IS RUSSIA RESTRUCTURING?*

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Abstract

This paper explores the dynamics of enterprise restructuring in Russia since 1996 using newly available firm-level data from official sources and from original individual business case studies carried out in Russia's regions. We assess empirically how the patterns of job creation and destruction are related to various aspects of enterprise restructuring across firms in different sectors and regions, and with different ownership forms, size, vintage, and performance characteristics. Our case-study evidence - based on more than 70 business visits - suggests that job destruction has taken place, but in some sectors and regions only to a limited degree, in large part due to institutional and incentive constraints and a still-widespread "socialist" corporate culture. The case studies also indicate job creation has materialized, particularly in sectors where the import-substitution effects of the 1998 ruble devaluation have been most pronounced. This case-study evidence is complemented by analysis of data provided by Goskomstat covering approximately 128,000 enterprises across 24 industrial sectors in all of the country's 89 regions for 1996-1999. These data suggest that in the aggregate the typical Russian firm has experienced only modest downsizing - about 12 percent - in terms of number of employees. We also find evidence of particular sectors where there has been new entry by smaller firms and exit by larger, mature businesses. Except for a lull in 1998, there has been a steady increase in the rate of job creation; at the same time, job destruction rates have been declining, with a substantial drop in the 1998-99 periods. Employment shifts between regions have steadily increased over time, but across sectors and firm ownership types, employment shifts are "u-shaped", with a pronounced decline in 1998. Firm size is found to be statistically correlated (positively) with profitability; yet restructuring through changes in net employment growth does not appear to be related statistically to profitability. This suggests that there are efficiency improvements needed in Russia's restructuring process.

Keywords: restructuring, employees, corporate culture

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The findings, interpretations and conclusions expressed here are entirely the authors' and should not be attributed in any manner to the World Bank, its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.
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Introduction

Russia still faces a daunting challenge to restructure its enterprises, despite several years of growth recently, due in large part to the debt default and devaluation of the ruble in 1998 and high world oil prices that have prevailed since then. Nowhere is this restructuring task more difficult than in dealing with the immense problem the Russian authorities inherited from the socialist system - to ensure that workers have value-enhancing jobs and a vibrant, flexible labor market that operates according to competitive principles. The ability of Russia's labor market to adapt efficiently to changes, is critical to achieve sustainable growth. Indeed, a dynamic labor market - one that facilitates "job creation" in productive enterprises and "job destruction" in unproductive enterprises - is an important factor for all countries making the transition from a centrally planned to a market system, where substantial corporate restructuring is necessary.[1]

The record of job creation and job destruction across transition countries has differed greatly. Many Central and Eastern European (CEE) countries have experienced substantial layoffs by state-owned enterprises (SOEs) and a relatively large reallocation of labor from less efficient to more efficient sectors.[2] The Russian experience, however, has developed along a different path.

At the advent of its transition to a market system following the break-up of the Soviet Union, Russia experienced a major decline in output. This is when Russia's authorities first realized they faced the task of reallocating labor (as well as capital) from insolvent state enterprises towards more productive uses. The federal government began to deregulate wages, abolish guaranteed employment, and reduce formal labor mobility constraints, although not all constraints were eliminated at the regional level. Perhaps most important, in light of the fact that virtually all aspects of peoples' livelihoods and social services were tied to the enterprise sector, the authorities initiated a major drive to privatize SOEs in order to both facilitate restructuring of these firms and the emergence of new private firms, which, in other countries have been major sources of job creation.

During the early 1990s Russia's privatization initiatives led to quite modest results. Increases in productivity of incumbent firms were limited and the country did not experience significant growth of *de novo* private sector business, especially compared to other transition countries in Central and Eastern Europe.[3] Predictions that large-scale layoffs or dramatic increases in unemployment would arise during this period did not materialize, and the initial employment adjustment was small relative to output declines. Consistent with this outcome, rates of job destruction during Russia's early transition years were lower than expected.[4]

By the mid-1990s and especially later in the decade, however, enterprise restructuring increased, as we show in this article, as have other researchers.[5] But the breadth and depth of Russia's enterprise restructuring was more limited than policy-makers' aspirations and observers' predictions.[3] The impacts of the 1998 crisis on enterprise restructuring, which began to effectively materialize only in the latter part of 1999 and in earnest in 2000 and 2001, did—it appears—produce more enduring effects. Still, notwithstanding the salutary fallout of the 1998 crisis (and of higher world oil prices) on Russia's economy, it has been puzzling for re-

[1] See Davis, Haltwanger, and Schuh (1996).
[2] See IMF, 2000; OECD, 1997.
[3] See Broadman (2003).
[4] Jackman (1998); IMF, 2000.
[5] See Broadman and Recanatini (2001), from which this article draws. See also the later paper by Brown and Earle (2001).
[3] See for example Aslund (1995)

searchers and policy-makers to understand why Russian industry has been unable to restructure at the same speed and depth as the industries in other transition economies.

In this article we contribute to a better understanding of this phenomenon. We begin to unbundled - at the firm level - the empirical determinants of enterprise restructuring and job creation and destruction in Russian businesses. In particular we systematically assess the patterns of job creation and destruction over the period 1996-1999 among a large sample of Russian manufacturing businesses in all of the country's 89 regions. We analyze how the patterns of job creation and destruction at the firm level are related to various aspects of enterprise restructuring across businesses in different sectors and regions, and with different ownership forms, size, vintage, and performance characteristics.

In part, we rely on official data provided to us by Goskomstat, Russia's State Statistical Agency. Economists have struggled to measure the "true" degree of firm restructuring and private sector development in all transition economies (Russia included). The limits of official data collected by government statistical agencies are well-known: a bias toward medium and large enterprises, lack of systematic information on worker-hours, and perverse incentives for businesses to mis-report employment data. (In an attempt to overcome these limits, some researchers have used survey data.[4]) Thus, we stress at the outset that our dataset has these limitations. This biases our sample and some of our conclusions towards the labor dynamics of large, well-established enterprises rather than of small start-up firms.

To overcome some of these limits, we integrate these official data with detailed information we gathered through a series of original business case studies of enterprises located in eight of Russia's regions that we carried out during 2000. Despite these words of caution, our dataset provides unique and rich information on Russian enterprises and the country's labor market across 89 regions over a period of four years. The use of these data enables us to carry out a more structured statistical investigation of Russian job creation and destruction and enterprise restructuring than has been performed in the past. In brief, our analysis suggests that the typical Russian firm experienced during the period of observation only modest downsizing - about 12 percent - in terms of number of employees. We also find evidence of particular sectors where there has been new entry by smaller firms and exit by larger, mature businesses. Except for a lull in 1998, there has been a steady increase in the rate of job creation. At the same time, while job destruction rates were higher in the mid-1990s than the earlier part of the decade, the Goskomstat data show declining job destruction rates in the latter 1990s, with a substantial drop in the 1998-99 period. A decomposition of excess job reallocation suggests that employment shifts between Russia's *regions* have increased, while such shifts between *sectors* and among different firm *ownership* types are "u-shape", with a pronounced decline in 1998.

The paper is structured as follows. In Section II we describe briefly our analytical framework and some basic stylized facts regarding enterprise restructuring and job creation and destruction in Russia and compare Russia's experience to that of other transition economies. Motivated by this discussion, Section III presents the quantitative analysis of the Goskomstat data.[5] In Section IV the qualitative evidence from the individual business case studies is presented. We conclude the paper in Section V with a summary of our principal findings.

[4] See, among others, Faggio and Konings (1999); Bilsen and Konings (1998); Haltiwanger and Vodopivec (2000).

[5] A description of the statistical data set is presented in Appendix 1; Appendix 2 defines the basic measures of job creation and destruction utilized.

Analytical Framework and Stylized Facts

There are several reasons why the restructuring of Russian enterprises has been partial and why new private sector start-ups have struggled to emerge, which, in turn, has translated into relatively limited reallocation of labor.[6] The mode of privatization most commonly used in Russia relied on manager-employee buyouts (MEBOs). This insider-oriented ownership structure has not have provided adequate incentives for existing firms to restructure and layoff workers. At the same time, private sector start-ups, particularly small and medium enterprises (SMEs), have faced several barriers to entry, especially at the local level. This limited entry has reduced pressure on incumbent firms to restructure. The barriers have included institutional impediments, such as licensing, registration and inspection requirements, corruption, and inadequate legal mechanisms for dispute resolution. Entry has also been blocked by the lack of a competitive environment, engendered by large incumbent enterprises, who retain the structural advantages that come from market dominance, favored access to infrastructure services and protection from inter-regional trade and investment; and by financial sector barriers, which, stemming from the lack of an effective banking system that intermediates saving into investment, have prevented access to credit on commercial terms. Continued state-engendered or state–sponsored "soft" budget constraints on incumbent enterprises—in the guise of fiscal subsidies, government tolerance (indeed generation) of non-payments, and the absence of a financial system adhering to commercial lending practices—also have worked to limit cost minimization incentives faced by managers.

