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Russian Firms in Transition: Champions, Challengers, and Chaff

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Abstract

This paper proposes a composite measure to evaluate a firm's survival potential. The composite measure is applied to 51 Russian firms located in Moscow, Volgograd, Rostov and Taganrog, utilizing data collected in 1995 from in-depth interviews with top-level managers of manufacturing, trade, and other organizations. Using a straight scale with equal weights for each element of the composite measure, the survey results suggest that more than three years after the initiation of the transition from plan to market in Russia, *champions* number fewer than one-in-fifty, *challengers* may account for less than 10%, and firms unlikely to survive the transition process, the *chaff*, represent 80-85%. Utilizing unequal weights, that is, weighting current profitability, export experience, foreign investment, monopoly power, and future financial and production strategies twice as much as the other elements in the composite measure, generates the outcome where 5 firms meet the criteria for *champion* (10%), 18 firms are *challengers* (35%), and 28 are *chaff* (55%). These results are somewhat more optimistic than estimates reported at the beginning of the Russian transition process that only one-in-ten firms would avoid bankruptcy.

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Efficiency gains frequently are cited as one of the main economic benefits associated with the transition from a centrally planned to a market economy (Boycko et. al 1994, Brada et. al 1990, Kennett & Lieberman 1992, van Brabant 1993). Most analysts estimate rather large efficiency gains because of the numerous sources of inefficiency in socialist economies. That is, in contrast to market economies where efficiency typically is associated with private property rights and competition, inefficiency in centrally planned economies stems from such systemic and policy factors as lack of private property rights, soft budget constraints, monopoly power, job rights, pricing distortions, taut planning, and the like (Bergson & Levine 1983, Berliner 1957 1976, Granick 1987, Gregory & Stuart 1990, Hewett 1988, Kornai 1980). Privatization, the transfer of ownership from the state to the nonstate sector, as well as the entry of new nonstate-owned organizations, is viewed as the primary mechanism for initiating efficiency gains during the transition process. While numerous studies support the positive correlation between privatization and increased efficiency (Galal et. al 1992, Hammond 1992, Harrell & Sohl 1993, Hutchinson 1991, Jones et. al 1991, Megginson et. al 1994, Ott & Hartley 1991), other studies suggest that privatization alone does little to promote efficiency (Caves 1990, Goodman & Lovemen 1991, Haskel & Szymanski 1993, McDonald 1993, Shirley & Nellis 1991, Vickers & Yarrow 1988). Studies examining the relationship between privatization and efficiency gains in transition economies are beginning to emerge (Ash & Hare 1994, Brada et. al 1994, Ernst et. al 1996, Estrin et. al 1995, Hersch et. al 1994, Lieberman & Nellis 1994, Rayner 1992, Roland &Verdier 1994).

Firm survival is a necessary condition for experiencing efficiency gains. However, firm survival is impeded by numerous barriers in transition economies. In the Russian economy, for example, adverse macroeconomic conditions, inadequate legal, transportation, communication, distribution and tax systems, as well as inadequate sources of financing for firm renovations reduce survival potential. Monopoly power exercised by firms and government organizations may preclude survival of some firms.

Moreover, select characteristics of the firm may impose barriers to survival: obsolete capital stock, excessive debt, and an inadequate assortment of production, for example. Finally, management characteristics may impede firm survival; that is, if top-level managers maintain a strong commitment to socialist ways, it is unlikely that the firm's revenues will cover costs in the transition or post-transition economy.

This paper examines characteristics that contribute to firm survival in the Russian transition economy. Survival is defined as at least two years of continuous operations where "profits" represent the main source of additional operating revenues.[1] The research hypothesis governing the analysis is that *factors influencing survival can be grouped into three categories*: characteristics of the market structure in which the firm operates, characteristics of the firm, and characteristics of the firm's top-level managers; and that *survival potential is positively correlated to the firm's performance with respect to a composite success measure incorporating these three categories.* The composite success measure developed to evaluate survival potential is based in part on factors cited in the literature (Alm & Sjoquist 1995, Boeva & Dolgopiatova 1994, Capelik & Slay 1996, Ickes & Ryterman 1992 1993, Krueger 1995, Pinto et. al 1993, Starodubrovskaya 1994, Tirole 1991, Torok 1996), and in part on results from in-depth interviews with top-level managers of Russian firms between 1992 and 1994 (Linz 1993, 1994, 1995a). Evaluating performance using a straight scale, firms satisfying at least 90% of the elements specified in the success measure are designated as *champions*; firms satisfying more than 70% of the specified elements are designated as *challengers*; firms satisfying fewer than 70% are expected to be blown away during the transition process and thus are designated as *chaff*.

Rather than attempting to establish the characteristics that enhance a firm's survival or

[1] In a world of unstable inflation, especially rapidly rising inflation, negotiating a contract price that accurately reflects price changes over the contract period (4-6 months, for example) is not always possible. Russian managers describe buyers unwilling to "accept" the possibility that input prices may increase by 50% to100%, thus the contract price needs to reflect this situation. In such a world, managers utilize "profits" from one contract to cover "losses" from another contract; their interpretation of "profits" involves financial sustainability in terms of working or operating capital rather than a net residual available for investment or dividends. I thank Morris Bornstein for suggesting the term "financial sustainability" to accurately capture the interpretation of profits that is used in this paper.

competitive position in the Russian transition economy, why not simply use the standard success criterion: profits? Aggregate data on the distribution of profits by sector, as well as the absence of profits, are provided annually by Goskomstat, the State Committee on Statistics (see Table 1). In addition to the rejoinder that firm-level rather than sector-level data are needed to evaluate firm survival potential, several responses to "why not profits?" come to mind. First, in the chaotic economic environment of the Russian transition economy, monthly inflation frequently surpassed double digits (Goskomstat 1995); new laws and regulations were published almost daily (Aslund 1995); firms faced dramatic reductions in demand when state orders (*goszakazy*) were eliminated and client enterprises failed to make payment (Krueger 1995, Ickes & Ryterman 1992); firms were legally and illegally selling scrap and other materials;[2] and the value of the ruble was rapidly and significantly depreciating (Krupp & Linz 1995). In such an environment, the standard measure of a firm's success, profits, while signaling revenues in excess of cost, may simply reflect temporary or windfall gains rather than the survival potential of the firm. Second, in the Russian transition economy, it is not possible to get accurate information on enterprise profits. The tax system penalizes firms: a rate of 60-80% typically is levied on revenues (Dolgopiatova 1995); in some instances, the rate is higher.[3] Faced with confiscatory rates often arbitrarily applied, firms have no incentive to accurately report their revenues or profits. Based on a survey of 151 firms conducted in the fall of 1993 and a survey of 12 firms conducted in the spring of 1994, Dolgopiatova (1995) concludes that less than 2% of Russian firms accurately document sales

[2]Articles describing the legal and illegal sales of scrap and other precious/strategic materials appear in nearly every issue of the weekly publications: *Delovvie Lyudi* and *Commersant* in 1992 and 1993, and in numerous articles in the *Wall Street Journal, Financial Times*, and the *Economist*.

[3] The tax and other mandatory contributions in 1995 included the following: (i) on revenues, firms paid VAT (20%) and in Moscow, a special tax (3%, later 1.5%); (ii) on the size of the wage fund, firms paid tax on personal income (12%), pension fund contributions (29%), fund for employment contributions (2%), fund for obligatory medical insurance (3.6%), fund for social protection (5.4%), transport tax (1%), and education tax (1%); (iii) on newly-acquired property, firms paid a property tax (1%); (iv) on profits, firms paid profits tax (35%). In addition, on value of capital stock, firms paid taxes for housing maintenance (1.5%) and road maintenance (2%). Firms also paid a waste tax (10%), a local community goals tax (1%), and a transport owners tax (flat rate fee per vehicle). Prior to 1996, if firms paid wages in an amount more than 6 times the Federal minimum, the "excess" wages were not deductible from sales revenues in the calculation of profits, and they were subject to the excess wage tax (35%). Discussions of abandoning the excess wage tax began only in August 1995; the excess wage tax was eliminated, effective 1 January 1996.

Table 1: Distribution of Profits in Russia, 1990-1994
(billion rubles, current prices)

	1990	1991	1992	1993	1994
Total profits	155.8	362.8	5622.8	40763.3	71279.5
of which					
Industry	79.3	221.3	4015.3	27159.5	47148.8
Agriculture	31.3	53.1	454.4	3185.1	167.1
Construction	10.7	23.2	249.1	3119.3	7962.8
Transportation/ communication	17.0	20.9	269.1	4056.7	9950.5
Trade	4.6	15.6	127.4	1174.9	1366.7

	1990	1992	1993	1994
Unprofitable Enterprises (% of total)				
Industry	7.0	7.2	7.8	22.5
Agriculture	2.8	14.7	10.0	51.7
Construction	7.2	7.6	5.9	16.2
Amount of losses (billion rubles)				
Industry	1.4	19.1	230.3	500.4
Agriculture	0.1	31.6	105.4	302.1
Construction	0.3	4.1	51.3	44.9

Source: Goskomstat, *Russia in Figures* (Moscow, 1995), p. 173.

revenues; one-third hide (do not document) up to 25% of their sales revenues, at least half hide between 25% and 50% of their sales revenues, and nearly one-in-five hide more than 50% of their sales revenues (Table 12-2, p. 244). Third, unusual accounting and pricing policies also make the Russian firm's measure of profits incompatible with traditional measures. Thus profit alone is not adequate either for evaluating successful performance or survival potential.

