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Institutional Features of New Enterprise Formation in Regions of Russia

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It is generally accepted that new-enterprise formation is critical for generating growth in post-socialist economies. This process has been intensive in Russia, with considerable regional variation. In this study, this variation is estimated, drawing on the theory of conditional and unconditional convergence. It is shown that in the 1991–1993 period, Russia's regions tended toward convergence, while from 1994 to 1999 they tended toward divergence, and in regions where this process had been weak, it became still weaker. How can mechanisms underlying the regional variation in the establishment of small enterprises be determined? The conceptual framework of this study, which seeks to explain the choice of determinants and interpret the obtained results, is focused on two models: a simple model of relative demand-supply determining the aggregate segment of small businesses and a model of individuals' rational behavior in the labor market. It is confirmed that labor demand in the segment of small entrepreneurship depends on the relation of earnings in new versus wage sector, on the initial savings of the population and on the population's risk-aversion. Credibility of local governments and relatively high economic potential of regional institutions stimulated labor demand in the small business segment. An empirical test of the theoretical propositions is made on the 1990–1992 data.

Keywords: Russia, small business, self-employment, risk of entrepreneurship, regional elite, a system of simultaneous equations.

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CONTENTS

NON-TECHNICAL SUMMARY	4
1. INTRODUCTION	7
2. INTERREGIONAL DIFFERENTIATION IN ENTREPRENEURSHIP DEVELOPMENT	9
3. LITERATURE REVIEW	16
4. CONCEPTUAL FRAMEWORK	20
5. SPECIFICATION OF THE MODEL AND TENTATIVE ESTIMATES	24
6. METHODS AND RESULTS OF ESTIMATIONS	32
7. CONCLUSION	41
APPENDICES	43
A1. Data	43
A2. The relation of those employed in cooperatives and small enterprises to those employed in other sectors of the economy across Russia's regions in 1990–1992	45
A3. Wage funds in co-operatives and new enterprises in current prices 1990–1992	48
REFERENCES	52

NON-TECHNICAL SUMMARY

The reforms in Russia that allowed private entrepreneurship and market mechanisms brought to light the inefficiency of the large scale of state-owned monsters. Along with the collapse of long existing enterprises, there was a surge in the establishment of new private enterprises. They provided people with self-employment and new sources of incomes. It was for the first time that people were entitled to run their own business and use financial planning, which earlier was the exclusive privilege of state organizations and their officials.

Today, small businesses make up a fairly large sector in the Russian economy, enjoying special support from state and non-state agencies. This notwithstanding, new-enterprise formation has slowed lately. The data of the RF Goskomstat on registered small enterprises show that the sharp surge in the number of small businesses witnessed in the early 1990-s has changed into stagnation. Why is this so? Does small business formation vary according to region? And can small business behavior in Russia be explained through a cross-country comparison?

This study seeks to answer these questions and help federal and regional governments design an efficient policy supporting the formation and functioning of new enterprises and avoid unprofitable investments.

This study shows the regional variation in the establishment of new enterprises and evaluates the trends in this process over the whole period of reforms. For this purpose the variables used are the number of small enterprises per thousand inhabitants, the percentage of small business employment out of total regional employment, and the share of small business in the total output per industry. In 1991–1993, Russia's regions showed a tendency toward convergence on the levels of new-enterprise formation and from 1994 to 1999, these regions tended toward divergence. In regions where the formation was slow, it slowed still more.

An explanation for these trends can be found in the rational behavior of the individual who makes a decision about opening his or her own business. The creation of every small enterprise is the result of an individual's concrete decision to change his status. Earlier he was a wage worker, now he becomes an entrepreneur and enters the sector of self-employment. This change in activity is reasonable if the individual maximizes his utility. Only an individual with low risk aversion and with the required starting capital can open his or her own business. These fairly simple considerations and the assumption that by becoming

self-employed, the individual also creates jobs for other people allows us to switch from the model of individual behavior to the model of aggregate labor demand-supply in the sector of small business and to predict in what direction particular factors will influence labor demand and supply.

Empirical estimations given in the study are based on RF Goskomstat data and working materials of the Ministry of Finance of Russia and on expert assessments of two data bases — of the "Expert" journal ("Regions of Russia") and of a survey commissioned by the Russian Union of Producers and Entrepreneurs: "Entrepreneur Climate in Russia's Regions. Geography of Russia for Investors and Entrepreneurs."

The different labor demand in small business is shown to relate to the regional variation in risk levels ensued from institutional weakness and conservatism of elite. Different risk expectations determine the different degree of inhabitants' confidence in the action of business rules. Empirical estimations confirm the influence of incomes on labor demand-supply in this sphere. A significant influence is also made by inhabitants' low risk aversion, their favorable attitude toward democratic reforms and their availability of starting capital.

What region is friendly to small business formation? At the beginning of transition it was a region with a high percentage of reform-minded inhabitants with sufficient initial capital, where the regional elite had reformist and rather homogeneous orientation and the authorities have relatively more budgetary opportunities than other regions. It was a region where self-employment yielded relatively high incomes compared to incomes in the public sector. Such an environment is favorable to small business formation, encourages inhabitants' initiatives, and creates conditions for self-employment.

In forming the regional programs supporting small business formation, it is necessary to consider the inhabitants' predisposition to entrepreneurship. Russia is a multi-ethnic nation, and some ethnic groups living within its territory have no cultural traditions in organizing their own businesses. Encouragement and political declarations are hardly going to be successful in bringing about the desired result.

The confidence of inhabitants in the authorities and the political stability of the region are crucial factors for entrepreneurship. Homogeneity and cohesion of the regional elite promote entrepreneurship. Personal ambitions of regional leaders can inflict damage on the creation of a friendly entrepreneurial climate.

The federal government can exert influence on new enterprise creation in particular regions through its policy of transfers and subsidies and by

improving budgetary endowments in areas where the local environment is friendly to small business. Voting scenarios and results of elections give many-faceted information valuable for making predictions about the creation of entrepreneurial climate in a region.