Pressure on employers from local governments to maintain employment and reduce the political, social and economic consequences of "open unemployment" also has led enterprises to be reluctant to restructure and lay off significant amounts of redundant workers. Indeed, keeping a large number of workers on their payrolls may give enterprise managers more political clout in channeling resources towards themselves. It is also apparent that many managers have acted paternalistically in maintaining employment inasmuch as significant lay-offs would increase poverty among their workers, particularly as the unemployment insurance system has not had adequate resources or sufficient capacity to channel resources to eligible groups.

It has been widely reported that in the years since Russia's debt default and devaluation of the ruble in August 1998 and the increase in world oil prices, these two factors have produced a significant effect on enterprise restructuring, fostering job creation and destruction, particularly in the country's manufacturing sector. Indeed, in the aggregate, both separations and new hiring seem to have increased. By 2000 the rate of hiring began to approach the rate of separations - although with differences across sectors, regions, firm size and other characteristics. By 2000 unemployment began to decline. To assess empirically the flexibility of the Russian labor market and its link to enterprise restructuring, we concentrate on the behavior of job flows throughout the 1990s, and particularly focus on the period just prior to and subsequent to the economic crisis, devaluation and debt default of 1998. We set the stage for this investigation by presenting some salient stylized facts on job reallocation Russia.

Table 1 presents data on the trends in new hiring and separations in Russia's economy from 1993 to 1999. It is apparent that in the industrial sector, except for 1999, both new hirings and separations were quite flat. Only in 1999 does it appear that new hirings have increased, narrowing significantly the gap between hiring and separations. These are trends we will explore in greater detail below with the newly available firm-level data.

[6] See Broadman (2000).

Table 1. Aggregate Data on Labor Turnover in the Russia

(Labor Turnover as percent of Total Employment)	1993	1994	1995	1996	1997	1998	1999
New Hiring	21.1	20.8	22.6	18.9	19.9	21.0	23.9
Of which: in industry	20.1	18.2	21.1	16.9	19.2	19.8	27.4
Separations	25.1	27.4	25.7	23.9	24.5	24.9	24.2
Of which: in industry	28.8	32.0	28.4	27.0	26.8	27.7	27.0

Data in percentage. *Source:* IMF, 2000.

More generally, to what extent has the Russian labor market been showing increasing flexibility as the transition process has progressed? Until recently, the ability to answer to this question has been limited because firm-level data on job flows for Russia have not been systematically accessible. Labor market phenomena are best measured using micro data, which are not easily available in Russia. To date, the most important sources of micro data on Russian job flows generally were from either specialized (usually one-time) firm-level surveys (such as Konings and Walsh (1999)[7] and Foley (1997))[8] or specialized compilations using data from Goskomstat, such as OECD (1997). These data are summarized in Table 2. They suggest that although Russia's labor market has been changing, compared to other transition economies, rates of job creation and destruction are lagging behind. A second conclusion that we can infer from Table 2 is that measuring Russia's restructuring progress has been a significant challenge and has led to a variety of estimates. This mushrooming of estimates is due in part to the use of different databases and survey data.

Table 2. Job Flows in Russia Compared to Selected Transition Economies

Country (years)	Job Creation	Job Destruction	Job Reallocation	Net Employment Growth
Transition Economies				
Poland (94-97)	3.0%	3.7%	6.7%	-0.6%
Estonia (93-97)	9.3%	8.8%	18.1%	0.6%
Slovenia (93-97)	3.3%	5.4%	8.8%	-2.1%
Bulgaria (94)	1.4%	5.2%	6.6%	-3.7%
Romania (93-97)	3.7%	9.9%	13.6%	-6.2%
Hungary (94)	1.3%	6.6%	7.9%	-5.3%
Ukraine (96)	2.5%	15.3%	18.0%	-12.0%
Russia				
Faggio-Konings (95)	1.2%	4.9%	6.1%	-3.7%
Goskomstat (95)	0.9%	4.0%	4.9%	-3.1%
Russian Economic Barometer (95)	1.7%	10.1%	11.8%	-8.4%

Source: Compiled by the authors from data in: OECD, 1997; Faggio and Konings 1999; Konings and Walsh, 1999., Bilsen and Konings, 1998; Davis et al, 1996. From different data sets; not fully comparable.
Note: Job Reallocation = Job Creation + Job Destruction; Net Employment Growth = Job Creation - Job Destruction

[7] The rates were calculated using survey data from 150 enterprises collected in the fall of 1997.
[8] The rates were calculated using data from the Russian Longitudinal Monitoring Survey, a household-based survey. Round 1 of the survey was implemented in 1992, while the last Round was implemented in 1996.

Until recently, data available on Russia's labor market has not provided sufficient information to reconcile these existing pieces of evidence and to assess systematically over time, across sectors and inter-regionally the factors that are influencing changes in Russian job creation and destruction. We help fill this vacuum by offering a more complete analysis of the Russian labor market and enterprise restructuring. We do so by using new firm-level data from a larger and more comprehensive data set from Goskomstat than heretofore has been the case. The firm-level data from Goskomstat we employ cover approximately 128,000 medium and large enterprises and about 7 million employees across 24 industrial sectors in all of Russia's 89 regions for the years 1996-1999. We complement the Goskomstat data with new data on smaller firms from a series of detailed qualitative case-studies of individual Russian businesses that we developed in the field in 2000.

Statistical Analysis: Quantitative Evidence Across Russia's 89 Regions

Enterprise Restructuring in the Aggregate. Table 3 summarizes key attributes of the restructuring that has taken place among Russian enterprises between 1996 through the end of 1999. One measure of the amount of firm restructuring is the change in the number of registered firms during 1996-99. Although the change has been small in the aggregate, with only a 1.3% increase, there is significant variation across sectors. Sectors where the number of registered firms has decreased substantially include clothing, shoes, tanning, furs, electronics and light industry. Substantial increases in number of firm registries have occurred in the fishing, pulp and paper, and woodworking sectors. Of course, number of firms registered is a (perhaps highly) imperfect measure of economic restructuring: it contains no information about changes in firm scale (i.e., whether it is a large or a small firm that is registering or deregistering) and it also may reflect administrative/legal changes rather than economic changes (i.e., when an existing firm simply re-registers under a new name). For these reasons it is critical to look at number of employees (columns 4 and 5 of Table 3). First we note that the average size firm in the Goskomstat data is 355 employees, which is slightly above the normative definition of a "small enterprise" in Russia (usually 250 employees[9]), but in some sectors - notably information and computer services, clothing, light industry, meat and dairy, among others - the Goskomstat data do contain firms whose average size does fit the "small enterprise" definition. In contrast to the data on registration, the data on number of employees show that moderate downsizing - of almost 12 percent - has occurred in the typical firm during 1996-99.

As with the registration measure, there is great variability across sectors in the change of number of employees. But the data on employee numbers give a richer picture: for example, in the woodworking, pulp and paper, meat and dairy, and fishing sectors, the average number of employees per firm has in fact decreased even though the number of registered firms in these sectors has increased - suggesting that these market structures have rationalized and smaller firms have been entering these businesses, a finding consistent with our case studies, including the impact of the ruble devaluation on trade sensitive sectors. In light industry, however, although there has been a decrease in the number of firms registered, the average number of employees per firm has increased, suggesting an upsizing in firm scale has been taking place. In contrast, the employee downsizing in the mechanical engineering for light industry, electronics and precision tools, which was consistent with the decrease in registered firms in these businesses, suggests in such sectors enterprises have been exiting from the market.

[9] Within the Russian nomenclature this standard varies somewhat across sectors.