Why is it important to categorize Russian firms according to their survival potential? At the macro-level, knowing the survival potential of firms enables policy makers to roughly estimate current and future production and employment levels in different regions. Such information might conceivably guide investment allocation if policy makers continue to pursue centralized funding of capital renovation or defense conversion. In a world where investment resources are constrained, the ability to eliminate from consideration those firms who are unlikely to survive, the *chaff*, and those firms who are most likely survive regardless of government support, the *champions*, makes the allocation decision less troublesome. Equally important, information about the relative numbers of champions and chaff, overall and in particular regions, might guide policy makers in establishing the magnitude of future funding and/or the current disbursement of unemployment compensation and job re-training resources. At the micro-level, knowing the elements that contribute to survival in the Russian transition economy would enable enterprise managers to directly evaluate the costs associated with their firm achieving the highest survival potential: what are the financial and other resources required to become a champion? Where the cost is prohibitively high, that is, beyond current and prospective future resources, managers, depending upon the ownership structure of the firm, would be positioned either to suggest or to undertake alternative arrangements for the firm's assets.

Are there any *a priori* expectations about which firms would have the highest survival potential? Generic predictions regarding the kinds of firms that will survive include: firms that produce a good or service that has a stable demand;[4] firms producing goods with no close substitutes; firms with reliable

[4] Stable demand may be associated with (i) mass consumer goods, i.e., those purchased by households at all income levels, especially those good previously in short supply; (ii) inputs to firms producing mass consumer

suppliers of low cost, high quality inputs; firms with managers willing and able to adjust to changing economic conditions; and firms with sound financing. We would expect to find these firms in industries where capital intensity is low,[5] where capital is flexible (not product-specific), where reliance on electronic equipment is minimal,[6] and where export potential is greatest.[7] While these *a priori* expectations may guide the selection criteria for including a particular element in the survival potential measure, they are insufficient as guides either for policy makers or enterprise managers in investment or other resource allocation decisions.

This paper proposes a composite measure to evaluate a firm's survival potential. The composite measure is applied to 51 Russian firms located in Moscow, Volgograd, Rostov and Taganrog, utilizing data collected in 1995 from in-depth interviews with top-level managers of manufacturing, trade, and other organizations. Using a straight scale with equal weights for each element of the composite measure, the survey results suggest that more than three years after the initiation of the transition from plan to market in Russia, *champions* number fewer than one-in-fifty, *challengers* may account for less than 10%, and firms unlikely to survive the transition process, the *chaff*, represent 80-85%.[8] Utilizing unequal weights, that is, weighting current profitability, export experience, foreign investment,

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goods; and (iii) inputs to firms involved in distribution, a sector which was underdeveloped in the Soviet economy but critical to the smooth functioning of a market economy.

[5] For a more detailed discussion of the proportion of obsolete capital in most firms, see Berliner (1976), and Thornton & Linz (1989). In such a world, replacement/renovation costs would necessarily be lowest in firms where production requirements involve a small capital-to-output ratio.

[6] For a detailed discussion of the lack of computers in the workplace, see Thornton (1990). Recent descriptions of inability to profitably produce computers domestically provided by *Wall Street Journal* in article focusing on the closing of an IBM plant in Zelenograd (15 Febuary 1996).

[7] Exporting firms earn hard currency and thus are able to finance imports of necessary (high quality) inputs (machinery or materials). Exporting firms also have greatest prospects for receiving foreign investment or establishing a joint venture with a foreign firm. The benefits of such arrangements are described in Lawrence & Vlachoutsicos (1990).

[8] This category does not include firms that are owner-terminated as a rational response to the existing tax system. That is, given the one year tax holiday on property/equipment, for many small service-related private firms, profitability considerations dictate termination of the company within the year and establishment of a new company which then purchases the used (less than year-old) equipment at a greatly reduced price.

monopoly position, and future financial and production strategies twice as much as the other elements in the composite measure, generates the outcome where 5 firms meet the criteria for *champion* (10%), 18 firms are *challengers* (35%), and 28 are *chaff* (55%). These results are somewhat more optimistic than estimates reported at the beginning of the Russian transition process that predict that only one-in-ten firms would avoid bankruptcy.

The paper is divided into four parts. Part I summarizes factors affecting survival potential. Part II describes how the composite measure utilized for evaluating survival potential is constructed. Part III presents the results obtained when applying the survival potential measure to a recent sample of Russian firms. Part IV offers reasons why these results may reflect the experiences of a broad category of firms in Russia, as well as describing areas for further research.

I. Prerequisites for Firm Survival

Transition economies, regardless of whether they pursue a rapid or gradual transformation process, experience severe macro and microeconomic disequilibria (Hoen 1996). Imbalances arise as socialist institutions are dismantled, and because establishing market-oriented institutions takes a significant amount of time (van Brabant 1993). In the Russian transition economy, macro and micro disequilibria have been exacerbated by numerous policy choices (Aslund 1995). While the strength of the Soviet legacy may have precluded policy options that enhanced rather than impeded the transformation from plan to market, the fact remains that during the first three years of the transition process, the Russian economy experienced a rather dramatic decline. The magnitude of the impact is highlighted in Table 2. It is within this framework that the survival potential of Russian firms is evaluated. The objective here is to identify specific factors enhancing the ability of a firm to operate continuously for at least two years with "profit" being the primary source of additional operating revenues; that is, firms maintain financial sustainability by utilizing the "profits" from one contract to cover any "losses" incurred when the contract price does not cover unanticipated increases in materials and/or energy prices. The factors relevant to survival are grouped into three categories: (i)

Table 2: Main Economic Indicators, 1990-1994

	1990	1991	1992	1993	1994
Price indicies[a]					
Consumer	1.1	2.6	26.1	9.4	3.2
Producer	1.0	2.4	20.5	9.9	5.1
Percent change					
Real GDP	-3	-13	-19	-12	-15
Industrial production		-8	-18	-16	-21
Meat production (million tons)	10.1	9.4	8.3	7.5	6.9
Real wages (1987 = 100)	127	119	86	90	86
Number of industrial workers (million persons)	17.01	16.27	16.34	15.64	13.90
Population change (per 1000 persons)	2.2	0.7	-1.5	-5.1	-6.0
State Budget Deficit (% GDP)	1.3	2.9	3.6	4.9	9.9
New housing (mln sqm)	61.7	49.4	41.5	41.8	38.5

Main Economic Indicators, % of previous year

	1991	1992	1993	1994
Gross Domestic Product	87.2	81	88	85
Industrial output	92	82	85.9	79
Agricultural output	95.5	90.6	95.6	91
Capital investments	85	60	88	74
New housing units	80	84	100.7	92
Average wage (real)	97	67	100.4	89
Average pension (real)	97	52	131	94

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[a] For consumer price index, definition given is: aggregate index of consumer prices for goods and services (in times, December as compared to December of previous year). For producer price index, definition given is: industrial producer prices index (in times to the previous year); p. 18.

Source: Goskomstat, *Russia in Figures* (Moscow, 1995), pp. 15-20, p. 200, 245, 258.

characteristics of the market structure in which the firm operates, (ii) characteristics of the firm, and (iii) characteristics of the firm's top-level managers.

Market Structure

Monopoly power dominates the conventional view of Soviet industrial structure (Capelik & Yakovlev 1992, IMF et. al 1990, Kahan & Peck 1991, Kroll 1991, Shatalin et. al 1990); a view recently challenged by Brown, Ickes and Ryterman (1993) and Joskow et. al (1994). Conventional wisdom suggests that monopoly power impedes the transition process by maintaining socialist production and employment patterns, yet enhances a firm's survival potential by permitting price setting. Formation of the State Anti-monopoly Committee at the initial stage of Russia's transition process signalled an understanding of the potential adverse consequences of the Soviet legacy of monopoly power. No doubt equally well understood were the potential adverse consequences on employment of eliminating monopoly power.

