Post-Privatization Ownership Structure and Productivity in Russian Industrial Enterprises

John S. Earle

Stockholm School of Economics
Central European University

First draft: 20 December 1997
This version: 28 January 1998

Presented at the ACES-ASSA meetings, January 1998. The paper draws on joint work and discussions with Saul Estrin, without which it could hardly have been written. Thanks to Serhiy Biletsky and Zuzana Sakova for excellent research assistance, and to Guido Friebel, Barry Ickes, Martin Spechler, and especially Laurence Levin for valuable comments and discussions.

Abstract/Summary

This paper investigates the impact of ownership structure on the productivity performance of Russian industrial enterprises. The analysis compares the effects of several types of new private owners - insiders (managers and other employees) and outsiders (individual and institutional investors) - with continued ownership by the state, and it takes into account possible selection effects in the privatization process that may bias the observed ownership-performance relationship. Drawing upon a large survey of privatized and state-owned enterprises conducted in July 1994, the paper shows that, despite the predominance of employee ownership resulting from the privatization policy design, there was significant heterogeneity in the Russian ownership structure, with a large role continuing for the state and with some potential for outsiders, particularly concentrated institutional investors, to begin to influence the behaviour of a non-trivial fraction of firms. OLS regression estimates show a positive impact of private share ownership, relative to state, on labor productivity, but somewhat surprisingly most of this result is due to the positive effects of managerial ownership and secondarily of non-managerial worker ownership; among outsiders, only individual share ownership has a positive and statistically significant impact, and the point estimate for foreign ownership is actually negative.

An often-noted but little examined hypothesis in studies of corporate ownership structure is that OLS results such as these may be artefacts of selection biases in the process determining ownership structure. The paper draws on the analysis in Earle and Estrin (1997) of the determinants of the Russian ownership structure, including the interests of various types of owners and the priority they received during the privatization process, in order to calculate IV estimates that remove the simultaneity bias of OLS. Compared with the latter, the IV results confirm, even strengthen, the implied impact of private ownership on productivity, but now this is accounted for by outside ownership, while inside ownership, whether of managers or workers, becomes insignificant. Among different types of outside owners, the estimated impact of concentrated institutional investors is strengthened in the IV compared to the OLS estimates, that of dispersed individuals is weakened, and the coefficient on foreign ownership, although not precisely measured, does become positive. Ownership by investment funds is estimated to have a large and statistically significant impact on productivity.

Overall, the results provide some evidence that ownership change in Russia was already having some positive effects, shortly after the conclusion of the voucher privatization process, but that those effects were strongest in companies with concentrated outside owners. Because the design of the Russian privatization program appears to have been biased against such institutional investors, the latter finding only emerges after a careful analysis of the simultaneous determination of ownership and performance through the privatization process.

1. Introduction

The Russian privatization program has been nothing if not controversial. On the one hand, it has been alleged to be purely cosmetic, at best meaningless and at worst contributing to the "criminalization" of the Russian economy (see, e.g., Intriligator (1994), Arrow *et al* (1996), or any number of articles in the popular press). Besides the blatant corruption associated with a number of transactions, the aspect of the program that has come in for the most criticism concerns the massive advantages given to enterprise managers and other employees in acquiring shares in their firms (see, e.g., Frydman and Rapaczynski (1994) or Earle and Estrin (1995)). Indeed, a number of studies have documented a rate of employee ownership that is astronomical by any standard (see, e.g., the studies due to Blasi (1994, 1995, 1996) and his co-authors (1996 and 1997)). Given the urgent need for extensive and painful restructuring of most of the industrial enterprises, a program that so actively promoted inside ownership and discouraged the entry of outsiders would hardly seem to be the cure that the doctor would have ordered.

On the other hand, the Russian program has been defended as the best that was politically feasible (e.g., Boycko *et al* (1995)). Under the conditions of the continued Communist domination of the Duma and the lack of an organized lobby for outsider privatization, whether through sales to core investors or through a Czech-style voucher scheme, the only alternative to continued state ownership may have been to cede majority control to insiders. According to this view, the program at least opened the way to improved corporate governance and restructuring by "depoliticizing" the enterprise-state relationship, even under insider ownership, while creating some possibilities for outside investors to enter.

In this paper, I provide some empirical evidence on the economic effects of the Russian privatization, focusing on its short run impact on the productivity performance of industrial enterprises, and taking into account the possibility of significant selection effects in the privatization process that may bias the observed ownership-performance relationship. I argue that the Russian ownership structure not only calls for consideration of the extent of concentration of ownership (as emphasized by analysts of corporate governance in the West; see, e.g., the summary in Shleifer and Vishny (1995)), but it also demands attention to the identity of various types of owners, given that the objectives pursued and constraints faced by different types are likely to differ quite significantly. The analysis distinguishes five important categories of owners: the state, managers, nonmanagerial employees, individual

outsiders, and institutional investors; within the last group, banks, investment funds, domestic firms, and foreign investors are also considered. In a series of nested specifications, the paper examines the impact of the shareholding of each owner-type on labor productivity, controlling for past labor productivity and a number of other variables that may be correlated with both ownership and the dependent variable.

A potentially important problem in interpreting the results from ordinary least squares (OLS) estimation of the impact of ownership on productivity could arise from the possibility that the process generating the ownership structure is somehow related to that for enterprise productivity. Although the notion that ownership structure is itself endogenous has received some attention in studies of publicly owned corporations in the West (see Demsetz (1988) and Demsetz and Lehn (1985) for such an argument with respect to the concentration of ownership), it seems particularly plausible that a privatization process such as the Russian would contain significant selection effects, implying that ordinary least squares estimates may suffer from simultaneity bias. To rectify this problem, the paper draws on the investigation reported in Earle and Estrin (1997) of a set of potential determinants of the ownership structure, including variables that may reflect the relative attractiveness of the firm to different types of owners, the costs and benefits of concentrated ownership, and the priority given to those interests by the privatization process. The determinants are used as instruments to produce a second set of estimates of the impact of ownership structure, this time purged of simultaneity bias. The results from these IV estimations differ dramatically from the OLS, suggesting the importance of taking into account such selection effects.

The rest of the paper is organized as follows. Section 2 begins with a brief account of the Russian privatization debate. Existing information on Russian ownership structure and a description of the data set used in this paper are provided in section 3. The data are drawn from a survey of 439 Russian enterprises conducted by the World Bank in July 1994, just after the conclusion of the voucher privatization program, although many firms were privatized earlier (both through lease-buyouts and through vouchers). The main purpose in section 3 is to highlight a series of factors that, despite the widespread dominance of insiders, raise the potential for outside owners to have some impact on enterprise behaviour. Section 4 discusses the choice of the performance indicator - labor productivity - used in the paper and presents OLS estimates of the productivity-ownership relationship. Section 5 reconsiders the validity of OLS estimation in light of the possibility of selection effects and presents IV estimates that take such biases into account. Section 6 concludes.

2. The Russian Privatization Debate

Leaving aside the question of political feasibility (but see McFaul (1995) for the view that the Russian Government had an alternative political-economic strategy), the arguments concerning the economic effects of the Russian privatization program may be grouped in five categories. The first concerns the likelihood that the ownership structure created by the privatization process would persist. If the employee-owners (particularly the rank-and-file workers) were to sell their shares quickly to outside investors, then the initial predominance of employee ownership would be inconsequential in the longer run. Post-war Japan is sometimes cited as evidence of the likelihood of such a rapid secondary transfer (Aoki and Kim (1995)). Even in the absence of a rapid selloff, the need for the "right kind" of outsiders - bringing in fresh capital and new technologies and markets - may gradually persuade the insiders to accept outside participation in decision-making as well; at least, this is more likely for the viable firms, while the nonviable ones will starve for lack of capital (Boycko *et al* (1995)). Likewise, the dispersion of outside ownership, encouraged by the privatization program design, may be rectified by subsequent secondary sales to concentrated institutional investors.