Stagnation in small business formation in Russia is regionally differentiated and explained by the population's low confidence in authorities. The determinants of this difference are a result of responses to increasing risks, conflicts and controversy of attitudes within the regional elite, low and unbalanced regional budgets, no advantages of employment in small enterprises over that in the wage sector, and impoverishment of the inhabitants in the course of reforms.

These results can be of interest to policy-makers too if they have a real resolve not to repeat their earlier mistakes in the field of small business development and to officials who want to show, in action and not in words, that the state indeed takes an interest in small businesses.

"Russia will be set on her feet by the spirit of entrepreneurship, — no other means are available"

V.Leontieff, "Komsomol'skaja pravda"
09.02.1998.

1. INTRODUCTION

Since the mid 1970-s the role of small enterprises in the economic growth of an industrial society has been re-evaluated. The previous theoretical paradigm stating that capital is invariably being concentrated and firms and companies increasing their sizes has not been confirmed in practice. The OECD studies of six largest countries made by Loveman, Gary and Werner Sengenberger (1991) have revealed a rise of employment in small firms.

Similar events have been observed in economies in transition too. At the cross-national level, it is generally taken as proven that the success of economic transformation is primarily the result of the formation of new firms. New enterprises are relatively free of distorted incentives that influence state-owned enterprises, and are therefore relatively efficient and responsive to market conditions. The most impressive growth of small private business was in Czechoslovakia, where before 1989 no legal private enterprises existed. In less than two years, the number of private businesses exceeded 1 million per country's population of 15 million. In Poland and Hungary, with their more developed private sectors, a still more substantial growth of new enterprises was observed. Even in relatively less developed Bulgaria, 460 thousand private enterprises were registered by mid 1994, *i.e.*, one enterprise per twenty residents.

In Russia structural transformations have been much slower. According to the Goskomstat data, the number of small firms was 890600 at the beginning of 2000, that is 6.1 firms per thousand inhabitants. They produced about 10% of the gross national product and employed 12% of the total labor force. The low number of small firms implies little competition, which impedes the formation of a normal market environment and therefore constrains the economic growth and improvement of living standards.

In recent years small businesses have begun to be supported by different state and non-state structures. At the federal level and in most regions, even special institutes have been created to implement this support. But their activity is not always based on a deep investigation into the mechanisms driving the formation of small firms. Thus, in spite of the

fundamental significance of the regional approaches to small business support, the economic and political characteristics of individual regions fail to be taken into consideration. At the same time, initial regional conditions, regional economic structure and institutional factors can markedly influence the process of turbulence (birth and death) of new small firms. Without a clear idea about the mechanisms that influence the process of enterprise formation in different Russian regions, it is impossible to design an effective policy to promote this process.

The objective of this project is to explore regional factors influencing new-enterprise formation in Russia, specify regional differences in these factors and determine which factors can influence these disparities. This study seeks to answer the following question: what accounts for the differences in the emergence of new, small-scale firms in different regions of Russia?

In the first part of this study, data on regional differentiation in the level of enterprise development in Russia's regions are cited. On the basis of the conditional and unconditional convergence theory of Sala-I-Martin (1996), changes in the number of registered small firms per 1000 population in 78 regions of Russia for the period of 1990–1999 are analyzed. The analysis has revealed a high regional variation in new enterprise formation. Displayed is not only spatial but also temporal differentiation. The following sections show how this difference can be explained.

The creation of any small enterprise is the result of an individual's decision to change his status: if earlier he was an employee, now he becomes an entrepreneur and enters the sector of self-employment. The approach used to analyze regional differences in the enterprise climate in Russia is based on the theory of choice among labor market sectors. Taking into account specific features of Russia's transition, we can further elaborate the Blanchflower and Oswald (1998) model, building a model that allows us to move from the model of an individual's behavior, who by his decision about where to work maximizes his utility, to a model of aggregate labor demand-supply in the aggregate segment of small businesses. Such a shift has permitted us to bind basic determinants of an individual's decision to become self-employed with factors of new enterprise formation and predict the impact of particular factors on labor demand and supply.

A survey conducted among entrepreneurs has revealed regional variations in the level of risk caused by regional institutional weakness and conservative attitudes of the regional elite. The difference in risk expectation implies a different degree of credibility of the rules in business. A premium for involvement in small business development or a stimulus to

become self-employed can be measured by the ratio of earnings in the small enterprise sector to those in the wage sector.

Low risk-aversion and liberal attitudes of the inhabitants are also very significant. This is in line with the arguments of Kihlstrom and Laffont (1979), who built an exact model of the negative relationship between risk-aversion and self-employment probability and corroborated their theoretical conclusions with the empirical data. Unlike Earl and Sakova (1999), who used questionnaire data and focused on individual motives for making the shift to self-employment (gender, age, marital status, parents' occupation, *etc.*), in the presented model factors influencing the demand-supply across the whole segment of small businesses were used. As determinants, different characteristics of local labor markets and financial sources of entrepreneurship are considered.

This paper is structured in the following way. Section 2 contains data and background information on new-enterprise formation in Russia in the 1990–1999 period of reformation. It includes calculations and tendencies of conditional and unconditional convergence of this process. Section 3 is devoted to the analysis of literature. In Section 4 the conceptual framework needed to explain the choice of determinants and to interpret the obtained results is considered. In Section 5, a model of relative labor demand-supply in the aggregate segment of small businesses, which is a system of simultaneous equations, is developed. The data and empirical methods used for assessing the system of equations (OLS, 2SLS, FIML) are described. Section 6 contains the empirical results and Section 7, the conclusions.

2. INTERREGIONAL DIFFERENTIATION IN ENTREPRENEURSHIP DEVELOPMENT

Communist economies had a number of specific features. One of them was a stark production structure. The number of firms that appeared and then went bankrupt, the percentage of small firms, the number of new jobs — all these characteristics that are important for a market economy had no special meaning for management in countries with a socialist orientation. The proportions remained unchanged over a long time (Table 1).

In contrast to this, the beginning of the reformation in Russia not only permitted private entrepreneurship, but has changed the mechanism determining the size of firms, and with the emergence of market mechanisms the inefficiency of many industrial mega-projects has come to light.

