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**ECONOMIC DECLINE IN RUSSIA:
DISASTER OR CREATIVE
DESTRUCTION?**

by

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Economic Decline in Russia: Disaster or Creative Destruction?

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Abstract

In this paper we report the results of a unique survey of Russian firms. The survey yields a rich picture of how the transition works at the micro-level, of the conditions that induce firms to restructure and innovate.

Our conclusion is, in short, that the most active restructuring and innovating takes place in firms that either have been hit harder than average by declining demand or have changed ownership such that private investors have a controlling share. These results suggest that the transition, far from being too rapid, may not be occurring fast enough. Continuing state subsidies, continuing state ownership, transferring ownership to firm employees rather than independent investors and a non-existent competition policy, have real costs in terms of delaying necessary restructuring and innovativeness.

Introduction

In 1993 the Russian economy toiled through the second year of economic reforms. This was a critical period for the survival of the newly created economic and political systems. On the one hand, widescale privatization transferred the bulk of state property to new owners. Millions of novice entrepreneurs scrambled to master the logic of emerging markets. On the other hand, their efforts were stymied by economic upheavals, in particular a collapse of demand and high inflation.

The success of economic reforms and, indeed, the survival of the new economic and political life depend crucially on how quickly privatized firms and markets can produce the goods consumers want, as well as generate the income and jobs so that consumers can afford these goods. Too slow a progress risks eroding the support of an already wary public.

In this paper we report the results of a unique survey of Russian firms. The survey yields a rich picture of how the transition works at the micro-level, of the conditions that induce firms to restructure and innovate.

Our conclusion is, in short, that the most active restructuring and innovating takes place in firms that either have been hit harder than average by declining demand or have changed ownership such that private investors have a controlling share. These results suggest that the transition, far from being too rapid, may not be occurring fast enough. Continuing state subsidies, continuing state ownership, transferring ownership to firm employees rather than independent investors and a non-existent competition policy, have real costs in terms of delaying necessary restructuring and innovativeness.

In a sense our survey supports a more optimistic picture than that subscribed to by many western pundits. The gist of macroeconomic reforms is to cut inflation and public expenditure drastically. If this succeeds it will undoubtedly depress demand and lead to further declines in official GDP figures. Yet economic necessity, in combination with the recently extended influence of independent investors, provides the impetus for many firms to reorient their production toward goods consumers want. Thus living standards may well rise - even though GDP appears to be falling - and the foundations for a viable industrial structure are laid.

1 The Macroeconomic background

The economic decline of 1993 was not as dramatic as in 1992. Officially, GDP fell by 12% in real terms compared to 19% in 1992.¹ The average monthly output of industry in 1993 was 64% of the 1989 level. Investment in production capacity fell by 20% (40% in 1992). Estimates of unemployment vary from 1.2% to 10.4% depending on the definition. The most common western definitions yield estimates of 4% - 6% at the end of 1993.

These dramatic declines in GDP and industrial production are, however, partly a statistical artefact. Previous government demand for military products and heavy investment machinery is being replaced by household demand for goods and services. Yet a significant share of the growth in new services is not officially recorded. Officially, the share of the service sector in GDP increased by 10%. This underestimates the actual rapid development of, for example, the new banking and financial sectors. Profits of commercial banks alone in 1993 made up 10% of total profit in the economy. Old-fashioned methods of national accounting miss parts of the banking sector as well as significant parts of other services such as trade and private construction.

Even more important, the newly produced goods and services are more often geared toward private consumption than many of the goods that the economy now produces less of. We do not know for sure how these various effects balance, but there are indications that household real incomes may actually have grown over recent years. For one, there has been a rapidly increasing demand, and soaring prices, for housing, presumably reflecting income or wealth effects. Some analysts predict that a construction boom is in the offing.

Even if household income is maintained on average, there are clearly redistributions between groups. It should be pointed out that the development of average household income serves merely as a measure of the economy's productive performance. It says little about the likelihood of misery, even starvation, of significant groups in society.

Even though the service sector, and perhaps even household incomes, seem to be growing, revamping industry takes time. Decades of overproduction of military goods, investment equipment and intermediate products prove hard to erase. Orthodox Marxist dogma preached the importance of non-consumer sectors. Firms were forced to produce or buy goods that would not have been made or purchased at free market

¹ Industrial production shrank by 16.2% (19% in 1992). According to the estimate of the Gaidar Institute the decline of industrial production was 14.4%.

prices. Thus, the economic decline in 1992-94 can be interpreted as an adjustment of the economy to actual consumer preferences. This, however, is an interpretation that the political opposition in Moscow likes to dismiss. Their view is that the Russian economy suffers from failed economic reforms which were either wrong altogether or, at least incurred excessive transition costs due to their poor design.