But while Russian policymakers and analysts may have expected (or hoped) *ex ante* that employees would sell their shares quickly, as a factual matter the rate of sale by employees to outsiders and that from individuals to institutions appear to have been rather small (see Blasi *et al* (1997) or the summary of evidence in Earle and Estrin (1997)), so that the ownership structure created by the giveaway phase of the privatization process up to June 1994 has persisted to a considerable extent.[1] One can only speculate on the reasons why employees have been slow to sell, but among them are probably their desire to retain control of their firms and their lives (an aspect commonly ignored in discussions of the nondiversification of human and financial assets under employee ownership), the tradition of solidarity among Russian workers and the central place occupied by the enterprise and the employment relationship in many aspects of society, and the poor functioning of capital markets, the last consideration implying that little gain could be obtained from selling, in any

[1] The giveaway phase embraces both the early period of lease-buyouts and the subsequent State Privatization Program (using vouchers). After June 1994, many of the remaining state-owned shares in partially privatized companies were supposed to be sold by tender or auction in "investment sales" to concentrated outside investors, but, notwithstanding some highly publicized deals (and scandals), such sales have proceeded quite slowly, consistent with

event. Even if the urgent need for fresh capital were to encourage insiders to negotiate, information and agency problems may inhibit outsiders from entering (see Frydman and Rapaczynski (1994), Earle and Estrin (1995), or, for a theoretical treatment, Aghion and Blanchard (1996)).

Second, it may be argued on behalf of the program that even if the bulk of shares have been acquired and continue to be retained by employees, most observers believe that enterprise managers remain in firm control (e.g., Blasi (1994, 1995, 1996)), and the unity of ownership and control under management helps to overcome the agency problems of the modern corporation, as testified by a long literature going back to Berle and Means (1932). But the program's detractors may respond that while managerial ownership may solve one kind of agency problem, it also creates others, in particular with respect to providers of outside equity or debt (Jensen and Meckling (1976)). Still more seriously, the desirability of managerial ownership concerns not only the proper provision of incentives to the existing management, but also the allocation of managerial talent across positions and firms (see Rosen (1990) for a general discussion; Barberis *et al* (1996) refer to the allocation issue as the "human capital" issue in the transition context). Even if managerial ownership has desirable properties in some situations, it seems difficult to maintain that the inherited stock of Soviet managers is the most appropriate under the new conditions. The benefits of improved incentives may pale compared to the costs of entrenching the incumbents.[2]

Third, promoters of insider privatization may claim that employee ownership may actually offer certain advantages, including improved incentives and opportunities for participation by individuals with some knowledge of areas where productivity could be increased; and the workers may make the most efficient decision where painful cuts are required as well. But the counter-argument is that, while a case may be built for employee ownership in declining firms (Earle and Estrin (1995)), it is dubious that employees are the best placed to carry out restructuring where the enterprise has some chance to be viable afterwards. Hansmann (1990) has argued with respect to developed market economies that employee ownership works best in relatively small, homogeneous companies, where divisive distributional conflicts are rare. But such conflicts are endemic in the transition, where resources have been systematically misallocated and, moreover, where uncertainty about the

---

experience in most East European countries (see Boycko *et al* (1995) or Earle *et al* (1993)).

[2] The tradeoffs between these two effects are discussed in Morck *et al* (1988) with respect to Western corporations; the argument here is that entrenchment is likely to be particularly costly, due to the inherited misallocation of human capital, in Russia.

outcome from any particular type of restructuring may make it impossible to reach an agreement about the best course of action. Even if one could imagine the employees setting up some compensation mechanism to ensure that all would somehow gain from restructuring (to turn a potential into an actual Pareto improvement), the transaction costs of carrying this out are likely to be exorbitant in practice. As a consequence, employees may face difficulties reaching agreement on many changes, since the changes will impose costs on at least some group, and the uncertainty connected with the distribution of costs and benefits will lead to a status-quo bias (as argued, for example, by Fernandez and Rodrik (1992) in the context of political support for economic reforms).

Fourth, defenders of the program may point out that outside investors are severely handicapped in an environment where contracts are at best poorly enforced and where they may have great difficulties in imposing restructuring that hurts the incumbent management and workers (e.g., Frydman and Rapaczynski (1994); in this context, employee ownership may be superior in fostering the development of property rights, because the ability of outside owners to exercise their nominal rights will be highly attenuated (Earle and Estrin (1995)). The program's detractors could respond that it is indisputable that the legal environment in Russia has been inhospitable for outside investors. But the inhospitality has only been encouraged by a policy that ratified and legitimized insider control, making it the norm in the economy. Not only did the privatization program grant huge preferences to insiders, it also discouraged the concentration among outsiders of whatever shareholdings remained after the insiders had essentially had their pick.

Finally, the defender of insider privatization may allege, with many citations to the popular press, that the current pool of potential "outside" owners in Russia is hardly of better quality than the insiders; even leaving aside the mafia and criminal elements, quite a number of outsiders, including banks and other firms, may be at least as interested in asset-stripping as in value- maximization. The opponent might retort that while it may be true that such terms as "investment fund" or "bank" may have a fundamentally different meaning in Russia than they do in a market economy, the program could nevertheless have done much more to develop institutional and core investors, bringing the argument back to the question of political feasibility.

Despite the widespread attention paid to these debates, in both Russia and the West and in both policy-making and academic circles, there has been little empirical evidence available to evaluate what are ultimately empirical questions: Does the dominance of insider

ownership eclipse any possible influence of outside owners in Russia? Relative to continued state ownership, has privatization to employees improved the performance of firms, and does it matter if the new employee-shareholders are relatively concentrated managers or dispersed rank-and-file workers? If private outsiders occupy a significant place in the ownership structures of some firms, do they improve enterprise performance relative to the state, and how do they compare with the performance of inside owners? Among outsiders, what is the relative impact of dispersed individuals compared to concentrated institutional investors, and do different types of institutions (banks, investment funds, other domestic firms, and foreign investors) differ in their ability to improve enterprise performance? Finally comes a question that is critical for addressing all of the foregoing: does the fact that the privatization process was so strongly biased in a number of ways, most notably in the preferences granted to insiders, have implications for an analysis of ownership and performance in Russia? These are the questions addressed in the rest of this paper.

3. Data and Description of Russian Ownership Structure

Only limited information has been available concerning the results of the privatization process for the structure of corporate ownership in Russia. The State Property Committee (GKI) released data on the numbers of privatizations, including some of their characteristics, but rather little on the actual ownership results. Goskomstat (1996) records about 122,000 "changes of ownership type," but the only published classification divides firms only into the very general, and not precisely defined, categories of "state," "mixed," and "private."

More information is available from several surveys. Pistor (1994) reports, based on a sample of 36 privatized firms in six regions (Moscow, Novgorod, Yaroslavl, Ivanovo, Perm, Sverdlovsk), that all employees together (workers and managers are not reported separately) owned an average of 62 percent of all shares, outsiders held an average of 19 percent, and the state retained 19 percent in 1993. Webster *et al* (1994) report on 92 privatized firms in Moscovskaya and Vladimirskaya oblasts in October 1993 that total employee ownership averaged 61 percent, of which managers held 17 percent (the size of the other holdings are unclear). Radygin (1996) reports 52 percent ownership by workers, 14 percent by management, 19.5 percent by outsiders, and 14 percent by the state, although the sampling and coverage of this study is unclear.

Much of the best information comes from the surveys organized by Joseph Blasi, and reported in Blasi (1994, 1995, and 1996), Blasi and Shleifer (1996), and Blasi *et al* (1997).

Data from a survey of 127 privatized firms in 1993 indicate that insiders held on average some 65 percent of the shares in 1993, of which 9 percent was held by top managers. Outsiders held only 22 percent, while the state accounted for the remaining 13 percent. Indeed, on the general orders of magnitude of the average shareholdings of these groups in firms in the mass privatization program, there appears to be considerable agreement, also with our survey results, as we discuss below.

The existing sources of information have several drawbacks, however. The sample sizes are small, and sample selection was non-random. Moreover, with the exception of Webster *et al* (1994), it appears that all data pertain only to enterprises privatized through the State Privatization Program, omitting enterprises privatized through leasing arrangements. Yet to omit leased enterprises is to omit an important part of Russian corporate structure. Goskomstat (1996) reports over 25 percent of completed privatizations of enterprises as lease buyouts over the years 1993-95, a result consistent with the survey data (although the latter apply only to manufacturing), as discussed below.[3]

Previous research has also omitted any analysis of firms remaining 100 percent state owned; instead the focus has always been on firms which have participated in privatization (and almost always restricted to the State Program, as noted above). For instance, in an otherwise fairly detailed study of state ownership after privatization in Russia, Pistor and Turkewitz (1996) provide no indication of the proportion of firms that had no shares privatized whatsoever. Yet both because some firms were prohibited from privatizing (particularly some of those in the military-industrial complex) and because the managers of others may have been reluctant to do so, the numbers remaining with the state could be large. Goskomstat (1996) reports that 9 percent of industrial enterprises and 16 percent of industrial employment were in the state, municipal, or public institution categories. Again, as shown below, the analogous results derived from the data set in this paper are quite consistent, permitting the use of other information on these firms to provide a more complete picture of the ownership and behaviour of Russian enterprises.