Table 1. Percentage of the employed in firm with a number of employees, %.

Country	Year	20	20-99	100-499	500+
Japan	1983	35.0	21	17.0	27.08
USA	1985	7.4	20.2	33.8	38.6
France	1981	21.8	23.0	27.1	28.1
Germany	1970		33.4	25.3	41.1
Great Britain	1983		26.2	27.0	46.8
Russia	1964		2	15.8	82.2
	1968		2.4	17.1	81.5
	1975		1.5	20.3	78.2
	1987		3.2	20.1	76.7

Co-operatives that were the earliest state-independent small firms began to appear back in 1986. At that time it was the only possible way to legalize private enterprise activity. In the beginning, the dynamics of the development of co-operatives looks fairly impressive. In 1987 there were 23 co-operatives. Then the development of co-operatives exploded: January 1988 — 13.2 thousand co-operatives, January 1989 — 77.5 thousand, January 1990 — 193.5 thousand. In two years, their number increased nearly 15-fold.

Small firms sprang up in 1990 on the basis of the Regulation of the Council of Ministers of the USSR of August 8, 1990, No 790, "Measures Toward Formation and Development of Small Enterprises." According to this regulation, small enterprises are set up in all sectors of the national economy on the basis of state, collective, and private ownership of Soviet citizens and other ownership and these enterprises could perform any activity not forbidden by law.

The main criterion by which this group of enterprises was identified was the number of employees. In industry and construction, these firms had up to 200 employees; in other sectors of production, up to 50 employees; in services, 25 employees; in retail trade, 10 employees.

The criterion for identifying this group of small firms was changed in 1995. According to the Federal Law "On State Support of Small Business in the Russian Federation" of June 14, 1995, No 88-FZ, it was not only the number of employees, but also the maximum 25 percent share in their charter capital of non-small-business entities: commercial structures (juridical persons) with participation of federal, regional, public and

religious organizations, charitable and other funds; as to the number of employees it was not to exceed in the reporting period: in industry, construction and transport — 100 employees, in agriculture and science-technology — 60 employees, in wholesale trade — 50 employees, in retail trade and consumer facilities — 30 employees, in other sectors and other activities — 50 employees. Co-operatives and small firms, unlike state-owned ones, could quickly appear and quickly die. The dynamics of registered small enterprises in national terms is shown in Fig. 1.

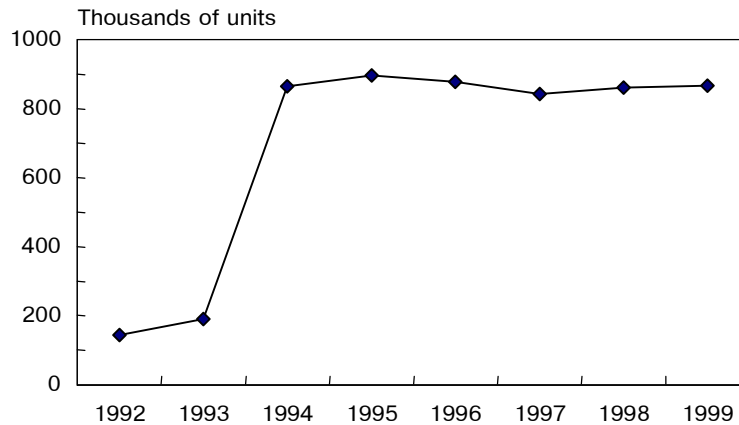


Fig. 1. Number of registered small enterprises in Russia. Source: RF Goskomstat.

In the first years of reformation there was a fairly great rise in the number of small firms and consistent positive dynamics. In 1995, a certain drop in their absolute number was observed, after which the trend stagnated.

Regional disparities in the formation of small firms appeared with the beginning of the reforms and can be noted as one of the distinctive features of the transition period in Russia along with regional variation in GRP, average per capita incomes and industrial output. Here are some examples of these disparities based on the data of economic districts (Figs 2 and 3).

Still higher differentiation of small business employment can be revealed in particular federal units. While in 1991 the difference between the minimum percentage of small business employment (Mordovia) and the maximum (the Magadan province (Oblast)) was 7 times, in 1992 this difference became 136 times. Since 1994, the leading territory in the

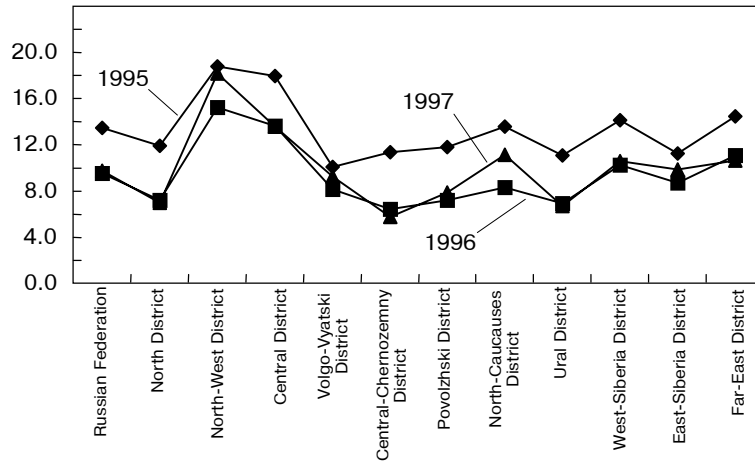


Fig. 2. Proportion of small business employment to the annual average employment in Russian economic districts in 1995–1997.

percentage of small business employment has been Moscow (1994 — 18.3%, 1996 — 23.1%, 1997 — 23.4%).