Demand and supply shocks

Russian industrial firms suffered from severe shocks as moderately tight fiscal and monetary policy curtailed demand for their products. Demand constraints became critical when the Ministry of Finance and the Central Bank agreed in May 1993 to tighten the supply of cheap loans to firms.

To a large extent, state orders in the military sector and production investment by firms were cut rather than consumer expenditures. The decline in the machine industry was more dramatic than in the raw materials and consumer goods sectors. Consumer durables performed best: production of radioelectronics, whiteware and automobiles did not fall and even increased in 1993, despite burgeoning competition from imports.² This indicates that the demand shocks that were experienced were less the result of macroeconomic restraint, and more a structural consequence of shifting demand.

Demand constraints became a serious problem on the microlevel in 1993-94. According to some planning surveys of Russian firms, inventories of finished goods exceed the normal levels (from managers' view) by 15-20%. The share of finished goods in total inventories increased from 21% in January 1994 to 40% in July 1994. The rate of total working time losses is estimated as 25% on average, and 58% of these losses occurred because of the demand constraint.

The political events in September and October 1993 put an end to the collision between the parliament and the government and allowed the latter to reduce budget expenditures. In particular, the government abolished import subsidies to firms and reduced the supply of cheap loans through the banking system. The Central Bank increased the annual discount rate from 435% in September to 592.6% in October.

The disintegration of the Soviet Union and the centralized system of supply disrupted traditional links between firms and increased transaction costs. For various reasons firms had to use barter exchange and search for inputs on the newly emerging markets.

Supply shocks were also caused by price instability and by administrative

² The significance of the aggregate demand constraint is also illustrated by the relatively small decline in the energy-producing sector: only -5% in 1993/92. For technological reasons the energy demand by firms is less sensitive to output plans than the demand for investment and intermediate goods. The demand from households and the service sector also remained unchanged.

regulation of raw material and energy prices in 1992-93. Abrupt fluctuations of relative prices increased uncertainty and forced firms to contract output plans. In some branches shortages persisted due to market imperfections and price rigidity. In fact, shortages were still quite common in 1992, inherited from the time when they constituted a perennial plague of the planning system. Price liberalization did not remove the shortage of goods completely, but it became less of a problem for firms' managers.

Taxation worse than shock therapy

In addition to the severe macroeconomic shocks, another problem looms even larger on managers minds. The main pressure on firms regularly pointed out by managers is taxation. The main taxes are an internationally high value added tax (28% in 1992, lowered to 20% in April 1993) and a profit tax. The total tax burden, measured as the ratio of tax revenues of both the central government and local authorities to nominal GDP was 24.6% in 1993. Nearly half of this (10.3% of GDP) was raised by a profit tax at a rate of 32%. Value added taxes raised another 6.9% of GDP, while personal income and property taxes only raise about 3.4% of GDP. Firms thus bear the main part of tax burden.

Naturally, many resort to various tax evasion schemes. The most commonly used method is deducting exaggerated expenses by, for example, rapid capital depreciation or clever inventory management. Firms also try to reduce accounted revenues and delay incoming payments. For example, they pay less taxes in advance when goods are delivered to buyers and more at the end of the quarter after the acceptance of payments. Firms can also delay tax payments by one month which is important under high inflation; interest payments for delayed taxes are based on the current discount rate. Firms delaying tax payments thus, in essence, borrow from the Ministry of Finance. In order to decrease the tax base firms also widely use barter exchange and cash payments, thus reducing the revenue reported to tax authorities.

Although inflation in 1993 first showed signs of slowing, it then turned around and all but exploded. Prices increased about tenfold during the year. Our estimates suggest that total *seigniorage* in 1993 was only slightly less than the total revenues of the state from regular taxation (693.4 bn roubles and 834.8 bn roubles per month, respectively, in December 1992 prices). The distortionary impact of the inflation was of the same order as similar effects of the fiscal policy.

Firms learned in 1992 how to survive in an inflationary economy. To avoid losses they shortened turnover periods and increased the share of investment in financial operations and transactions. Some firms established special subsidiaries for

money management, which also helped to avoid taxes. In order to reduce inflation costs and uncertainty, many firms require payments in advance. Firms widely use payments in dollars despite the presidential decree in January 1994 forbidding trade in foreign currency.

Seasonal inflation became rather predictable, since the government usually inflates in August and September when it needs to pay collective farms threatening not to harvest. These inflation peaks are rationally expected by the banking system and financial markets, leading to high nominal interest rates. When firms perceive impending inflation they decrease their monetary assets, decrease contract outputs and raise prices. The time gap between monetary injections and their corresponding price jumps has proved to be quite long: 3-4 months. This can be explained by long delays during which the supply of inflationary money mainly circulates within the banking system before being passed on to firms and households.