In addition to the sample size and selection problems, the existing studies of Russian

[3] The percentage of firms privatized through lease buyouts was 29.5, 20.8, and 29.8 of a total of 42,924, 21,905, and 10,152 firms privatized in 1993, 1994, and 1995, respectively, according to Goskomstat (1996), Table 10.4.6. Webster *et al* (1994) find that leased enterprises were 50 percent more numerous than those in the State Program in the two oblasts they studied, but this appears to be an overestimate of the importance of leased firms on a national basis.

corporate ownership suffer from lack of information about such important institutional details as the prevalence of non-voting shares. As I discuss below, a significant proportion of insider and state holdings are actually non-voting, which has potentially crucial implications for corporate control in general, and for the role of outsiders in particular.

The survey from which the data in this paper were drawn was organized by the World Bank and conducted by VTsIOM (the All-Russia Center for Research on Public Opinion) in 439 companies during June and July 1994, just at the close of the voucher privatization process.[4] 394 firms were randomly selected from a complete list of the population of manufacturing firms in Russia with at least 15 employees in 1991, stratified by industry and region to ensure representativeness. In addition to this sample, which includes both state-owned and privatized enterprises, an additional 45 manufacturing firms in the new private sector were interviewed based on regional lists of all companies. This data set appears to be the largest and most representative source containing detailed ownership and other information on industrial firms in Russia. More information about the survey and sampling can be found in Lee (1996).

The ownership composition of the enterprise sample is as follows. Of 430 firms which provided sufficient information to be classified, 86 were 100 percent state-owned, 299 had undergone some, at least partial, privatization process, and 45 were newly created (*de novo*) private enterprises.[5] These categories do not match those of the Goskomstat (1996), because the latter does not distinguish new private firms from privatized enterprises formerly owned by the state; for the purposes of this paper, however, it is important to distinguish them from the "old" firms - those that are or were state-owned and that are the focus of this study of ownership change and its impact on behaviour. Nonetheless, the results are quite consistent with the Goskomstat data: roughly one-quarter of old firms remain 100 percent state-owned, while about three-quarters have been privatized, at least partially.

One disadvantage of the data set for describing the ownership structure is that the

---

[4] Thanks to Qimiao Fan for permission to use the data.

[5] Having "undergone privatization" here means that a formerly state-owned enterprise has either been bought out through a leasing arrangement or that it participated in the State Privatization Program, but not necessarily that state ownership is zero. The classification of *de novos* was based on the answers to a set of questions, including whether the firm had a legal antecedent, the current and past legal form, and several questions about privatization, where "always private" was one possible answer. Firms providing ambiguous and inconsistent responses are excluded from the sample in the subsequent analysis.

latter may have evolved significantly, particularly as the state privatizes its remaining holdings and as employees begin to sell their shares (a possibility we emphasized in Earle and Estrin (1995)). From other evidence, however, it appears that rather few such sales have taken place. The so-called "investment auctions" have followed a very slow pace, and the infamous "loans-for-shares" program covered only a small number of companies (if very valuable ones, particularly in mining industries); thus, the state share has changed little in most companies. Moreover, it appears that there have been relatively few sales by employees. According to Blasi and Shleifer (1996) the median across all firms of both employee and voucher fund sales was 0 percent of all shares (and only 4 and 1 percent, respectively, on average), implying that the share structure has not changed at all in more than half of their companies. Any expectations of a quick and dramatic sell-off by employees to outsiders, such as occurred in Japan in the post- war period (Aoki and Kim (1995)), are contradicted by the results reported by Blasi *et al* (1997) for the year 1996, when employee ownership, both that of managers and of workers, actually rose slightly compared to the previous year.[6] No doubt the share structure will evolve in the longer run. Regardless of how quickly it does so, however, it seems useful to analyze the ownership structure just at the conclusion of the mass phase of Russia's privatization program, which, as shown below, accounted for the overwhelming bulk of the privatization process.

A second disadvantage, more closely related to the purposes of this paper, also stems from the timing of the survey. Given that the data were collected just at the close of the voucher privatization, in July 1994, is it not rather too early to expect to see an impact of ownership change on firm behaviour? Many Russian companies were privatized somewhat earlier, however, including not only the lease-buyouts of 1990-92 but also those firms privatized in the State Privatization Program in late 1992 (when the program finally started after long discussion) and 1993. Unfortunately, the survey did not ask the firms to report the date at which their ownership changed, so we cannot distinguish which firms had been privatized for some time from those for which the process was barely concluded. This would tend to bias the results against finding an impact of ownership. It would be desirable, of course, to collect later data, but that is an undertaking for future research.

A final issue to discuss concerning the data set analyzed here is its representativeness. Table 1 shows the composition of the World Bank sample by our groupings of industry, region, and size (the definitions are explained in the tables) and the comparable figures from

[6]See also Pistor (1997), p.21.

the population of 10,582 firms from which the sample was drawn. Although sample selection was stratified by industry and region, some non-representativeness in the number of enterprises crept in. It is particularly the machine-building sector (both heavy and light), already quite large in the Russian economy, which appears to be over-represented in the sample. Fuel and energy and metals and chemicals are also over-represented, while wood and construction materials and consumer goods are under-represented. When weighted by 1994 employment, however, the discrepancy is much less: for instance, 40.7 percent of Russian industrial employment was in machine-building, while the corresponding sample percentage is only 44.7 percent (see also Commander, Dhar, and Yemtsov (1996)). The survey exhibits some bias towards larger firms, but regional discrepancies between sample and population appear to be minimal. Although the sample is not perfectly representative, its coverage is broad enough to permit cautious inferences on ownership structure and corporate control in Russian industry as a whole.

Table 1: Characteristics of Sample Survey Data Compared With Goskomstat Registry

With these caveats in mind, we may now turn to the analysis of the ownership structure emerging from the voucher privatization process.[7] Table 2 shows the distribution of shareholdings for privatized firms (defined as firms that have undergone some privatization process) and for all "old" firms in the sample, the latter category including unprivatized firms remaining 100 percent in state hands. As noted above, most studies of Russian privatization and corporate governance have tended to focus attention on the firms participating in the State Privatization Program; the ownership structure for such firms according to the database examined here is shown in the column labelled "all SPP." Consistent with the findings of other studies, the figures show the clear predominance in the SPP of insiders, with 56.3 percent of all shares, while outsiders had 23.3 percent and the state had 20.4 percent. The SPP embraced the three methods listed as "options 1, 2, and 3" in the table; while option 3 was rarely used and can therefore be dismissed, there are significant differences between options 1 and 2, for instance in the percentage privatized.[8] The data thus provide only limited support for widespread contention (for instance, Blasi (1996)) that the ownership outcome of

[7] See Earle and Estrin (1997) for more detail on the privatization process and the ownership structure; for discussions of the legal framework for corporate governance see Frydman *et al* (1993) or Pistor (undated).

[8] Earle and Estrin (1997) report the results of regressions where the dependent variables are various measures of the ownership structure and the independent variables include method of privatization and industry, region, and size controls.

privatization in Russia did not vary across method. The differences are still wider when one considers voting shares, as discussed below.

The analysis has thus far focused on the proportionate shareholdings of different kinds of owners in the firms included in the SPP. The picture of the Russian ownership structure changes considerably, however, if we take a number of factors into account. Let us first consider expanding the analysis to include firms outside the SPP. Table 2 shows the ownership structure in firms purchased by their employees through lease-buyouts and "all privatized firms," which includes both the SPP and the lease-buyouts. The lease-buyouts tend to have lower state shareholding - an average of 1.5 percent - but nonetheless much lower outside ownership relative to SPP firms. The reason is that their insider ownership is still much higher: an average of 90.6 percent of all shares!

While taking into account the lease-buyouts lowers the observed outsider share and further heightens the picture of insider domination, a second expansion of the set of firms under consideration - to include other industrial firms that had not yet been privatized - lowers the shareholdings of both outsiders and insiders, since these firms are owned 100 percent by the state. The final column of table 2 includes all "old" firms, thus providing information on the total sample (excluding *de novos*). When we look at Russian industry as a whole, the shareholdings of outsiders falls to 13.8 percent on average and those of institutional investors to only 9.1 percent, while the state share rises to 38.0. Thus, expanding the sample beyond the standard set of SPP firms to include lease-buyouts and unprivatized firms greatly worsens the relative position of outsiders in the overall ownership structure.