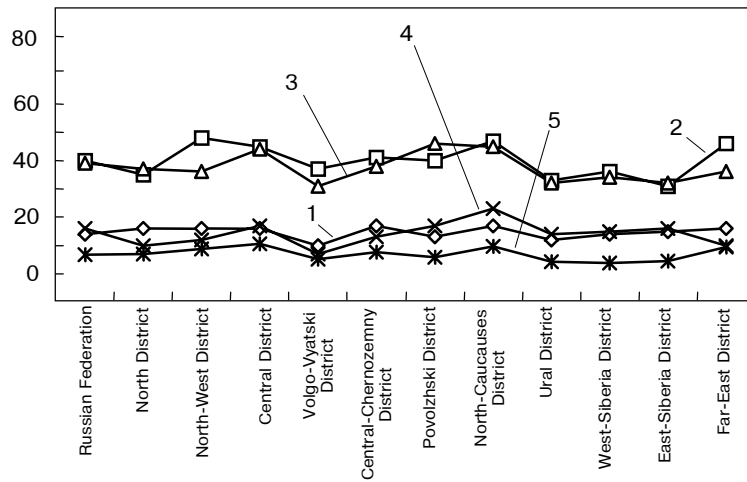


Fig. 3. Percentage of small business employment in 1993 across sectors and administrative districts of Russia (%): 1 — industry, 2 — construction, 3 — trade and public catering, 4 — science, 5 — share of small firms in total industrial output of the territories.

The scales of regional variation in new-enterprise formation can be seen in comparing the maximum and minimum number of small firms per thousand population in different regions over the whole period of reforms (Fig. 4).

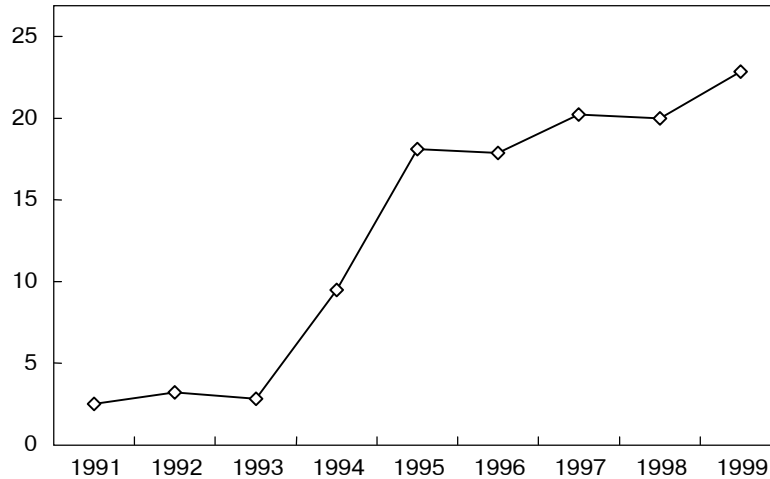


Fig. 4. The spread of changes in the number of small enterprises per thousand population among Russian regions (1991–1999) (max-min).

In 1991 in the region with the maximum level of entrepreneurship (the Magadan province), the number of small enterprises per thousand population was 2.52. The Lipetsk province was the region with the minimum level of enterprise formation. The difference between the maximum and minimum figures of enterprise formation in the time interval considered was consistently increasing to reach its maximum level in 1999, when the difference in the number of small enterprises registered per thousand population between St. Petersburg and Dagestan (maximum and minimum levels, respectively) was 22.8 times. It should be noted that while the group of "backward" regions (those with the minimum number of small firms per thousand population) each year included different regions (except for Dagestan, which was present in this group three times during this period), the group of leaders (with the highest number of small firms) were consistently the Magadan province, Moscow and St. Petersburg.

Interregional differentiation in the formation of small enterprises can be measured on the basis of the theory of conditional (σ) and unconditional

(β) convergence of Sala-I-Martin (1996).¹ According to this conception, the process σ of convergence for the group of economies occurs if the standard deviation of average per capita indicators tends to decrease, that is $\sigma_{t+T} < \sigma_t$, where σ_t is the standard deviation, or, using the logarithmic form of the indicator

$$\sigma_t = \left[\frac{1}{n} \sum_i (\log y_{it} - \mu_t)^2 \right]^{1/2} \quad (1)$$

where:

y_{it} is the per capita indicator in region i in year t , μ_t is the average value of $\log y_{it}$.

The analysis of the behavior of the differentiation of Russian regions by enterprise level was conducted from 1991 to 1999 on the basis of the Goskomstat data. Enterprise formation was measured by the number of small firms registered at the beginning of the year per thousand population. The information for 1991–1993 was formed on the basis of the data on small enterprises and co-operatives.

Calculations have shown that in the period from 1991 to 1994, a process of conditional convergence was observed. Interregional differentiation in enterprise formation was decreasing. The variation in the number of small enterprises was decreasing from 0.44 in 1991 to 0.34 in 1994. From 1995 to 1998, the trend reversed. During this period, a process of regional divergence is characteristic: regional disparities in enterprise formation are increasing.

The variation in the number of small enterprises increased from 0.38 in 1995 to 0.48 in 1998. In 1999 a new stage in convergence began. The standard deviation of the logarithm of the number of small enterprises in 1999 is 0.47.

Note that this trend of regional variation in enterprise formation is in line with the trend in per capita incomes. The latter indicator was obtained by Mikheeva (1999) for the 1991–1996 period. Fig. 5 plots the standard deviations of logarithms of per capita money incomes (Mikheeva's data) and enterprise formation in Russia's regions for the period from 1991 to 1999.

¹ A similar approach was used to measure regional, social and economic differentiation in Russia by Mikheeva (1998), where convergence was measured on the basis of such indicators as per capita GRP, per capita income, and per capita production.

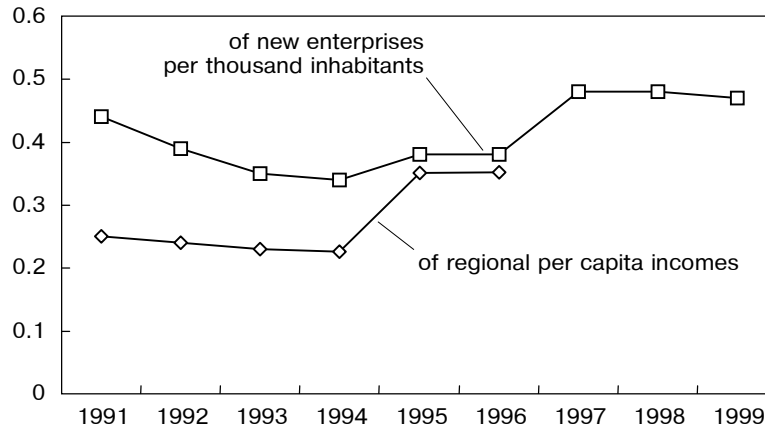


Fig. 5. Standard deviations of logarithms.