Table 3. Russian Enterprise Restructuring and Performance: 1996 – 1999

Industry	Number of Registered Firms Providing Complete Balance Sheet Information[10]		Average Size (number of employees)		Reporting year Payroll (in '000 rubles)	Total number of employees	Sale Revenues (in '000 rubles)	Rate of Return (profits over assets)	Rate of Return (profits over assets)
					average		average	average	average
	As of end 99	Δ(99-96)	As of end 99	Δ(99-96)	1999	As of end 96	1999	1996	1999
Ferrous metallurgy	973	-2.6%	2366	-12.3%	10728	834603	149519	1.6%	39.2%
Non ferrous metallurgy	1584	15.8%	1245	-9.6%	8600	599358	113855	19.9%	62.9%
Chemical industry	3827	18.1%	1026	-3.7%	1815	567002	22895	-1.1%	21.5%
Mechanical engineering	2930	1.0%	718	-23.4%	2440	903139	23309	5.8%	9.8%
Machine tool and tool industry	1030	-14.2%	356	-23.9%	824	153109	6286	1.8%	8.5%
Precision tool industry	1309	-12.6%	508	-30.1%	797	202960	7078	2.1%	19.6%
Tractor and agricultural mechanical engineering	463	-1.9%	908	-29.2%	2869	261548	25379	4.6%	3.2%
Mechanical engineering for light industry	950	-6.3%	348	-47.7%	669	139265	6643	0.2%	-11.3%
Electronic industry	983	-20.4%	411	-43.8%	714	199016	4888	-2.8%	9.1%
Metal construction and articles industry	3878	-0.5%	239	4.6%	271	141387	3742	5.1%	17.9%
Woodworking industry	4155	27.7%	211	-47.4%	696	398272	4908	-7.9%	10.6%
Wood processing industry	9587	-5.2%	230	-2.6%	309	401657	3316	-3.3%	12.4%
Pulp and paper industry	734	31.9%	788	-22.5%	3525	160181	54402	-2.3%	43.6%
Timber-chemical industry	39	2.6%	433	2.5%	1290	6745	11389	1.5%	4.2%
Building material industry	6614	-9.5%	249	-8.8%	758	637679	6537	2.1%	5.0%
Glass and porcelain industry	647	-0.5%	540	-11.5%	1236	102943	10580	4.6%	20.7%
Textile industry	2417	-14.9%	359	-23.1%	856	478905	7277	-1.8%	6.7%
Clothing industry	7529	-25.4%	125	-9.6%	136	313408	1358	2.2%	19.4%
Tanning, fur and shoes industry	2752	-32.5%	193	-4.7%	259	165816	2524	-0.6%	10.6%
Other light industry	75	-40.0%	170	26.5%	301	4013	2210	0.8%	18.9%
Food gustatory industry	10420	14.1%	238	5.5%	1055	709291	15917	14.0%	31.7%
Meat and diary industry	4806	14.2%	184	-20.7%	766	397921	16500	5.8%	7.7%
Fish industry	2562	36.4%	294	-47.3%	789	194003	10169	-4.8%	-1.5%
Information and computer services	3961	11.8%	57	5.3%	102	24134	1556	21.9%	2.4%
Russia (total and average)	74225	1.30%	355	-11.5%	1028	7996355	12794	2.9%	15.5%

Source: authors' calculations using data from Goskomstat

The effects of the 1998 devaluation and ensuing industrial growth in Russia are evident in terms of changes in firm performance, in particular, profitability. As indicated in the last two columns of Table 3, the overall average rate of return on assets increased from 2.9 percent in 1996 to 15.5 percent in 1999. Profitability in 1999 was highest in the non-ferrous and ferrous metals, pulp and paper, and food sectors; and losses were suffered in the mechanical engineering for light industry and fishing sectors. Sectors whose rates of return declined in 1999 relative to 1996, in addition to the mechanical engineering for light industry and fishing

[10] Although the size of our panel data is 128,000 firms over four years, only about 80,000 enterprises provided complete and consistent information for each of the four years. Our analysis and the annual rates of job creation and destruction constructed are therefore based on a set of about 80,000 enterprises.

sectors, also include information and computer services and tractor and agricultural machinery. The data indicate that in 1999 greater profitability is associated with larger firm size: the correlation between revenues and rate of return on assets is about 0.7 and is statistically significant.

Job Creation and Destruction in the Aggregate. Table 4 and Figure 1 display the extent of job creation, destruction, and reallocation as well as net employment growth, aggregated across all regions and sectors for the 1996-1999 period. The data indicate several important findings. Except for a lull in 1998, there has been a steady increase in the rate of job creation since 1996, especially between 1999 and 1998. But at the same time, job destruction rates have been declining over the same period, again with a substantial drop in the 1998-99 period. This suggests that, all other things equal, the rate of layoffs in enterprises has been decreasing, especially in the post-crisis period. These two outcomes result in the fact that although *net employment growth* - the excess of job creation over job destruction - in Russia is still negative, there is substantially less negative net employment growth today - at –1.6 percent—than there was in 1996, when net employment growth was –8.9 percent. These data also indicate, however, that although net employment growth rates are growing, the extent of job reallocation - the sum of job destruction and job creation rates - has declined, suggesting that overall job flows in Russia's labor market are decreasing.[11]

Table 4. Russia's Job Creation, Destruction, and Reallocation; Net Employment Growth: 1996-1999 (rates in percentage)

Year/Year	Job Creation	Job Destruction	Job Reallocation	Net Employment Growth
97 vs. 96	9.9	18.8	28.7	-8.9
98 vs. 97	9.7	17.7	27.4	-8
99 vs. 98	12.2	13.8	26	-1.6

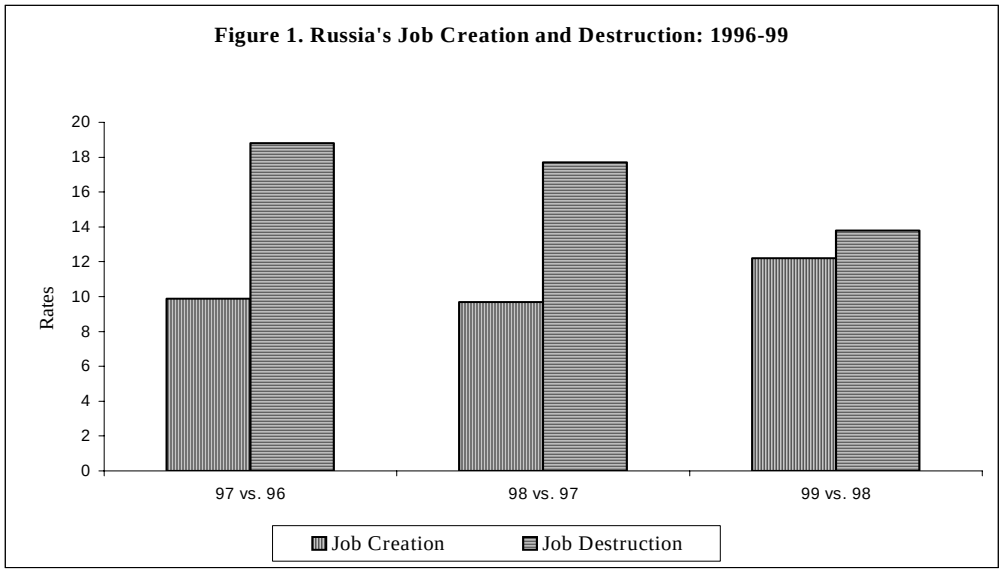
Note: Job Reallocation = Job Creation + Job Destruction; Net Employment Growth = Job Creation - Job Destruction

Source: Authors' calculations using data from Goskomstat. For a detailed description of the methodology and definitions, see Appendix 2. These rates were calculated using a subset of the Goskomstat dataset because of missing data and inconsistencies.

Job Creation and Destruction: Does Firm Size Make a Difference? A key issue is the extent to which job creation and job destruction rates differ according to firm size. For a simple assessment of this at the sectoral level, the correlations between average firm size in 1999 (measured either by number of employees or sales revenues) and job creation or job destruction rates in 1999 vs 1998 are both negative, but neither, however, is statistically significantly different from zero - suggesting that, at this juncture in Russia, firm size and net employment growth do not appear to be related.[12] Figure 2 illustrates this finding. Of course, to investigate this question more comprehensively, there is a need to focus on within- and cross-sectoral effects, as well as on within- and cross-oblast differences.

[11] This slowing down of the labor market could be attributed in part to the evolution of the transition process itself. At the beginning of the transition, a large reallocation of resources from inefficient to more efficient uses was necessary. As the transition proceeded and resources were reallocated, the rate of job reallocation got closer to U.S. and European levels.