Several other factors, however, tend to work in the other direction. Table 3 first reproduces, for comparison purposes, the final column of table 2, while the second column shows an estimate of the distribution of ownership of voting shares. Although frequently mentioned in the context of discussions of Russian privatization, the existence of non-voting shares has received little attention in analyses of ownership structure. But the two types of non-voting shares, type A given to workers free under option 1 of the SPP and type B limiting the state's voting rights to no more than 20 percent of all shares with the exception of companies in some particular sectors, both work to raise the relative influence of outsiders, as the table shows. See Earle and Estrin (1997) for further discussion of voting shares and of the estimates reported in this table.

The influence of outside ownership appears still greater when we weight companies by size, as shown in the next column of the table (where 1994 employment is the weighting

variable). The average outside shareholding rises to 19.4 percent, while that for insiders falls to 36.4. Calculated this way, institutional investors actually own more on average than do managers: 13.3 compared to 9.7 percent. A possible reason for this is the greater potential for influence, at a given level of shareholding, in larger firms (an argument due to Demsetz and Lehn (1985) and elaborated in the current context in Earle and Estrin (1997)).

The analysis so far has considered only average shareholdings, thus another factor affecting the picture of the ownership structure, in particular of outside ownership, concerns the dispersion of owner-types across companies. The last column in table 3 begins to show how the dispersion matters by displaying the mean percentage of voting shares in firms where the owner-type has a positive voting shareholding. In firms with positive outsider shareholding, outsiders own 32.7 percent on average, of which institutional investors account for 28.8 percent. There is a notable tendency of particular types of institutions to concentrate their shareholdings in particular firms, presumably in order to enhance their possibilities for corporate control. For instance, investment funds have an average of 19.2 percent of shares in companies where they own shares, suggesting that their investment decisions were driven by "control-oriented" rather than portfolio, or "arms-length," motives (see Berglof (1995)).

Further information on the tendency for institutional investors to concentrate their ownership stakes in a subset of companies appears in Table 4a, which contains the distribution of firms by each owner-type's level of shareholding. While the state has positive shareholding in 64.6 percent of companies and insiders do in 71.2 percent, outsiders appear in less than half - 47.3 percent - and institutions in only 36. But it is interesting to note that while the incidence of some types of shareholders, especially managers and individual outsiders, tend to decline rapidly as we consider successively higher levels of shareholding, the incidence of institutional investors declines only rather slowly. At the 20 percent ownership level, a larger fraction of companies have institutional ownership than have managerial ownership. Nearly a quarter have institutional ownership on that level, suggesting that outsiders may have the capacity to influence corporate behaviour in a significant fraction of the sample.

The final factor affecting the picture of outsiders in the ownership structure concerns the variation in that structure between firms with significant outside investment and those with little or none. Table 4b shows the ownership structure for firms with institutional investors owning at least 20 percent of the shares in the company, and those who have smaller institutional stakes. In the former group of firms, the average institutional

shareholding is 38.5 percent, while it is only 1.4 percent in the latter. Interestingly, institutional stakes are larger where managers have significantly fewer shares, but where workers have about the same amount and individuals actually have more. This suggests that institutional investors tend to have larger shareholdings in companies where the other owners are dispersed (workers and individuals) and therefore where they are more able to control management.

To summarize, this section has shown that the characteristics of the Russian ownership structure vary considerably when a number of factors, which have commonly been omitted, are taken into account. While there is little doubt that insiders dominate on average, the data show substantial heterogeneity in the ownership structure. This not only suggests a somewhat brighter picture of corporate governance in Russia than is often portrayed, but it also implies that the data may be useful for the purpose of this paper: examining the impact on corporate behaviour of several different types of owners: the state, workers, managers, individual outside investors, and concentrated institutional investors.

4. Estimating the Impact of Ownership on Productivity Performance

The organization of the data in this paper has been motivated by hypotheses concerning the potential impact of ownership structure on enterprise performance. Because of the possibility that private owners may be more likely to restructure and to increase profits and productivity compared to continued ownership by the state, I have quantified the extent and the patterns of private ownership emerging in Russian industry. For similar reasons, I have distinguished owners who are insiders to the firm from those who are outsiders, and considered different types of each (managers versus workers, and individuals versus various types of institutional investors) based on the hypothesis that each type may have different objectives and may face different constraints, compared with the others. I have emphasized the importance of measuring voting shareholdings because voting shares represent control rights - thus the possibility for owners to influence company behaviour. Finally, the analysis of the types of concentrated institutional investors was similarly motivated: the implications of a given total ownership by outsiders are very different if the outside owners consist of few entities with large holdings, compared to the situation where outside holdings are dispersed over a large number of individuals. With respect to each of these aspects of ownership structure, we have found significant variation across the Russian enterprise sample.

This section exploits the statistical variation that Russia offers to test the premise

underlying the ownership structure analysis: the possibility of some relationship between enterprise performance and the various aspects of the ownership structure, as I have analyzed them. The magnitude and the speed of changes in Russia, I have argued, indeed provides an interesting quasi- experimental setting in which to investigate the effects of ownership on enterprise behaviour.[9] But the nature of the ongoing transformation of the economic system in Russia has implications not only for the magnitude of change that may be observed, but also for the types of behaviour that are possible and interesting to measure. The section first describes the labor productivity variable used as the performance indicator in this paper, and then reports OLS estimates of the impact of the shareholdings of different types of owners. The next section studies the issue of the possible endogeneity of the ownership structure and reports instrumental variable estimates.

The corporate governance literature in the West has adopted a number of alternative measures of enterprise performance: accounting profits (e.g., Demsetz and Lehn (1985), Holderness and Sheehan (1988), and Prowse (1992)), abnormal stock price increases (e.g., Wruck (1989) and Smith (1996)), and Tobin's Q (e.g., Morck *et al* (1988) and McConnell and Servaes (1990)). The literature on private versus state ownership has tended to use accounting measures of profits and revenues, due to the unavailability of stock prices for state-owned firms (e.g., Boardman and Vining (1989) and Megginson *et al* (1994)). Empirical analyses of the comparative performance of producer cooperatives versus conventional firms has focused on technical efficiency, usually represented by disembodied total factor productivity (see the summary in Bonin *et al* (1993)). Finally, Bhagat and Black (1997) have recently included a variety of firm-value and accounting measures, concluding that some results are non-robust across the alternative performance variables, although the focus of their paper is not the effects of ownership structure, but rather of board composition.

Applying such performance indicators in the transition context, however, faces problems of both measurability and appropriateness. No reliable measures of firm value are available in the post-socialist countries, where stock markets are just beginning to operate. Similarly, the arbitrariness of socialist prices and depreciation rules implies that historical valuations of capital are meaningless, rendering it impossible to estimate production

[9] Indeed, the changes over 1991 to 1994 are at an order of magnitude seldom if ever seen in most "normal" situations: for instance, the mean change in real output for the firms in our sample is -52.2 percent, the mean change in nominal output is 16585.7 percent (the difference due to the near-hyperinflation in Russia over this period), and the mean change in employment is -25.2 percent.

functions. Measures of value-added are further contaminated by problems in valuing inventories accumulated over periods of rapidly changing relative prices. Western accounting systems are poorly developed and inconsistently applied, and reported profits are unreliable in the extreme.[10]

The approach adopted in this paper, therefore, is to use average labor productivity, the sales-employment ratio in 1994, as a proxy for firm performance. Consistent with conventional studies of the determinants of firm productivity, I examine the impact of ownership structure on the level of productivity in a cross-section of firms, rather than on productivity change. Change is very hard to measure in Russia because of hyperinflation, massive changes in relative prices, poor and inconsistent accounting practices, and general noisiness in the data. In order to control for systematic variation in labor productivity due to a variety of causes (for instance, different capital-labor ratios), however, I include a measure of past (pre-privatization) labor productivity as an independent variable. In all specifications, including those reported below, the coefficient on this variable is estimated to be much less than one (about .4), with a standard error suggesting that the difference between the coefficient and unity is highly statistically significant (in all cases, $p<.001$). Thus, the data appear to reject the specification of the dependent variable as the change rather than the level of labor productivity.[11]

The impact of ownership on labor productivity may of course work through several channels, including actions to enhance efficiency by reducing input waste, to increase sales by improving output quality, and to augment the quantity and quality of the capital stock and improve the technology through new investment. All of these channels are likely to be relevant, and the analysis does not distinguish them. If new owners have made well-chosen investments that have increased labor productivity in some firms, then this is a positive development that should be taken into account. If they have improved the quality or variety of the firm's products, enabling them to raise either the quantity of their sales or the price they are able to charge, then again this should be taken into account. The reduced form

[10] A currently popular saying in Russia is that "the good manager will achieve zero profits," the implication being that it would be foolish to report profits since they would then be lost as tax payments or as dividends to the state or outside owners.