The latter observation seems to support the conclusions made by Berkowitz and DeJong (1998) who discovered a positive correlation of new enterprises with per capita incomes and thus showed the positive effect of small enterprises on regional economic growth.

The indicator of unconditional convergence β is used to measure the rate of convergence (divergence) in the following way.

Let y_{it} be the per capita indicator of the economy i in year t . The convergence rate β is assessed by the following equation:

$$\ln(y_{iT} / y_{it}) / (T - t) = c - b \ln y_{it} + u_{it}, \quad (2)$$

where c is constant, t and T are the first and the last year of the period under consideration, respectively, and u_{it} are balances. If b is assessed, then β is estimated from equation

$$b = [(1 - e^{-\beta(T-t)}) / (T - t)]. \quad (3)$$

The estimations made on the basis of new small enterprises per thousand inhabitants for the 1991–1999 period have given $\beta = -0.31$, which corresponds with the high rate of regional divergence by level of new enterprise formation.

A statistically significant measure of β derived separately for periods 1991–1994 and 1995–1999 could not be obtained.

The value of the unconditional convergence coefficient (divergence in our case) shows that in those regions where in the initial period there

was a high level of enterprise formation, this process continued rising. The increase in the rate of divergence in such indicators as per capita incomes and per capita GRP was found also for the period of 1990–1996 by Mikheeva (1999). Therefore, there are similar trends in the changes of enterprise formation, per capita incomes and per capita GRP in Russia's regions.

Our analysis has shown a high differentiation across regions in new-enterprise-formation, taking into account the temporal component. In the next sections it will be shown how this difference can be explained on the basis of the studies made by other authors and by what is really going on in Russia.

3. LITERATURE REVIEW

A detailed study of the literature devoted to small business development in different countries allows us to identify two lines of inquiry. The first is formed by authors who approach this problem from the theory of organization and economy of scales. In these works, as a rule, a different number of factors (institutional, political, social-economic) promoting the development of small firms in the economy are revealed. But, in these works lacking are theoretical models that would permit us to limit the number of such factors and the number of empirical tests of hypotheses, leading to an enormous number of different interpretations and explanations.

The influence of the institutional climate on the process of new-enterprise formation in Eastern and Central European countries and in Russia has been noted by many authors such as Webster (1992), Backberg (1997) who point out to the importance of tax reform, the decrease of bureaucratic burden and elimination of bureaucratic corruption, the improvement of judiciary structures and the infrastructure of capital markets. Other authors, for example Radaiev (1998), who concentrate their attention on the economic and political instability in the nation emphasize the influence of "business networks" combining the means of formal control with informal exchange of services between entrepreneurs.

One of the most recent studies by the World Bank conducted by Brunetti, Kisunko, and Weder (1997, 1998) in 69 nations where over 3600 entrepreneurs were surveyed, states: institutional barriers exist in all countries, but the significance of individual factors is different. Corruption, crime and embezzlement as well as a normative tax base are the most serious barriers to the development of business activity. For the

entrepreneurs of Central and Eastern Europe, high taxes, corruption and inflation are the main causes impeding business, while for ex-Soviet nations, an untrustworthy judiciary system was mentioned by these authors.

The decisive factor in the new-enterprise formation in Eastern and Western European countries as was shown by Webster (1992), Basareva *et al.* (1995) has become the development of foreign trade, as well as specific factors which may be described as an index of reforms or local initiatives. Thus, Berkowitz and DeJong (1998) demonstrated on the RF statistics that new-enterprise-formation in a region (number of firms per resident) corresponds with the reform index which is defined by them as progress in small scale privatization, in the degree of price control, and in the level of subsidies to regional economies. They have found that the initiative of local governments in privatization and the desire of regional governments to get control of their capital stock displays a strong positive relationship with new-enterprise formation which, in turn, facilitates economic growth in regions.

Very popular is the model of business climate developed by Mokry (1988), Bartik (1989), attributing new enterprise formation to a combination of such factors as flexible employment policy, the low cost of production factors, soft local taxation, support from governments. For an explanation of this process in England, Keeble (1990) proposed three theoretical models.

It is a model of economic depression increasing the number of potential entrepreneurs, a model of per capita income growth underlying subsequent changes in market demand, and a model explaining the surge in new enterprise formation by the emergence of radically new technologies (computerization). These theories were analyzed in the regional aspect by Amin and Storey (1986) in terms of the models called here the Birmingham, Bologna and Boston models. In the Birmingham model, new-enterprise formation is a direct result of regional and national industrial depression and corporate restructuring. In the Bologna model, enterprise formation is explained by the higher demand in the technological market and specialization inside a geographic region where state control stimulates enterprises not to expand in size. The Boston model is an incubator model explaining the high rates of new enterprise formation in the center of a large urban area with the highest cost of key factors of production but with people seeking career opportunities and existence of unstable sectors; access to production inputs, access to consumers, presence of specialized production units, and access to R&D, information and innovations.

Reynolds (1991) examined the attempts to analyze the enterprise effect on the improvement of well-being in the USA and showed that changes

in new and small firms had substantially influenced economic change in the USA in the 1976–1984 period.

Loveman and Sengenberger (1991) made an empirical analysis of the data for six nations of the OECD and demonstrated that increases in employment in small enterprises depends to a large degree on industrial restructuring of two types, *i.e.*, decentralization of enterprises and new small enterprise mergers, which are a response to higher consumer demand for more diversified goods.

