007	.006	.035
Machine Building	377	.400	.025	.350	.450
North	381	.031	.009	.014	.049
North-West	381	.087	.014	.058	.115
Povoljie	381	.092	.015	.063	.121
Volga-Vyatka	381	.058	.012	.034	.081
Central-Chernozyom	381	.060	.012	.036	.084
North Caucasus	381	.126	.017	.093	.159
Urals	381	.165	.019	.128	.203
West Siberia	381	.079	.014	.052	.106
East Siberia	381	.045	.011	.024	.065
Far East	381	.031	.009	.014	.049
Central	381	.226	.021	.184	.268

* Goskomstat sample.

B. An Example of Mutually Beneficial Barter

The situation when the price is time-dependent and there is no inexpensive credit may create a favorable environment for barter. In the example that follows, barter is a preferred mode of transaction over the monetary payment.

Let us consider a transaction between two firms, the supplier and the customer. Each firm has certain money demand or liquidity preferences.⁶⁵ Money can either be earned or borrowed. Here I will focus on the borrowed money or credit. Credit has three main characteristics: an amount, an interest, and duration. Thus the demand for money can be measured by these three characteristics. If the amount and duration are the same for two firms, a firm with higher money demand is willing to pay a higher interest or “price.”

If the customer has a higher money demand than the supplier, that is for the same amount of cash borrowed for the same amount of time the customer is willing to pay more than the supplier, and there is no competitive credit market which could satisfy this money demand at the interest rate no larger than the supplier’s money demand, then both parties may prefer a payment in goods to a payment in money.

In the environment of disorganization in Russia,⁶⁶ search costs are quite high so that more marketing and search effort – which I measure by the time spent to find the highest paying customer – yield a higher price. The customer cannot wait to get the higher price because its demand for money is high. The supplier can wait because its demand is lower. The difference between the current and future value of the good represents trade surplus, a division of which benefits both parties if they use barter.

⁶⁵ Expressions “money demand” and “liquidity preferences” are used interchangeably in the text.

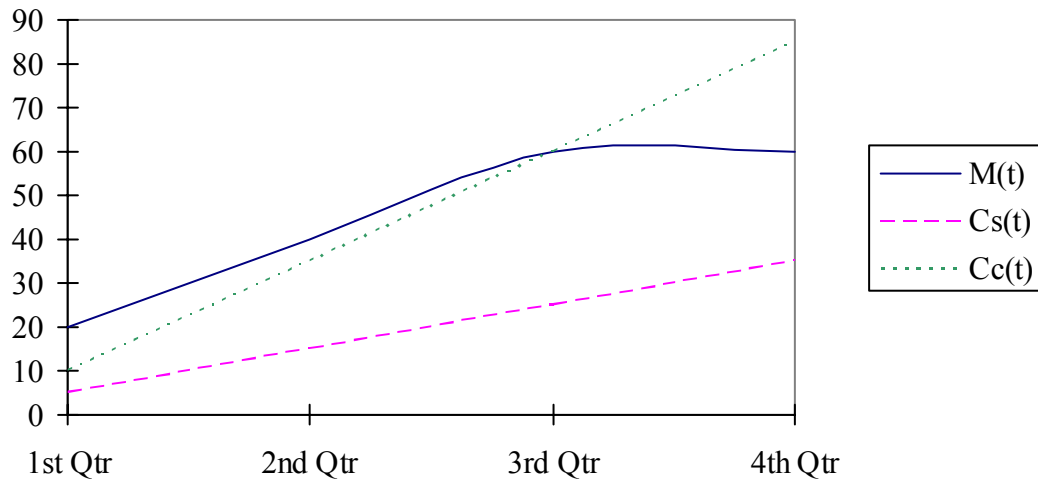
⁶⁶ See the Ph.D. dissertation by Racanitini (1998) from the University of Maryland on the importance of search costs in transition due to disorganization.

To see the point, consider the following. The customer's cash profits from the sale of the good, which it offers for barter, are $S^c(t) = M(t) - C^c(t)$, where $M(t)$ is the monetary income the customer gets if it sells the good at time t , and $C^c(t)$ is the cost of waiting for time t . $C^c(t)$ here depends on the liquidity preferences of the customer.

The delay of the sale by time t causes the cost of $\int_0^t R(x)dx$, where $R(x)$ is the price which the customer is willing to pay for the reduction of the sale time by one period at time x .⁶⁷ Let's assume that this marginal cost is higher for the customer firm (R) than for the supplier firm (r): $R > r$. Furthermore, for simplicity, let's assume that $R(x) = R$, and $r(x) = r$. Hence the cost of selling the good by t for the customer and the supplier is $C^c(t) = tR$, and $C^s(t) = tr$, respectively. Let's also assume that each agent gets the same cash from the sale at time t , $M(t)$, that is each agent's marketing skills and customers' preferences with respect to each agent are the same. Thus, receipts from the sale of the good at time t for the customer and the supplier are $S^c(t) = M(t) - tR$ and $S^s(t) = M(t) - tr$. Hypothesized $M(t)$, $C^c(t)$ and $C^s(t)$ are illustrated in Figure 12.

⁶⁷ For instance, the customer firm may not be able to start its production process without inputs that causes delay of the sale of output during which the due time of obligations may come up that may cause penalty costs per unit of time.

Figure 9. Monetary Income from the Sale of Good and Waiting Costs



The supplier will accept the good instead of the monetary payment as long as the value of the good for the supplier, $V^s = \max_{t'}\{S^s(t)\}$, is greater than the monetary payment for inputs. The customer will prefer to pay with the good as compared to money as long as the value of the good for the customer, $V^c = \max_{t''}\{S^c(t)\}$, is less than the monetary payment for inputs. Therefore, if $V^c < P < V^s$, where P denotes the monetary payment for inputs, barter is preferred by both parties to the monetary payment. Using the payment in money, both parties lose from dividing the trade surplus, $[M(t'')-t''\cdot r]-[M(t')-t'\cdot R]$, where t' and t'' are the optimal times of sale for the customer and the supplier, respectively (in Figure 9, $t' = 1^{\text{st}}$ quarter, $t'' = 3^{\text{rd}}$ quarter).

Notice also that the good in the barter transaction is priced with a discount reflecting the waiting time. Evidence in Marin and Schnitzer (1999) suggests that the supplier indeed receives a substantial discount from the customer.

C. Performance and Barter: Repeating Guriev and Ickes' (1998) Tests

The basic equation of Guriev and Ickes used for a test of the association between labor productivity and barter is:

$$llp97_i = a_0 + a_1 llp96_i + a_2 (b97_i - b96_i) + a_3 profit96_i + a_4 size96_i + \varepsilon_i$$

My survey data does not have information on barter in 1997 and 1996 and so I use observations on barter in 1998 and 1994 that, according to Guriev and Ickes (1999), should only strengthen the test (“a more ideal test... would regress the change in labor productivity on the change in barter from an earlier period... Enterprises that invested in relational capital would have a large increase in barter since then...”). As a measure of profits I use the costs to output ratio (Guriev and Ickes claim that their results did not change when a measure of costs was used instead of the measure of profits). As a measure of size I use the log of output. Besides using a measure of only barter (*b*) as a dependent variable, I will also use a measure of barter and offsets combined (*bo*), and *veksels* (*vek*).⁶⁸

My estimation results are reported below along with estimates from Guriev and Ickes (1999). Basically, my results confirm those found by Guriev and Ickes. It seems that they had used a wider definition of barter since my results correspond to theirs only when I use a joint measure of barter and offsets. Note also that the use of *veksels* is insignificantly related to labor productivity.

⁶⁸ Measures of the use of non-monetary payments are constructed using answers to a question on percent of sales paid in non-monetary forms.

Table 14. Performance and Barter

<i>Dep. var</i> → <i>Ind. var</i> ↓	<i>llp98</i>	<i>llp98</i>	<i>llp98</i>	<i>llp98</i>	<i>llp98</i>	<i>llp97</i> <i>G&I</i>	<i>llp97</i> <i>G&I</i>
<i>llp94</i>	.349*** (.060)	.343*** (.061)	.349*** (.060)	.340*** (.061)	.354*** (.061)		
<i>b98</i> - <i>b94</i>	-.379 (.246)						
<i>b98</i>		-.410* (.251)					
<i>b94</i>		.245 (.328)					
<i>bo98</i> - <i>bo94</i>			-.380** (.185)				
<i>bo98</i>				-.470** (.204)			
<i>bo94</i>				.247 (.225)			
<i>vek98</i> - <i>vek98</i>					.720 (.538)		
<i>cost97</i>	- .544*** (.135)	- .538*** (.136)	- .542*** (.138)	- .527*** (.139)	- .518*** (.139)		
<i>size97</i>	.202*** (.036)	.206*** (.037)	.204*** (.036)	.213*** (.037)	.207*** (.036)		
<i>llp96</i>						0.78*** (0.05)	0.78*** (0.06)
<i>b97</i> - <i>b96</i>						-0.42** (0.17)	
<i>b97</i>							-0.52** (0.20)
<i>b96</i>							0.35* (0.19)
<i>Profit</i> <i>96</i>						0.83*** (0.13)	0.84*** (0.13)
<i>size96</i>						0.09*** (0.03)	0.09*** (0.03)
<i>const</i>	1.515 *** (.442)	1.521 *** (.443)	1.531 *** (.442)	1.534 *** (.442)	1.366 *** (.440)	0.91 ** (0.41)	1.03 ** (0.42)
<i>N</i>	201	201	200	200	200	150	150
<i>R</i> ²	.479	.480	.483	.485	.476	0.83	0.83

Note: Standard errors are in parentheses. ***=1 percent, **=5 percent, *=10 percent significance.