[11] As discussed below, an alternative interpretation of the equation with lagged labor productivity on the right-hand side is that the dependent variable represents an indicator of restructuring, where more restructuring means that the firm has been relatively successful in reducing employment while keeping output up, or in raising output while keeping

approach used in this paper seeks to measure the overall impact of alternative ownership forms on firm performance, not to identify the various channels through which such an impact takes place.

Although it would be desirable to identify those specific channels, and to estimate a structural model of the determinants of productivity, it does not appear to be possible to distinguish among them in the Russian context. Investment is hard to measure under Russian accounting practices (and indeed, it cannot be reliably inferred from the data set used in this paper).[12] Nor, as discussed above, would it be straightforward to measure the change in real output, to distinguish increases in productive efficiency from other reasons for an increase in revenue. Because of the difficulty of valuing inventories, output is measured less reliably than sales, and price deflators are notoriously unreliable. However, I have also estimated the equations reported below with the dependent variable deflated to 1990 RBS using highly disaggregated PPIs; the results differed little. As described below, the results are also robust to a variety of other alternative specifications of the estimating equation.

Table 5 shows summary statistics for the variables used to construct labor productivity in 1990 and 1994. It is evident that employment has dropped dramatically, on average, while nominal sales have skyrocketed. Consistent with the well-known decline in aggregate industrial output, the nominal sales increase is masking real declines in most firms, although the extent of decline depends on the deflator used. In any event, most of the firms in the sample show a decline in real productivity, but 10-15 percent of them actually show an increase. Given the enormous recession in the Russian economy and the tendency in any firm for employment to adjust less than equiproportionately to output changes, the specification of labor productivity as the dependent variable with lagged pre-reform labor productivity as a right-hand side control may be interpreted as reflecting the degree of success of new owners in maintaining sales in spite of the widespread downturn and in cutting employment despite the overall tendency to hoard labor and to continue the tradition of job security in Russia.

i Depe64 6 1e W n

the same four specifications as in table 6, but where the ownership shares are substituted by their fitted values based on the selection equations. Regarding specification 1, the impact of private shareholding appears to be quite robust: the coefficients are slightly higher in the IV estimation than in the OLS versions, suggesting the possibility of a slight negative selection bias in the privatization process, but the differences are trivial.

Table 8: Impact of Ownership on Productivity, IV Estimates

Beginning with specification 2, however, where private owners are disaggregated into managers, workers, and outside investors, the IV estimates are quite different from the OLS. By contrast with the OLS results, the IV estimate of the effects of managers and workers is not significantly different from zero, but the estimated impact of outside ownership (of all types) is positive, large, and highly significant. Specification 3 also differs in the IV, compared to the OLS estimation. The IV results show a positive estimated impact of ownership by institutional investors, while individual outside ownership becomes statistically insignificant. When institutional investors are disaggregated, in specification 4, I find evidence of a positive impact of investment funds, while the negative coefficient on foreign ownership disappears (although the coefficient is imprecisely estimated).

These results appear to be quite robust to changes in specification. Among other things, adding a set of "firm quality" covariates to the equation has only trivial effects on the coefficient and standard error estimates. Specifying the dependent variable as real labor productivity (with sales deflated by a highly disaggregated producer price index), or as productivity per hour (with an estimate of total hours of work rather than the number of employees in the denominator), also has little impact on the results. The IV results therefore provide further support for the hypothesis that private ownership is working in Russia, but when different types of private owners are permitted to have different effects, several of the implications of the OLS estimates are reversed. In the IV results, the overall positive evaluation of private ownership stems from certain types of outside investors. The fact that the impact of ownership by outsiders and institutional investors is enhanced when we examine IV rather than OLS results suggests that the privatization process may have contained some negative bias, such that outsiders were less likely to be able to claim shares in firms in which the opportunities for restructuring and productivity improvements were great.

Finally, I again investigated the possibility that the linear specifications may be obscuring non-monotonic relationships between enterprise performance and aspects of ownership structure. To test for such possibilities, models were estimated in which the

impact of the instrumented shareholding and concentration variables was permitted to vary in a piecewise linear fashion (following Morck *et al* (1988), although they do not treat ownership structure as endogenous). As was also true in the OLS models, there was no systematic evidence of such non-monotonicities for any of the ownership variables.

6. Conclusion

A common thread in most accounts of the emerging system of corporate governance in Russia is the low level of participation by private outside owners. It is well-known that the State Privatization Program, although based on a free distribution of vouchers to every citizen, in fact granted such enormous preferences to enterprise employees that extremely high levels of insider ownership were the inevitable result. Although it has received much less attention, the other main privatization process in Russia - lease buyouts - facilitated still greater transfers to insiders, as the paper has shown. Moreover, the state has retained considerable shareholdings, both by not privatizing about 30 percent of enterprises, and by holding back large stakes in putatively privatized ones. For the small proportion of shares remaining for potential acquisition by private outsiders, the design of the program encouraged maximal dispersion of ownership, especially by the legislative limits on the ability of the new Voucher Investment Funds to acquire stakes in excess of 10 percent in any one company. Thus, overall, it would appear that insiders and the state dominate Russian enterprises and that outsider influence should be close to nil.

This story has significant truth, and this paper has presented evidence to substantiate much of it. It has documented the large fraction of shares that Russian privatization has transferred to insiders, including both managers and workers, and analyzed the holdings of the state in some detail. However, the paper has also shown that the situation may not be quite so bleak as is often claimed. For a variety of reasons, outside shareholders may wield clout in a significant fraction of Russian companies. In particular, the paper has developed several considerations that enhance the picture of the potential strength of outside investors: the unequal distribution of outsiders across companies that gives them much more than their average stakes in a significant fraction of firms, the tendency of outsiders to invest in somewhat larger companies that raises the proportion of the capital stock they may influence, the important role played by non-voting shares that may limit the control rights of inside and state shareholders, the apparent lack of enforcement of the 10 percent limit on fund ownership in any one company, the propensity of institutional investors to acquire shares in

companies with low managerial ownership, and, as a result of all of these factors, the emergence of concentrated blocks of shares, held mostly by institutional investors, that provide both the means and the motive for outside "control over insider control" (to paraphrase Aoki (1995)).

Among outsiders, the paper has shown that large blockholders tend to be investment funds and domestic firms, while the role of banks and foreign investors is minimal. Similarly to large corporations in the U.S. (Shleifer and Vishny (1986) and Zwiebel (1995)), firms with blockholders tend to have only a single blockholder. The main difference is that many Russian firms have no blockholder whatsoever. Yet it turns out that a non-trivial fraction of them do have one.

The paper has also presented evidence that the different methods of privatization applied in Russia are partially responsible for the heterogeneity of ownership structure. Unlike previous studies of Russian ownership, the data includes enterprises remaining only partially privatized, those still 100 percent state-owned (as of July 1994), and those that had been privatized in the earlier "lease-buyout" program. The data show that the choice of privatization method carried significant implications for the extent of privatization, the relative importance of different types of private owners, and the degree of concentration among outside investors.

The approach to organizing the ownership data in the paper has pursued the dual themes of "identity" and "concentration." Although the zero-transaction cost world of Coase (1960), Demsetz (1983), and Demsetz and Lehn (1985) may contain no systematic relationship between corporate performance and the distribution of ownership, the situation in Russia appears to be quite different. Due to the lack of development of financial markets, institutions of contract, and the legal system, there are enormous costs to monitoring, measuring, and enforcing contracts in Russia and other transition economies. Moreover, the poor functioning of competitive markets, both factor and product, and of other corporate governance institutions, such as credit market monitoring, implies that Russia has few of the other disciplinary devices common in market economies. It is in this context that widespread asset stripping has ensued, following the breakdown of state control, in Russian enterprises. Without active monitoring of owners - whether insider or outsider - little stands in the way of a continuation of this largely destructive process.