The credit crunch

As a consequence of the demand shift, inflation, and high taxation many firms had difficulty meeting their payment deadlines. This induced a snowball effect creating severe problems for many firms. Initially it arose at the beginning of economic reforms as a result of poorly organized banking services and it reflected an adjustment strategy of firms to rapid inflation. Vertically integrated firms often used mutual arrears as a mechanism for mutual financing. Later, in 1993, the problem was exacerbated by tougher demand constraints. In many cases suppliers of goods benefit from mutual arrears, because they are unable to sell under the requirement of payment-in-advance. Managers of those firms prefer to delay payments or even take the risk of contracting with unreliable buyers rather than reduce production or reorient the firm toward new markets. In the very short-run this was an individually rational behavior, because until the end of the summer of 1994 firms had not faced a tangible bankruptcy constraint. The new presidential decree adopted in June 1994 suggests a mechanism for selling insolvent state-owned firms. It is expected to be widely applied by the fall of 1994.

The problem with arrears is that they cause a chain reaction. The total amount of arrears between firms increased in the period January-May 1994 from 18.5 to 34.8 bn roubles (for comparison, the GDP in 1993 equaled 162.3 bn roubles). The arrears owed by manufacturing firms to the government today is 23% of the total revenue of the consolidated state budget.

Another angle on the arrears problem is that they are used by firms to

blackmail the government. Firms threaten with reduced output and widescale strikes, mainly in the basic sectors (fuel and energy production, agriculture). Managers of state-owned and even privatized firms sometimes benefit from threatening the government which they blame for failing to pay workers' salaries. In fact, managers themselves often freeze wage payments for several months to ignite worker dissatisfaction.

Blackmailing is accepted partly because the government itself has become the biggest debtor in the economy. It has not fulfilled earlier promises to subsidize firms and to purchase goods produced according to state orders. Paradoxically, this "discretionism" of the government results from its attempts to tighten fiscal and monetary policy, but it gives reasons for firms to put in claims for further support. The pressure on the government may be quite strong since around 33% of the total number of industrial firms report losses and 12% are potentially bankrupt.

The macroeconomic outlook

Recent success in lowering inflation requires drastic cuts in public expenditure, since roughly half of public expenditures were financed by seigniorage. This ought to depress demand during the foreseeable future. To some extent this burden may eventually be mitigated by falling real and nominal interest rates. For the time being, however, real interest rates remain extraordinarily high at real (nominal minus inflation) rates of 40%-160%.³ Presumably this reflects lingering fears that inflation is not stamped out for good.

This fear may be justified. Following the pattern in previous years the government handed out considerable subsidies to farmers and industry at the end of the summer that were not planned for in the budget. In addition there have been problems in raising the budgeted tax revenue. Thus there is a considerable risk that the government will again have to resort to printing money. Yet it should be remembered that these events follow a predictable annual cycle, and that inflation from year to year been following a downward trend.

Taxation on firms is successively being lowered. It was proclaimed that the tax burden will be evenly redistributed between firms and households. However it will be more difficult to collect individual progressive taxes and detect tax evasion (at

³ August 1994: 160% for three month direct loans, 80% for three month interbank loans, and 40% for three month deposits.

present the Ministry of Finance collects 65-70% of targeted amounts). This is another strong reason for the government to cut public expenditure.

The government has been issuing treasury bills during 1993-1994 which are becoming an important source of non-inflationary budget income. The market interest rate is determined at treasury bill auctions and in the secondary market. (During 1993 this function was fulfilled by the interbank market for loans.) The market for treasury bills boomed in 1994 as political stabilization was achieved and signs of economic stabilization came into view. This is, however, a rather volatile market attracting short-term money. It remains extremely sensitive to political signals and can easily collapse if the spectre of inflation were renewed.

The policy of high interest rates, while necessary for financial stabilization, has a depressing effect on economic development. In 1994, the main part of production investment occurs in only two sectors: fuel and energy production (46%) and agriculture (18%). These sectors still extract monopoly rents and receive state support. For comparison, investment in the investment goods branch only amount to 13% of total investment, a low level that is clearly affected by high real interest rates.

2 How Firms Cope

Demand collapses have been most drastic for high-technology producers, in particular former military firms.

According to surveys of Russian firms by the Gaidar Institute (The Institute for the Economy in Transition, Moscow) the absolute majority of firms (90.7%) incurred some change in the structure of output during the years 1992-93.⁴ Among the main reasons given were:

- 1) shifts of demand (pointed out by 53% of firms),
- 2) increase in production costs (31.8%),
- 3) shortage of materials (17.9%),
- 4) lack of investment (13%).