D. Questionnaire in English



Фонд "Общественное мнение"

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Эл.почта: fom@fom.ru Интернет: www.fom.ru

Region code

Sample point

No of interviewer

No of questionnaire

Industrial Enterprises Survey - 99. Part 1.

HELLO!

Let me introduce myself. I am an interviewer of the Fund of Public Opinion.

We ask you to participate in the survey of industrial enterprises. It is not difficult. I will be reading a question to you and possible answers to it. You can choose the answer which corresponds the most to your opinion, give your own answer or refuse to answer. Sometimes answers will be presented by a card which I will be giving to you. In this case, it is sufficient just to say the number of your answer.

We guarantee confidentiality of the information which we will receive.

We are grateful in advance for your cooperation!

NAME OF THE COMPANY

1. The enterprise exists from month 19 __ __ year

2. The enterprise has been founded in month 19 __ __ year

LAST, FIRST AND MIDDLE NAME OF THE INTERVIEWER:

**DATE OF COMPLETION OF THE QUESTIONNAIRE (DAY, MONTH,
YEAR):** ____ / ____ / ____

COMMENTS:

QUESTIONNAIRE

General instructions:

Enterprise below is defined as legal entity or main legal predecessor, which was this enterprise in the corresponding year.

When answering questions, always write down units. Usually, for monetary data all numbers for 1991-1994 were in thousands of old (before denomination) rubles. Data for 1995-1997 were in millions of old rubles. After the denomination, data are in thousands of denominated rubles. May be it would be more convenient to give numbers in thousands of rubles throughout the questionnaire.

If information is not available for some particular question please put the “-“ sign in the appropriate cell of a table. If you are sure that some variable was equal to zero please use “0” to indicate this. For example in question 232, if you are sure that there were no former employees among hired in some particular year, put "0" in the corresponding cell of the table. If there were former employees but it is impossible to get information for this question, use the “-“ sign.

Outline of sections:

1. History of the firm
2. Management
3. Privatization process
4. Ownership

5. Corporate governance
6. Social relationships at the enterprise
7. Supplies, sales and payments
8. Technology
9. Employment
10. General information about the enterprise
11. Payments to the employees of the enterprise
12. Activities of the enterprise

[TO BE ANSWERED BY A MANAGER WHO HAVE WORKED AT THE ENTERPRISE FOR A LONG ENOUGH PERIOD OF TIME. FOR EXAMPLE, DEPUTY MANAGER]

1. History of the Firm

LET US BEGIN BY TALKING ABOUT THE ORIGINS OF YOUR ENTERPRISE.

1. 80-IES: PLEASE, TELL US, DID YOUR ENTERPRISE EXIST IN 1986 OR NOT?

1. Yes => *Write in position 1 of the insert "January 1986" and go to Q. #6*

2. No

2. DID YOUR ENTERPRISE EXIST IN ANY FORM, FOR INSTANCE, AS A PART OF SOME OTHER ENTERPRISE IN 1986 OR NOT?

1. Yes => *Write in position 1 of the insert "January 1986" and go to Q. #6*

2. No

3. DID YOUR ENTERPRISE EXIST IN ANY FORM IN 19.. OR NOT?

/INTERVIEWER! ASK IN TURN ABOUT 87, 88, ETC. YEARS BEFORE YOU GET AN ANSWER "YES". AS SOON AS YOU GOT THE ANSWER "YES", WRITE THIS YEAR IN POSITION 1 OF THE INSERT AND GO TO Q. #4/

	87	88	89	90	91	92	93	94	95	96
1. Yes	1	1	1	1	1	1	1	1	1	1
2. No	2	2	2	2	2	2	2	2	2	2

/INTERVIEWER! DO NOT FORGET TO WRITE THE YEAR IN POSITION 1 OF THE INSERT./

4. IN WHAT APPROXIMATELY MONTH WAS YOUR ENTERPRISE FOUNDED IN 19[][]?

/INTERVIEWER! READ YEAR FROM POSITION 1 OF THE INSERT./

- | | | | |
|-------------|----------|--------------|-------------------------|
| 1. January | 4. April | 7. July | 10. October |
| 2. February | 5. May | 8. August | 11. November |
| 3. March | 6. June | 9. September | 12. December |
| | | | 13. difficult to answer |

/INTERVIEWER! COPY THIS ANSWER IN POSITION 1 OF THE INSERT./

5. DID YOUR ENTERPRISE HAVE A PREDECESSOR IN 1986 OR NOT?

1. Yes
2. No => go to Q. #10

6. WHAT WAS PREDECESSOR'S NAME IN 1986? */IF THERE WERE MULTIPLE PREDECESSORS, THEN ASK FOR THE MAIN ONE AS IT WOULD BE DEFINED BY THE RESPONDENT./*

7-8. IN WHAT YEAR AND, APPROXIMATELY, MONTH, WAS THE

PREDECESSOR ORIGINALLY FOUNDED, STARTED TO OPERATE?

7. YEAR

1 _____

8. MONTH

- | | | | |
|-------------|----------|--------------|-------------------------|
| 1. January | 4. April | 7. July | 10. October |
| 2. February | 5. May | 8. August | 11. November |
| 3. March | 6. June | 9. September | 12. December |
| | | | 13. difficult to answer |

**9. TO WHAT MINISTRY WAS YOUR ENTERPRISE OR ITS
PREDECESSOR SUBORDINATED IN 1986?**

**10. NOW WE WOULD LIKE TO TALK ABOUT CHANGES OF THE
BOUNDARIES OF YOUR ENTERPRISE, THAT IS WHEN EMPLOYMENT
OR ASSETS CHANGED BECAUSE OF SPLIT-UPS OR MERGERS. HAS
ANYTHING LIKE THAT HAPPENED WITH YOUR ENTERPRISE?**

/INTERVIEWER! SHOW CARD #1 TO THE RESPONDENT./

**CHECK THE LIST OF POSSIBLE REORGANIZATIONS TAKEN FROM THE
NEW LEGAL CODE AND TELL US: STARTING WITH 19[] []/READ
YEAR FROM POSITION #1 OF THE INSERT/, HAS ANYTHING FROM THE
LIST HAPPENED OR NOT?**

1. Yes
2. No => Copy month and year from position #1 of the insert into

position 2 and go to instruction before questions #16-21.

11-15. STARTING FROM 19[][] YEAR (READ YEAR FROM POSITION 1 OF THE INSERT), LET'S TALK ABOUT REORGANIZATIONS OF YOUR ENTERPRISE, IN CHRONOLOGICAL ORDER, STARTING WITH THE VERY FIRST ONE. /INTERVIEWER! ASK QUESTIONS 11-15 FOR EVERY SUBSEQUENT REORGANIZATION./

	# of	reor	gan	iz	ati	on	
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
11. TYPE OF REORGANIZATION							
1. split-up	1	1	1	1	1	1	1
2. merger (involves legal registration of a new legal entity based on two or more predecessors)	2	2	2	2	2	2	2
3. spin-off, your enterprise is the one which spun off and there was its legal registration as a new legal entity	3	3	3	3	3	3	3
4. spin-off, your enterprise is the one from which an enterprise was spun off and there was no legal re-registration of your enterprise	4	4	4	4	4	4	4
5. acquisition	5	5	5	5	5	5	5
6. reorganization of legal entity of one type to another type (change of legal form) without any of the above changes	6	6	6	6	6	6	6
7. other, please enlist	7	7	7	7	7	7	7
12. IN WHAT YEAR DID THIS REORGANIZATION HAPPEN?	19__	19__	19__	19__	19__	19__	19__

13. IN WHAT, APPROXIMATELY, MONTH DID THIS REORGANIZATION HAPPEN?	---	---	---	---	---	---	---
14. AS A RESULT OF THIS REORGANIZATION DID THE NUMBER OF EMPLOYEES INCREASE, DID NOT CHANGE, OR DECREASE?							
1. increase	1	1	1	1	1	1	1
2. did not change	2	2	2	2	2	2	2
3. decrease	3	3	3	3	3	3	3
4. difficult to say	4	4	4	4	4	4	4
15. BY HOW MANY PERCENT DID THE EMPLOYMENT INCREASE/DECREASE ONLY BECAUSE OF THIS REORGANIZATION (TAKE THE NUMBER OF EMPLOYEES BEFORE THIS REORGANIZATION AS 100%)	%	%	%	%	%	%	%

DID ANY OTHER REORGANIZATION HAPPEN AFTER THE ONE WE HAVE JUST TALKED ABOUT?

INTERVIEWER! IF REORGANIZATION OF THE TYPE "1", "2", OR "3" HAS HAPPENED, THEN COPY YEAR AND MONTH OF THE LAST SUCH REORGANIZATION IN POSITION 2 OF THE INSERT, IF NOT -- THEN COPY YEAR AND MONTH INTO POSITION 2 FROM POSITION 1 OF THE INSERT.

16-21. INTERVIEWER! IF IN POS. 2 OF THE INSERT YOU HAVE JANUARY 1986, THEN GO TO Q. #44 (SECTION 2), IF THERE IS A LATER DATE, THEN CONTINUE TO ASK QUESTIONS

LET US CALL /READ MONTH AND YEAR FROM POSITION 2 OF THE INSERT/ A DATE OF FOUNDING OF YOUR ENTERPRISE AND ALL THE QUESTIONS, WHERE IS A REFERENCE TO THE DATE OF FOUNDING, REFER TO THIS VERY DATE.