Data from a 1992 listing of civilian manufacturing firms in Moscow, Volgograd and Rostov, Russia (see Appendix A) indicate that, at the beginning of the transition process, certain branches in Soviet/Russian industry were highly concentrated with respect to employment. In Moscow, in six of the eleven industrial branches reported, a single firm employed more than 25% of that industry's workforce (see Appendix A, Table A4); in nine industries, the four largest firms in the industry employed more than 25% of the industry's workforce. This employment concentration pattern is even more pronounced in Volgograd and Rostov: in Volgograd, the largest firm employed more than 25% of the industry's workforce in nine of eleven cases, the four largest firms employed more than 25% in all eleven cases; in Rostov, the largest firm employed more than 25% of the industry's workforce in five of eleven cases, the four largest firms employed more than 25% in nine of eleven cases. Combined with reports that "in almost two-thirds of the Soviet product groups, a single enterprise accounts for more than half -- between 50 and 100 percent -- of total output" (Kahan & Peck 1991, p. 65), and that "30 to 40 percent of total industrial output is accounted for by products for which there is but a single manufacturer" (IMF et. al 1990, p. 26), the presence of monopoly power in Russian industry during the transition cannot be

Table 3: Distribution of Monopolists by Industry, 1994

Industry	Frequency	Percent of Total Firms	Percent of Total Output
Fuel	11	2.4	15.5
Ferrous metallurgy	31	12.8	62.5
Nonferrous metallurgy	32	12.0	29.4
Machine building	59	10.1	33.3
Chemical/petrochemical	319	6.2	33.1
Wood/pulp/paper	15	0.5	11.9
Construction materials	8	0.3	1.3
Glass	2	1.2	7.9
Light	3	0.1	0.7
Food	10	0.2	0.8
Medical appliances	3	2.3	3.1
Total	499	2.2	20.0

Source: Goskomstat, *Russia in Figures* (Moscow, 1995), p. 207.

ignored. Goskomstat estimates the number of monopolists in Russian industry in 1994 at just under 500 (see Table 3).

Whether monopoly power is local or national (Brown, Ickes & Ryterman 1993), whether it stems from production planning or the lack of transportation and warehousing faciltities/infrastructure (Kahan & Peck 1991, Kroll 1991), or whether it is monopoly power or other factors that impede the development of a market-oriented economy (Taylor 1994, Yavlinsky & Braguinsky 1994) are discussions far beyond the scope of this paper. Here, the objective is to assess how the number of competitors a firm faces might influence the firm's survival potential in the Russian transition economy. While it is expected that the number of competitors will vary by industry (see Appendix A, Table A1), and perhaps by region, the underlying proposition is that fewer competitors enhance survival potential.

Firm Characteristics

For firms to survive the transition, they must produce a good or service currently in demand and sell it for a price greater than cost. The Soviet legacy inherited by Russian firms shows up in the form of outdated capital (Ernst et. al 1996), overfull employment (Granick 1987, Linz 1995b), low quality goods (Hill & McKay 1988), energy-intensive operations (Dienes et. al 1994), and, in many instances, an inappropriate assortment of production (Krueger 1993). Given the Soviet legacy of vertical integration and branch autarky, the relatively straightforward act of finding suppliers and buyers confounded many firms in the early stages of transition; finding those that were financially sound (willing and able to pay their bills) proved to be nearly impossible (Ickes & Ryterman 1992). Thus to survive, many Russian firms will be forced to renovate a significant portion of their capital stock and downsize their workforce in order to produce the quantity and quality of that goods consumers and clients demand.

Reducing the workforce and upgrading the capital stock may be necessary but clearly are not sufficient conditions to guarantee survival in the Russian transition economy. To maintain at least two years of continuous operations in a condition of financial sustainability; that is, where "profits" represent the main source of additional operating revenues, firms must also position themselves in such a way as to generate a sound financial foundation. This might be done by requiring prepayment for all contracts, by

becoming directly affiliated with a financial institution, or by attracting foreign investment. Establishing variable pricing strategies and selling for hard currency (legally by exporting, illegally by requiring payment in dollars for domestic sales) might also contribute to a sound financial base. The greater the number of firm characteristics that allow it to continue producing and selling, without experiencing financial shortfalls, the greater the survival potential of the firm.

Management Characteristics

It has become conventional wisdom that for firms in transition economies to survive in the post-transition world, Red Executives (Granick 1961), those managers commited to socialist principles, must be replaced (Aslund 1995, Blasi 1996, Brada et. al 1994, Lipton & Sachs 1990, Shama 1993, Lawrence & Vlashoutsicos 1990, Rondinelli 1991, McNulty 1992, *Economist* 1991, Winiecki 1993, Mroczkowski et. al 1996). Survival is viewed as contingent upon installing a new, "young" (<45 years) manager, preferably one who has received training in the West or in one of the many international business schools that have emerged in Russia since 1992. Similarly, survival is viewed as contingent upon management's ability to develop an appropriate strategy.

Combining these three categories of variables influencing the survival potential of firms in the Russian transition economy, our "wish list" for firm-level data includes: volume and assortment of production, actual versus optimal workforce size, fraction of capital stock needing replacement, location and reliability of suppliers, number of competitors, number of times production halted, number of times the firm was unable to sell its products, number of times the firm delayed wage payments, number of times the firm experienced revenue shortfall, the firm's debt-to-asset ratio and/or debt-to-revenue ratio, whether profits or loans or personal capital or other sources primarily fund additional production costs, whether the firm requires prepayment, whether the firm is a founding member or partner of a financial institution, whether the firm receives foreign investment or exports its product, whether prices vary by contract/customer, whether the firm faces fixed prices or receives subsidies, and whether the manager is "young" and/or recently installed.

In evaluating the firm's survival potential, it also would be useful to know what obligations the

firm faces with respect to providing social services (Alm & Sjoquist 1995, Dolgopiatova 1995), what constraints are imposed by trade unions (Jones 1995), and what fraction of total revenues the firm is able to hide from tax collectors. Indeed, another research avenue to explore with respect to firm survival in Russia that is beyond the scope of this paper are the claims made on the firm by official (tax and other local and federal authorities) and unofficial (mafia) organizations (Shelley 1994).

II. Establishing Success Criteria for Firms in the Russian Transition Economy

Based on interviews conducted between 1992 and 1994 with top-level managers at more than three dozen firms in St. Petersburg, Novosibirsk, Moscow, Taganrog, Riga, and Tashkent, it is possible to roughly gauge the kinds and quality of information that can and cannot be acquired about individual firms. It is within this framework, the information about the firm's operations and performance that one can realistically hope to acquire, that the selection of elements from the "wish list" to include in the composite measure of survival potential must be made.

A total of fifteen elements reflecting the three categories of variables influencing firm survival potential from the "wish list" are included in the composite measure. A series of questions focused on these elements were included in two survey instruments to be administered in 1995 to top-level managers of firms in Russia: one to managers of privatized (former state-owned) firms, and one to managers of newly-created, private firms.[9]

The composite measure to assess survival potential was constructed by creating dummy variables for each of the 15 elements in such a way that the value equals one if the element contributes to survival potential. That is, to capture the characteristics of the market structure the firm faces, each manager was asked about number of competitors. If no competitors are cited, the variable takes on a value of one: if managers cite alternative suppliers of same product, the variable takes on a value of zero. To capture the stability of demand, managers were asked whether their firm ever stopped production and

[9] Firms with ownership structure designated as "leased" or "other" were administered the questionnaire for former state-owned firms.

also whether their firm experienced a situation where it was unable to sell its products. If managers responded negatively to these questions, the values of the dummy variables equal one. Several questions were asked that focused on whether or not the firm had established a sound financial base. If the manager responded negatively to wage delays or revenue shortfalls, the dummy variables equal one. If the manager cites profits as the primary source for funding additional expenditures, if the firm requires prepayment, if the firm is a founding member or partner in a financial institution, if the firm exports its products,[10] if the firm receives foreign funding, and if the firm employs a variable pricing strategy, the dummy variables equals one.

Regarding management characteristics, if the manager has assumed his/her position within the past 5 years, and is less than 45 years old, the dummy variables equal one. To capture whether or not the manager has a vision or strategy for the future,[11] specific questions were asked about future financing and future production. The rationale for such an approach is as follows. In the Russian transition economy, typically bank loans must be paid back within three to four months, and carry a high interest rate. At best, such loans can offset a temporary revenue shortfall; at worst, firms may find themselves owned by the bank. If managers report that loans are ***not*** to be used as the primary source of financing in the future, the dummy variable equals one. This variable, perhaps more than any other, signals the manager's view of the financial soundness of the firm. Moreover, if the manager responds that the firm will change its assortment in the future (either by expanding the number or type of goods and/or improving the quality), the dummy variable equals one. Here the rationale stems from the revealed preferences of Russian consumers for non-Russian goods (Huddleston and Good 1995). Managers almost by default are put in a position where they must change their assortment. In some instances this

[10] Managers were asked to distinguish between exports and sales to CIS. Thus exports designates sales to hard currency countries.