Yet the main obstacle to more significant structural change cited by firms is a shortage of capital. The moderately tight monetary policy in 1993-94 resulted in

⁴ The Russian economy in 1993, tendencies and perspectives, IET, Moscow, 1994.

significant hikes in the real market interest rate (the real discount rate increased from -51% an. in July 1993 to +70% an. in July 1994) and led to a notable contraction of the supply of cheap loans. Banks are still reluctant to grant loans for periods longer than half a year. To deal with the capital shortage, firms often sell their production inventories. The share of production inventories decreased from 43% of total inventories to 30% in the first half of 1994.

Another form of adjustment to a lack of demand is the search for new customers in the market. The main reason for breaking traditional links (34.4%, as Gaidar Institute surveys suggest) is the insolvency problem. A modest share of former state-owned industrial firms (15.3%) prefers to shift to new markets and focus the search for new buyers in the new private business arena.

Competition is not a major problem for the absolute majority of managers. According to surveys by Gaidar Institute only 10.6% of firms do not have competitors. To a large degree (74.8%) the competition is with domestic producers, and to a lesser extent with foreign firms (23.5%) and new domestic businesses (21.2%).

It should be pointed out, however, that many Russian industries are dominated by only one or two suppliers. Further, industrial activity is concentrated in a small number of huge, vertically integrated organizations. The brushwork of small manufacturing firms that is so common in western countries is almost entirely missing in Russia. Such a structural legacy could slow down the the creation of competitive markets. This is also worrying because there has been very little emphasis on competition policy so far.⁵

Most firms reduced employment in 1992-93. However, significant layoffs occurred only in the (former) defense industry and in the high-technological industries. Table 1 shows the distribution of respondents regarding the extent of layoffs in 1993.

⁵ For a review of Russian competition policy see Joskow, P., Schmalensee, R., and Tsukanova, N., Competition policy in Russia during and after privatization. Brookings Papers on Economic Activity, 1994, 301-370.

Table 1 **Distribution of labor shedding in industry**
Sectors, percent

	Industr as a whole	Defense industry	High- tech	Raw- material producers	Consumer goods
1) No layoffs	29.1	21.7	26.5	35.5	28.0
2) Non-signif. layoffs	55.6	34.8	55.9	58.1	62.0
3) Significant layoffs	14.6	39.1	17.6	6.5	10.0

Source: IET, Moscow 1994.

Reductions of labor go hand in hand with reductions in output. Most of the firms that have reduced output (about 2/3 of the total number), shed labor on a significant (22%) or non-significant (57%) scale. In many cases directors prefer not to fire high-qualified workers, hoping for bigger orders in the future.

Wage freezes are often preferred to laying off workers to avoid costly severance pay. Some directors prefer to switch the redundant work force to other jobs or to "create" new jobs. Hidden unemployment is also typical: firms use short working weeks (3-4 working days per week), long vacations with no or minimal compensation and so forth.

Wage policy differs among firms. Although 83.4% of directors consider the income flow yielded by the firm as the main determinant of the wage level, about 33% emphasize consumer price increases, and 30% emphasize wages in other firms.

Investment decisions are typically not motivated by long-run projects. Most of production investment occurs in the form of small-scale purchases of equipment aimed at creating new products or technological improvement. Some firms practice partial reconstruction of physical capital. Almost all directors need support from foreign investors or government subsidies to implement large-scale projects. Table 2 shows the allocation of production investment by industrial enterprises.

Table 2 **Distribution of Investments**
Sectors, percent of firms investing

	Industry as a whole	Defense industry	Raw-ma- terial producers	Consumer goods
1) No investments	16.6	17.5	16.1	18.0
2) Equipment purchases	43.0	36.8	38.7	52.0
3) Technology improvement	27.2	26.3	29.0	30.0
4) New foreign technologies and equipment	9.9	7.0	25.8	6.0
5) Partial restructuring	44.4	40.4	48.4	48.0
6) Change the firm's profile	9.3	14.0	6.5	4.0
7) Dwellings	29.8	28.1	29.0	28.0
8) Social infrastructure	7.9	5.3	6.5	12.0
9) Other obj.	11.3	14.0	0	16.0

Source: IET, Moscow, 1994.

As Table 2 demonstrates, investment in new equipment and technological improvement takes place in a significant share of firms. However, purchases of foreign technologies and equipment occur more often in the raw-material producing sectors with relatively high exports and better opportunities for foreign investors. Despite the lack of investment, firms continue to invest in housing for workers and in the social infrastructure (although those expenditures have gone down).

Firms do not differ much in their view about the financial sources for production investment, as the Gaidar institute surveys demonstrate. Most firms prefer not to raise outside funds, but to use internal financing (53.6% of firms). The reason for such behavior is obvious: directors want to maintain their control over firms. A lot of firms use privileged bank loans (23.8%) and state investment subsidies (25.8%). Only very few respondents used direct investment from commercial banks and from other domestic firms, 1.3% and 3.3% respectively. The share of firms raising funds from the new business arena is 7.9% and from foreign investors 4.6% of the total number of respondents.