16. HOW WAS YOUR ENTERPRISE CALLED AT THE DATE OF FOUNDING?

17. WHAT WAS YOUR ENTERPRISE'S LEGAL FORM AT THE DATE OF FOUNDING? /SHOW THE CARD OF LEGAL FORMS AND CIRCLE RESPONDENT'S ANSWER IN THE QUESTIONNAIRE./

CARD #2	
1. Federal state enterprise section 2	=> go to question #44
2. Municipal enterprise section 2	=> go to question #44
3. Limited Liability Company	
4. Closed Joint Stock Company	
5. Open Joint Stock Company	
6. Cooperative	
7. Small enterprise	
8. Partnership (any kind)	
9. Other, please describe _____	

18. WAS YOUR FIRM SUBORDINATED TO SOME AUTHORITY AT THE

FOUNDING DATE?

1. Yes

2. No => go to Q. #20

19. WHAT WAS THE NAME OF THIS AUTHORITY AS OF THE FOUNDING DATE?

20. ESTIMATE (APPROXIMATELY) THE SHARE (IN %) OF EQUIPMENT USED (WAS LEASED, BOUGHT, TRANSFERRED BY SOME ARRANGEMENT) BY YOUR ENTERPRISE AT THE MOMENT (RIGHT AFTER) ITS FOUNDING WHICH WAS PREVIOUSLY USED BY ENTERPRISE-PREDECESSOR (PREDECESSORS) OR FOUNDERS.

_____ %

21. ESTIMATE (APPROXIMATELY) THE SHARE (IN %) OF YOUR EMPLOYEES AT THE MOMENT OF FOUNDING WHICH PREVIOUSLY WORKED FOR THE ENTERPRISE-PREDECESSOR (PREDECESSORS) OR THE FOUNDERS.

_____ %

22. WE DO NOT NEED TO KNOW THE NAMES OF THE FIRM'S FOUNDERS. WE ONLY WOULD LIKE TO ASK YOU ABOUT THE TYPES OF YOUR FOUNDERS.

DID YOUR ENTERPRISE HAVE FOUNDER-BLOCKHOLDERS WHICH CONTRIBUTED 5 OR MORE % OF THE CHARTER CAPITAL OF

THE ENTERPRISE ON [] [] MONTH 19[] [] /READ MONTH AND YEAR FROM POSITION 2 OF THE INSERT/, I.E. ON THE DATE OF FOUNDING (IN OUR DEFINITION)?

1. Yes
2. No => go to Q. #27

LET'S TALK ABOUT THEM. /INTERVIEWER! GIVE THE RESPONDENT CARDS #3 AND 4. ASK QUESTIONS #23-26 FOR EVERY BLOCKHOLDER./

# founder	1 st	2 nd	3 rd	4 th	5 th	5 th	7 th	8 th	9 th	10 th
23. PLEASE, SELECT THE TYPE OF THE FOUNDER USING CARD #3										
1 . federal state authority	1	1	1	1	1	1	1	1	1	1
2 . local state authority	2	2	2	2	2	2	2	2	2	2
3 . enterprise-predecessor	3	3	3	3	3	3	3	3	3	3
4 . managers of the former enterprise-predecessor	4	4	4	4	4	4	4	4	4	4
5 . non-managerial employees of the former enterprise-predecessor	5	5	5	5	5	5	5	5	5	5
6 . Russian bank	6	6	6	6	6	6	6	6	6	6
7 . Russian holding company	7	7	7	7	7	7	7	7	7	7
8 . Russian investment fund or other non-bank financial institutions	8	8	8	8	8	8	8	8	8	8
9 . other Russian legal entities	9	9	9	9	9	9	9	9	9	9
10 . other Russian physical persons	10	10	10	10	10	10	10	10	10	10
11 . foreigners	11	11	11	11	11	11	11	11	11	11
24. WHAT % OF CHARTER CAPITAL DID THIS FOUNDER CONTRIBUTE?										
	%	%	%	%	%	%	%	%	%	%

25. BEFORE THE FOUNDING OF YOUR ENTERPRISE, DID THE FOUNDER WORK IN THE BRANCH, WORK IN WHICH IS THE MAIN ACTIVITY OF YOUR ENTERPRISE?										
1 . yes	1	1	1	1	1	1	1	1	1	1
2 . no	2	2	2	2	2	2	2	2	2	2
26. WHO WAS THE FOUNDER AT THE FOUNDING DATE? <i>/CARD #4. MULTIPLE ANSWERS PERMITTED./</i>										
1 . non-managerial employee of your enterprise	1	1	1	1	1	1	1	1	1	1
2 . manager of your enterprise	2	2	2	2	2	2	2	2	2	2
3 . customer of your enterprise	3	3	3	3	3	3	3	3	3	3
4 . supplier of your enterprise	4	4	4	4	4	4	4	4	4	4
5 . creditor of your enterprise	5	5	5	5	5	5	5	5	5	5
6 . competitor to your enterprise	6	6	6	6	6	6	6	6	6	6
7 . intermediary	7	7	7	7	7	7	7	7	7	7
8 . nothing from the above	8	8	8	8	8	8	8	8	8	8

INTERVIEWER! IF THE RESPONDENT SAYS THAT THERE WERE NO OTHER BLOCKHOLDERS-FOUNDERS ON THIS DATE, THEN GO TO Q. #27. IN ANY OTHER CASE, ASK QQ. #23-26

27. WERE THERE SMALL FOUNDERS, THAT IS THOSE WHO CONTRIBUTED LESS THAN 5% OF THE CHARTER ENTERPRISE?

Yes.....1

No.....2 => go to Q. #44, section 2

LET'S TALK ABOUT THEM.

WERE THE SMALL FOUNDERS OF YOUR ENTERPRISE...	Yes	No	% of the charter capital
28-29. ... local state authorities?	1	2	
30-31. ... federal state authorities?	1	2	
32-33. ... enterprise-predecessor?	1	2	
34-35. ... managers of your enterprise?	1	2	
36-37. ... non-managerial employees of your enterprise?	1	2	
38-39. ... other, not yet mentioned, Russian legal entities?	1	2	
40-41. ... other, not yet mentioned, Russian physical persons?	1	2	
42-43. ... foreigners?	1	2	

2. Management

INTERVIEWER! READ THE DATE OF FOUNDING FROM POSITION 2 OF THE INSERT.

STARTING WITH [] [] MONTH 19[] [], LET'S TALK ABOUT ALL HEADS OF YOUR COMPANY IN CHRONOLOGICAL ORDER.

WHEN THE MANAGER, WHO WAS IN THE POSITION ON [] [] MONTH 19[] [], STARTED TO WORK IN THIS POSITION?

MANAGER	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
44-45. DATE OF ENTERING THE POSITION							
month	_	_	_	_	_	_	_
year 19__	_	_	_	_	_	_	_
46. WHERE DID (S)HE WORK BEFORE ENTERING THE POSITION?							
1 . in the same company or its predecessor	1	1	1	1	1	1	1
2 . in the parent company	2	2	2	2	2	2	2
3 . inside the industry, outside the company	3	3	3	3	3	3	3
4 . other, specify	4	4	4	4	4	4	4
5 . difficult to say	5	5	5	5	5	5	5
47. IS (S)HE STILL THE TOP MANAGER?							
1. yes => go to Q. # 53, section 3	1	1	1	1	1	1	1
2. no	2	2	2	2	2	2	2
48-49. IN WHAT YEAR AND, APPROXIMATELY, MONTH DID THIS MANAGER LEAVE THE							

POSITION?							
month	___	___	___	___	___	___	___
year 19__	___	___	___	___	___	___	___
50. WAS THE DEPARTURE CONNECTED WITH A SPLIT-UP OR MERGER?							
1 . yes, it was: because of the merger (acquisition) of enterprises	1	1	1	1	1	1	1
2 . yes, it was: because of the split-up (spin-off) of enterprises	2	2	2	2	2	2	2
3 . yes, it was: because of the merger (acquisition) and simultaneous split-up (spin-off) of enterprises	3	3	3	3	3	3	3
4 . no, it was not	4	4	4	4	4	4	4
5 . difficult to say	5	5	5	5	5	5	5
51. WHAT WAS THE MAIN REASON FOR DEPARTURE? /CARD # 5/							
1 . fired or forced to quit	1	1	1	1	1	1	1
2 . voluntary quit to new job (had an opportunity to remain in the position)	2	2	2	2	2	2	2
3 . forced leave to new job	3	3	3	3	3	3	3
4 . voluntary retirement (had an opportunity to remain in the position)	4	4	4	4	4	4	4
5 . forced to retire	5	5	5	5	5	5	5
6 . demotion within company	6	6	6	6	6	6	6
7 . death	7	7	7	7	7	7	7
8 . forced recall to parent company	8	8	8	8	8	8	8
9 . voluntary quit for parent company	9	9	9	9	9	9	9
10 . other, specify	10	10	10	10	10	10	10
11 . difficult to say	11	11	11	11	11	11	11

INTERVIEWER! QUESTION #52 SHOULD BE ASKED IF AS AN ANSWER TO Q. #51 YOU GOT ANSWERS 1, 3, 5 OR 8. GIVE THE RESPONDENT CARD #6 FOR THE ANSWER.

MANAGER	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
52. WHO WAS THE MOST ACTIVE IN INITIATING THE DISMISSAL (FORCING THE LEAVE)? /CARD #6/							
1 . federal government agency	1	1	1	1	1	1	1
2 . local government agency	2	2	2	2	2	2	2
3 . bank	3	3	3	3	3	3	3
4 . other firm	4	4	4	4	4	4	4
5 . workers of the firm (work collective)	5	5	5	5	5	5	5
6 . other managers	6	6	6	6	6	6	6
7 . new owner	7	7	7	7	7	7	7
8 . other influential group	8	8	8	8	8	8	8
9 . difficult to say	9	9	9	9	9	9	9

3. Privatization

53. HAS YOUR ENTERPRISE BEEN PRIVATIZED, I.E. ALL OR A PART OF THE FIRM WAS TRANSFERRED FROM THE STATE TO PRIVATE OWNERSHIP?