Different authors noted also other factors contributing to new-enterprise formation: Bartik (1989), Moyes and Westhead (1990), Storey (1982) and Webster (1992) indicated human capital; Glisin and Rogachevsky (1998), Beesley and Hamilton (1984) — the level of various costs of setting up an enterprise, including transaction costs; Storey (1982), Moyes, Westhead, and Brusco (1982) — the presence of production factors and market infrastructure; Brusco (1982) and Mason (1991) — access to studies and developments, information, innovations, new technologies; Bartik (1989), Brusco (1982) — costs of social infrastructure; Zhuravskaya (1999), Johnson (1986), Mason (1991), Mokry (1988) — the presence or absence of support from administration bodies; Johnson (1986), Mason (1991), Mokry (1982) — social norms conducive to enterprise credibility.

A second group of authors investigated the phenomenon of small business development focusing on its specific role in economic growth. These researchers drew on Schumpeter's (1939) and Knight's (1921) ideas elaborating theoretical concepts that mostly are not accompanied by empirical tests. Knight (1921) in "Risk, Uncertainty and Profit" described the entrepreneur as an individual with sound judgment that often goes with self-confidence, as the "head" or one who is willing to take on all risks and responsibilities for decisions made.

Baumol (1968), although he thought that the entrepreneur really disappeared from the literature in the 1950-s and 1960-s, suggested that much of existing economic theory had relevance for entrepreneurship. Studies should be focused on their application to the problem of maximizing the effect from the entrepreneur function. Baumol suggested for the entrepreneur the role of "innovator according to Schumpeter." For the case of an undeveloped economy, Baumol (1990) concludes that studies should be concentrated on the impact of public policy on the return to the risk-bearing function. Researchers should try to understand, for example, the effect of alternative systems of taxation on enterprise development, or the effect of the structure of interest rates on decisions to organize new firms. Public policies, the so-called rules of the game, significantly influence whether entrepreneurship is allocated in

productive or unproductive ways. Societies that are interested in improving this allocation, in order to improve prosperity, ought to identify and enact policies that reduce the marginal cost of risk-bearing. Taxes on capital gain, for example, should be structured in such a way as to resist arbitration and encourage long-term investments.

Coase (1937) answering the question about what determines optimal firm size, writes: "the question is whether it is worthwhile to implement an additional transaction within the framework of the present organizational structure. The marginal cost of organization of a process within a firm should be equal to the cost of organization in any other firm or to alternative cost in case of refusal from transaction in favor of instruments of market price formation. Businessmen will always be experimenting in higher or lower control of the process, thus maintaining the mechanism that holds the equilibrium."

And, finally, a third branch of research has recently developed where entrepreneurship is envisaged from the viewpoint of the theory of utility and rational individual behavior in the labor market. Entrepreneurship is identified with self-employment and is opposed to its alternative, that is hired labor. For this group of research it is characteristic to use theoretical ideas of risk-aversion and to discern labor market segments. Econometric equations of new enterprise growth assessed in these studies are, as a rule, bound with an economic theory. This approach permits us to avoid non-real models, making the model more plausible and effective.

Berkowitz and Cooper (1997), Blanchard (1997) realized purely theoretical approach, Aslund (1997) carried out an empirical study.

Blanchflower and Oswald (1998) model low risk aversion and associate it with individuals' entrepreneurial vision, at the same time taking into account the important function of the density of distribution of capital assets among inhabitants.

Earle and Sakova (1999) proceed from the assumption that the probability to choose self-employment is based on a certain surplus of utility from self-employment over utility from being employed. Drawing on empirical data of questionnaire surveys in six countries, including Russia, they have proved that in Russia labor supply is a non-elastic function and that, in comparison to other countries, the self-employment decision requires a high premium.

The latter approach is fairly productive as it permits to bind econometric equations of small enterprise growth with the economic theory. Dougherty (1997) thinks that building an econometric model on the basis of the model of individual behavior has three possible merits. "First, this rela-

tionship is valuable as such, second, it may help avoid specification of non-real models, third, there is a probability that the theory will impose constraints on specification and make it more plausible and effective."

Later we will show how the approach based on the model of rational behavior of an individual in the labor market can be elaborated and applied to the analysis of regional disparities in enterprise formation in Russia.

4. CONCEPTUAL FRAMEWORK

The conceptual framework of this study required to explain the choice of determinants and the interpretation of the obtained results is based on Schumpeter's views (1939) that risk aversion is displayed only by part of the population and on the tenets of the theory of utility and rational behavior in the labor market.

Taking into account the features of Russia's transition, we elaborate Blanchflower and Oswald's model (1998). An attempt is made to pass from the model of individual behavior to that of aggregate labor demand-supply in a two-sector model of the economy. Unlike Blanchflower and Oswald's model (1998), each entrepreneur uses not only his own labor but the labor of employees, and the self-employment decision is taken on by him taking into account the risk of zero utility from his activity.

The form of labor demand-supply functions in the two-sector economy permits us to move to the estimation of relative demand-supply in the self-employment market in an individual region similar to the approach of Earle and Sakova (1999). The latter study is built on questionnaire survey data and counts out the model rationale for demand-supply factors.

Consider the economy of a particular region consisting of two sectors. The first sector — the traditional sector — will be called the wage sector. The other sector is that of small enterprises. In contrast to Blanchflower and Oswald (1998) and Earle and Sakova (1999), this sector includes not only self-employed business owners, but also those employed in small businesses.

N is the total employable population.

Every person from N can either work in the wage sector, or be an employee in a small enterprise, or set up a new enterprise himself. The employable population, therefore, is divided in the following way:

$$N = L_1 + L_2 + E + L_0,$$

where L_1 is employment in the wage sector, L_2 is employment in small enterprises, E are the individuals who made the self-employment decision and became entrepreneurs.

For simplicity, assume that one entrepreneur owns only one small enterprise, L_0 are those unemployed, including voluntarily unemployed. Shadow employment is not considered.

The decision of each individual i , $i = 1, \dots, N$ will be modeled on the basis of discrete choice, that is assuming that he chooses out of a number of alternatives and decides on that which gives him maximum utility u_i .

Assume that an individual maximizes his utility by setting up a small enterprise. Then he must have entrepreneurial vision and sufficient capital. We can presume that if an individual has no entrepreneurial vision or capital, his utility from a small enterprise is minus infinity.