3 Privatization and Managerial Behavior

The purpose of the first stage of the privatization program in Russia (also called "voucher" privatization) was to minimize the share of firms under state ownership within a short period: from the end of 1992 to the middle of 1994. As a result, the state transferred the control rights over about 90% of industrial firms to new owners.

The program was based on the following scheme: in 1992 all citizens of Russia received in 1992 vouchers - documents verifying individual rights to a 1/150 millionth part of the privatized state ownership (150 million is the population size in Russia). The nominal price of the voucher was derived from the total value of the privatized wealth of Russia in 1991 prices. People could either sell vouchers in the market or exchange them for shares of firms or investment funds.

The absolute majority of firms could not obstruct privatization. Although it was mandatory for large enterprises and voluntary for small and medium-sized firms, the latter faced strong pressure from the State Privatization Committee, the main authority responsible for the privatization program. As a compromise, firms were allowed to choose a privileged scheme for workers. The majority (nearly 75%) preferred the variant that allowed employees of the firm to purchase, either with vouchers or money, 51% of the firm's stock at pre-auction (low) prices. The residual part of the stock was supplied to the so-called voucher auctions or temporarily accumulated by state privatization funds. These were established under pressure from the Parliament, which at that time was in opposition to the governmental program.

Managers were in favor of this scheme because it eliminated the risk of takeovers by outside investors through auctions. Sometimes managers purchased directly or through intermediators significant volumes of shares on voucher auctions. Another reason why managers were interested in share purchases was that decreasing the state's share to 25% gave them more control rights.⁶ Outside strategic investors were desirable if, in one way or another, they invested money in the firm's assets

⁶ An important by-product of the voucher privatization is the emergence of the stock market in Russia. In 1993 vouchers became more attractive for speculators than the currency exchange. The real exchange rate of dollar fell steadily during the period May-September, while the market price of the voucher followed the inflation. As a result, dollar denominated yields from investment in vouchers during this period were near 400%. Most private investment funds which were established for concentration ownership and control, engaged in voucher speculation rather than in share purchases. At the same time, state privatization funds decreased the supply of shares to auctions and counterbalanced the lack of demand.

beyond "voucher purchases" of shares.

Auctions evaluated the net worth of firms according to expected dividend flows. The highest voucher rate for industrial shares was in oil and gas production and distribution, food and tobacco, printing, pulp and paper, and furniture production. About 70% of the voucher supply to auctions was exchanged for shares in five main branches of industry, namely, machinery (19.4%), oil and gas production (18%), metal production (11.8%), chemical industry (10.5%), electrical energy production (8.1%).

The second stage of privatization started in July 1994 and is being called "privatization for money", since firms are now allowed to issue new shares and sell them through tender auctions or in the stock market. The latter is expected to develop rapidly in 1995 as supply and demand for shares of industrial firms is expected to vastly grow. Unlike voucher privatization, in the second stage firms will be able to raise funds to finance new projects. This will occur parallel to the privatization for money of the state-owned real estate (primarily land) and, probably, abolition of some earlier adopted privileges for workers.

4 A Survey of Russian Industrial Firms

The purpose of the empirical study is to throw some light on the question of how fast firms, through innovation, investment and productivity growth, can be expected to reverse and compensate for the recent decline in output. To that end we have conducted a survey of Russian industrial firms representing all branches and regions. (The list of branches is found in Appendix A.)⁷

The survey contains queries about the firms' outlook on the future, strategic choices, innovativeness and balance-sheet data for the years 1992-93. The annual balance-sheet reports of firms are prepared and sent to the fiscal authorities just by the beginning of April. For that reason the survey was conducted in April and May 1994. Responses were received from 311 firms, which is a good response compared to other

⁷ We did not include construction in the survey since we wanted the aggregate results to be comparable with official statistical data concerning the industry. Statistical services in Russia used to treat construction separately from other manufacturing industries.

surveys.⁸

The absolute majority of respondents (95%) answered the questions about balance-sheet data. Although managers could give anonymous responses, almost all of them gave their name and mailing address.

The questionnaire is divided into three parts (see Appendix B). The first part concerns property rights and some important economic characteristics that could not be extracted from the balance-sheet data, for example concerning the share of new products in output, the degree of capacity utilization, and the share of exports and imports.

The second part relates to managers' outlook on investment strategies and the firm's development (enhancing existing markets or entering new ones, preferences on outside investment and financial sources). It also asks questions about the main obstacles to innovation and entry into new markets.

The third part asks for data from annual balance-sheet reports. It includes the main indicators of firms' economic performance in 1992-93.