- 1. Yes
- 2. No => go to Q. #62

NOW I WILL READ POSSIBLE TYPES OF PRIVATIZATION. NAME ALL WHICH YOUR ENTERPRISE HAS GONE THROUGH.

Type	Yes	No
54. Sale of the whole company by auction, commercial or investment tender	1	2
55. Option 1 of privileges given to the work collective	1	2
56. Option 2	1	2
57. Option 3	1	2
58. Lease buyout	1	2
59. Other, describe		

[IF NECESSARY, EXPLAIN THE OPTIONS: 2ND = SALE OF 51% OF VOTING SHARES TO THE WORK COLLECTIVE, 1ST = FREE TRANSFER OF 25% OF NON-VOTING SHARES AND SALE OF 10% OF VOTING SHARES TO THE WORK COLLECTIVE, 3RD = SALE OF 20% OF VOTING SHARES TO ADMINISTRATION UPON THE COMPLETION OF THE PLAN OF RESTRUCTURING.]

QUESTION #60 HAS TO BE ASKED ONLY TO THOSE WHO ANSWERED

"YES" TO QUESTION #55

60. HAS YOUR ENTERPRISE CONVERTED PREFERRED (NON-VOTING) SHARES OF TYPE A INTO COMMON (VOTING)?

- 1. Yes
- 2. No => go to Q. #62

61. WHAT PERCENT OF ALL TYPE A SHARES?

_____ %

62. HAS YOUR ENTERPRISE EVER BEEN IN THE STATE OF BANKRUPTCY BY THE DECISION OF THE ARBITRAGE COURT OR ANY OTHER AUTHORITY?

- 1. Yes
- 2. No => go to question #85, section 4

Was your enterprise...	Date of entering this stage (approximately, if necessary)?	For how many months has it been introduced?
63. ... at the stage of outside monitoring Yes.....1 No.....2	64. Month [][] 65. Year [][]	66. _____
67. ...at the stage of outside management Yes.....1 No.....2	68. Month [][] 69. Year [][]	70. _____
71. ... at the stage of peace agreement Yes.....1 No.....2	72. Month [][] 73. Year [][]	74. _____
75. ... at the stage of	76. Month	78. _____

tender production	[] [] 77. Year [] []	
-------------------	---------------------------------------	--

79-84. WHO INITIATED THE BANKRUPTCY PROCEDURE OR BROUGHT THE CASE TO THE ARBITRAGE COURT?

	Yes	No
79. BANK	1	2
80. OTHER FIRM	1	2
81. FEDERAL STATE AUTHORITY	1	2
82. LOCAL STATE AUTHORITY	1	2
83. WORKERS OF THE ENTERPRISE	1	2
84. MANAGEMENT OF THE ENTERPRISE	1	2

4. Ownership

INTERVIEWER! CHECK USING THE DATE OF FOUNDING OF THE ENTERPRISE (POS. 2 OF THE INSERT) WHETHER THE FIRM EXISTED IN 1994. IF IT DID, THEN ASK QUESTIONS FOR BOTH DATES: FIRST ASK ALL QUESTIONS ON JANUARY 1, 1999, AND THEN -- ON JULY 1, 1994. IF THE FIRM DID NOT EXIST, THEN ASK QUESTIONS ONLY FOR JANUARY 1, 1999.

WE DO NOT NEED TO KNOW THE NAMES OF THE FIRM'S OWNERS, BUT WE WOULD LIKE TO ASK YOU ABOUT THE TYPES OF OWNERS AND % OF OWNERSHIP THAT THEY HELD.

[IF IT IS IMPOSSIBLE TO GET PRECISE NUMBERS, THEN ASK FOR ESTIMATES TO NEAREST 5%]

WERE THE OWNERS OF YOUR ENTERPRISE ON...	..January 1, 1999		...July 1, 1994	
85, 97. local state authorities?	85.	Yes...1 => %? _____ No.....2	97.	Yes...1 => %? _____ No.....2
86, 98. federal state authorities?	86.	Yes...1 => %? _____ No.....2	98.	Yes...1 => %? _____ No.....2
87, 99. employees of your enterprise on this date, including all workers and managers? Of which:	87.	Yes..1 => % _____ No....2 => go to Q. #90	99.	Yes..1 => % _____ No....2 => go to Q. #102

88, 100. managers of your enterprise excluding former employees and pensioners?	88.	Yes...1 => %? _____ No.....2	100.	Yes...1 => %? _____ No.....2
89, 101. non- managerial workers of your enterprise?	89.	Yes...1 => %? _____ No.....2	101.	Yes...1 => %? _____ No.....2
90, 102. outside owners, excluding state authorities and employees of your enterprise? Of which:	90.	Yes..1 => % _____ No....2 => <i>go to Q. #94</i>	102.	Yes..1 => % _____ No....2 => <i>go to Q. #106</i>
91, 103. other, not yet mentioned, Russian legal entities?	91.	Yes...1 => %? _____ No.....2	103.	Yes...1 => %? _____ No.....2
92, 104. other, not yet mentioned, Russian physical persons?	92.	Yes...1 => %? _____ No.....2	104.	Yes...1 => %? _____ No.....2
93, 105. foreigners?	93.	Yes...1 => %? _____ No.....2	105.	Yes...1 => %? _____ No.....2

		January 1, 1999		July 1, 1994
94, 106. APPROXIMATE NUMBER OF OWNERS OF YOUR ENTERPRISE ON...	94	_____people=> go to Q. 95 -8 – diff. to say=> go to Q.96	106	_____people=> go to Q. 107 -8 – diff. to say=> go to Q.108
95,107. FROM WHICH: APPROXIMATE NUMBER OF WORKER-OWNERS	95	_____people -8 – difficult to say=> go to Q. #97	107	_____people -8 – difficult to say=> go to Q. #109
96,108. AT LEAST TELL US, ARE THERE MORE THAN A 100 OR LESS?	96		108	
1. exactly or more than 100		1		1
2. less than 100		2		2
3. difficult to say		3		3

109. SINCE THE MOMENT OF FOUNDING OF YOUR ENTERPRISE ON [] [] MONTH 19[] [] YEAR /READ MONTH AND YEAR FROM POSITION 2 OF THE INSERT/, WAS YOUR ENTERPRISE EVER MORE THAN 50% STATE OWNED?

Yes.....1

No.....2 => go to Q. #112

110. AT THE PRESENT MOMENT, IS THE STATE OWNERSHIP MORE THAN 50% OF THE CHARTER CAPITAL OF YOUR ENTERPRISE?

Yes.....1 => go to Q. #112

No.....2

**111. IN WHAT MONTH AND YEAR DID YOUR COMPANY BECOME 50%
NON-STATE OWNED?**

[][]month 19[][] year

**112. NOW WE WOULD LIKE TO ASK YOU ABOUT ANY OUTSIDE
BLOCKHOLDERS, DEFINED AS NON-STATE, NON-EMPLOYEE
OWNERS HOLDING 5 OR MORE % OF OWNERSHIP OF THE
ENTERPRISE. WERE THERE ANY SUCH BLOCKHOLDERS ON
JANUARY 1, 1999 OR ON JULY 1, 1994?**

Yes.....1

No.....2 => go to Q. #118, section 5

# of blockholder	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 ^t _h
113. TELL ME, PLEASE, WHAT IS THE TYPE OF THIS BLOCKHOLDER? <i>/CARD #7./</i>										
1. Russian bank	1	1	1	1	1	1	1	1	1	1
2. enterprise- predecessor	2	2	2	2	2	2	2	2	2	2
3. Russian holding company	3	3	3	3	3	3	3	3	3	3
4. Russian investment fund and other non-bank financial institutions	4	4	4	4	4	4	4	4	4	4
5. other Russian legal entities	5	5	5	5	5	5	5	5	5	5
6. Russian individuals => go to Q. #115	6	6	6	6	6	6	6	6	6	6

7. foreigners => go to Q. #115	7	7	7	7	7	7	7	7	7	7
114. WHO HELD 50% OR MORE OF OWNERSHIP OF THIS BLOCKHOLDER?										
1. state (federal or municipal level)	1	1	1	1	1	1	1	1	1	1
2. private legal or physical persons	2	2	2	2	2	2	2	2	2	2
115. WHAT PERCENTAGE OF OWNERSHIP DID THE BLOCKHOLDER HAVE ON JANUARY 1, 1999? //IF THE BLOCKHOLDER DID NOT EXIST WRITE DOWN "0"./										
	%	%	%	%	%	%	%	%	%	%
116. WHAT PERCENTAGE OF OWNERSHIP DID THE BLOCKHOLDER HAVE ON JULY 1, 1994? //IF THE BLOCKHOLDER DID NOT EXIST WRITE DOWN "0"./										
	%	%	%	%	%	%	%	%	%	%
117. WHAT WAS THE BLOCKHOLDER IN RELATION TO THE ENTERPRISE? /CARD #8, MULTIPLE ANSWERS										

<i>PERMITTED./</i>										
1. customer of your firm	1	1	1	1	1	1	1	1	1	1
2. supplier of your firm	2	2	2	2	2	2	2	2	2	2
3. creditor of your firm	3	3	3	3	3	3	3	3	3	3
4. competitor of your firm	4	4	4	4	4	4	4	4	4	4
5. intermediary	5	5	5	5	5	5	5	5	5	5
6. nothing of the above	6	6	6	6	6	6	6	6	6	6