[12] This result does not change if we eliminate outliers from the analysis.



Source: Authors' calculations using data from Goskomstat

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Job Creation and Destruction: Does Enterprise Ownership Form Matter? There is great variation in rates of job creation and destruction among firms of different ownership form; see Table 5. Between 1996 and 1999, rates of job creation and job destruction have been higher in public compared to private enterprises. For both ownership forms, however, job creation rates increased and job destruction rates decreased between 1996 and 1999. Moreover, net employment growth has been negative for public as well as private enterprises (but less so particularly after 1998). But private enterprises exhibit substantially less negative net employment growth than do their public sector counterparts, suggesting that more layoffs are occurring among public enterprises. Importantly, the differentials in net employment growth rates between the two ownership forms, however, has narrowed significantly, from 9 percent in 1997/96 to about 3 percent in 1999/98, suggesting that the overall pace of labor market flows is becoming more similar among public and private enterprises.

The patterns of job reallocation among enterprises with foreign ownership have been significantly different from domestic firms. For fully foreign owned firms, both job creation and job destruction rates were significantly higher than those of domestic public and private enterprises in the 1997-96 period (joint ventures' rates were more in line with those of domestic firms.) But whereas job creation rates for domestic firms rose between 1996 and

1999, for foreign owned firms, they actually fell and did so significantly (though for fully foreign owned firms they still are higher than domestic enterprises). Also in contrast to domestic firms, net employment growth rates were sizably positive from 1996-1998 for fully foreign owned enterprises, but then turned sharply negative in 1999. Importantly, joint ventures have exhibited the most stable job reallocation rates in the economy, and by end-1999 their rates of job creation only barely were exceeded by their rates of job destruction.

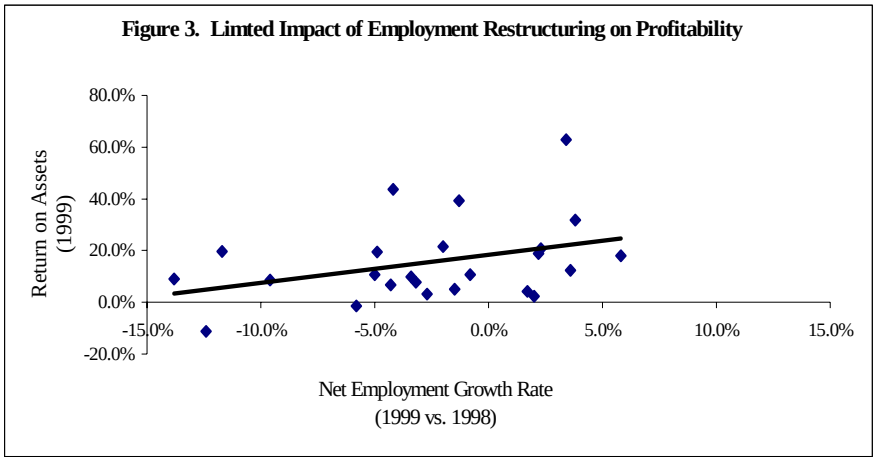
Table 5. Job Creation, Job Destruction and Net Employment Growth by Ownership Form

Ownership Form	Number of employees	Job Creation		Job Destruction		Net Employment Growth		
	As of end 96	97/96	99/98	97/96	99/98	97/96	98/97	99/98
Majority Public Enterprises	723686	17.3%	21.7%	37.3%	26.7%	-19.9%	-15.4%	-5.0%
Majority Private Enterprises	6738516	7.5%	10.8%	18.3%	13.2%	-10.9%	-8.6%	-2.4%
Fully Foreign Enterprises	4075	122.6%	33.4%	105.8%	44.4%	50.8%	58.5%	-11.0%
Joint Ventures	528054	17.3%	11.2%	13.3%	11.7%	4.0%	-7.3%	-0.5%

Source: Authors' calculations using data from Goskomstat

Enterprise Profitability and Employment Restructuring. We noted above that for 1999 there is a statistically significant positive correlation between enterprise profitability (as measured by return on assets) and size (as measured by sales revenues), a finding consistent with most studies of industrial organization worldwide. If Russia's restructuring process - through labor shedding and hiring - is being carried out efficiently, the expectation is that profitability and net employment growth should also be correlated, controlling for size differences. Looking at the simple correlation it appears that there is a positive relation between these two variables (see figure 3). A simple estimation exercise, however, provides mix results. In a regression covering all the 24 industry sectors of return on assets (for 1999) on (i) sales revenues (for 1999) and (ii) net employment growth (for 1999 vs. 1998), both the estimated coefficient on sales revenues and on net employment growth are statistically significant (and positive), though the estimated coefficient on net employment growth is significant only at the 10% confidence level.[13]

Figure 3. Limted Impact of Employment Restructuring on Profitability



Source: Authors' calculations using data from Goskomstat

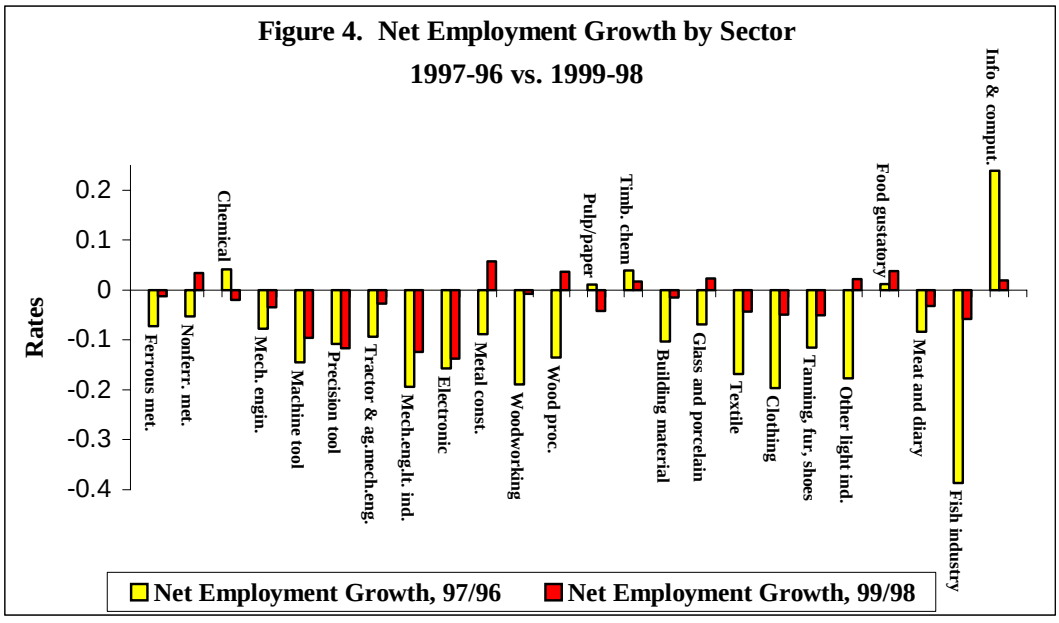
[13] The beta coefficient for sales revenues is 0.0003 and for net employment growth is 0.74. The Adjusted-R^2 is 0.54. We also used lagged net employment growth (1998/97) instead of the contemporaneous one, to reduce the possibility of endogeneity. In this case, the estimated coefficient for revenues is still positive and statistically significant but the coefficient for net employment growth is not statistically different from zero.

This seems to suggest that employment restructuring is not occurring efficiently at this juncture in Russian firms, although of course because other elements affect profitability differences across firms—such as industry-specific structural competitiveness factors, exposure to international trade, sectoral technologies, among other factors—it is difficult to make this judgment definitively based on this simple exercise.

Sectoral Differences in Job Creation and Destruction. The new dataset from Goskomstat allows us to analyze in the detail differences in job creation and destruction among the industrial sectors; see Figure 4. The data indicate a great degree of sectoral variance in employment flow rates, both within a given time period and between time periods. But they also show for certain sectors, some persistency over time. In 1996/97, job creation was greatest in information and computing services (52%) and least in ferrous metallurgy (3%); the sector with the highest rate of job destruction was fishing (50%) and the lowest was timber-chemical (5%). Overall in 1996/97, the highest net employment growth rate was registered in information and computing services (24%) and the lowest was registered in fishing (-39%). This is an enormous cross-sectoral range, as Figure 4 depicts clearly.