In order to correct nominal figures for inflation we calculated the following "real" indicators of firms' performance in 1992-93 based on the balance-sheet data: real output, labor productivity (output in 1992 prices/number of workers), profit margin (profit/sales), rate of return (profit/capital), unit costs (expenditures/sales), investment rate (investment/sales), inventory rate (inventories/sales). We deflated outputs in 1993 by the annual inflation rate 939%. On average the real output decreased by -16% which is very close to the statistical figure for the industry as a whole -16.2%. This provides some reassurance that the sample does not give systematic errors.⁹

The ownership structure of firms at the beginning of 1994 is represented in Table 3.

⁸ The survey includes small, medium-size and large firms, but not very small firms with fewer than 200 employees nor very large firms with more than 5000 employees. The initial sample included 1500 enterprises selected in the following way: First, all industrial firms were divided into subsets determined by the branch and the region a firm belongs to, and by its size (the number of workers in 1992). Firms were then randomly drawn from each subset according to its weight in the general population of industrial enterprises. The share of each subset in the initial sample is thus very close to its weight in the general population.

⁹ We can also check in a similar way the plausibility of firms' responses on the first part of the questionnaire. The average interval number for the degree of capacity utilization in 1992 was 5.177 (see question 1.5 in Appendix B). In 1993 the average interval number was 4.328. This means that capacities were underutilized on average somewhere between 61% and 70% in 1992, and between 51% and 60% in 1993. The ratio of average interval numbers in 1993/92 is 83.6% which means that the degree of capacity utilization fell by 16.4%.

Table 3 Ownership structure of firms

Property rights*)	State-owned firms	Leased firms	Stock-holding companies	Joint-stock ltd	Private firms	Other
The share of firms, %	10.7	1.6	80	4.5	1.9	1.3

*) Joint-stock ltd: Joint-stock companies with limited liability.

Thus, the absolute majority of industrial firms are stockholding companies. However, most of them are actually controlled by managers, although formally they are under workers' control. Of the private firms 70.2% have worker ownership exceeding 50%. This is not surprising because the absolute majority of firms (just near 70%) had chosen the mode of privatization that transferred most control to workers. Firms' managers preferred to minimize the risk of hostile takeovers by outside investors through voucher auctions.

The share of the state in stockholding companies is notably lower: it has stakes higher than 50% in only 3.9% of firms and higher than 10% in 39.4% of firms. Most probably this share has decreased even further up to July 1994, when the second stage of the privatization program in Russia started.

The share of new products in output increased on average by 18.4% in 1993. Only 11.3% of firms decreased the share of new products.

The share of exports in sales increased by 20.4% on average. Foreign trade was developed in 1993 mainly by firms that had already entered foreign markets, because only 2.7% of firms became exporters in 1993. There is no significant correlation between innovative activity and changes in export share, hence product innovations are basically focussed on domestic markets.

The rate of investment decreased by 7.2% on average. There is no significant correlation between production investment and the share of new products in output. Low correlation means that innovations are typically characterized by low investment intensity. This closely relates to the above mentioned results of the surveys conducted by the Gaidar Institute. The reason is that most firms cannot raise outside funds and therefore base innovations on small-scale projects that do not require large investment. Most firms (81.3%) pointed to a lack of financial sources for production investment as one of the main obstacles to innovation.

Managers have different views on development strategy, whether to enhance existing markets or attempt to enter new ones. Half of the respondents (49.3%) are indifferent between these modes of development, while 23.5% prefer to develop existing markets and 27.1% are more interested in new markets. These preferences weakly correlate with the innovative activity of firms in 1993. The reason is that both strategies require significant effort in creating and developing new products.

Demand problems are regarded as more constraining for entry into new markets than for innovating on existing markets. Respondents pointed to the demand constraint in 53.3% cases as the main obstacle to entering new markets and in 33% of cases the demand constraint was given as the main obstacle to creating new products for existing markets. Supply problems are viewed in the opposite way: only 8.7% of managers consider the supply of production materials and resources as a barrier to entry, while 17.7% believe that it impedes innovation in existing markets. Hence, it is more likely that under continuing demand pressure the innovative activity of industrial firms will be focussed to a larger extent on existing markets than on entry into new markets.

Strategic barriers to entry created by incumbents are important only for a small group of firms (9%). Some firms do not face any obstacles to innovation (5.3%) or new market entry (4.5%).

Some managers think strategically about investment and new market entry. Takeovers are considered by a minority as an admissible strategy (7.4%) or as a preferable strategy (2.0%). However, establishing a new firm (greenfield entry) appears to be a more suitable mode of behavior. It is preferable for 8.1% of firms and an admissible mode of entry for 35.5%. Obviously, takeovers are problematic because of the lack of finance. The other reason is that the initial sample of the survey was censored by firm size (the upper limit is 5000 employees in 1992). Probably very large firms would show more interest in takeovers.