LET'S TALK ABOUT NEXT BLOCKHOLDER WHICH EXISTED ON JANUARY 1, 1999. IF THERE WAS NONE, LET'S TALK ABOUT ANY WHICH EXISTED ON JULY 1, 1994 BUT ONLY ABOUT THOSE ONES WHICH WE HAVE NOT YET TALKED ABOUT. */IF THE RESPONDENT SAYS THAT THERE WERE NONE, THEN GO TO Q. #118, SECTION 5. IF THERE WERE OTHER BLOCKHOLDERS, ASK QUESTIONS 113-117./*

5. Corporate Governance in a Joint Stock Company

**118. IS YOUR ENTERPRISE A JOINT-STOCK COMPANY OF ANY KIND
AT THE PRESENT MOMENT?**

Yes.....1

No.....2 => go to Q. # 140

**119. DID YOUR ENTERPRISE HAVE PREFERRED SHARES ON
JANUARY 1, 1999?**

Yes.....1

No.....2

**120. DID YOUR ENTERPRISE HAVE PREFERRED SHARES ON
JANUARY 1, 1994?**

Yes.....1

No.....2

***INTERVIEWER! DECIDE ON THE DATES FOR THE NEXT QUESTION. IF
THE ANSWERS TO***

QUESTION 119

QUESTION 120

“YES”

“YES”, THEN ASK QUESTIONS ON BOTH DATES /№№121–138./

“YES”

“NO”, THEN ASK QUESTIONS ONLY ON JANUARY 1, 1999 /№121-128,137./

“NO”

“YES”, THEN ASK QUESTIONS ONLY ON JULY 1, 1994 /№129-136,138/

“NO”

“NO”, THEN GO TO Q. # 139

121-136. WE DO NOT INTEND TO ASK THE NAMES OF THE OWNERS OF YOUR PREFERRED SHARES. HOWEVER, WE WOULD LIKE TO RECEIVE INFORMATION ABOUT THE GENERAL CATEGORIES OF OWNERS OF PREFERRED SHARES THAT EXISTED AT YOUR ENTERPRISE AND % OF PREFERRED SHARES THAT THEY OWNED.

WERE THE OWNERS OF PREFERRED SHARES OF YOUR ENTERPRISE ON...		... January 1, 1999		... July 1, 1994
LOCAL STATE AUTHORITIES?	121.	Yes...1 => %? _____ No.....2	129.	Yes...1 => %? _____ No.....2
FEDERAL STATE AUTHORITIES?	122.	Yes...1 => %? _____ No.....2	130.	Yes...1 => %? _____ No.....2

ENTERPRISE- PREDECESSOR?	123.	Yes...1 => %? _____ No.....2	131.	Yes...1 => %? _____ No.....2
MANAGERS OF YOUR ENTERPRISE?	124.	Yes...1 => %? _____ No.....2	132.	Yes...1 => %? _____ No.....2
NON-MANAGERIAL EMPLOYEES OF YOUR ENTERPRISE?	125.	Yes...1 => %? _____ No.....2	133.	Yes...1 => %? _____ No.....2
OTHER, NOT YET MENTIONED, RUSSIAN LEGAL ENTITIES?	126.	Yes...1 => %? _____ No.....2	134.	Yes...1 => %? _____ No.....2
OTHER, NOT YET MENTIONED, RUSSIAN PHYSICAL PERSONS?	127.	Yes...1 => %? _____ No.....2	135.	Yes...1 => %? _____ No.....2
FOREIGNERS?	128.	Yes...1 => %? _____ No.....2	136.	Yes...1 => %? _____ No.....2

**137-138. % OF PREFERRED SHARES FROM THE TOTAL NUMBER OF
ALL SHARES ON...**

JANUARY 1, 1999

JULY 1, 1994

139. WHO KEEPS THE SHAREHOLDERS' REGISTRY?

Department of the enterprise.....1

Outside company.....2

There is no registry.....3

140-141. DID THE STATE HAVE THE GOLDEN SHARE ON...

JANUARY 1, 1999

JULY 1, 1994

Yes.....1

Yes.....1

No.....2

No.....2

IF THE RESPONDENT DOES NOT UNDERSTAND WHAT IS THE “GOLDEN SHARE”, EXPLAIN: THE GOLDEN SHARE BELONGS TO THE STATE AND GIVES IT THE POWER OF VETO ON SOME DECISIONS OF THE COMPANY.

IF YOU GOT A POSITIVE ANSWER TO Q. #140 OR #141 FOR ANY DATE, ASK Q. #142. IF NOT, GO TO Q. #144

142. DID THE STATE USE ITS VETO POWER?

Yes.....1

No.....2 => go to Q. #144

143. PLEASE, TELL US ABOUT CASES WHEN THE VETO POWER WAS USED.

WRITE DOWN THE RESPONDENT'S ANSWER BELOW.

144-149. NOW WE WOULD LIKE TO ASK A COUPLE OF QUESTIONS ABOUT THE VOTING PRACTICES ON YOUR COMPANY SHAREHOLDERS' OR PARTICIPANTS' MEETINGS.

144. IS VOTING AT THE GENERAL SHAREHOLDERS' OR PARTICIPANTS' MEETINGS FOR THE MEMBERS OF THE BOARD OF DIRECTORS ALWAYS DONE BY THE PRINCIPLE "1 SHAREHOLDER – 1 VOTE"?

Always.....1

Never.....2

Other.....3

145. IF THE RESPONDENT'S ANSWER IS "OTHER" (CODE 3), THEN ASK HIM/HER TO DESCRIBE IT IN WORDS AND WRITE IT DOWN BELOW

146. IS VOTING ON THE GENERAL SHAREHOLDERS' OR PARTICIPANTS' MEETINGS ALWAYS DONE OPENLY, I.E. NOT BY A SECRET BALLOT?

Always.....1

Never.....2

Other.....3

**147. IF THE RESPONDENT'S ANSWER IS "OTHER" (CODE 3), THEN ASK
HIM/HER TO DESCRIBE IT IN WORDS AND WRITE IT DOWN BELOW**

**148. DOES THE COUNTING COMMISSION ALWAYS WORK ON THE
GENERAL SHAREHOLDERS' OR PARTICIPANTS' MEETINGS?**

Always.....1

Never.....2

Other.....3

**149. IF THE RESPONDENT'S ANSWER IS "OTHER" (CODE 3), THEN ASK
HIM/HER TO DESCRIBE IT IN WORDS AND WRITE IT DOWN BELOW**

6. Social Relationships at the Enterprise

6.1. Fringe benefits

**150-163. ADDITIONALLY TO CASH INCOMES WHICH OF THE FOLLOWING GOODS AND SERVICES WERE PROVIDED FOR FREE OR SUBSIDIZED AT THE EXPENSE OF THE COMPANY?
ATTENTION: NOT INSTEAD OF CASH INCOMES BUT IN ADDITION TO CASH INCOMES!**

FOR FREE OR SUBSIDIZED AT THE EXPENSE OF THE ENTERPRISE...	1990	1994	1998
150. Land plots or cultivation services or covering costs of them	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
151. Purchase of housing, covering costs of purchase, or repair of housing for employees	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
152. Construction of housing for employees or covering costs of construction	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
153. Goods produced by the enterprise (incl. food)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
154. Food not produced by enterprise or covering its cost	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
155. Other goods not produced by the enterprise or covering their costs (excl. food)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
156. Catering during work time or covering costs	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
157. Subsidizing or covering costs of housing and utilities for employees	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
158. Medical services (own polyclinics) or covering costs of medical services provided by other organizations	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No

159. Vacation facilities or covering costs thereof	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
160. Professional education or covering costs of professional education	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
161. Kindergartens or covering costs thereof	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
162. Entertainment and cultural facilities or covering costs thereof	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
163. Other, describe _____	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No

6.2. Wage Arrears

164. HAS YOUR ENTERPRISE HAD WAGE ARREARS DURING THE PERIOD OF 1991 TO 1998?

Yes.....1

No.....2 => go to Q. #168, section 6.3

INTERVIEWER! QUESTIONS #165-167 FIRST ASK FOR 1998, THEN FOR 1997, AND SO ON UP TO 1991.

165. PLEASE, ESTIMATE THE VOLUME OF WAGE ARREARS IN MONTHLY WAGE FUNDS BY MONTHS AND THEN TAKE AN AVERAGE OVER THE COURSE OF THE YEAR.

EXAMPLE OF TAKING AN AVERAGE FOR THE 1ST QUARTER:

***WAGE ARREARS FOR JANUARY – 3 MONTHLY WAGE FUNDS
FOR FEBRUARY – 2 MONTHLY FUNDS***

FOR MARCH – 1 MONTHLY FUND

THEN AN AVERAGE VOLUME OF WAGE ARREARS FOR THE 1ST

QUARTER IS EQUAL TO

$(3+2+1)/3$ MONTHS = 2

THE CALCULATIONS FOR THE WHOLE YEAR ARE TO BE MADE ANALOGOUSLY

166. ESTIMATE AVERAGE PERCENTAGE OF EMPLOYEES WHO HAD WAGE ARREARS DURING THE YEAR.

167. ESTIMATE PERCENTAGE OF EMPLOYEES WHO WERE ALWAYS PAID ON TIME DURING THE YEAR.

	19 91	19 92	19 93	19 94	19 95	19 96	19 97	19 98
165. The volume of wage arrears in monthly wage funds by months averaged over the course of the year								
166. Average percentage of employees who had wage arrears during the year								
167. Percentage of employees who were always paid on time during the year								

6.3. Strikes

168. DID YOU HAVE ANY FORMS OF PROTEST BEHAVIOR OF EMPLOYEES (FOR EXAMPLE, STRIKES) AT YOUR ENTERPRISE DURING 1991-1998?

Yes.....1

No.....2 => go to Q. #175, section 7

169-174. PLEASE, TELL US THE TYPE OF PROTEST BEHAVIOR, YEAR AND MONTH WHEN IT HAPPENED, LENGTH OF ACTION, NUMBER OF PARTICIPANTS, AND THE REASONS FOR THE ACTION.