[11] Perhaps characteristic of the Russian culture, managers participating in this and earlier studies uniformly declined to answer general questions about the future of their firm or about strategies to be adopted regarding production, employment or financing. This contrasts with the tendency of U.S. managers, perhaps not always accurately, to glorify the future potential of their company.

takes the form of claiming to or using new technology to produce a higher quality product. In other instances in may involve changing the product line, or simply new packaging.[12]

To be a *champion*, the firm must meet at least thirteen of the fifteen elements in the composite measure; to be a *challenger*, the firm must meet at least ten. Firms failing to satisfy at least nine elements are categorized as *chaff*.

III. Evaluating Firm Performance

In-depth interviews in 1995 with top-level managers in 51 firms located in Moscow, Volgograd, Rostov, and Taganrog, Russia, make it possible to apply the composite measure of firm survival. Appendix B contains a detailed description of the sample selection and characteristics.

Regarding workplace charactertistics, it suffices here to say that the sample incorporates a variety of ownership types (joint stock, private, leased and other) and industrial sectors (see Table B1). More than half of the participating firms formerly were state-owned enterprises. Of these, half selected the privatization option in which employees initially acquire 51% of the shares. By 1995, however, only three of the privatized firms had maintained their "insider" ownership position. Consumer services, light industry and machine building account for nearly 70% of the firms participating in the survey. Indeed, in manufacturing, the relative distribution of firms between machine building and light industry is approximately the same as that reported in Appendix A, which describes the 1992 distribution of civilian manufacturing firms in the three regions where the survey was conducted (*BusinessMap* 1993). Moreover, in one respect, characteristics of the workplaces participating in the survey are not dramatically different from those described in Appendix A: that is, the capital stock is essentially unchanged. With respect to workforce size, however, there are signficant differences: those firms in the

[12] An article by Sergei Ryback, "Juices Flow with Western Backing," ***Moscow Times*** (16 July 1996, p. 7) reports that the Lianozovsky Dairy Plant, the largest in Russia, in 1992 moved to latin rather than cyrillic lettering and focused its marketing on telling Russian consumers that the company's J-7 juices were produced with foreign technology. According to gallup poll results reported in the article, of 1100 Muscovites asked in May 1996, more than 30% purchase J-7. The company expanded its production assortment by including new lines which produced yougurt and other products with a shelf life of 6 months.

sample that also are listed in the *BusinessMap* publications report much smaller employment in 1995. Interestingly enough, the industry effect on employment reported in Appendix A (based on 1992 data) also holds true for the firms participating in this survey (see Appendix B). That is, mean workforce size varies significantly by industry, with machine building, fuel, metallurgy and light industry firms typically employing more than 1000 workers. Firms in the forestry/wood/paper, construction materials, food and printing industries typically employed fewer than 500 workers.

Regarding management characteristics, as described in detail in Appendix B, there are significant age differences between managers of privatized (former state-owned) and private firms: even if both have recently been installed, managers of privatized firms are significantly older,[13] and thus have significantly more years of work experience. All managers participating in this project had approximately the same number of years of schooling. None had participated in any specialized management training programs.

What legitimately can be claimed from results based on fifty-one case studies? Since the sample was not randomly drawn from a well-defined population of firms, it is impossible to claim that the results obtained from the participating firms can be generalized to all firms in Russia, or even to those in the three regions where the firms are located. It is possible, however, to assign confidence intervals around particular results. Moreover, in the tradition of Estrin et. al (1995), Megginson et. al (1994), Thornton and Linz (1988), Webster et. al (1994), and others, it is possible to use these results to establish testable hypotheses. Sample size and location makes possible follow-up interviews in two years to determine whether the predictions made here are accurate: did the designated *champions* survive and

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[13] When "year born" was regressed on dummy variables created for ownership types, the coefficients are :

	Coefficient	standard error	t-statistic	N=51
joint stock	-8.58	2.92	-2.94**	Adjusted R^2 = .1790
private	dropped			Prob > F = .0033
other	-11.64	3.27	-3.56*	* significant @ .005
constant	1954	2.63	740.73	** significant @ .001

These results indicate that the mean age of managers of private firms is 41 (born in 1954); managers of privatized firms are on average 8 years older (born in 1946); managers of leased and other firms are on average 11 years older (born in 1943).

chaff fail? Finally, the distribution of firms across regions adds a non-Moscow dimension to ongoing analyses of the impact of transition on Russian firms.

Table 4 presents the elements included in the composite measure of survival potential, as well as the response frequencies associated with each element. Nearly all firms (94%) require some form of prepayment: the prepayment percentage varies from 25-100%, as does the percentage of clients from whom prepayment is required. Interestingly enough, the prepayment percentage does not vary significantly by ownership type, but the percentage of clients from which prepayment is required does vary signficantly between private and privatized firms.[14] That is, the private firms in this sample were more likely to demand prepayment than the privatized firms. On the one hand, this is not surprising, given the chaotic economic, legal and therefore business conditions facing private firms in Russia. Where privatized (former state-owned) firms maintained established relationships with suppliers and clients, perhaps holding a more acceptable position in the "new order,"[15] private firms appeared in sectors which previously were not filled (services) and thus had to establish their base of operations from scratch. The relatively smaller financial/capital base of private firms in comparison to privatized firms and the relatively higher wages paid by private firms may also contribute to the differential prepayment result. On the other hand, the result that privatized firms demand prepayment less often than private firms is somewhat surprising given differences between the volume and type of operations engaged in by manufacturing and service sector firms (none of the private firms in this sample were engaged in

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[14] When "% clients where prepayment required" is regressed on the dummy variables created for ownership types, the coefficients are:

	Coefficient	standard error	t-statistic	N=29
joint stock	-26.67	10.10	-2.64*	Adjusted R^2 = .1997
private	-35.00	12.98	-2.70*	Prob > F = .0211
other	dropped			
constant	100.00	8.75	11.43	* significant @ .01

Neither industry nor workforce size significantly affects either the prepayment percent or the percent of firms from which prepayment required.

[15] Private firms/businessmen, the "new Russians," are frequently cited in same breath as mafia: either as members of, or as targets of.

Table 4: Composite Measure of Survival Potential

Variable Name	Description	Frequency	Percent	Number of Respondents
Market Structure				
NUMCOMP	Number of competitors = 0	9	19.1	47
Firm Characteristics				
STOPQ	Not stop production	19	38.0	50
NOSALES	Not experience lack of sales	22	44.0	50
DELAYWG	Not delay wages to employees	20	42.5	47
SHORTFAL	Not experience revenue shortfall	29	56.9	51
PROFITS	Profits as source of current financing	43	86.0	50
PREPAY	Require prepayment	48	94.1	51
FOUNDER	Founder or partner of financial institution	15	33.3	45
EXPORT	Sales of Q outside CIS	10	22.7	44
VARYPRI	Vary price by customer/contract	35	70.0	50
FOREIGN	Receive foreign funding	10	20.0	50
Management Characteristics				
YRBORN	≤ 45 years old	10	23.2	43
HOWLONG	≤ 5 years at current job	30	60.0	50
FUTURL	Not use loans in future for current financing	24	51.1	47
FUTURQ	Plans to change assortment of production	21	42.0	50

manufacturing). For example, to acquire materials for production requires up-front money, but services typically are paid for only after they are rendered. These differential prepayment results suggest otherwise. They tend also to place a different emphasis on the financial condition of the privatized firms: many hold significant debt stemming from unpaid deliveries in previous years. Privatized firms carry the Soviet legacy of production with little regard for financing or demand conditions. The private firms in this sample, much smaller in scale, did not describe debt-to-asset ratios anywhere near those described by the privatized firms. Prepayment may be the means for avoiding such debt.

Nearly all firms (86%) report utilizing profits for funding additional operating expenses. That is, each manager was given a list of eight potential sources of financing and asked to select those currently used. The financing options included: profits (*pribyl'*), foreign investment (*inostrannye investitsii*), supplier credit (*kredit postavshchika*), buyer credit (*kredit pokypatelya*), personal capital (*lichnyi kapital*), bank loans (*ssudy banka*), loans from friends (*ssudy druzei*), family capital (*semeinyi kapital*).

Although more than three-quarters of the participating firms describe utilizing cost-plus pricing strategies, thirty-five managers (of 50 responding) report varying price by customer. Privatized firms were more likely to discount prices to buyers. Private firms were more likely to vary price by size of contract (as measured by volume or value); the larger the contract, the lower the per unit price. By way of comparison, in a survey of firms conducted in 1994 (Dolgopiatova 1995), 70% of all firms in the survey reported using cost-plus pricing; only 2% faced centrally-determined prices. At the same time, variable pricing strategies also were reflected in the response patterns of firms participating in her study: more than 35% utilized the price of subsitutes in establishing their own price; some 7% in 1994 varied price by customer, that is, they reported charging lower prices to established customers. Of those participating in Dolgopiatova's study, nearly 9% reported trying to charge the highest possible price (Table 9-4, p. 184). The response patterns to variable pricing strategies vary signficantly by sector of the economy, however. For example, 56% of the firms in defense-related production use price of substitutes in establishing own price, but only 35% of the firms processing raw materials selected this option. Moreover, in contrast to nearly 20% of the firms processing raw materials selecting "try to charge the

highest possible price," only 9% of firms in defense-related production and 4% of firms producing consumer goods selected this option.