Some managers find it permissible to solve the firm's strategic problems through selling control rights to outside investors. Foreign investors are more desirable than domestic investors, but not as major owners. In the sample 2.6% of firms prefer to be taken over by a domestic investor and 5% by a foreign investor. The former is an admissible way of development for 14.2% of firms and 17.8% of firms find the latter admissible. Generally, managers are eager to raise funds from abroad, but not at the cost of losing control and probably jobs. Those who consider a takeover by outsiders as an acceptable outcome hope to benefit from it or at least to keep their positions *ex post*.

Another outcome, probably inevitable for the majority of firms, is a reduction of the labor force. The number of firms that expect lay-offs in 1994 is 7.8 times the number of firms planning to hire new employees. The number of firms expecting a decrease in output in 1994 is 3.3 times the number of firms. This ratio is 1.6 for production investment and 1.5 for R&D expenditures. This implies that the future technological development in the industry most likely will be both physical and human capital-intensive type, but will reduce labor intensity.

5 What firms innovate?

We divided firms into two categories as more and less innovating in order to compare their economic performance and managerial behavior. We refer to these firms as innovating or non-innovating. A firm is considered to be innovating depending on the share of new products in output in 1993. For each branch we calculated the rounded average interval number in responses to the question 1.4 concerning new products share (see Appendix B). Firms belonging to the higher intervals are defined as innovating, all others are regarded as non-innovating. The number of innovating firms is 107, or one third of the whole sample.

As our survey demonstrates, firms that were classified as innovating performed notably worse than non-innovating firms. Output decline in 1993 was more dramatic for the firms that by 1994 had become innovative than for non-innovative firms: -20% and -14%, respectively. The difference in productivity decline confirm the pattern: -17% and -9% respectively. The rates of return were 0.54 for innovating firms and 0.78 for non-innovating firms. (Actually, these rates are not so large as they may seem, because a firm's production capital is estimated in fixed prices, while profits are measured in current prices.) The investment rate declined more rapidly for innovating firms: -8.4% versus -6.7%. The inventory rate was 0.33 for innovating firms and 0.21 for non-innovating firms.

Taken at face value this result could be taken to imply that innovation simply does not pay. For several reasons, however, quite the opposite appears more likely. Firms that face larger demand shortfalls are simply forced to innovate. In the meantime, innovation drains resources and further depresses economic performance. Yet this type of investment in innovation is probably the key to future survival and

economic growth.

Some evidence for this conclusion is that innovating firms more often complain about lacking demand for their traditional products. They also complain more often about taxes, presumably because this drains resources needed for innovation. Simple linear regressions demonstrate this link¹⁰.

A second piece of evidence implies that innovating firms plan to continue an innovating strategy in the future. Thus the innovating firms presumably see the strategy as profitable in the future. This contradicts the hypothesis that innovation does not pay. We estimated "the average propensity to enter new markets" in the following way: Managers were asked about their strategies for development: 1) enhancing existing markets or 2) entering new markets (see question 2.1 in Appendix B). For each firm (i) the desirability to enter new markets is indicated as

$$e_i = \begin{cases} + 1 & \text{if the firm chooses entering new markets;} \\ 0 & \text{if the firm is indifferent (both strategies are preferable or not} \\ & \text{preferable);} \\ - 1 & \text{if the firm chooses enhancing existing markets.} \end{cases}$$

The sum $e = \sum e_i$ indicates the average propensity to enter new markets. For innovating firms $e = 0.4$, while for non-innovating firms $e = 0.2$. Thus firms innovate for strategic reasons: creating new products is necessary for entry into new markets.

The third, and by far most important evidence, is that firms taken over by outside investors also tend to become innovators. We estimated a share of outside investors as a residual of the shares of workers and the state (see questions 1.2 and 1.3 in Appendix B). It is 68% for innovating firms and 31% for non-innovating firms. This is an important result in its own right, implying that ownership by management and workers retards innovation. Yet it also provides evidence that the

¹⁰ The regressions are:

$$(1) \quad y = 0.38 - 0.09*x + 0.12*z_1$$

(.....) (0.06)

$$(2) \quad y = 0.41 - 0.09*x + 0.13*z_2$$

(0.053) (0.06)

where y is the share of new products, x is labor productivity growth, z_1 and z_2 are dummies indicating the lack of demand and taxes, respectively.

poor economic performance of innovating firms is likely to be short-lived. Clearly, outside investors see a profit potential and are not deterred by the drop in demand for the firms' traditional products.