169. type of action	170. year	171. month	172. length of action /days/	173. number of participants	174. reasons for action

7. Supplies, sales and payments

7.1. Price controls

175. ESTIMATE PERCENTAGE OF SALES SUBJECT TO PRICE

CONTROLS (HERE WE ALSO INCLUDE SHARE OF OUTPUT WHICH HAS OR HAD PRICE OR PROFIT CEILINGS)

	1990	1992	1994	1998
Percentage of sales subject to price controls				

7.2. Suppliers

176-179. PLEASE, ESTIMATE THE SHARE (IN %) OF SUPPLIES FROM THE "OLD" AND "NEW", RUSSIAN AND NON-RUSSIAN SUPPLIERS BY YEARS.

SUPPLIERS FROM THE FORMER SOVIET REPUBLICS ARE CONSIDERED TO BE NON-RUSSIAN.

"OLD" ARE THOSE WHO WERE SUPPLIERS FROM (AT LEAST) 1990 AND CONTINUED TO SUPPLY IN THE CORRESPONDING YEAR. "OLD" SUPPLIERS WHICH WERE RENAMED OR THOSE WHICH SPLIT-UP FROM YOUR "OLD" SUPPLIER ARE NOT TO BE CONSIDERED "NEW".

"NEW" ARE THOSE WHO WERE NOT SUPPLIERS IN 1990.

INTERMEDIARIES ARE NOT COUNTED AS "NEW".

	1990	1994	1998
176. Old Russian suppliers			
177. New Russian suppliers			
178. Old non-Russian suppliers			
179. New non-Russian suppliers			
Total	100%	100%	100%

7.3. Payments for output of your firm

180. DID YOUR FIRM USE NON-MONETARY FORMS OF PAYMENT WITH YOUR CUSTOMERS, LIKE MUTUAL CANCELLATION OF DEBTS, BARTER, VEKSELS, AND THE LIKE?

Yes.....1

No.....2 => go to Q. # 187, section 7.4

181-186. ESTIMATE PERCENTAGE OF YOUR SALES THAT WERE PAID FOR USING:

	1994	1998
181. Barter		
182. Clearing schemes		
183. Veksels		
184. Bank transfers		
185. Cash		
186. Other, describe _____		

Total, %	100%	100%
----------	------	------

INTERVIEWER! CHECK WHETHER THE SUM IN TOTAL IS 100%. IF NOT, ASK WHY AND WRITE THE ANSWER BELOW

7.4. Payments for Material Resources Used in Production

187. DID YOUR FIRM USE NON-MONETARY FORMS OF PAYMENT WITH YOUR SUPPLIERS, LIKE MUTUAL CANCELLATION OF DEBTS, BARTER, VEKSELS, AND THE LIKE?

Yes.....1

No.....2 => go to Q. # 194

188-193. ESTIMATE THE SHARE (IN %) OF MATERIAL RESOURCES PAID USING:

	1994	1998
188. Barter		
189. Clearing schemes		
190. Veksels		
191. Bank transfers		
192. Cash		
193. Other, explain _____		
Total, %	100%	100%

INTERVIEWER! CHECK WHETHER THE SUM IN TOTAL IS 100%. IF NOT, ASK WHY AND WRITE THE ANSWER BELOW

194. IF YOU HAD AN OVERDUE LOAN FROM A BANK, DID THE BANK SEIZE ANY COLLATERAL?

Yes.....1

No.....2

195. AT THE END OF EACH OF THE FOLLOWING YEARS, WAS THE MAIN BANK ACCOUNT OF THE FIRM ON KARTOTEKA?

	19 90	19 91	19 92	19 93	19 94	19 95	19 96	19 97	19 98
At the end of each of the following years, was the main bank account of the firm on kartoteka?	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes
	2. No	2. No	2. No	2. No	2. No	2. No	2. No	2. No	2. No

8. Technology

8.1. Percentage of old equipment

196. WHAT IS THE SHARE (IN %) OF THE OLD EQUIPMENT ON YOUR ENTERPRISE, I.E. WHICH WAS RENEWED MORE THAN 4 YEARS AGO (HERE WE MEAN RENEWAL BY THE BRAND NEW EQUIPMENT)?

	1990	1994	1998
Share of equipment more than 4 years old (%)			

8.2. Innovations

197-198. WAS YOUR COMPANY RECEIVING PATENTS ON NEW GOODS, TECHNOLOGICAL PROCESSES, EQUIPMENT AND TOOLS DURING 1991-98? ITS NUMBER BY YEARS.

	1991	1992	1993	1994	1995	1996	1997	1998
197. Was your company receiving patents?	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
198. Approximate number of patents								

8.3. Research and Development

199. PLEASE, ESTIMATE THE NUMBER OF EMPLOYEES WHO WORKED IN R&D DEPARTMENTS OF YOUR FIRM, INCLUDING THOSE IN CONSTRUCTION BUREAUS AND OTHER WHO DESIGN NEW

PRODUCTS AND TECHNOLOGY.

	1990	1994	1998
Number of employees who worked in R&D departments of your firm			

[TO BE ANSWERED BY PERSONNEL OFFICE]

9. Employment

9.1. Composition of labor force

200-208. PLEASE, ESTIMATE THE COMPOSITION OF YOUR PERSONNEL-IN-THE-STAFF BY AGE, GENDER, AND EDUCATION AT THE END OF CORRESPONDING YEAR.

	at the end of 1998
200. NUMBER OF EMPLOYEES	

of which:

Percent of employees (%):	at the end of 1998
201. younger than 30 y.o.	
202. older than 50 y.o.	
203. women	
204. university education	
205. "special" vocational (example "tekhnikum")	
206. "professional technical" vocational (example "PTU")	
207. secondary	
208. lower than secondary	

9.2. Professional education

209. PLEASE, NAME PROFESSION OF PRODUCTION WORKERS OF THE MAIN ACTIVITY OF YOUR ENTERPRISE THAT YOU USUALLY (MOST OF ALL) HIRE (FOR EXAMPLE, *ChPU MACHINE TOOLS OPERATOR*).

Profession

210-211. ESTIMATE THE NUMBER OF DAYS WHICH IS NECESSARY TO TRAIN THE AFOREMENTIONED WORKER, INCLUDING TIME OF FORMAL TRAINING AT ENTERPRISE AND TIME SPEND BY INSTRUCTORS TO TRAIN THE WORKER IF...

210. WORKER DID NOT DO A SIMILAR WORK BEFORE.

211. WORKER WAS EARLIER EMPLOYED IN THIS OCCUPATION AT SOME OTHER ENTERPRISE IN THIS INDUSTRY.

The worker earlier...	Number of days which is necessary to train the worker
210. Did not do a similar work	
211. Was earlier employed in this occupation	

9.3. Hiring costs

212. SUPPOSE ONE WORKER OF THIS TYPE QUILTS THE FIRM, AND YOU MUST HIRE A REPLACEMENT AS SOON AS POSSIBLE. HOW MANY MAN-HOURS WOULD THE PERSONNEL OFFICE WORK TO ARRANGE ADVERTISEMENTS, INTERVIEW CANDIDATES, PROCESS PAPERWORK, ETC. TO HIRE THE REPLACEMENT (EXCLUDING THE TIME OF WAITING FOR THE WORKER TO SHOW UP AT THE PERSONNEL OFFICE OR WAITING TIME TO START THE JOB)?

_____ man-hours

9.4. Trade Unions

213. ESTIMATE WHAT SHARE OF YOUR EMPLOYEES WERE MEMBERS OF ANY TRADE UNION AT THE END OF THE FOLLOWING YEARS:

	1990	1994	1998
Share of members (%)			

9.5. Computerization

214. PLEASE ESTIMATE THE NUMBER OF YOUR EMPLOYEES WHO MOST OF THEIR WORKING TIME USE COMPUTERS OR COMPUTERIZED EQUIPMENT (DO NOT COUNT CHPU).

215. PLEASE ESTIMATE THE NUMBER OF YOUR EMPLOYEES WHO ARE PROGRAMMING AND SERVICING COMPUTERS AND COMPUTERIZED EQUIPMENT (DO NOT COUNT ChPU).

	1990	1994	1998
214. Number of employees who use computers or computerized equipment			
215. Number of employees who are programming and servicing computers			

INTERVIEWER! COPY MONTH AND YEAR FROM POSITIONS 1 AND 2 OF THE INSERT ONTO THE FIRST PAGE OF THE QUESTIONNAIRE.



Фонд "Общественное мнение"

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Region code

Sample point

No of interviewer

No of questionnaire

Industrial Enterprises Survey - 99. Part 2.