Regarding monopoly power, only nine firms (of 47 responding) in the 1995 sample report no competitors, although several firms report competitors for only one or two products in their overall assortment. Of the 47 firms responding, 10 firms report five or fewer competitors. Few firms exported their product outside the former Soviet Union. Similiarly few firms received foreign funding. One third of those responding (45 firms) report themselves as being a founding member or partner of a financial institution.

Some 60% of the managers participating in the 1995 survey had recently obtained their current position, but less than one-quarter of those responding were younger than 45 years old. While slightly more than half report not intending to use loans in the future for current financing, only 42% describe strategies to change production assortment in the future.[16] Unlike 1994 survey results where managers describe wage delays as a policy option routinely employed to maintain workforce size (Dolgopiatova 1995, Linz 1994, 1995), less than half (42%) of the managers participating in the 1995 survey reported experiencing wage delays in the12 months prior to the interview.

When the composite measure utilizing equal weights for each element was applied to the sample of fifty-one firms, no firm emerged as a *champion*; five firms emerged as *challengers*, and 46 were designated as *chaff*. When the weights were doubled for the six elements most frequently cited in the literature as important to survival: current profitability, export experience, foreign investment, monopoly position, and future financial and production strategies,[17] the five challengers became *champions* (10%), eighteen firms emerged as *challengers* (35%), and twenty-eight (55%) remained in

[16] Perhaps cultural differences explain the reluctance of Russian managers to describe future plans.

[17] These 6 elements include all three categories of variables: market structure, firm characteristics, management characteristics. Given the recent legality of establishing private firms, using age ("young") or "recently installed" as the management characteristic would bias the results toward the inclusion of private as opposed to privatized firms, thus I substituted proxies for management survival strategy (not rely on loans in future, expand production assortment in future) for these two management characteristics variables.

the *chaff* category.

Characteristics of the Winners and Losers

What are the characteristics of the *champions*? Two (of five) are privately-owned companies. Four are in the service sector of the economy (retail trade, publishing, consulting, and a gas station), each employing fewer than 75 people. One is in metallurgy, employing more than 12,000 workers in 1995. Only two of five claim a monopoly position with respect to the supply of their main product. Two are founders of a financial institution. Two have managers at least 45 years old. Only one exports outside the former Soviet Union.

Regarding the *challengers*, eleven of the 18 are joint stock companies (4 are closed joint stock companies); three are privately-owned. Two (of 18) are in ferrous/nonferrous metallurgy, four in machine building, one in the chemical industry, four in light industry, three in food industry, and the balance in consumer services and miscellaneous. Five report no competitors; five export outside the former Soviet Union; nine are founders or partners in a financial institution. All report current profits; all report requiring prepayment. All but three vary price by client or contract. Managers in three of the firms were less than 45 years old in 1995; twelve had held their current position for less than five years.

Of the twenty-eight firms not expected to survive the Russian transition process, the *chaff*, fifteen (of 26 responding) are former state-owned firms; two are privately-owned. Seventeen employ 200 or fewer workers. Five are in the machine building industry, nine are in consumer services, and seven are in light industry. Two report themselves as holding a monopoly position with respect to the supply of their main product; two have received foreign investment. Four export their product outside the former Soviet Union. Twenty-five require prepayment; twenty report current profits. Managers in four of the firms in 1995 were less than 45 years old; thirteen had held their current position for less than five years.

Overall, the results from applying the composite measure to the fifty-one firms appear plausible for three reasons. First, what does not guarantee success or survival potential? Ownership type, firm size, industry, and monopoly position. It is not the case that small private firms in consumer services are

guaranteed to survive. Conversely, large, former state-owned firms in heavy industry are not doomed to fail. Had the survival potential composite measure generated a set of champions comprised only of privatized (former state-owned) firms, or only in manufacturing, or only those reporting themselves as holding a monopoly position, the measure would have been viewed as a failure. Similarly, had the measure generated a set of champions comprised only of private firms, or only those in the service sector, the results would have been viewed with some skepticism.

Second, what does coincide with success or survival potential? A sound financial base: all firms categorized as champions and challengers report current profits and prepayment requirements. Similarly, all firms reporting themselves as founders or partners in a financial institution fall into the champion or challenger category. These firms also practice variable pricing strategies.

Third, what is missing for those firms that are expected to be blown away? Management strategies for the future; in particular, strategies for future financing and production assortment. In effect, these results point to the importance of preparing a business plan. While not all of those in the champion and challenger categories were able or willing to articulate strategies for the future, every single firm in the chaff category was unable or unwilling to do so. In fact, if "not rely on loans in future to finance current operating expenditures" is used as a proxy for the firm's own assessment of their survival potential, this composite measure and classification scheme coincides with the firms' view. This is, all twenty-four firms that responded affirmatively to future financing and production strategies (FUTURL, FUTURQ Table 4) are in the *champion* or *challenger* category; none are classified as *chaff*.

How do these results compare with the generic predictions regarding firm survival? With respect to firm and industry characteristics, three of five *champions* meet all generic firm characteristics: stable demand, no close substitutes, reliable suppliers,[18] flexible managers, and sound financing. Four of five meet the generic industry characteristics: low capital intensity, flexible capital, minimal reliance on

[18] The proxy for "reliable suppliers" was whether or not the firm had in fact changed, or was looking to change suppliers.

electronic equipment, export potential.[19] Similarly, *challengers* tend also to meet generic firm and industry characteristics. It is not possible, however, given these generic firm and industry survival characteristics, to predict that both a publishing company and a metallurgy plant would be in the *champion* category; or that *challengers* would include an aluminum plant (high export potential), an agricultural machinery plant, a ball bearing plant, along with companies providing a range of services: laundry and legal, to name a few. In other words, if all we had were the generic predictions to guide our selection of firms by survival potential, it is unlikely that we would predict many of the firms that ended up in the *chaff* category: beer, clothes, food processing equipment, motors, electronics, and candy, for example.

IV. Conclusions

This paper constructs a composite measure to evaluate the survival potential of firms in the Russian transition economy. The measure is applied to a sample of fifty-one firms in three regions in Russia. According to the champion/challenger/chaff classification, the results indicate that 10% of the firms will survive transition by continuing their current path; 35% of the firms have the potential to survive, but adjustments to their current situation will be required. More than 55% of the firms will declare bankruptcy unless significant restructuring occurs. Once follow-up interviews are conducted in 1997 enabling an evaluation of the extent to which this classification predicts actual outcomes, there will be a statistical basis for assessing these kinds of predictions.

For policy makers, these results are a mixed blessing. While no simple decision rule emerges regarding which firms to support, the fact that potential survivors number more than the originally estimated one-in-ten is a positive sign. A clear signal to both policy makers and managers is the importance of establishing a business plan which details a future strategy for financing and production (both volume and assortment).

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[19] Determination was made regarding these variables after completing the site visit and plant tour. Thus, the evaluation is the subjective view of the author.

Why should we believe these results? The sample may overrepresent the proportion of firms in the Russian economy that currently earn profits -- those not earning profits may have refused to participate. In this case, the results underestimate the number of potential losers, and thus reflect an upper bound estimate of the numbers of champions and challengers. The weighting scheme may not accurately reflect the relative importance to survival of the elements included in the composite measure. Given the lack of theoretical models describing firms in transition economies, changing the magnitude of the weights or assigning weights to more (or less) of the elements in the composite success measure adds little to our understanding of survival potential. Perhaps the most compelling reason for seriously considering the validity of the results is that they appear plausible. They can be emprically verified in 1997. Indeed, at this time it will be possible to estimate the appropriate weights to utilize in the composite measure.

What else needs to be done? Missing in the literature, as well as in this analysis, is an investigation of the impact of institutional and environmental factors on firm survival potential. Similarly missing are analyses of the impact of particular policies (for example: tax policy, import/export policies, price limits, and the like) on firm survival potential. Only now emerging are preliminary studies of the role of the mafia in production and distribution activities in Russia. To date, none explicitly address the impact of the mafia on firm survival.

Appendix A

Select Characteristics of Russian Industry in 1992

Table A1 summarizes the basic characteristics of the civilian manufacturing firms listed in the 1993 *BusinessMap* publications located in the 3 administrative regions[1] included in this study. As the data contained in the listing: (1) reflect conditions at the end of 1992, (2) exclude firms in the military-industrial complex, and (3) exclude retail trade organizations, this listing is not considered to be a description of the current population of firms in Moscow, Volgograd or Rostov/Taganrog. However, the data contained in the listing are useful for establishing baseline characteristics of Russian industry at the beginning of the transition process. The data relevant for this study involves the regional distribution of manufacturing firms by ownership structure, industry, and workforce size.