By 1998/99 information and computing services still registered the highest rate of job creation, but its rank was shared by woodworking (both at 22%); similarly, ferrous metallurgy still ranked lowest, but its rank was shared by mechanical engineering (both at 7%). Job destruction also remained lowest in timber-chemical (7%). These results all indicate a degree of persistency. (The correlation between job destruction in 1997/96 and 1999/98 is 0.68 and statistically significant, but there is no statistically significant correlation between job creation in 1997/96 and 1999/98.) Yet while job destruction in mechanical engineering for light industry (at 26%) was the highest among the sectors, job destruction rates in information and computer services (20%) and in woodworking (23%) were quite high on a cross-sectoral basis but lower than they were in these particular industries in 1996/97. Figure 4 indicates that sectoral differences in net employment growth rates in 1996/97 were much smaller by 1998/99, revealing some convergence.

Figure 4. Net Employment Growth by Sector
1997-96 vs. 1999-98

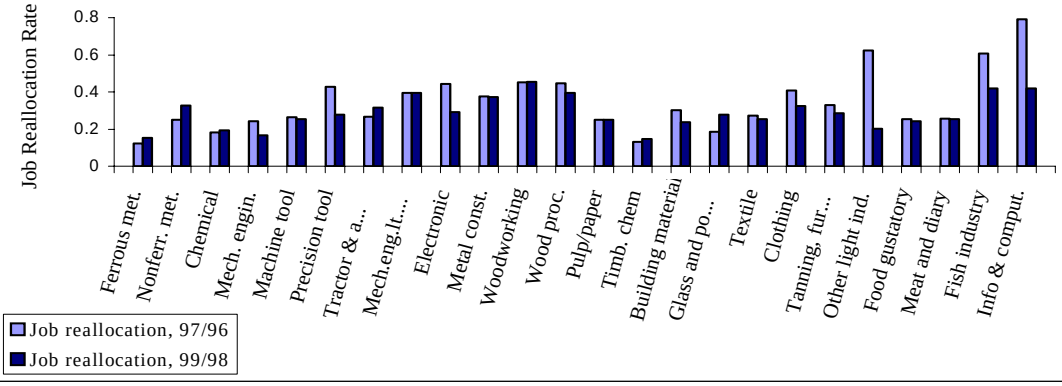


Source: Authors' calculations using Goskomstat data

Figure 5 illustrates how job reallocation flows differ. In 1996/97, job reallocation rates were highest in information and computer services (79%), other light industry (62%) and fishing (61%), and lowest in ferrous metallurgy (12%) and timber chemical (13%). In 1999/98,

job reallocation in woodworking was the highest (at 45%), but this was the same rate as in the earlier period. Job reallocation rates fell in information and computer services and in fishing from 1997/96, but remained the two highest (both at 42%) just below woodworking. While ferrous metallurgy continued to register the lowest job reallocation, its rate rose a bit from 1997/96.

Figure 5. Russia: Job Reallocation by Sector 1997-96 vs. 1999-98



Source: Authors' calculations using data from Goskomstat

Regional Variation in Job Creation and Destruction. Among Russia's regions there is heterogeneity in rates of job creation and destruction. Table 6 summarizes key variables from the Goskomstat data for the eight regions in which we carried out the case studies, plus four other regions for comparison purposes.

Among these twelve regions, in 1997/96 Saratovskaya registered the greatest positive net employment growth (4%) and Primorskii experienced the greatest negative net employment growth (- 24%). Both regions, however, had essentially the same rate of job reallocation flows (about 50%); yet in Primorskii's case, job destruction rates greatly outweighed those of job creation, whereas in Saratoskaya, job creation and destruction were more balanced.

Table 6. Russia: Regional Job Creation and Destruction (selected regions)

	1997/96				1999/98			
Region	Job Creation Rate	Job Destruct. Rate	Job Reallocat. Rate	Net Employment Growth Rate	Job Creation Rate	Job Destruct. Rate	Job Reallocat. Rate	Net Employment Growth Rate
Krasnodarskii	8.5%	18.3%	26.8%	-9.8%	9.0%	10.7%	19.6%	-1.7%
Primorskii	13.8%	37.4%	51.2%	-23.5%	26.4%	16.9%	43.3%	9.5%
Nizhegorodskaya	8.3%	20.8%	29.1%	-12.4%	7.5%	17.0%	24.4%	-9.5%
Samarskaya	11.3%	18.1%	29.4%	-6.8%	13.2%	25.2%	38.3%	-12.0%
Saint-Petersburg	16.8%	22.2%	39.0%	-5.4%	10.2%	14.7%	24.9%	-4.4%
Leningradskaya	9.2%	17.9%	27.1%	-8.7%	13.9%	14.2%	28.2%	-0.3%
Moscow	10.8%	22.8%	33.6%	-12.0%	16.2%	15.2%	31.4%	1.0%
Mosckovskaya	9.4%	15.9%	25.3%	-6.6%	10.3%	10.6%	20.9%	-0.3%
Novgorodskaya	10.3%	15.4%	25.7%	-5.0%	15.0%	13.7%	28.7%	1.4%
Novosibirskaya	9.4%	16.7%	26.1%	-7.2%	8.7%	12.7%	21.4%	-3.9%
Saratovskaya	27.1%	23.1%	50.2%	4.0%	14.3%	22.5%	36.8%	-8.2%
Sverdlovskaya	15.8%	12.8%	28.6%	3.0%	17.1%	13.7%	30.8%	3.4%

Source: Authors' calculations using data from Goskomstat

The situation in 1999/98 is substantially different on many counts. Primorskii registered the highest positive net employment growth rate (10%), engendered by strong job creation. At the same time, Saratovskaya's net employment growth rate turned sharply negative (-8%), due to high job destruction, although Samaraskaya's net employment growth was the lowest (-12%). Moscow's and Novgorodskaya's net employment growth rates also reversed in 1999/98 from 1997/96 (respectively from –12% to 1%, and from –5% to 1.4%), both due to higher job creation and lower job destruction rates. Primorskii's and Saratovskaya's job reallocation rates, however, remained the highest (43% and 37%, respectively), along with Samaraskaya (38%).

Across all the regions, on average, job creation rates rose only marginally (from 15% to 16%) between 1997/96 and 1999/98, whereas job destruction rates fell substantially (from 24% to 16%). Net employment growth rates, on average, rose significantly and turned just positive (from –9% to 1%). On a region-by-region basis, persistency characterizes job creation, but not job destruction: while there is a statistically significant correlation of 0.71 between job creation rates in 1997/96 and 1999/98 in a given region, the analogous correlation between job destruction rates in 1997/96 and 1999/98 of 0.25 is not statistically significant.

Decomposing Excess Job Reallocation: Within vs. Across Sectors, Regions and Firm Ownership Groups. Excess job reallocation, defined as the difference between job reallocation and the absolute value of the change in net employment, is a measure of simultaneous job creation and destruction. It quantifies the portion of job reallocation in excess of the amount required to accommodate changes in employment demand. This index is especially useful to assess employment shifts across- versus within-sectors (or regions or firm ownership groups). Measuring excess job reallocation sectorally can be decomposed into two components. The first, due to inter-sectoral employment shifts, is defined as:

$$\sum_{\forall s} |NET_s| - |NET_S|$$

where s indicates the sectors, and S the whole industry. The second component, excess job reallocation due to intra-sectoral employment shifts, is defined as:

$$\sum_{\forall s} R_s - |NET_s|$$

where R_s is the job reallocation in sector s.

The analogous decomposition can be computed for employment shifts between and within regions, and between and within firm ownership categories. Table 7 summarizes the results of decomposing excess job reallocation across sectors, regions and ownership groups.