Let β be a proportion of the employable population with entrepreneurial flair. These people see opportunities where others do not.

There exist a multiplicity of potential projects for small enterprises, for which different amounts of capital are required; this amount is k . The capital is assumed to be randomly distributed among the population. The relevant function of the density for those who possess entrepreneurial vision is $\varphi(k)$; k lies between 0 and 1. For convenience, normalize the richest person's capital assets at unity. The proportion of those with capital less than k is $\Phi(k)$. That is

$$\Phi(k) = \int_0^k \varphi(k) dk .$$

Since in the economy there is asymmetry of knowledge and the profit from a project can be estimated only by a person with entrepreneurial capacity, there is a low probability that a potential entrepreneur without capital can get loan for his project. The probability of getting a loan is ρ .

It is natural to assume that among projects the first to be implemented are those that require less expenditures of capital. The boundary capital is k^* , that is the amount required to implement a marginal project by a marginal entrepreneur. Projects requiring greater capital are not implemented. Knowing k^* , we could estimate the number of entrepreneurs. The probability that an individual will have capital sufficient to set up a new enterprise is

$$\int_{k^*}^1 \varphi(k) dk = 1 - \Phi(k^*) .$$

To this probability the probability of obtaining a loan by people without sufficient capital should be added:

$$\rho \int_0^{k^*} \varphi(k) dk = \rho \Phi(k^*).$$

The number of entrepreneurs E will be the sum of these two probabilities multiplied by β and by the total employable population N :

$$E = \beta N \left(\int_{k^*}^1 \varphi(k) dk + \rho \int_0^{k^*} \varphi(k) dk \right) = \beta N (1 - (1 - \rho)\Phi(k^*))$$

Let $\pi(k, w_2)$ be the profit from a project requiring capital k , while wages in the small business sector are w_2 , and in the wage sector, w_1 . Profit includes, among other things, the entrepreneur's satisfaction from his activity. It is normal to believe that π is a function increasing in k since the first projects to be implemented are the more profitable ones, yielding higher profits. Defining such a function we assume that if some entrepreneurs have already established small enterprises, the same opportunities are not narrowed to others.

Consider the decision made by a typical entrepreneur who has the possibility to set up a small enterprise. We assume that he makes his decision based on his function of utility, $u_E(\pi)$. He compares the expected utility of the venture with the utility \bar{u}_E that he could get from another activity. The expected utility is estimated taking into account probability μ that the newly created enterprise will go bankrupt and that the entrepreneur will get zero income. The probability μ is the determinant of the small business risks. The level of utility \bar{u}_E can be also determined, among other things, by the wage obtainable by the person as an employee either in the wage sector or in the small business sector. Therefore, the minimum level of small enterprise profitability which makes sense for a typical entrepreneur to create a new firm, π^* , is determined by the following equation:

$$(1 - \mu)u_E(\pi^*) + \mu u_E(0) = \bar{u}_E(w_1, w_2).$$

This relation sets the boundary π^* as a function of the risks and income from alternative activities:

$$\pi^* = \pi^*(\mu, w_1, w_2).$$

The condition of utility increase in profit from self-employment ($u'_E > 0$), and the condition of utility increase in wage rates ($\bar{u}'_{Ew_1} > 0, \bar{u}'_{Ew_2} > 0$) determine the kind of relation of π^* on parameters:

$$\frac{\partial \pi^*}{\partial \mu} > 0, \frac{\partial \pi^*}{\partial w_1} > 0, \frac{\partial \pi^*}{\partial w_2} > 0.$$

The relation for the boundary size of capital, k^* , has the form:

$$\pi(k^*, w_2) = \pi^*(\mu, w_1, w_2).$$

Hence

$$k^* = k^*(\mu, w_1, w_2).$$

The form of the function of labor demand of small enterprises is determined by the relationship of k^* to μ, w_1, w_2 .

$$L_2 = L_2^D(w_2, \mu, \rho, \beta, B_2, w_1).$$

The demand function also includes parameters ρ and β , determining the number of small enterprises and exogenous factors B_2 affecting small enterprises.

On the other hand, consider the wage sector of the economy. For simplicity, it will be modeled on the basis of the aggregate production function $f(L_1)$. Then the production function has the form:

$$f(L_1) - w_1 L_1.$$

Maximizing this function in L_1 , we get the standard condition of the first order:

$$f'(L_1) = w_1,$$

which means that wages are equal to marginal labor productivity.

The function of marginal labor productivity is, therefore, the inverse function of labor demand in the wage sector:

$$f'(L_1) = w_1^D(L_1).$$

Assuming the decreasing effect, the inverse demand function $w_1^D(L_1)$ is decreasing. Converting this function, we obtain the direct demand function $L_1^D(w_1)$.

Assuming the production function's dependence on some exogenous factors B_1 , *i.e.*, $f = f(L_1, B_1)$, demand will also be a function of these factors, that is:

$$L_1 = L_1^D(w_1, B_1).$$

The labor demand in our model draws on the model of discrete choice. Individual i makes a choice out of three utilities: the utility of working in the wage sector $u_i(w_1, A_1)$, the utility of working in a small enterprise $u_i(w_2, A_2)$ and the utility of becoming involved in activity outside the above sectors, including voluntary unemployment $u_i(w_0, A_0)$. Variables A_s , $s = 0, 1, 2$, include all additional factors affecting the individual's decision. In this model we take them as exogenous, like w_0 , too. The individual chooses that type of employment from which he earns the greatest utility. According to this, we can write the following functions of labor demand in the two analyzed sectors :

$$L_1 = L_1^S(w_1, w_2, A_1, A_2, A_0)$$

and

$$L_2 = L_2^S(w_1, w_2, A_1, A_2, A_0).$$

Both functions include the same factors.

5. SPECIFICATION OF THE MODEL AND TENTATIVE ESTIMATES

The econometric analysis will be focused on the following conclusions drawn from the theoretical model.

- The level of enterprise formation in the economy is determined by interconnected balances of supply-demand in the segments of the labor market. Labor demand and labor supply in the small business sector cannot be treated in isolation from the wage sector. The ratio between earnings in the small enterprise sector and the wage sector is a determinant in enterprise development.