As seen in panel I, *distribution of firms by ownership structure*, despite the initiation of the privatization program in June 1992, state ownership continued to dominate in manufacturing at the end of the year. Of the 1,223 firms in Moscow for which ownership information is reported, some 74% remained state-owned as of December 1992. The incidence of state ownership is even more pronounced in Rostov where more than 90% of the enterprises (n = 634) remained under state control; in Volgograd, state-owned firms accounted for 88% of the total (n = 426). Not unexpectedly, given obtacles impeding transportation, communication, and information flows in Russia in 1992, firms in Moscow were more likely than those in Volgograd or Rostov to have opportunities to establish joint ventures with foreign companies. Moreover, given that registration of new ownership types must be done in Moscow, overcoming bureaucratic obstacles associated with registering new firms would no doubt be easier for firms located in the city. Thus, it is not surprising to see in 1992 a greater distribution of ownership types in Moscow than in Rostov or Volgograd.

Panel II summarizes the *distribution of firms by industry* for each city. In Moscow, machine building dominates in terms of number of firms (41.1%), with light industry a far second (11%). Not surprisingly, given the importance of agriculture in the two regions' economies, food industry firms dominate in terms of numbers in both Volgograd (32.8%) and Rostov (28.5%). Machine building accounts for approximately 20% of the total in both Volgograd and Rostov, with firms in the construction materials industry ranking third. Rostov had proportionately more firms in the fuel industry and construction materials industry than either Volgograd or Moscow in 1992. While Rostov and Volgograd had the same number of firms in the power industry, the fact that the industrial base in Rostov is nearly half again as large as Volgograd created a situation where industrial development was hampered by power shortage. Regional analysts indicate that, in 1992 in the Rostov region, electric power consumption exceeded local generation by 30%. Even extreme energy conservation measures are unlikely to close this gap. Thus firms in the Rostov region are likely to face rising energy prices until new capacity in the power industry can be brought on line.

As seen in panel III, *distribution of firms by workforce size*, at the end of 1992, more than 4-out-of-5 employees in these 3 regions worked in companies where workforce size was1,000 or fewer people. Volgograd had proportionately more smaller firms (47.6%) than either Moscow (28.6%) or Rostov (41.1%); Rostov had proportionately more extra large firms (1.8%) than either Moscow (1.2%) or Volgograd (1.4%). In panel IV, *distribution of firms by potential privatization option*, workforce size is defined by the firm size categories used in the privatization program: *small* is defined as workforce size below 200 employees, *large* is defined as workforce size above 1,000 and *extra large* is defined as

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[1] For statistical reporting purposes, Russia typically is divided into 11 main regions and 75 subregions. The 3 subregions described here are Moscow, Volgograd and Rostov. Taganrog is included in the Rostov subregion. I thank Janet Blake, Huimin Chung, Melanie Guldi, CeCe Howell, Sarah Linz, Natalia Smirnova, and Mark Troyer for assistance with data coding and entry.

Table A1: Characteristics of Firms in Russia
(December 1992)

I. Distribution of Firms by Ownership

Type of Ownership	Moscow		Volgograd		Rostov/Taganrog		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
State-owned	910	74.4	375	88.0	590	93.1	1875	82.1
Lease	105	8.6	13	3.0	11	1.7	129	5.6
Cooperative	38	3.1	34	8.0	19	3.0	91	4.0
Collective	31	2.5	2	0.5	0	-	33	1.4
Joint stock	74	6.0	2	0.5	12	1.9	88	3.8
Joint venture	64	5.2	0	-	0	-	64	2.8
Other	1	0.1	0	-	2	0.3	3	0.1
Total	1223		426		634		2283	

II. Distribution of Firms by Industry

Industry	Moscow		Volgograd		Rostov/Taganrog		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
Power	19	1.5	18	4.2	18	2.8	55	2.3
Fuel	5	0.4	7	1.6	53	8.3	65	2.7
Ferrous/Nonferrous Metallurgy	21	1.6	7	1.6	4	0.6	32	1.3
Machine Building	531	41.1	83	19.4	128	20.1	742	30.8
Chemical	65	5.0	18	4.2	67	2.5	150	6.2
Forestry/Wood/Paper	48	3.7	51	11.9	37	5.8	136	5.6
Bldg/Const. Materials	78	6.0	47	11.0	89	14.0	214	8.9
Light industry	154	11.9	27	6.3	56	8.8	237	9.8
Food industry	112	8.7	140	32.8	181	28.5	433	18.0
Printing	88	6.8	20	4.7	21	3.3	129	5.4
Miscellaneous	171	13.2	9	2.1	33	5.2	213	8.8
Total	1292		427		636		2406	

III. Distribution of Firms by Workforce Size

Number Employees	Moscow		Volgograd		Rostov/Taganrog		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
< 50	98	9.0	65	15.4	52	8.5	215	10.1
50 - 200	215	19.6	136	32.2	200	32.8	551	25.9
201 - 1000	524	47.9	155	36.6	252	41.4	931	43.8
1001 - 5000	226	20.7	54	12.8	87	14.3	367	17.3
5001 - 10,000	18	1.6	7	1.6	7	1.1	32	1.5
> 10,000	13	1.2	6	1.4	11	1.8	30	1.4
Total[a]	1094		423		609		2126	

Table A1 (con't)

IV. Distribution of Firms by Potential Privatization Option[b]

Firm Size	Moscow		Volgograd		Rostov/Taganrog		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
Small	302	27.6	200	47.3	251	41.2	753	35.4
Other	535	48.9	156	36.9	253	41.5	944	44.4
Large	244	22.3	61	14.4	94	15.4	399	18.8
Extra Large	13	1.2	6	1.4	11	1.8	30	1.4
Total	1094		423		609		2126	

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[a] Not all firms reported workforce size.

[b] Small defined as < 200 employees; large defined as > 1,000 employees; extra large defined as > 10,000 employees.

Source: *BusinessMap 93: Russia*, vol. 7, 10, 15 (Moscow: Business Information Agency, 1993).

workforce size in excess of 10,000 people. As is evident in both panels, firms tend to be larger in Moscow than in Rostov or Volgograd.

Variation in workforce size by industry was pronounced, especially across regions. Table A2 gives the number of firms and mean workforce size for each industry in each region in 1992. While in all 3 regions, the ferrous/nonferrous metallurgy, fuel, and machine building industries dominate in terms of workforce size, there are significant differences in mean workforce size across regions for nearly all industries. For example, as seen in Table A2 mean workforce size appears significantly larger in Moscow than in Rostov or Volgograd for firms in the printing, food, and construction materials industries. Conversely, mean workforce size in Moscow appears significantly smaller for firms in the power, ferrous/nonferrous metallurgy, and chemical industries. Only in machine building and light industries are mean workforce sizes approximately the same across regions.

Regression analysis was used to estimate the effect of industry on workforce size in each of the 3 regions, as well as the effect of Moscow on workforce size. First, to evaluate the *industry effect*, dummy variables were created for each industry, with machine building designated as the comparison industry.[2] The coefficients reported in the first three panels of Table A3 measure the difference in mean workforce size between the given industry and the machine building industry in each of the 3 regions; a negative sign indicates a smaller workforce size. The constant reflects the mean workforce size in machine building in each region. In Volgograd, industry explains 10% of the variation in workforce size; in Rostov, industry explains 8% of the variation; but in Moscow, industry explains at best 1% of the variation in workforce size. When the log of workforce size was used as the dependent variable (see panels IV-VI), the coeffients retained the same signs and the explanatory power of the specification increased: industry explained 35% of the workforce size variation in Volgograd, 39% in Rostov, and 8% in Moscow. Second, to evaluate the *Moscow effect* on workforce size, the data were pooled and a region dummy created that was 0 if the firm was located in Moscow, and 1 otherwise. The coefficient on the region dummy indicates that mean workforce size is significantly higher in Moscow when industry is held constant, and that only for the ferrous/nonferrous metallurgy and fuel industries is mean workforce size significantly lower in Moscow.

Table A4 summarizes employment concentration by industry for the 3 regions. As seen in panel I, in Moscow, the largest firm in the power industry employed 37% of the industry's workforce in 1992; the four largest firms employed 75% of the power industry workforce. In the forestry/wood/paper industry, one Moscow firm employed 80% of the industry's workforce in that region. In all 3 regions there are two industries where the largest firm employs more than 50% of the industry's workforce: in Moscow, fuel and forestry/wood/paper; in Volgograd, power and miscellaneous; in Rostov, power and ferrous/nonferrous metallurgy.

Employment concentration in the four largest firms in each industry is also reported in panel I for each region. In Volgograd, in nine of the 11 industries, the four largest firms employed more than half of the industry's workforce in 1992. This compares with 6 of 11 in Rostov, and 5 of 11 in Moscow.