I have argued that the new ownership structure is critical for another reason: the manifest need for large-scale restructuring of enterprises to improve performance where

possible and to liquidate where it is not. This restructuring process is not only a fascinating economic phenomenon to observe and study, but it is also a critical issue for policy in the transition context because of its many externalities: the extent and success of restructuring has welfare consequences both inside the old enterprise sector and outside in the *de novo* firms. As long as the old enterprises account for a large fraction of the economy, their performance will affect the employment and career prospects for workers, the investment opportunities for savers, the quantity and quality of goods for consumers, and the health of state finances for taxpayers. Furthermore, the growth of the new private sector depends to a significant extent on assets, including structures and equipment as well as human capital, that are bottled up in state and former state companies, until released by restructuring. This is another set of reasons, in addition to the high level of transaction costs, the poor functioning of competitive markets, and the disequilibrium situation in Russia, why it would be inappropriate to treat non-value-maximizing behaviour by owners or managers as mere on-the-job consumption, as utility maximization without any normative consequences.

A further motivation for the paper has been that the fact that restructuring is needed on such a large scale in Russia suggests that, despite the noisiness of the environment and of the data, the researcher may be able to observe an impact from ownership structure on enterprise performance of a magnitude much larger than those detectable in stable market economies. Although it is of course quite early to investigate the ownership-performance relationship in Russia, the issue is sufficiently important and interesting to merit attention. Indeed, the paper has shown evidence, in simple OLS specifications, of systematic effects of private ownership on labor productivity. The OLS results indicate that, among private owners, managers have the most consistently positive and statistically significant impact on performance, together with worker and individual outside ownership. Other types of private owners, including worker-owners and types of outside investors except for investment funds, do not appear to lead to performance superior to that under state ownership, nor do the OLS results suggest any implication that concentration of outside ownership has a positive effect on performance. These results do not appear to arise from a linear specification that does not permit non-monotonicities in the relationship between enterprise performance and ownership concentration.

The paper also relies on the investigation of the determinants of the post-privatization corporate ownership structure in Russia reported in Earle and Estrin (1997). That study found evidence that characteristics of the firm likely to raise its relative attractiveness to

certain types of owners, compared to others, do remove a substantial proportion of the variation in ownership structure, both the distribution of shares across different types of owners and the extent of concentration of outside ownership. Based on the finding that privatization method carries large implications for ownership structure, I have argued that this variable and other determinants, measured prior to privatization, may be suitable instruments for ownership structure.

The final set of findings concern the results from estimating the performance-ownership relationship using those instrumental variables. Consistent with the OLS estimates, private share ownership appears to be robustly positive and significant, if sometimes small in magnitude. The findings for managerial, worker, and individual shareholdings, however, are not robust; instead, they vanish in the IV estimates. However, the IV results show much clearer evidence of institutional ownership on performance, and consistently larger effects of outside ownership concentration, relative to the OLS estimates. This result provides support for the contention that the Russian privatization process was systematically biased against outside investors and that it is critical to take such selection effects into account when evaluating the impact of ownership structure on enterprise performance.

References

Aghion, P., and O.J. Blanchard, “On Privatization Methods in Eastern Europe and Their Implications,” photocopy, April 4, 1996.

Akamatsu, N., “Enterprise Governance and Investment Funds in Russian Privatization,” in Aoki and Kim (editors), 1995.

Aoki, M., “Controlling Insider Control: Issues of Corporate Governance in Transition Economies,” in Aoki and Kim (editors), 1995.

Aoki, M., and H.K. Kim (editors), Corporate Governance in Transitional Economies: Insider Control and the Role of Banks, The World Bank, Washington, D.C., 1995.

Arrow, K.J., *et al*, Joint Statement of Russian and American Economists, Nezamisimaya Gazeta, July 1, 1996, summarized in M.D. Intriligator, “A New Economic Policy for Russia,” Economics of Transition, Volume 5, No. 1, 1997.

Barberis, N., M. Boycko, A. Shleifer, and N. Tsukanova, “How Does Privatization Work? Evidence from the Russian Shops,” Journal of Political Economy, Vol. 104, pp. 764-90, August 1996.

Barclay, M.J., and C.G. Holderness, "Private Benefits from Control of Public Corporations," Journal of Financial Economics 25, 371-397, 1989.

Berle, A., and G. Means, The Modern Corporation and Private Property, MacMillan, New York, 1932.

Berglof, E., "Corporate Governance in Transition Economies: The Theory and Its Policy Implications," in Aoki and Kim (editors), 1995.

Bhagat, S., and B. Black, “Do Independent Directors Matter?” draft, 1997.

Blasi, J.R., “Russian Privatization: Ownership, Governance, and Restructuring,” Rutgers University School of Management and Labor Relations, unpublished manuscript, 1994.

Blasi, J.R., “Russian Enterprises After Privatization,” paper presented at the Association for Comparative Economic Studies Meeting, San Francisco, January 1995.

Blasi, J.R., "Corporate Ownership and Corporate Governance in the Russian Federation," Research Report of the Federal Commission on the Capital Market, May 1996.

Blasi, J.R., M. Kroumova, and D. Kruse, Kremlin Capitalism: Privatizing the Russian Economy, Cornell University Press, Ithaca, 1997.

Blasi, J.R., and D.L. Kruse, The New Owners, HarperCollins, 1991.

Blasi, J.R., and A. Shleifer, "Corporate Governance in Russia: An Initial Look," in Frydman,

Gray, and Rapaczynski (editors), 1996.

Boardman, A., and A. Vining, "Ownership and Performance in Competitive Environment: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises," Journal of Law and Economics, Vol. 32, pp. 1-33, 1989.

Bonin, J., D. Jones, and L. Putterman, "Theoretical and Empirical Studies of Producer Cooperatives: Will Ever the Twain Meet?" Journal of Economic Literature, September 1993.

Boycko, M., A. Shleifer, and R. Vishny, Privatizing Russia, MIT Press, Cambridge, 1995.

Coffee, J., "Liquidity Versus Control: The Institutional Investor as Corporate Monitor," Columbia Law Review,Vol. 91, 1991.

Commander, S., S. Dhar, and R. Yemtsov, "How Russian Firms Make Their Wage and Employment Decisions," in Commander *et al* (editors), 1996.

Commander, S., Q. Fan, and M. Schaffer (editors), Enterprise Restructuring and Economic Policy in Russia, World Bank - Economic Development Institute, Washington, D.C., 1996.

Cubbin, J., and D. Leech, "The Effect of Shareholding Dispersion on the Degree of Control in British Companies: Theory and Measurement," Economic Journal, Vol. 93, June 1983.

Demsetz, H., Ownership, Control, and the Firm, Basil Blackwell, Oxford, 1988.

Demsetz, H., and K. Lehn, "The Structure of Corporate Ownership: Causes and Consequences," Journal of Political Economy, vol. 93, no. 6, 1985.

Dittus, P., and S. Prowse, "Corporate Control in Central Europe and Russia: Should Banks Own Shares?" in Frydman *et al* (editors), 1996a.

Earle, J.S., and S. Estrin, "Employee Ownership in Transition," CISAC Working Paper, 1995 (also published in Frydman *et al* (editors), 1996a).

Earle, J.S., and S. Estrin, "Privatization versus Competition: Changing the Behaviour of Russian Enterprises," CEP Working Paper no. 316, 1996b.

Earle, J.S., and S. Estrin, "After Voucher Privatization: The Structure of Ownership in Russian Manufacturing Industry," CEPR Discussion Paper, 1997.

Earle, J.S., S. Estrin, and L. Leshchenko, "Ownership Structures, Patterns of Control, and Enterprise Behaviour in Russia," in Commander *et al*, 1996.

Earle, J.S., R. Frydman, and A. Rapaczynski (editors), Privatization in the Transition to a Market Economy, Pinter Publishers and St. Martin's Press, London and New York, 1993.

Earle, J.S., and D. Sapatoru, "Incentive Contracts, Corporate Governance, and Privatization Funds in Romania," Atlantic Economic Journal,Vol. 22, No. 2, June 1994.

Fernandez, R., and D. Rodrik, “Resistance to Reform: Status-Quo Bias in the Presence of Individual-Specific Uncertainty,” American Economic Review, Vol. 81, No. 5, December 1991.

Frydman, R., C. Gray, and A. Rapaczynski (editors), Corporate Governance in Central Europe and Russia. Volume 1: Banks, Funds, and Foreign Investors, CEU Press, Budapest, 1996a.

Frydman, R., C. Gray, and A. Rapaczynski (editors), Corporate Governance in Central Europe and Russia. Volume 2: Insiders and the State, CEU Press, Budapest, 1996b.

Frydman, R., E. Phelps, A. Rapaczynski, and A. Shleifer, "Needed Mechanisms of Corporate Governance and Finance in Eastern Europe," Economics of Transition 1(2), 1993.