NAME OF THE COMPANY

LAST, FIRST AND MIDDLE NAME OF THE INTERVIEWER:

DATE OF COMPLETION OF THE QUESTIONNAIRE (DAY, MONTH,

YEAR): ____ / ____ / ____

COMMENTS:

[TO BE ANSWERED BY PLANNING DEPARTMENT]

INSTRUCTIONS ON HOW TO FILL OUT THESE SECTIONS:

THESE SECTIONS ARE FILLED OUT USING FIRM'S YEARLY REPORTS ON EMPLOYMENT. THESE REPORTS MAY INCLUDE YEARLY, QUARTERLY, OR MONTHLY FORMS 1-T (OR PERHAPS 2-T) FOR YEARS 1995-1997, AND FORM P-4 FOR 1998. IF THERE ARE SIMILAR FORMS FOR EARLIER YEARS 1990-1994, PLEASE USE THEM TO FILL IN THE TABLES. HOWEVER, ROW NUMBERS IN STATISTICAL FORMS MAY CHANGE FROM YEAR TO YEAR, SO IN EVERY CASE BEFORE PUTTING AN ANSWER IN A TABLE, PLEASE, CHECK WHETHER THE MEANING OF AN ENTRY IN A TABLE IS THE SAME AS THE ONE IN STATISTICAL FORM. IF YOU CANNOT FIND APPROPRIATE ROW IN STATISTICAL FORM, PLEASE, ASK RESPONDENT FOR A ROUGH ESTIMATE. FOR EXAMPLE, IN THE CASE OF THE NUMBER OF FORMER EMPLOYEES AMONG ALL THOSE HIRED (Q. #232), YOU WILL HAVE TO ASK FOR A ROUGH ESTIMATE OF THE NUMBER OF FORMER EMPLOYEES HIRED IN A GIVEN YEAR.

9.6. Hours, employment, and flows

216. PERSONNEL-IN-THE-STAFF AT THE END OF YEAR:

- IN INDUSTRIAL DIVISIONS OF COMPANY

Industrial divisions	199	199	199	199	199	199	199	199	199	199	199	199	199	1998	
Average registered employment (without personnel-not-in-the-staff)	0	1	2	3	4	5	f 1-T	01	f 1-T	01	6	f. 1-T	7	f. P-	02

- IN NON-INDUSTRIAL DIVISIONS OF A COMPANY (PLEASE, INDICATE WHETHER A DIVISION EXISTED IN THE COMPANY IN A GIVEN YEAR BY CIRCLING "YES" OR "NO" AND GIVE AN AVERAGE NUMBER OF EMPLOYEES IN IT)

Non-industrial divisions	1990	1994	1998
217. AGRICULTURAL PRODUCTION, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____

218. CATERING, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
219. HOUSING, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
220. UTILITIES, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
221. POLYCLINICS, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
222. VACATION FACILITIES, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
223. EDUCATION, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
224. CHILDCARE, PEOPLE	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____
225. OTHER _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____	1. Yes _____ 2. No _____

226-236. HOURS, NUMBER OF PERSONNEL-NOT-IN-THE-STAFF, AND FLOWS:

	1990	1991	1992	1993	1994	1995	F. 1-T	1996	F. 1-T	1997	F. P-4	1998
226. NUMBER OF WORK-HOURS (WITHOUT PERSONNEL-NOT-IN-THE-STAFF)							09		12		07	
227. NUMBER OF NON-WORKED MAN-HOURS FOR EMPLOYEES ON SHORT TIME, FIRM INITIATED							—		19		10	
228. NUMBER OF MAN-DAYS FOR EMPLOYEES ON UNPAID LEAVE, FIRM INITIATED							14		18		14	

229. AVERAGE NUMBER OF EXTERNAL PERSONNEL-NOT-IN-THE-STAFF (UNTIL 1998 NUMBER AT THE END OF YEAR)						16	21	21	21	03
230. AVERAGE NUMBER OF PERSONNEL-NOT-IN-THE-STAFF ON CIVIL CONTRACT						17	22	22	22	04
231. HIRING OF WHICH						20	21	21	24	15
232. ROUGH ESTIMATE OF THE NUMBER OF FORMER EMPLOYEES WHO WERE REHIRED						—	—	—	—	—
233. TOTAL SEPARATIONS OF WHICH						22	23	23	26	17

[TO BE ANSWERED BY ACCOUNTING DEPARTMENT]

10. General information about the enterprise

INSTRUCTION: USE THE COMPANY'S CHARTER WHEN FILLING OUT THIS SECTION

237. FULL NAME OF THE ENTERPRISE:

238. SHORT NAME OF THE ENTERPRISE:

239. CODE OF THE ENTERPRISE BY OKPO:

240. CODE OF THE MINISTRY BY OKOGU (SOOGU):

241. CODE OF THE LEGAL FORM BY KOPF:

242. LEGAL ADDRESS OF THE ENTERPRISE:

243. PHONE # (____) _____

244. FAX # (____) _____

245. FULL NAME OF THE DIRECTOR

11. Payments to workers

11.1. Wage arrears

246. DID YOUR COMPANY HAVE WAGE ARREARS DURING THE PERIOD OF 1991-98?

Yes.....1

No.....2 => go to Q. #252, section 11.2.

247-248. WERE THERE WAGE ARREARS DURING THE COURSE OF THE YEAR? IF YES, PROVIDE US A STOCK OF WAGE ARREARS AT THE END OF YEAR (1991-1998)

INSTRUCTION: YOU MAY USE ACCOUNTING BALANCE DATA, FORM 1, ROW 624 AT THE END OF YEAR. IF

THERE ARE FORMS ANALOGOUS TO THAT ONE FOR YEARS 1990-1995, PLEASE USE THEM TO FILL IN THE TABLE.

Measuring units (thou, mln)	1991	1992	1993	1994	1995	1996	1997	1998
	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.
247-248. STOCK OF WAGE ARREARS AT THE END OF	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2	Yes = 1 No = 2

249. HAS YOUR COMPANY EVER BEEN FINED FOR HAVING WAGE ARREARS?

Yes.....1

No.....2=> go to Q. #252, section 11.2.

250-251. HAD YOUR COMPANY BEEN FINED IN THE CORRESPONDING YEAR? IF YES, ESTIMATE THE TOTAL

SUM OF FINES AND PENALTIES PAID FOR HAVING WAGE ARREARS DURING A GIVEN YEAR.

Measuring units (thou, mln)	1991	1992	1993	1994	1995	1996	1997	1998
	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.	_____ rbl.

250-251. TOTAL SUM OF FINES AND PENALTIES PAID FOR HAVING WAGE ARREARS	Yes = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1
	_____	_____	_____	_____	_____	_____	_____	_____	_____
	No = 2	No = 2	No = 2	No = 2	No = 2	No = 2	No = 2	No = 2	No = 2

11.2. Wages in natural form

252. HAS YOUR COMPANY EVER SUBSTITUTED IN-KIND GOODS FOR WAGES DURING THE PERIOD OF 1991 -98?

Yes.....1

No.....2 => go to QQ. # 255-258, section 12.

253. ESTIMATE THE SHARE (IN %) OF ANNUAL WAGE BILL PAID IN-KIND.

254. ESTIMATE AVERAGE PERCENTAGE OF YOUR EMPLOYEES WHO WERE GETTING IN-KIND PAYMENTS INSTEAD OF WAGES (EVEN PARTIALLY) DURING EACH YEAR.

	1991	1992	1993	1994	1995	1996	1997	1998
253. Share (%) of wage bill paid in-kind								
254. Average percent of employees paid in-kind								

12 Activities

12.1. Customers

255-258. ESTIMATE (IN %) THE DISTRIBUTION OF YOUR SALES...

255. FOR EXPORTS TO FOREIGN USERS/CONSUMERS OF THE PRODUCT

256. TO RUSSIAN USERS/CONSUMERS OF THE PRODUCT,

of which:

257. TO THE STATE BUDGET

258. TO USERS/CUSTOMERS OF THE MILITARY OUTPUT

	1990	1994	1998
255. Share (%) of exports			
256. Share (%) of sales to Russian customers of which:			
257. Share (%) of sales to the state budget			
258. Customers of the output for military purposes			

INSTRUCTIONS ON HOW TO FILL OUT NEXT SECTIONS:

THESE SECTIONS ARE FILLED OUT USING FIRM'S YEARLY REPORTS ON PRODUCTION. THESE REPORTS MAY INCLUDE FORMS I-P FOR YEARS 1995-1997, AND FORM P-1 FOR 1998. FOR YEARS 1990-1994 SIMILAR FORMS (FOR EXAMPLE, FORM F-22) MAY BE AVAILABLE. IF THEY EXIST, PLEASE, USE THEM TO FILL IN THE TABLES. THE NUMBERS OF ROWS IN CORRESPONDING FORMS MAY BE GIVEN IN THE TABLES IN COLUMNS PRECEDING COLUMNS WITH YEAR NUMBERS. HOWEVER, ROW NUMBERS IN STATISTICAL FORMS MAY CHANGE FROM YEAR TO YEAR, SO IN EVERY CASE BEFORE PUTTING AN ANSWER IN THE TABLE, PLEASE, CHECK WHETHER THE MEANING OF AN ENTRY IN THE TABLE IS THE SAME AS THE ONE IN THE STATISTICAL FORM. IF YOU CANNOT FIND APPROPRIATE ROW IN STATISTICAL FORM, PLEASE, ASK RESPONDENT FOR A ROUGH ESTIMATE.

12.2. Sales (shipped output)

259. PLEASE GIVE US YOUR SALES' (SHIPPED GOODS, OTHER OUTPUT, AND SERVICES) DATA FOR YEARS

1990-1998 (EXCLUDE VAT AND SALES TAXES).

Measuring units (thou, mln)	1991	1992	1993	1994	1995	1996	1997	1998
Sales	___ rbl.	___ rbl.	___ rbl.	___ rbl.	___ rbl.	___ rbl.	___ rbl.	___ rbl.