Panel II provides a ranking of the industries in each region by employment concentration.

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[2]Machine building was selected because the mean workforce size was approximately the same for each region.

Table A2: Mean Workforce Size by Industry
(December 1992)

	Moscow		Volgograd		Rostov/Taganrog	
Industry	*Number of Firms*	*Mean Workforce Size*	*Number of Firms*	*Mean Workforce Size*	*Number of Firms*	*Mean Workforce Size*
Power	8	841	18	1020	18	1190
Fuel	4	1689	7	1538	52	3829
Ferrous/non Ferrous Metallurgy	17	1080	7	4698	4	5134
Machine Bldg	429	1453	80	1456	109	1573
Chemical	61	650	18	2617	15	1115
Forestry/Wood/Paper	46	2600[a]	51	227	36	300
Building/Cons. Materials	75	1308	46	590	87	253
Light	146	1195	27	1139	56	914
Food	107	982	140	243	181	267
Printing	86	401	20	132	21	142
Miscellanous	115	398	9	780	30	610
Total	1094[b]		423[b]		609[b]	

[a] Employment for 1 firm listed as 95,467 people. If this firm is dropped, the mean workforce size for Forestry/Wood/Paper falls to 537, still significantly higher than in the other 2 regions.

[b] Small defined as < 200 employees: large defined as > 1,000 employees; extra large defined as > 10,000 employees. Not all firms provided workforce size information.

Source: *BusinessMap 93: Russia*, vol. 7, 10, 15 (Moscow: Business Information Agency, 1993).

Table A3: Industry Effect on Workforce Size
(December 1992)

Independent Variable — Dependent Variable = Number of Employees

Volgograd (n = 423)

Industry	Coefficient	Standard Error	t-statistic
Power	-436.001	553.435	-0.788
Fuel	82.253	836.182	0.098
Ferrous/Nonferrous Metallurgy	3242.396	836.182	3.878
Chemical	1161.381	553.435	2.095
Forestry/Wood/Paper	-1228.842	380.137	-3.233
Building/Construction materials	-865.284	392.551	-2.204
Light	-316.656	472.172	-0.671
Food	-1212.232	297.329	-4.077
Printing	-1324.075	530.365	-2.497
Miscellaneous	-675.286	745.871	-0.905
Constant	1456.175	237.187	6.139

Adjusted R^2 = 0.1097

Rostov (n = 609)

Industry	Coefficient	Standard Error	t-statistic
Power	-383.006	822.911	-0.465
Fuel	2255.932	545.128	4.138
Ferrous/Nonferrous Metallurgy	3561.356	1646.631	2.163
Chemical	-457.461	890.742	-0.514
Forestry/Wood/Paper	-1273.394	621.755	-2.048
Building/Construction Materials	-1319.532	465.002	-2.838
Light	-658.894	531.783	-1.239
Food	-1306.168	392.145	-3.331
Printing	-1430.585	770.813	-1.856
Miscellaneous	-962.694	606.858	-1.444
Constant	1573.394	309.804	5.079

Adjusted R^2 = 0.0861

Moscow (n = 1094)

Industry	Coefficient	Standard Error	t-statistic
Power	-612.265	1595.022	-0.384
Fuel	235.735	2245.355	0.105
Ferrous/Nonferrous Metallurgy	-373.279	1105.386	-0.338
Chemical	-802.974	611.652	-1.313
Forestry/Wood/Paper	1147.246	693.488	1.654
Building/Construction Materials	-144.595	559.443	-0.258
Light	-257.583	428.281	-0.601
Food	-470.636	483.016	-0.974
Printing	-1051.829	528.111	-1.992
Miscellaneous	-1055.385	469.376	-2.248
Constant	1453.515	215.809	6.735

Adjusted R^2 = 0.0033

Independent Variable Dependent Variable = Ln (Number of Employees)

Volgograd (n = 423)

Industry	Coefficient	Standard Error	t-statistic
Power	.1229	.3266	0.376
Fuel	.5826	.4935	1.181
Ferrous/Nonferrous Metallurgy	1.4253	.4935	2.888
Chemical	.9494	.3266	2.907
Forestry/Wood/Paper	-2.3508	.2243	-10.478
Building/Construction Materials	-.3992	.2316	-1.723
Light	-.1638	.2786	-0.588
Food	-1.1667	.1754	-6.649
Printing	-2.3566	.3130	-7.529
Miscellaneous	-.40225	.4402	-0.914
Constant	6.1534	.1399	43.956

Adjusted R^2 = 0.3544

Rostov (n = 609)

Industry	Coefficient	Standard Error	t-statistic
Power	.1675	.2918	0.574
Fuel	1.2475	.1933	6.453
Ferrous/Nonferrous Metallurgy	1.9867	.5839	3.402
Chemical	.0993	.3159	0.315
Forestry/Wood/Paper	-2.3300	.2205	-10.566
Building/Construction Materials	-.8214	.1649	-4.981
Light	.0473	.1886	0.251
Food	-1.2863	.1390	-9.249
Printing	-1.7177	.2733	-6.283
Miscellaneous	-.2890	.2365	-1.222
Constant	6.1981	.1098	56.411

Adjusted R^2 = .3836

Moscow (n = 1094)

Industry	Coefficient	Standard Error	t-statistic
Power	.3691	.4952	0.746
Fuel	.9911	.6971	1.422
Ferrous/Nonferrous Metallurgy	.2049	.3432	0.597
Chemical	-.3390	.1899	-1.785
Forestry/Wood/Paper	-.3746	.2153	-1.740
Building/Construction Materials	.0415	.1736	0.239
Light	.1880	.1329	1.414
Food	-.0634	.1499	-0.423
Printing	-1.3057	.1639	-7.963
Miscellaneous	-.7961	.1457	-5.463
Constant	6.1279	.0670	91.458

Adjusted R^2 = .0811

Table A4 : Employment Concentration by Industry
(December 1992, percent)

I. Percent of Industry Workforce Employed at Largest Firm, Four Largest Firms

	Moscow		Volgograd		Rostov/Taganrog	
Industry	*Largest Firm*	*Four Largest Firms*	*Largest Firm*	*Four Largest Firms*	*Largest Firm*	*Four Largest Firms*
Power	37	75	53	67	56	81
Fuel	56	100	36	90	28	58
Ferrous/Nonferrous Metallurgy	40	66	45	90	52	10
Machine Bldg	9	22	25	53	21	44
Chemical	13	32	23	59	23	72
Forestry/Wood/Paper	80	85	32	66	38	72
Building/Cons. Materials	49	59	9	33	3	12
Light	29	39	45	67	18	38
Food	14	40	11	25	14	27
Printing	23	44	42	79	20	52
Miscellanous	6	18	58	92	38	51

II. Ranking of Industry by Employment Concentration (1=most concentrated)

	Moscow		Volgograd		Rostov/Taganrog	
Industry	*Largest Firm*	*Four Largest Firms*	*Largest Firm*	*Four Largest Firms*	*Largest Firm*	*Four Largest Firms*
Power	5	3	2	5	1	1
Fuel	2	1	6	2	5	4
Ferrous/Nonferrous Metallurgy	4	4	3	2	2	11
Machine Bldg	10	10	8	9	7	7
Chemical	9	9	9	8	6	2
Forestry/Wood/Paper	1	2	7	7	3	2
Building/Cons. Materials	3	5	11	10	10	10
Light	6	8	3	5	9	8
Food	8	7	10	11	11	9
Printing	7	6	5	4	8	5
Miscellanous	11	11	1	1	3	6

Source: *BusinessMap 93: Industry*, vol. 7, 10, 15 (Moscow: Business Information Agency, 1993).

Appendix B

Management Sample Description

The research project design involves in-depth interviews with top-level managers in Russian firms in Moscow, Rostov, Taganrog, and Volgograd. The objective is to elicit information on how decisions are made at the firm-level during the transition process. In particular, the project focuses on production and employment strategies firms employ to survive. Not intended to be the definitive study of Russian firms in transition, the project's contribution lies not only in providing insider information at a time when alternative sources do not exist, but also in the relative size and location of the sample, as well as the comparability of results with projects conducted in previous years.

Interview evidence is used here as expert testimony on how firms cope with the chaotic conditions characterizing the Russian transition process. While sample size is sufficient to permit statistical analysis, no claim is made that the sample is representative of some larger population of Russian firms. To select a representative sample, one must have detailed information on the referent population. At best, listings of Russian firms include only civilian manufacturing enterprises (that is, exclude companies affiliated with military-industrial complex, and exclude retail and other service organizations), and are only relevant for the pre-transition period. Such information is provided in Appendix A[3] to establish a benchmark for evaluating the potential for generalizing the interview project results to the population of firms in the 3 regions relevant to this study.