Table 7. Fraction of Excess Job Reallocation Resulting from Employment Shifts

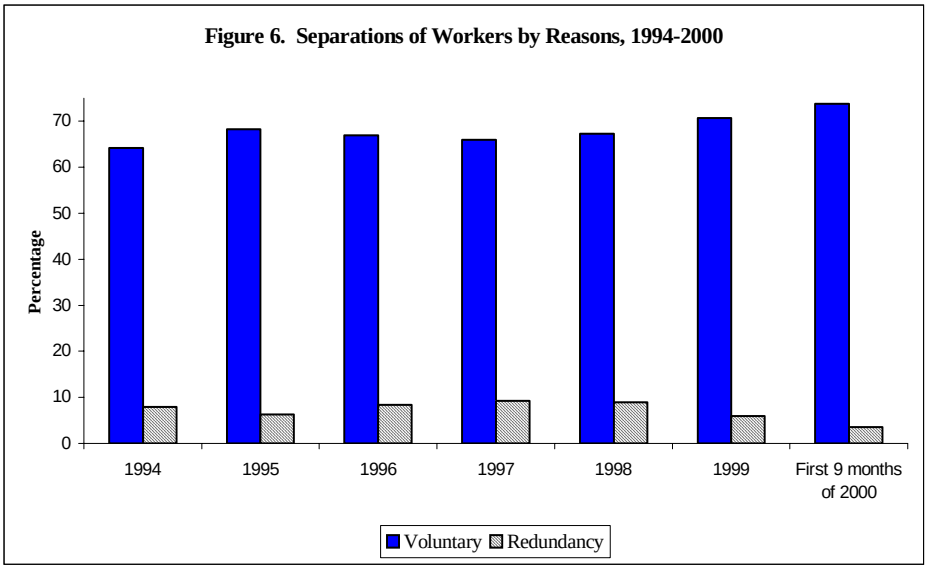
Group type	Number of Groups	Fraction Resulting from Shifts Between Groups, 97-96	Fraction Resulting from Shifts Between Groups, 98-97	Fraction Resulting from Shifts Between Groups, 99-98
Sectors	24	5.25%	0.81%	8.44%
Regions	89	2.58%	4.22%	8.09%
Ownership types	14	4.93%	0.7%	3.79%

Source: Authors' calculations using data from Goskomstat

As the table 7 indicates, over time the fraction of excess job reallocation resulting from employment shifts between oblasts has steadily increased, suggesting greater regional mobility for Russian workers. On the other hand, on both a sectoral and ownership group basis, we observe a "u-shaped" pattern, with a trough in 1998. However in the case of sectoral excess job reallocation, the employment shifts in the post-1998 period are greater than in the pre-1998 period, whereas the converse is true in the case of ownership group excess job realloca-

tion. This suggests that while employment mobility across sectors increased after the crisis, in the case of firm ownership groups, employment mobility declined. More research is needed at this stage to understand the reasons for this u-shaped pattern.

Figure 6. Separations of Workers by Reasons, 1994-2000



Source: Ministry of Labor data.

Compositional Differences in Worker Separation: Variation by Reason and by Sector. Newly available data from the Ministry of Labor shed light on the trends and variations in the attributes of worker separations for the period 1994 through the end of the Third Quarter of 2000.

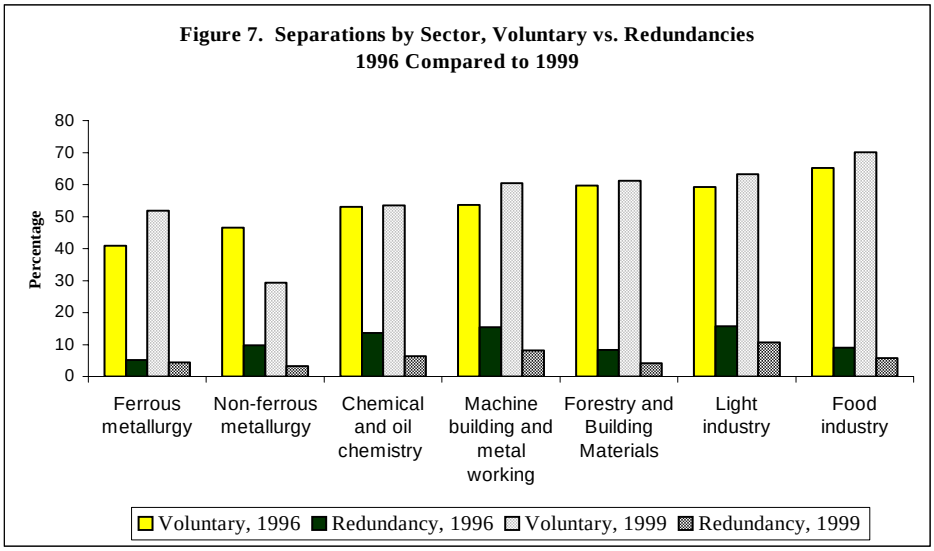
Figure 6 and Table 8 show that since 1994 the main—and growing—form of worker separations is "voluntary" as opposed to layoffs through "redundancies." While there is always ambiguity in any labor market about what precisely constitutes a "voluntary" separation—for example a worker can be induced by his/her employer to "voluntarily" resign or retire—the large and significantly increasing differences between the two separation categories leaves little doubt that layoffs through redundancies constitutes a small fraction of total worker separations in Russian enterprises. Across all industries, about two-thirds of all worker separations in 1996 were categorized as voluntary, while less than 10 percent of total separations were layoffs through redundancies. By the end of the Third Quarter of 2000, the portion of total separations that were voluntary increased to almost 74 percent, while the portion that were layoffs through redundancies declined by more than 50 percent to below 4 percent.

Figure 7 (and Table 8) illustrates differences in the forms of worker separations for 1996, 1999 and the Third Quarter of 2000 for representative sectors. In every sector, except for non-ferrous metallurgy and chemicals, there is a steady increase in the portion of total separations that were voluntary, and a steady decrease in the portion that were through redundancies. The food industry registered the largest proportion of voluntary separations in both 1996 and the Third Quarter of 2000, while light industry registered the largest proportion of redundancy separations in both 1996 and the Third Quarter of 2000. Ferrous metallurgy registered the smallest proportion of both voluntary and redundancy separations in 1996, and maintained the smallest proportion of redundancy layoffs in the Third Quarter of 2000; but in the Third Quarter of 2000, non-ferrous metallurgy registered the smallest proportion of voluntary separations.

Table 8. Separation of Workers by Reason by Sector (percent of total number of separated)

	1996		1999		End Q3 2000	
	Voluntary Separations	Separation Through Redundancies	Voluntary Separations	Separation Through Redundancies	Voluntary Separations	Separation Through Redundancies
All Industries	67.0	7.9	70.7	6.0	73.8	3.5
Selected Industries						
Ferrous metallurgy	40.9	5.2	51.9	4.5	53.7	1.8
Non-ferrous metallurgy	46.5	9.8	29.4	3.3	48.6	2.5
Chemicals	53.1	13.7	53.5	6.3	59.1	3.6
Mach bldg and metal wkg	53.6	15.4	60.4	8.2	63.2	3.1
Frstry and bldg materials	59.7	8.3	61.2	4.2	64.4	2.1
Light industry	59.3	15.7	63.3	10.6	71.2	4.4
Food industry	65.2	9.1	70.1	5.8	75.4	3.8

Note: Figures do not sum to 100 percent because other reasons for separation not shown. *Source*: Ministry of Labor data



Source: Ministry of Labor data

Case-Study Evidence

In-depth interviews of general directors and other senior management of more than 70 enterprises and banks were carried out in 2000 in eight Russian regions: Krasnodar Kraii, Leningrad Oblast, St. Petersburg city, Moscow Oblast, Moscow city, Novgorod Oblast, Novosibirsk Oblast, and Primorskii Kraii. We summarize here the key findings from these case studies, which supplement our statistical analysis of the Goskomstat data.

Some Job Destruction Has Occurred, But Many Firms Are Still Over-Employed. The majority of the managers interviewed indicated that the level of employment in their enterprises has declined since the beginning of the transition in the early 1990s. But most also indicated that more downsizing was necessary to bring the scale of plants in line with market conditions. Thus, further restructuring of incumbent enterprises was deemed necessary. The limited reduction in personnel observed was attributed for the most part to retirements and voluntary separations rather than to actual lay-offs at the managers' initiative. It was apparent

that due to political pressure and a lingering Soviet "corporate culture", managers responded to the worsening in economic conditions and the decline in demand by accumulating wage arrears, shortening employees' workday and imposing forced leave without pay or with partial pay, rather than laying off employees. At the same time, some of managers interviewed conceded that, given the actual demand for their firms' products, their enterprises are still over-manned by at least 10-15%. This trend of implicit or temporary unemployment is especially common among well-established, older enterprises (either SOEs, or privatized firms) in the more traditionally manufacturing sectors. Certain distortions in the policy environment, for example the tax regime, also play a role in creating incentives and constraints on job destruction; see Box 1.