12.3. Costs

THIS SECTION IS FILLED OUT USING FIRMS' YEARLY REPORTS ON PRODUCTION. THESE REPORTS MAY INCLUDE FORMS I-C FOR 1990, AND 5-Z FOR THE YEARS 1994,1998. THE NUMBERS OF ROWS IN 5-Z FOR 1998 ARE GIVEN IN THE TABLE IN THE COLUMN PRECEDING COLUMN WITH YEAR NUMBER. HOWEVER, FOR EARLIER YEARS ROW NUMBERS IN STATISTICAL FORMS MAY CHANGE FROM YEAR TO YEAR, SO IN EVERY CASE BEFORE PUTTING AN ANSWER IN A TABLE, PLEASE, CHECK WHETHER THE MEANING OF AN ENTRY IN A TABLE IS THE SAME AS THE ONE IN THE STATISTICAL FORM. IF YOU CAN NOT FIND APPROPRIATE ROW IN STATISTICAL FORM, PLEASE, ASK RESPONDENT FOR A ROUGH ESTIMATE

260-270. PLEASE, PROVIDE THE STRUCTURE OF YOUR COSTS FOR EACH YEAR:

Costs:	1994	f.5-z	1998
Measuring units (thou, mln)	____rbl.		____rbl.
260. TOTAL COSTS OF PRODUCTION AND SELLING		03	
261. MATERIAL COSTS, OF WHICH:		04	
262. RAW MATERIALS		05	
263. PURCHASED MATERIALS AND SEMI-FINISHED INPUTS		11	
264. CONTRACTED OUT SERVICES CONNECTED WITH PRODUCTION		12	
265. FUEL		17	
266. ENERGY		18	
267. PERSONNEL COSTS		20	
268. SOCIAL INSURANCE		22	
269. DEPRECIATION		23	
270. OTHER COSTS		24	

271-272. PLEASE, PROVIDE THE NAME OF ONE MATERIAL INPUT UNDER THE CATEGORY OF RAW MATERIALS (EXCEL. FUEL AND ENERGY) AND PURCHASED COMPONENTS AND SEMI-FINISHED PRODUCTS, WHICH

ACCOUNT FOR THE MOST OF MATERIAL COSTS.

Category	Name
271. Raw materials	
272. Purchased materials and semi-finished inputs	

12.4. Investment

273. PLEASE, PROVIDE THE AMOUNT OF INVESTMENT IN PRODUCTION ASSETS BY YEAR.

INSTRUCTION: USE ACCOUNTING FORM 5, ROW 371, COLUMN 4 IN ORDER TO GET INVESTMENT INTO BASIC PRODUCTION CAPITAL FOR 1992-1998. FOR EARLIER YEARS, YOU MAY USE FORM 11 FROM ACCOUNTING BALANCE TO GET INVESTMENT IN PRODUCTION ASSETS.

274. SOURCES OF INVESTMENT FINANCING.

SHOW THE RESPONDENT CARD #9 -- SOURCES OF INVESTMENT FINANCING. MULTIPLE ANSWERS PERMITTED.

Measuring units (thou, mln)	1991 _____ rbl.	1992 _____ rbl.	1993 _____ rbl.	1994 _____ rbl.	1995 _____ rbl.	1996 _____ rbl.	1997 _____ rbl.	1998 _____ rbl.
273. AMOUNT OF INVESTMENT IN PRODUCTION ASSETS								
274. CHIEF SOURCE OF INVESTMENT FINANCING								
1. retained earnings	1	1	1	1	1	1	1	1
2. bank credits	2	2	2	2	2	2	2	2
3. debt financing from former parent company	3	3	3	3	3	3	3	3
4. debt financing from other organizations	4	4	4	4	4	4	4	4
5. budget funds	5	5	5	5	5	5	5	5
6. off-budget funds	6	6	6	6	6	6	6	6
7. new shares issue (other securities, transfer of ownership titles)	7	7	7	7	7	7	7	7
8. foreign investment	8	8	8	8	8	8	8	8
9. other, please describe	9	9	9	9	9	9	9	9

275-281. PLEASE, PROVIDE THE AMOUNT OF INVESTMENT IN FINANCIAL ASSETS AT THE END OF 1994 AND 1998.

INSTRUCTIONS: USE THE ADDENDUM TO ACCOUNTING BALANCE, FORM 5 BY OKUD, CHAPTER 5; TOTAL AMOUNT IS A SUM OF LONG-TERM AND SHORT-TERM INVESTMENT IN A GIVEN YEAR (SUM OF COLUMNS 4+6), IN THE ROWS MARKED WITH THE WORD "ESTIMATE", PLEASE, ASK FOR THE PERCENT ESTIMATES.

Measuring units (thou, mln)	row #	1994 _____ rbl.	1998 _____ rbl.
275. Investment in equity in other firms of which	510		
276. in firms with the same owner as of your company	Estimate, %		
277. in banks	Estimate, %		
278. Other bonds:	520		
279. of which in GKO	Estimate, %		
280. Loans	530		
281. Other	540		

12.5. Debt

282-283. TOTAL DEBT TO BANKS AND THE NUMBER OF BANKS TO WHICH THE DEBT IS OWED AT THE END OF THE CORRESPONDING YEAR.

INSTRUCTION: PLEASE, USE THE ADDENDUM TO ACCOUNTING BALANCE, FORM 5 OKUD, THE NUMBERS OF ROWS ARE GIVEN IN THE TABLE.

Measuring units (thou, mln)	row #	1994 _____rbl.	1998 _____rbl.
282. DEBT TO BANKS	110+130+140		
283. NUMBER OF BANKS	-----		

284-290. TOTAL OVERDUE PAYABLES AND RECEIVABLES AND THE SHARES (IN %) OF DIFFERENT PARTNERS.

INSTRUCTION: OVERDUE PAYABLES AND RECEIVABLES IS A SUM OF SHORT-TERM AND LONG-TERM PAYABLES OR RECEIVABLES. PLEASE, USE THE ADDENDUM TO ACCOUNTING BALANCE, FORM 5 OKUD, THE NUMBERS OF ROWS TO ADD ARE GIVEN IN THE TABLE. PLEASE, ASK FOR ESTIMATES IN ROWS MARKED WITH THE WORD "ESTIMATE".

A. Receivables

Measuring units (thou, mln)	row #	1994 _____rbl.	1998 _____rbl.
284. TOTAL, OF WHICH:	211+221		
285. STATE BUDGET	Estimate, %		
286. OTHER CUSTOMERS	Estimate, %		

[NOTE: ROWS 285 + 286 = 100%]

B. Payables

Measuring units (thou, mln)	row #	1994 _____rbl.	1998 _____rbl.
287. TOTAL, OF WHICH :	231+241		
288. TO STATE (TO BUDGET AND OFF-BUDGET FUNDS)	Estimate, %		
289. TO ENTERPRISES	Estimate, %		
290. TO BANKS	Estimate, %		

[NOTE: ROWS 288 + 289 + 290 MAY BE LESS THAN 100%]

12.6. Some financial indicators

PLEASE ESTIMATE THE FOLLOWING FINANCIAL INDICATORS OF THE ENTERPRISE BY YEARS.

INSTRUCTION: IN 294 AND 295, PLEASE, USE DATA FROM ACCOUNTING BALANCE, FORM 3 OKUD, THE ROW NUMBERS ARE GIVEN IN THE TABLE. IF THERE ARE ANALOGOUS FORMS FOR EARLIER YEARS, PLEASE, USE THEM TO FILL IN THE TABLE.

Measuring units (thou, mln)	row #	1994 ____ rbl.	1998 ____ rbl.
291. LOANS ON PREFERENTIAL TERMS OF WHICH:	-----		
292. FOR INVESTMENT	Estimate, %		
293. FOR CONVERSION	Estimate, %		
294. TARGETED FINANCING FROM STATE BUDGET	090		
295. TARGETED FINANCING FROM BRANCH AND INTER-BRANCH OFF-BUDGET FUNDS	100		

INSTRUCTION: IN 298, PLEASE, USE THE DATA FROM ACCOUNTING

**BALANCE, FORM 4 OKUD, THE ROW NUMBERS ARE GIVEN IN THE TABLE.
IF THERE ARE ANALOGOUS FORMS FOR EARLIER YEARS, PLEASE, USE
THEM TO FILL IN THE TABLE.**

Measuring units (thou, mln)	row #	1994 ____rbl.	1998 ____rbl.
296. AMOUNT OF TAX BREAKS	_____		
297. TOTAL AMOUNT OF TAXES AND PAYMENTS DUE TO BUDGET (NOT ACCOUNTING FOR TAX BREAKS)	_____		
298. FROM WHICH: TOTAL AMOUNT OF TAXES AND PAYMENTS ACTUALLY PAID TO BUDGET	F.4 OKUD row 220		
299. FROM WHICH: TOTAL AMOUNT OF TAXES AND PAYMENTS ACTUALLY PAID TO BUDGET USING BANK TRANSFERS OR IN CASH	_____		

INSTRUCTION: IN 300, PLEASE, USE THE DATA FROM ACCOUNTING BALANCE, FORM 1 OKUD, THE ROW NUMBERS ARE GIVEN IN THE TABLE. IF THERE ARE ANALOGOUS FORMS FOR EARLIER YEARS, PLEASE, USE THEM TO FILL IN THE TABLE.

Measuring units (thou, mln)	row #	1994 ____ rbl.	1998 ____ rbl.
300. ARREARS ON PAYMENTS TO BUDGET OF WHICH	F.1 OKUD row 626		
301. AMOUNT OF ARREARS ON PAYMENTS TO BUDGET THAT WERE WRITTEN OFF	_____		

INTERVIEWER! WRITE THE DATE OF COMPLETION OF THE QUESTIONNAIRE ON THE FIRST PAGE OF PART 1 OF THE QUESTIONNAIRE.

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