Frydman, R., and A. Rapaczynski, Privatization in Eastern Europe: Is the State Withering Away?, CEU Press, 1994.

Frydman, R., A. Rapaczynski, J.S. Earle *et al*, The Privatization Process in Russia, Ukraine, and the Baltic States, CEU Press, Budapest, 1993.

Goskomstat, Russia in Figures, 1996.

Grossman, S.J., and O.D. Hart, “The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration,” Journal of Political Economy, Vol. 94, no. 4, 1986.

Grossman, S.J., and O.D. Hart, "One Share-One Vote and the Market for Corporate Control," Journal of Financial Economics, Vol. 20, pp. 175-202, 1988.

Harris, M., and A. Raviv, "Corporate Governance: Voting Rights and Majority Rules," Journal of Financial Economics, Vol. 20, pp. 203-35, 1988.

Hansmann, H., “When Does Worker Ownership Work? ESOPs, Law Firms, Codetermination, and Economic Democracy,” Yale Law Journal, Vol. 99, pp. 1749-1816, 1990.

Holderness, C., and D. Sheehan, “The Role of Majority Shareholders in Publicly Held Corporations,” Journal of Financial Economics, Vol. 20, pp. 317-346, 1988.

Intriligator, M.D., “Privatization in Russia Has Led to Criminalisation”, Australian Economic Review, No. 106, pp. 4-14, April-June, 1994.

Intriligator, M.D., “What Russia Could Learn from China in the Transition to a Market Economy,” manuscript, February 1997.

Jensen, M., and W. Meckling, "Theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure," Journal of Financial Economics, Vol. 11, pp. 5-50, 1976.

Kaplan, S., “The Effects of Management Buyouts on Operating Performance and Value,” Journal of Financial Economics, Vol. 24, pp. 217-254, 1989.

Lee, U.J., “Appendix: The World Bank Survey of Industrial Enterprises,” in Commander *et al* (editors), 1996.

McConnell, J.J., and H. Servaes, “Additional Evidence on Equity Ownership and Corporate Value,” Journal of Financial Economics, Vol. 27, pp. 595-612, 1990.

McFaul, M., “State Power, Institutional Change, and the Politics of Privatization in Russia,” World Politics, Vol. 47, No. 2, January 1995.

McFaul, M., “The Allocation of Property Rights in Russia: The First Round,” in Communist and Post-Communist Studies, Vol. 29, No. 3, 1996.

Megginson, W.L., R.C. Nash, and M. Van Randenborgh, "The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis," Journal of Finance, Vol. XLIX, No. 2, pp. 403-452, June 1994.

Morck, R., Shleifer, A., and R.W. Vishny, "Management Ownership and Market Valuation: An Empirical Analysis," Journal of Financial Economics, Vol. 20, pp. 293-315, 1988.

Pistor, K., “Privatization and Corporate Governance in Russia: An Empirical Study,” in McFaul and Perlmutter (editors), 1994.

Pistor, K., “Company Law and Corporate Governance in Russia,” undated photocopy.

Pistor, K., and J. Turkewitz, “Coping with Hydra - State Ownership After Privatization,” in Frydman, Gray, and Rapaczynski (editors), 1996.

Pound, J., "Beyond Takeovers: Politics Comes to Corporate Control," Harvard Business Review, March-April 1992.

Prowse, S., “The Structure of Corporate Ownership in Japan,” Journal of Finance, vol. 47, no. 3, July 1992.

Radygin, A., “The Russian Model of Mass Privatization: Governmental Policy and First Results,” in McFaul and Perlmutter (editors), 1994.

Radygin, A., “Privatization in Russia: Hard Choice, First Results, New Targets,” Institute for Economy in Transition, unpublished manuscript, Institute for Economy in Transition, Moscow, 1996.

Richter, A., and M.E. Schaffer, “The Performance of De Novo Private Firms in Russian Manufacturing,” in Commander *et al* (editors), 1996.

Rosen, S., “Contracts and the Market for Executives,” NBER Working Paper No. 3542, 1990.

Shleifer, A., and D. Vasiliev, “Management Ownership and Russian Privatization,” in Frydman *et al* (editors), 1996b.

Shleifer, A., and R.W. Vishny, “Large Shareholders and Corporate Control,” Journal of Political Economy, Vol. 94, No. 3, 1986.

Shleifer, A., and R. W. Vishny, “Politicians and Firms,” Quarterly Journal of Economics, Vol. CIX, No. 4, November 1994.

Shleifer, A., and R. W. Vishny, "A Survey of Corporate Governance," Harvard Institute of Economic Research Discussion Paper Number 1741, October 1995.

Short, H., “Ownership, Control, Financial Structure and the Performance of Firms,” Journal of Economic Surveys Vol. 8, No. 3, 1994.

Smith, A.J., “Corporate Ownership Structure and Performance: The Case of Management Buyouts,” Journal of Financial Economics, Vol. 27, pp. 143-164, 1990.

Smith, M.P., “Shareholder Activism by Institutional Investors: Evidence from CALPERS,” Journal of Finance, vol. 51, 1996.

Stulz, R., “Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control,” Journal of Financial Economics, Vol. 20, pp. 25-54, 1988.

Webster, L., J. Franz, I. Artimov, and H. Wackman, “Newly Privatized Russian Enterprises,” World Bank Technical Paper 241, Washington, D.C., 1994.

Wruck, K.H., “Equity Ownership Concentration and Firm Value: Evidence from Private Equity Financings,” Journal of Financial Economics, Vol. 23, pp. 3-28, 1989.

Zwiebel, J., "Block Investment and Partial Benefits of Corporate Control," Review of Economic Studies Vol. 62, pp. 161-185, 1995.

Table 1:
Composition of Sample and Population

	Sample Survey		Goskomstat Registry
	Count	Percent	Percent
Industry Categories			
FUEL & ENERGY	24	6.3	2.0
METALS & CHEMICALS	45	11.7	5.0
HEAVY MACHINERY	57	14.9	8.0
LIGHT MACHINERY	110	28.7	17.0
WOOD & CONSTR. MATERIALS	47	12.3	21.0
CONSUMER GOODS	81	21.1	40.0
OTHER	19	5.0	9.0
Region Categories			
NORTH	54	14.1	13.0
VOLGA-VYATKA	22	5.7	6.0
POVOLZHSKI	51	13.3	11.0
NORTH CAUCASUS	35	9.1	10.0
URALS	60	15.7	14.0
WSIBERIA	49	12.8	13.0
ESIBERIA	27	7.0	8.0
MOSCOW	44	11.5	9.0
CENTER	41	10.7	18.0
TOTAL	383	100.0	100.0
Size Categories			
(1991 Employment)			
< 200	51	15.2	44.0
200-1,000	99	29.6	37.0
1,000-10,000	161	48.1	17.0
> 10,000	24	7.2	2.0
TOTAL	335	100.0	100.0

Note: Industry groups were constructed on the basis of Goskomstat categories: “Metals & Chemicals” includes ferrous and nonferrous metallurgy; “Heavy Machinery” includes electrotechnical industry, defense industry, ship-building industry and heavy machine building; “Light Machinery” includes machine tools, computers, automobiles, agricultural machinery, radio industry, communication and electronics, metal constructions and machinery repair; “Wood & Construction Materials” includes lumber, wood working industry, and construction materials; “Consumer Goods” includes textiles, clothing industry, food processing and meat and milk industry. Regions use the Goskomstat grouping except that Moscow is distinguished, Far East is included in “East Siberia” and both Northern and North-Western regions are included in “North”.

Source: Earle and Estrin (1997). Column 1 and 2 are authors’ calculations from sample. Column 3 is from Lee (1996), based on Goskomstat registry of 10,582 industrial firms in Russia in 1991.

Table 2:
Ownership Structure by Method of Privatization

Shareholding (percent of all shares)	Method of Privatization				All SPP	Privatized Firms	All Old Firms
	Option 1	Option 2	Option 3	Lease-buyout			
TOTAL STATE	25.0	17.9	8.3	1.5	20.4	15.0	38.0
TOTAL PRIVATE	75.0	82.1	91.7	98.6	79.7	85.03	62.0
-All Insiders	54.1	57.3	68.4	90.6	56.3	66.1	48.2
--Workers	41.8	38.9	41.7	61.6	40.1	46.1	33.5
--Managers	12.3	18.3	26.8	28.7	16.2	19.7	14.3
-All Outsiders	20.9	24.8	23.2	8.0	23.3	19.0	13.8
--Individuals	4.2	8.4	13.3	3.7	6.9	6.0	4.3
--Institutions	16.3	16.0	9.9	4.2	16.0	12.6	9.1
---Banks	.2	1.7	.0	.7	1.1	1.0	.7
---Investment Funds	7.9	4.4	5.5	1.7	5.8	4.6	3.3
---Other Domestic Firms	7.5	9.4	4.4	1.8	8.6	6.6	4.8
---Foreign Investors	.7	.6	.0	.0	.6	.4	.3
Valid N	61	102	3	66	166	232	319

Note: Sample includes all old firms. “Privatized firms” refers to all firms that have undergone at (at least partial) privatization. “Options 1, 2, and 3" refer to enterprises included in the State Privatization Program (“All SPP”), while “Lease-buyout” refers to firms whose assets were bought by lessees.