Although Some Job Creation Has Materialized, There Is Potential For Much More. In contrast with the evidence gathered regarding the older enterprises, including previously privatized firms, newcomers in the market, particularly *de novo* smaller firms, appear to have been at the forefront of creating new jobs—although it is too early tell from the interviews how durable these new jobs will be (i.e., whether or not there is net positive employment growth).

Box 1. Is It *Real* Job Reallocation? A Construction Firm in Moscow Oblast

Established in the early 1950s, this large company producing construction materials has undergone several transformations since 1991. To be able to survive the worsened economic conditions and minimize the burden of taxation, the senior management decided to divide the original company into about 30 separate enterprises. These firms are *de facto* departments of the "mother" company, but are legally separate entities. The newly established firms and the mother company are in constant re-organization depending on the needs of the mother company and changes in tax incentives and credits available to small businesses. The "subsidiary" companies are kept "alive" until they are profitable and then are closed down. Workers, on the other hand, have been continuously moved from one subsidiary to another, displaying trust toward the management and a great level of mobility, since each time a subsidiary closes down, the employees are laid-off with simply the implicit understanding that they will be later re-hired in another subsidiary. Nonetheless this fictitious closing down and opening of the subsidiaries, and the continuous flows and reflows of employees between different jobs—apparently largely on the basis of tax incentives and disincentives—leads to significantly distorted measures of job creation and destruction.

Source: authors

Job creation was found to be particularly strong in light industry, especially enterprises in the food, retail and information technology (IT) sectors, and also in natural resource-related firms (those in or associated with oil or natural gas). Moreover, the creation of new jobs appears to be more marked since the 1998 devaluation, likely because of the import substitution effects, particularly in trade-sensitive sectors, for example, timber and wood processing.

There Is Significant Variation Across Sectors And Regions In The Incidence Of Job Creation And Destruction Observed. Although the case studies reveal some regularities, different sectors and regions have responded differently to the transition in terms of job creation and destruction. Light industry and the services, retail, and information technology sectors, for example, are clearly in expansion, as well as are export-oriented and import-substituting enterprises as a consequence of the 1998 devaluation and increased oil prices. More traditional manufacturing sectors, for example, heavy industry, machine tools, and chemicals (among others), however, are still struggling to recover. Among the eight regions visited, there are also significant differences in the patterns in employment flows and enterprise restructuring. More progressive and reform-oriented regional administrations, such as Novgorod, have promoted new entry, enterprise restructuring and a more flexible labor market through judicious economic and fiscal policies, bolstered by greater policy stability and transparency; see Box 2. Other regions, however, have been less helpful in creating a more favorable business environment, hampering the restructuring process. Many regional administra-

tions employ protectionist policies to insulate "local champions" from competition, for example in hampering inter-regional trade flows.

Enterprise Restructuring And Downsizing Is Hampered Due To Protectionist Institutions And Policies. Many general directors indicated that their enterprises are still responsible for providing social services—such as housing, hospitals, schools and training centers—for both their current and former employees.

Box 2. Promoting Restructuring and Job Creation: The Economic Council of Novgorod

Since the mid 1950s, the Novgorod region developed as a production center for radio-electronics, especially for the military sector (for many firms military orders accounted for up to 70% of their production). The transition process led the region into a deep economic crisis, since most of its industry was unable to compete in a market-based environment because of the halting of military orders; outdated technologies; and lack of trained labor. In 1992, the oblast administration reassessed the business environment and decided to launch a multi-pronged strategy to reduce unemployment. It established the Economic Council of Novgorod with the purpose of formulating economic policies to revitalize the regional economy. The Council focused on three areas of economic policy: (1) development of small businesses, so as to promote growth and new jobs; (2) administration of more effective tax collection, so as to reduce the regional dependency from the federal budget; and (3) creation of a favorable investment conditions for out-of-oblast investors. Whereas the tax issues are still not resolved (the oblast is still federally subsidized to the amount of 12.5% of its budget), the employment goal has met with some success. As of mid-2000 one fourth of the local population is employed by small businesses, and tax receipts from SMEs account for one fifth of the budget revenues. The biggest success has come however from attracting FDI to the region (currently some US$800 million), following the adoption of several investment promotion programs and the formation of a transparent and stable investment policy regime at the regional level. In 1999 62% of the oblast's gross product came from ventures with foreign participation, and the oblast's exports were four times the size of its imports.

Source: authors

This situation, a hangover Soviet corporate mentality, creates a web of deep ties between the firm and employees that unduly complicates the restructuring process, where the ties remain even after the formal employer-employee relationship is terminated. Other transition economies, such as China, exhibit similar protectionist policies, which have retarded labor reallocation.[14]

Portions of Russia's existing employment regulations, especially the Labor Code, appear to complicate the situation further, making it difficult for enterprises to lay off redundant employees. On the other hand, the regulations do have an impact on the type of contracts that employers who are faced with redundancy challenges prefer to offer to prospective employees since employers have a strong preference for temporary and seasonal hiring.

One Of The Constraints Expanding Firms Face Is Their Ability To Find Expert Workers. Many managers interviewed report that they currently face several impediments to increase their labor force—despite stronger demand for their products. In part their attempts to expand production capacity are hampered by the lack of skilled labor, especially for the newly emerging IT and computer sectors. Indeed, a common complaint among general directors is the difficulty of attracting particular types of experts. This is due in part to the surge in recent demand for new skills but without the matching supply of requisite workers—for example, skills in modern management techniques and in specialized areas such as computer software; see Box 3. Although most firms acknowledge that a large part of the problem is that they are unable to offer competitive wages, the shortage also is the result of constraints reflected in limited regional mobility within the country and outdated training programs.

[14] See Lane, Broadman and Singh (1997) for analysis of labor creation and destruction in Chinese enterprises.

Box 3. Lack of Skilled Workers -- An IT Firm in Novosibirsk Oblast

Established in 1991, this IT firm has expanded rapidly over the past 10 years, growing from 3 to about 300 employees. Its growth however has been constrained by the lack of available skilled labor in the software field and in modern management techniques. Especially since the crisis in August 1998, the firm has tried to increase its capacity and compete on the Russian market with foreign enterprises. Its recruitment efforts, through headhunters, its web site newspaper advertisements and its informal network, have all been hampered by the lack of the firm's internal marketing skills and an incomplete strategic vision. If possible, in the coming year, this firm would like to increase its management staff by 10 percent, and its overall personnel by approximately 30 percent.

Source: authors

The lack of skilled labor is increasing the economic gaps between Russian regions. Regions with well-established, state-of-the-art universities, for example, Novosibirsk, appear to be restructuring at a somewhat faster pace and attracting investment. Relatively few managers indicated that in order to overcome the shortage of skilled labor would the firm—at this juncture—hire unskilled labor and provide in-house training, although in the case of senior positions, training would be provided to new employees.

Job Reallocation Is Hampered Because Workers Are Reluctant Or Face Constraints To Move To Different Regions Or Even Within A Region. The limited availability of skilled labor is also exacerbated by workers' unwillingness to move, especially outside urban centers, in part because of housing endowments they enjoy in their current locality, local residency requirements that act as constraints on new worker entrants (for example in the city of Moscow) or poor transport links. Despite substantial improvements since the start of the transition, worker mobility across Russia's regions is still quite limited. This creates unnecessary bottlenecks in the labor market, retards enterprise restructuring, and increases the wage and economic disparities across regions.

Worker Recruitment Still Occurs Mostly Through Informal And Personal Networks. Job creation is unlikely to be efficiently carried out because of the lack of competitive and transparent hiring practices. Many managers indicated that they tend to rely more on their personal contacts for worker searches, especially when hiring blue-collar workers. Using newspaper advertising or head-hunters is more common when the firm is looking for specialized labor and senior workers. Managers also rely heavily on their current employees to spread by word-of-month that there are job openings in the firm and to let friends know of recruitment possibilities.

Enterprise Restructuring And Job Reallocation Are Also Being Stifled Because Of Obsolete Technologies And Lack Of Financing. Many managers acknowledge that their production lines are outdated, inefficient and excessively labor intensive. Yet most managers indicated extreme difficulty in obtaining financial credit from banks or other sources, including government agencies, for medium term investment needs on "commercial terms" they find acceptable. Conditional on access to financial capital, many would seek to automate their production lines in the next few years. If consummated properly and in line with true market demand, such investments would likely translate into significant job destruction (for low skilled jobs) and job creation (for expert personnel).