In sum, there are various pieces of evidence that support the following picture: Firms that are not acutely threatened have been taken over by managers and workers or remain in state hands. These firms also innovate rather little. Firms that have experienced larger demand drops more often adopt an innovation strategy. Since managers and workers had first choice of assuming ownership, it is not surprising that outside investors more often have gotten majority control over these firms. Takeover by outside investors further spurs innovation, but also may be more of a temporary drain on resources.

6 Conclusion

A general conclusion is that the recent decline in Russian GDP may be a statistical artefact. In any event real household incomes need not follow official GDP figures. Real household incomes increase to the extent that production is shifted to products that households demand. Innovative product strategies in industry thus are crucial for the development of living standards.

At the firm level our survey provides evidence that reorientation of firms toward new products has been unnecessarily delayed because too many firms have remained well cushioned by public support and a lack of competition policy, and because too little of ownership had been transferred into the hands of private investors.

Public expenditure is now likely to be cut drastically since they are not to be financed by printing money any longer. While this may have a depressing effect on demand it may be what is required to motivate restructuring and innovation in many firms. Further the last part of the privatization program, "privatization for money" makes it more common that private investors gain control over firms and initiate structural changes.

Yet privatization is only one of several steps needed to depoliticize Russian firms. Competition policy has been a crucial element of reforms in, for example, Poland and the Czech Republic. Yet in Russia virtually all aspects of competition policy remain problematic. Facilitation of entry, openness to imports and bankruptcy laws are just some of the areas where reforms appear to be moving too slow rather

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than too fast.

APPENDIX A. List of industries covered by the survey

1. Electric power production
2. Fuel production
3. Ferrous metals
4. Non-ferrous metals
5. Chemicals and petroleum products
6. Machine industry
7. Wood, pulp and paper
8. Construction materials
9. Glass and porcelain
10. Light industry
11. Food industry
12. Microbiological industry
13. Grains
14. Pharmaceuticals
15. Printing industry
- 16 Others

APPENDIX B. The survey questionnaire for Russian industrial firms**Part 1****1.1 Ownership rights at the beginning of 1994**

state-owned	leasing	stockh. com.	joint-stock ltd	private	other
1	2	3	4	5	6

1.2 The share of workers in the firm's stock at the beginning of 1994, in % (for privatized firms).

< 5	5 - 10	11 - 20	21 - 30	31 - 40	41 - 50	> 50
1	2	3	4	5	6	7

1.3 The share of the state in the firm's stock at the beginning of 1994, in % (for privatized firms).

< 5	5 - 10	11 - 20	21 - 30	31 - 40	41 - 50	> 50
1	2	3	4	5	6	7

1.4 The share of new products in the firm's output in 1992 and 1993, in %.

< 5	5 - 10	11 - 20	21 - 30	31 - 40	41 - 50	> 50
1	2	3	4	5	6	7

1.5 The degree of capacity utilization in 1992 and 1993, in %.

< 30	30 - 40	41 - 50	51 - 60	61 - 70	71 - 80	> 80
1	2	3	4	5	6	7

1.6 The share of exports in sales in 1992 and 1993, in %.

0	1 - 5	6 - 10	11 - 20	21 - 30	31 - 40	41 - 50	> 50
1	2	3	4	5	6	7	8

1.7 The share of imports in current expenditures (excl. wages) in 1992 and 1993, in %

0	1 - 5	6 - 10	11 - 20	21 - 30	31 - 40	41 - 50	> 50
1	2	3	4	5	6	7	8

Part 2

- 2.1 Order the following strategies for development:
- enhancing existing markets;
- entering new markets as:

Preferable	Admissible	Undesirable
1	2	3

- 2.3 Order the following investment strategies:

- investment in your firm;
- investment in other firms;
- establishing new firms

in the above way.

- 2.4 Order the following sources for financing your projects

- state subsidies;
- privileged bank loans;
- state order;
- establishing a joint venture;
- selling control rights to a domestic firm (investor);
- selling control rights to a foreign firm (investor)

in the above way.

- 2.7 Obstacles to innovation in existing markets and entry into new markets :

- lack of finance to make production investment;
- supply problems;
- demand constraints;
- barriers to entry created by incumbents;
- high taxes and tariffs;
- no obstacles.

- 2.6 Expectations about the firm's performance in 1994 regarding

- output,
- employment;
- investment;
- R&D expenditures:

Increase	No change	Decrease
1	2	3

Part 3 Economic performance of the firm in 1992 and 1993 from the annual balance-sheet report.

- 3.1 Sales, thous. roubles
- 3.2 Production expenditures, thous. roubles
- 3.3 Profit or losses; thous roubles
- 3.4 The number of employees

3.5 Wages, thous. roubles

3.6 Production capital, thous. roubles

3.7 Production investment, thous. roubles

3.8 Production inventories, thous. roubles