Table 3:
Ownership Structure from Several Perspectives

Shareholding in all old firms (percent)	All shares(un-weighted)	Voting shares(un-weighted)	Voting shares (weighted)	When given voting shares > 0
TOTAL STATE	38.0	37.6	44.2	58.2
TOTAL PRIVATE	62.0	62.4	55.8	85.4
-All Insiders	48.2	47.0	36.4	66.0
--Workers	33.5	32.4	26.1	51.5
--Managers	14.3	14.2	9.7	23.1
-All Outsiders	13.8	15.5	19.4	32.7
--Individuals	4.3	4.7	5.9	13.3
--Institutions	9.1	10.4	13.3	28.8
---Banks	.7	.7	.5	13.3
---Investment Funds	3.3	4.0	8.4	19.2
---Other Domestic Firms	4.8	5.3	3.8	22.9
---Foreign Investors	.3	.4	.7	22.3
Valid N	319			

Note: The category “all old firms” includes enterprises that were partially or fully privatized and enterprises that had not begun privatization and were still held 100 percent by state. 1994 employment was used to weight firms in the columns labeled “weighted”. The last column shows the unweighted mean of voting shareholdings for firms where the shareholdings of the given type are strictly positive.

Table 4A:
Dispersion of Types of Owners Across Firms

Voting shareholding (percent)	Percent of firms in which given category has greater than:					
	>0	>10	>20	>30	>40	>50
TOTAL STATE	64.6	60.2	48.9	39.5	34.8	32.3
TOTAL PRIVATE	73.0	73.0	72.4	71.8	70.5	67.7
-All Insiders	71.2	69.6	66.8	62.4	55.5	50.2
--Workers	62.9	60.0	54.6	46.7	39.4	32.4
--Managers	61.3	34.6	20.3	13.7	11.1	8.3
-All Outsiders	47.3	38.9	31.3	21.9	14.7	7.8
--Individuals	35.4	13.1	6.7	3.2	1.3	1.0
--Institutions	36.0	29.0	22.6	14.3	8.0	3.8
---Banks	5.4	2.2	1.3	.3	.0	.0
---Investment Funds	20.7	14.3	8.3	4.8	2.2	.0
---Other Domestic Firms	23.2	15.0	10.5	5.7	3.5	2.5
---Foreign Investors	1.6	1.3	1.0	.3	.0	.0

Note: The table shows the percent of firms in which the ownership category has > 0, > 10, > 20, > 30, > 40, and > 50 percent, respectively.

Table 4B:
Ownership Structure in Firms with Strong and Weak Institutional Ownership

Voting shareholding (percent)	Strong institutional ownership	Weak institutional ownership
TOTAL STATE	14.6	45.5
TOTAL PRIVATE	85.4	54.5
-All Insiders	41.2	48.8
--Workers	31.1	32.9
--Managers	10.1	15.3
-All Outsiders	44.3	5.7
--Individuals	5.8	4.3
--Institutions	38.5	1.4
---Banks	2.7	.1
---Investment Funds	14.2	.7
---Other Domestic Firms	20.2	.6
---Foreign investors	1.5	.0
Valid N	76	238

Note: The table compares the ownership structure of firms where institutional investors have at least 20 percent of the shares (“strong institutional ownership”) with those where institutional investors have less than 20 percent (“weak institutional ownership”).

Table 5:
Summary Statistics for Performance Indicators

	SALES90	SALES94	EMP90	EMP94	log(SALES90/ EMP90)	log(SALES94/ EMP94)
Mean	215.6	32609.0	3277.7	2218.2	-3.9	1.6
S.D.	1694.5	159076.4	7431.3	6687.7	1.0	1.2
Valid N	209	281	335	335	197	271

Note: SALES90 and SALES94 denote nominal sales in 1990 and 1994, respectively. EMP90 and EMP94 denote employment in 1990 and 1994, respectively.

Table 6
Impact of Ownership on Productivity
OLS Regression Estimates

Dependent variable : Log of 1994 Productivity (Sales/Employment)

	Specification 1			Specification 2			Specification 3			Specification 4		
Independent variables	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.
Voting shareholding												
Private	0.490	0.207	0.019									
Workers				0.416	0.229	0.072	0.386	0.227	0.091	0.389	0.228	0.090
Managers				0.684	0.285	0.018	0.761	0.284	0.008	0.790	0.279	0.005
Outsiders				0.525	0.387	0.177						
Individuals							1.450	0.622	0.021	1.332	0.594	0.027
Institutions							0.307	0.414	0.460			
Banks										-0.248	1.335	0.853
Investment funds										0.982	0.632	0.123
Domestic firms										0.248	0.590	0.675
Foreign investors										-2.431	1.132	0.034
Lagged dependent variable	0.442	0.101	0.000	0.439	0.102	0.000	0.447	0.102	0.000	0.449	0.102	0.000
Adj. R-sq.		0.326			0.319			0.335			0.330	
N		157			154			150			150	

Note: Other controls included dummies representing 7 industries, 3 size categories and 3 regions. Standard errors calculated using heteroskedasticity-consistent variance-covariance matrix.

Table 7:
Summary Statistics for Determinants of Ownership Structure

	Variable	Mean	Std Dev	Minimum	Maximum	N
exports to West/revenue in 1990 (%)	EXPW90	1.40	5.83	.00	70.00	309
payment problem (dummy)	PAYPROB	.59	.49	.00	1.00	318
subordinated to GKOP (dummy)	MIC	.16	.37	.00	1.00	380
price controls (dummy)	PRICONT	.39	.49	.00	1.00	361
government support in 1992 (dummy)	GOVSUP2	.26	.44	.00	1.00	342
old union membership (%)	OLDUNION	77.56	38.11	.00	100.00	278
strike or strike threat (dummy)	STR_THR	.18	.38	.00	1.00	382
old equipment, >15yrs (%)	OLDEQUIP	35.08	30.20	.00	100.00	311
capital/total costs in 1990 (%)	CAPCOSTS	7.24	7.39	.00	47.50	212
labor/total costs in 1990 (%)	LABCOSTS	28.60	18.53	.14	99.93	211
social benefit types (number)	SOCBENNO	5.46	2.09	.00	8.00	374
SPP - option 1 (dummy)	OPTION1	.21	.41	.00	1.00	376
SPP - option 2 (dummy)	OPTION2	.34	.48	.00	1.00	376
SPP - option 3 (dummy)	OPTION3	.01	.09	.00	1.00	376
lease-buyout (dummy)	LEASEBO	.21	.41	.00	1.00	376

Table 8
Impact of Shareholding on Productivity
IV Regression Estimates

Dependent variable : Log of 1994 Productivity (Sales/Employment)

	Specification 1			Specification 2			Specification 3			Specification 4		
Independent variables	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.	Coeff.	S.E.	Signif.
Voting shareholding												
Private	0.615	0.219	0.006									
Workers				-0.204	0.623	0.744	0.042	0.622	0.947	-0.350	0.724	0.630
Managers				1.047	1.165	0.370	0.432	1.155	0.709	0.662	1.250	0.597
Outsiders				2.280	0.598	0.000						
Individuals							3.628	2.509	0.151	6.278	3.155	0.049
Institutions							1.695	0.915	0.066			
Banks										6.430	5.471	0.242
Investment funds										3.758	2.263	0.099
Domestic firms										-1.618	2.685	0.548
Foreign investors										5.981	15.901	0.707
Lagged dependent variable	0.441	0.099	0.000	0.433	0.097	0.000	0.437	0.097	0.000	0.425	0.099	0.000
Adj. R-sq.		0.339			0.369			0.370			0.365	
N		157			154			150			150	

Note: Other controls: industries, size categories and regions. Instruments for ownership include those controls plus the variables listed in table 7. Standard errors calculated using heteroscedasticity-consistent variance-covariance matrix.