Conclusions

In this article we have systematically documented the dynamics of enterprise restructuring and job creation and destruction in Russia, using both data from more than 70 original business case studies we carried out in eight regions in 2000 and recently available data from Goskomstat that cover approximately 128,000 enterprises across 24 industrial sectors in all of the country's 89 regions for the years 1996-1999.

Overall, the analysis suggests there is significant heterogeneity across Russian firms and regions in terms of the record of restructuring. In broad terms, the case studies suggest that job destruction has taken place, but in some sectors and regions only to a limited degree, in large part due to institutional and incentive constraints and a still-widespread "socialist" corporate culture. At the same time, the case studies indicate job creation has materialized, particularly in sectors where the import-substitution effects of the 1998 ruble devaluation have been most pronounced, but still only slowly, mostly because of limited regional mobility and the lack of skilled workers.

Moreover the case study evidence suggests that the incentives and constraints on enterprise restructuring and the operation of the labor market in Russia are a function of the initial economic conditions at the start of the country's transition and the institutional environment. Today Russia's economy manifests a hangover from the earlier drive for regional autarky and self-sufficiency, with large firms exhibiting excessive vertical integration, protected by local government barriers to interregional trade and investment. In turn, throughout the more than ten years following the dismantling of the Soviet system, the regionally-specialized structure of the economy has had a profound impact on the response of the country's labor market to the reform process.

The Goskomstat data suggest that in the aggregate, the typical firm in Russia has experienced only modest downsizing—about 12 percent—in terms of number of employees in the 1996-1999 period. But not surprisingly these data—like our case studies—show there is great variability across sectors. For example, in the woodworking, pulp and paper, meat and dairy, and fishing sectors, the average number of employees per firm has in fact decreased even though the number of registered firms in these sectors has increased—suggesting that market structures in these sectors following the 1998 crisis have rationalized and smaller firms have been entering, a finding consistent with our case studies, including the impact of the ruble devaluation on trade sensitive sectors. In light industry, however, although there has been a decrease in the number of firms registered, the average number of employees per firm has increased, suggesting an upsizing in firm scale has been taking place. In contrast, the employee downsizing in the mechanical engineering for light industry, electronics and precision tools sectors, which was consistent with the decrease in registered firms in these businesses, suggests in such sectors, enterprises have been exiting from the market. Thus, we find evidence of particular sectors where there has been new entry by smaller firms and exit by larger, mature businesses.

Except for a lull in 1998, there has been a steady increase in the rate of job creation since 1996, especially between 1999 and 1998. But at the same time, job destruction rates have been declining over the same period, again with a substantial drop in the 1998-99 periods. This means that, all other things equal, the rate of layoffs in enterprises has been decreasing, especially in the post-crisis period. Worker separations made on a "voluntary" basis remain the main—and growing—form of layoffs, constituting three-fourths of total separations, while layoffs made through redundancies are a shrinking form of separations.

The Goskomstat data analysis also indicates that while employment shifts between Russia's regions have steadily increased over time, suggesting greater regional mobility for Russian workers, on both a sectoral and ownership group basis, we observe a "u-shaped" pattern, with a trough in 1998; but while employment mobility across sectors increased after the crisis, in the case of firm ownership groups, employment mobility declined. There is also a degree of persistency in job creation and destruction rates across sectors and across regions. Interestingly, there appears to be persistency in job destruction on a cross-sectoral basis but persistency in job creation on a cross-regional basis.

While the data suggest that, on average, firm size and net employment growth are not statistically related, ownership form does seem to matter: more layoffs are occurring in public

than in private enterprises, although the differentials in net employment growth rates between the two ownership groups have narrowed considerably over time. Foreign-affiliated enterprises exhibit higher average job creation and destruction rates than their domestic counterparts; but in contrast to domestic firms, job creation rates by foreign businesses in Russia have dropped during 1996-99.

Finally, although firm size is found to be statistically correlated (positively) with profitability, restructuring through changes in net employment growth does not appear to be related statistically to profitability. This suggests that there are efficiency improvements needed in the restructuring process.

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Appendix 1. Firm-Level Data Sources and Measurement Issues

In this study we use only firm-level data. They were derived from approximately 70 case studies carried out in the field in eight Russian regions as well as data from the Russian State Statistical Committee (Goskomstat) The case study data are described in the text. Here we described the Goskomstat data set. Our primary source of data on gross employment is Goskomstat through its Accounting Balance Survey of registered enterprises. These data are collected through mandatory yearly reporting by large and medium sized enterprises, which cover some 75 percent of total employment.[15] The data set covers all types of ownership including fully state-owned enterprises, as well as newly privatized and de-novo private firms. The data used in this study are derived from this larger data set and include information on 128,244 registered enterprises between 1996 and 1999. Our data set, though it covers all 89 Russian regions, focuses only on a subset of sectors of the economy, in the manufacturing and service sectors. The data set includes information at the firm-level on employment, product, location, size, average wage bill, ownership and other characteristics. This rich data set has however a few limitations. First, since small enterprises are excluded, the most dynamic part of the economy is under-represented. This creates a bias in our measure of job flows. Secondly, the data do not provide information on the firm's vintage nor do they distinguish between continuing enterprises, start-ups and shut-offs. Thirdly, this is enterprise-level rather than plant-level data. Thus, job movements between (and within) plants of the same enterprise are not captured in our calculations. This is a serious limit especially when addressing the issue of changes in the enterprise's productivity. Fourthly, this data is collected only on a yearly basis. The point-in-time nature of this data does not allow us therefore to capture employment changes that are reversed within the same sampling period.

Appendix 2. Basic Definitions

We adopt the same notational conventions used in much of this literature. Variables have as many as three subscripts: the letter i denotes the firm; the letter s denotes the sector to which the firm belongs; and the letter t denotes the time period. In referring to job creation, job destruction and related measures, we use uppercase letters to denote levels, and lowercase letters to denote rates. In addition, the symbol Δ denotes the first-difference operator, such as $\Delta X_t = X_t - X_{t-1}$. Finally, X denotes employment, and the superscripts + and – indicate the subset of firms in the sector that expand and contract, respectively. For the purpose of the analysis presented in this paper, we used the following definitions:

(Gross) Job creation at time t: the employment gains summed over all the firms that expand or start up between t-1 and t. Thus, gross job creation in sector s at time t is:

$$C_{st} = \sum_{i \in S^+} \Delta X_{ist}$$

(Gross) Job destruction at time t: the employment losses summed over all firms that contract or shut down between t-1 and t. Similarly, job destruction is:

$$D_{st} = \sum_{i \in S^-} \left| \Delta X_{ist} \right|$$

Following Davis, Haltiwanger and Shuh (1997), job creation and job destruction can be expressed as rates by dividing by a measure of sector size. Firm size, Z_{ist} , is the average employment in periods t and t-1. The corresponding firm-level employment rate is:

$$g_{ist} = \frac{\Delta X_{ist}}{Z_{ist}}$$

[15] Small enterprises in Russia are subject to a different and simpler system of reporting.

Thus, sectoral rates of job creation and destruction are size-weighted sums of firm-level growth rates:

$$c_{st} = \frac{C_{st}}{Z_{st}} = \sum_{e \in S^+} \left(\frac{Z_{ist}}{Z_{st}} \right) g_{ist}$$

$$d_{st} = \frac{D_{st}}{Z_{st}} = \sum_{e \in S^-} \left(\frac{Z_{ist}}{Z_{st}} \right) \left| g_{ist} \right|$$

This definition of employment growth, defined as the average employment between period t and t-1 (i.e. [E(t) + E(t-1)]/2) rather than lagged employment (E(t-1)), allows us to calculate rate measures that range from –2.0 to +2.0, rather than from –1.0 to + infinity, portraying expansion and contraction symmetrically. Thus, for example, firm startups and shutdowns have growth rates of +2.0 and -2.0 rather than + infinity and –1.0.

Net employment change at time t: the difference between job creation and job destruction at time t and employment at time t-1. Formally,

$$net_{st} = c_{st} - d_{st} = \frac{\Delta X_{st}}{Z_{st}}$$

(Gross) Job reallocation at time t: the sum of all firm-level employment gains and losses that occur between t-1 and t. The gross reallocation rate equals the sum of the creation and destruction rates:

$$r_{st} = c_{st} + d_{st}$$

(Gross) Worker reallocation at time t: the number of persons who change place of employment or employment status between t-1 and t.

Excess job reallocation at time t: the difference between gross job reallocation and the absolute value of the net employment change.