Sample Selection

In-depth interviews with top-level managers in 51 firms located in Moscow (n = 2), Rostov (n = 7), Taganrog (n = 10), and Volgograd (n = 32), were conducted in summer 1995. Participating firms initially were contacted by local project coordinators who had been given the simple instruction to target a variety of firm types (where type was defined as ownership structure, main product/industry, workforce size). After agreeing to participate, only one firm elected to refrain from answering the majority of questions. Interviews took 1-2 hours to complete, and frequently involved 2-3 top-level managers. Confidentiality and anonymity requirements make possible only broad descriptions of the participating firms and managers.

Workplace Characteristics

Table B1 provides basic characteristics of the participating firms, more than half of which were former state-owned enterprises. Of the former state-owned enterprises, more than half had selected option 2 as their privatization method; that is, where employees initially acquire 51% of the shares. A similar number of firms (56% of those in the sample undergoing privatization) completed the privatization process within the first 6 months after the program was announced. By 1995, only 3 of these firms maintained their "insider" ownership position.

Panel I summarizes the *distribution of firms by ownership structure*: of the 49 cases where ownership information is available, nearly half are classified as open joint stock companies (47%), 8 (16%) are closed joint stock companies, and 7 (14%) are private companies. The smaller R&D organizations are leased from state-owned research institutes, and at least one firm remains fully state-owned because it employs handicappers.

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[3]Appendix A contains summary characteristics of Russian industry in Moscow, Volgograd, and Rostov/Taganrog, based on a listing of civilian manufacturing firms as of December 1992.

Table B1: Workplace Characteristics

I. Distribution of Firms by Ownership Structure

	Frequency	*Percent*
Joint Stock Company		
Open	23	46.9
Closed	8	16.3
Private	7	14.3
Leased	2	4.1
Other	9	18.4
Total	49	100

II. Distribution of Firms by Industry

	Frequency	*Percent*
Ferrous/Nonferrous Metallurgy	4	7.8
Machine Building	9	17.6
Chemical	1	2.0
Forestry/Wood/Paper	1	2.0
Building/Construction Materials	1	2.0
Light	11	21.6
Food	6	11.7
Consumer Services	16	31.4
Miscellaneous	2	3.9
Total	51	100

III. Distribution of Firms by Workforce Size

Number	1995		1990	
Employees	*Frequency*	*Percent*	*Frequency*	*Percent*
< 50	9	17.6	2	7.1
50 - 200	21	41.2	3	10.7
201 - 1000	12	23.5	9	32.1
1001 - 5000	4	7.8	8	28.6
5001 - 10,000	1	2.0	2	7.1
> 10,000	4	7.8	4	25.0
Total	51		28	

IV. Distribution of Firms by Number of Competitors

	Frequency	*Percent*
No competitors	8	19.5
1 - 10	17	41.5
11 - 20	5	12.2
21 - 100	9	21.9
> 100	2	4.9
Total	41	

As seen in panel II, *distribution of firms by industry*, consumer services, light industry and machine building account for more than two-thirds of the participating firms. The sample is comparable with the 1992 industry distribution reported in Appendix B in terms of the distribution of firms in machine building and light industry. Unlike the 1992 industry distribution, however, the sample includes a significant number of firms in consumer services, nearly all of which are privately owned.

Panel III summarizes the *distribution of firms by workforce size* for 1995 and 1990. Some 60% of the firms participating in the 1995 project would be considered *small* by the workforce size definition used for privatization (< 200 employees); 16% would be considered *large* using the same definition (>1,000 employees).

Like the workforce distribution reported in Appendix B, more than 4-out-of-5 firms employed fewer than 1,000 workers in 1995. The 1995 sample also is comparable with the 1992 industry distribution in terms of mean workforce size across industries. That is, in both this sample and the 1992 listing, firms in the machine building and ferrous/nonferrous metallurgy industries have a larger mean workforce size than those in the light or food industries.[4] In addition, regression results highlight an *industry effect* on workforce size similar to that found in the 1992 listing, albeit more pronounced in the 1995 sample. For the 1992 listing of firms in the 3 regions, industry explains between 8% and 35% of the variation in firm size, depending upon the region and the specification (levels or logs). In this sample, where the 3 regions are pooled, industry explains 29% of the variation when the dependent variable is measured in levels and 53% of the variation in workforce size when the dependent variable is measured in logs. In both 1992 and 1995, the probability that industry does not affect workforce size is zero.

For the sample as a whole (n=50), mean workforce size totaled 1,275 in 1995. This figure is significantly lower than the 1990 mean workforce size of 3,354 employees (n=27), where just over half of the firms employed fewer than 1,000 workers.

Workforce downsizing in former state-owned enterprises has been mitigated somewhat by the growing use of part-time employees. More than half of the firms (28 of 47 responding) report in 1995 that they employ part-time workers, a practice not frequently reported in earlier studies of Russian firms in transition,[5] and a practice not widely used in the Soviet economy.

Panel IV, *distribution of firms by number of competitors*, summarizes managers' responses to the question asking how many other firms supply their same product or service. Eight firms report themselves as holding a monopoly position with respect to the supply of their main product or service. Several others noted that for at least one product in their assortment they held a monopoly position, but overall, they viewed their firm in competition with other similar firms and thus were not included in the group of eight.[6]

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[4]The chemical industry firm participating in the project was prior to 1992 part of a larger firm that employed more than 10,000 workers. By 1995, from the original firm at least 3 new firms had been created. Thus while the participating firm reports a workforce size of 70, the company in fact sits on the premises of a firm that in 1990 employed more than 10,000 workers and currently is still designated as an "extra large" firm.

[5] Workers were reported as working part-time, but having part-time workers was typically not described by managers in 1992 or 1994.

[6]Interestingly, several firms in the light and food industries were designated as monopolists by the State Anti-Monopoly Committee because they held a local monopoly position with respect to the supply of a product; that is, no other firm in the city produced the same thing. However, in light of how decisions were made about the products put on the shelves of retail trade organizations, these firms competed not only with numerous firms in the region, but also with foreign firms (imports). Ironically, given the monopoly/mafia position with respect to the supply of goods to the retail trade sector and the beneficial financial situation associated with foreign trade

Management Characteristics

Respondent characteristics are available for 49 of the 51 participants in the project (see Table B2). As seen in panel I, the majority of respondents (71%) held the top-level position of the company. Panel II summarizes the age distribution of the managers. Not surprisingly, the mean age of managers in private firms is significantly lower than that of managers in former state-owned enterprises. Yet, of the 42 respondents employed in the former state-owned firms, 3 had worked at their current company for less than one year; that is, they had recently been brought in to run the company. Altogether, 15 had worked at the former state-owned enterprise as top-level managers for 5 or fewer years. These data point to a relatively recent turnover of top-level management, in most instances occurring within 1 year after the firm completed the privatization process. The observation that a significant number of former state-owned firms underwent management change after the ownership transformation process is further underscored in panel IV: more than 56% of the managers had held their current position for 5 or fewer years.

With respect to gender and years of schooling, uniformity in sample characteristics was pronounced: men accounted for 96% of the informants, an equal percentage completed at least 15 years of schooling. Similar uniformity is observed with respect to voucher allocation: 90% of the respondents traded their privatization voucher for shares in the company in which they worked at the time it was privatized.

(misreporting financial flows and the ability to establish hard currency accounts in foreign banks), firms in the food and light industry sectors designated as monopolists face a greater degree of foreign competition than do firms in machine building or construction materials, for example.

Table B2: Management Characteristics

I. Occupation Distribution by Ownership Structure

	Joint Stock		Private		Other		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
Director	20	64.5	5	71.4	10	90.9	35	71.4
Assistant director	9	29.0	2	28.6	0	9.1	11	22.4
Department head	2	6.5	0	-	1	-	3	6.2
Total	31		7		11		49	

II. Age Distribution by Ownership Structure

	Joint Stock		Private		Other		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
< 40	2	6.4	3	42.8	1	9.1	6	12.2
40 - 49	18	58.0	4	57.2	3	27.3	25	51.0
50 - 59	8	25.8	0	-	6	54.5	14	28.6
> 60	3	9.7	0	-	1	9.1	4	8.2
Total	31		7		11		49	

III. Years Respondent Worked at Current Company

	Joint Stock		Private		Other		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
< 1 year	2	6.4	0	-	1	9.1	3	6.1
1 - 5 years	10	32.2	7	100	2	18.2	18	36.7
6 - 10 years	7	22.6	0	-	1	9.1	8	16.3
> 10 years	12	38.7	0	-	7	63.6	20	40.8
Total	31		7		11		49	

IV. Years Respondent Has Held Current Position

	Joint Stock		Private		Other		Total	
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
< 1 year	3	9.7	0	-	1	9.1	4	8.2
1 - 5 years	14	45.2	7	100	5	45.4	26	53.1
6 - 10 years	10	32.2	0	-	4	36.4	14	28.6
> 10 years	4	12.9	0	-	1	9.1	15	30.6
Total	31		7		11		49	

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