- Low risk aversion among a region's inhabitants accounts for regional variation in small business formation in Russia. The higher is the percentage of people in a region who are able to embrace new ideas, risk and liberal reformation, the higher labor demand appears in the sector of small business.
- In creation of a favorable enterprise climate, asymmetry of knowledge about the attractiveness of business-ideas and availability of disposable resources in households is critical. Under higher transparency of information, more small enterprises appear and labor demand is increasing in the segment of small business.
- Regional risks make a significant component of entrepreneur climate. Under high risks, the expected enterprise yield is reduced and labor demand decreases.

Theoretical ideas about the connection between labor supply-demand matching in the wage sector and the small business sector permit us to come to an econometric estimation of equations of relative demand-supply suggested by Earle and Sakova (1999). The price (earnings, wage) and quantity of labor are measured in this statement in relative units and the relation of demand to supply is as follows:

$$D = D(w, X)$$

$$S = S(w, Z),$$

where D is the aggregate labor demand in the small business sector related to that in the wage sector, S is the aggregate labor supply in the small business sector related to that in the wage sector, w is the ratio of average earnings in the small business sector to that in the wage sector, X is a vector influencing the relative change in demand, Z is a vector influencing the relative change in supply. Such a statement permits us to predict the signs of the independent variables in the regression equations.

The function of relative demand is defined as a function reverse to that of relative opportunities in the small business sector over the wage sector, so that $\delta D/\delta w < 0$.

The function of relative supply reflects the degree of mobility of the labor force factor between the small business and wage sector, so that $\delta S/\delta w > 0$. The effect of shifts along X and Z in the equilibrium of relative volumes and prices can be easily presented. The total differential in the equilibrium state $D = S$ equals

$$(\delta D/\delta w)dw + (\delta D/\delta X)dX = (\delta S/\delta w)dw + (\delta S/\delta Z)dZ.$$

If $dZ = 0$, then $dw/dX > 0$, and if $dX = 0$, then $dw/dZ < 0$. Eliminating dw , it is easy to show that $dQ/dX > 0$ and $dQ/dZ > 0$ (Q is the equilibrium point). This permits us to state a simple result: relative remuneration in the small business sector will be higher when demand factors dominate, and lower or even negative when shifts of the supply curve are more substantial.

The components of vectors X , Z are determined by the model presented in Section 4.

The basic determinants of relative labor demand in the aggregated segment of small businesses are the following: the relative earnings of those employed in small businesses to those employed in the wage sector, risks, presence in the region's economy of capital which potentially can be invested in small business, the percentage of inhabitants in the region with entrepreneurial flair. Regional policy and crimes are taken as factors of risk in new enterprise formation.

The basic determinants of labor supply in the aggregate segment of small businesses are relative earnings and factors skewing the supply curve.

The report presents the model and calculations for the initial period of the small enterprise sector in 1990–1992.

The structure of the model of relative demand-supply of the aggregate segment of small businesses for the economy consisting of i regions is a system of simultaneous equations (Simultaneous Equations Models) and is

$$\begin{aligned} \text{Demand equation } q_D &= \alpha_0 + \alpha_1 p + \alpha_2 y + \varepsilon_D, \\ \text{Supply equation } q_S &= \beta_0 + \beta_1 p + \beta_2 z + \varepsilon_S, \\ \text{Equilibrium condition } q_D &= q_S = Q. \end{aligned}$$

We will estimate the system where the supply equation is written with regard to price:

$$\begin{aligned} \text{Shares}_{it} &= \alpha_{it} - b_1 \text{Wsmwgov}_{it} - b_2 \text{Crime}_{it} + \\ &+ b_3 (\text{Re gElit}_{it} \text{ BudGR}_{it}) - b_4 \text{ExpRisk}_{it} + \\ &+ b_5 (\text{PolElect}_{it} \text{ DepBal}_{it}) + \text{dummy1990} + \text{dummy1991} + \gamma_i + \varepsilon_{it}, \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Wsmwgov}_{it} &= \beta_{it} + c_1 \text{Shares}_{it} - c_2 \text{Workpop}_{it} - \\ &- c_3 \text{SumGrad}_{it} + \text{dummy1990} + \text{dummy1991} + v_i + u_{it}, \end{aligned} \quad (2)$$

where:

$Sharesm_{it}$ is relative labor demand or supply in the small business sector in relation to the wage sector in region i in year t ; it is measured by the percentage of small business employment in relation to all other employment;

$Wsmgov_{it}$ is the relative earnings of a small enterprise employee in region i in year t ;

$Crime_{it}$ is crime;

$RegElit_{it}$ $BudGRm_{it}$ is regional policy in region i in year t ;

$ExpRisk$ is an estimate of the investment risk in region i in year t ;

$PolElect$ $DepBal_{it}$ is enterprise potential of region i in year t ;

$Workpop_{it}$ is the percentage of the employable population of region i in year t ;

$SumGrad_{it}$ is the percentage of graduates of all learning institutions to the total inhabitants of region i in year t ;

$Dummy$ 1990, 1991 — dummy of the respective year;

γ_i , v_i — fixed effect of spatial organization;

ε_{it} , u_{it} is a symbol of error.

Data on earnings in the small business sector and data on small business employment in 1990–1992 were estimated from the RF Goskomstat information handbooks that can be described as relic. They were published by the Goskomstat at the beginning of perestroika for federal civil servants in no more than 100 copies; some had a stamp "For internal use only." The author has great trust in these data since in 1990–1992 the number of enterprises was small, and the information was compiled on the basis of a complete and not sampling survey as in subsequent years. Also, at the beginning of perestroika, tax dodging and, therefore, concealment of real wages had not reached the level witnessed at present.²

² In the phone interview Olga Sinitsina, Head of the Goskomstat Non-state Sector Department of Finance and Development, who has information on wages in small businesses, expressed great doubt over the credibility of the data for 1995–1999. These data comply with bookkeeping reporting but not with real wages. Official Goskomstat data on wage size in the small enterprise sector in 1995–1999 are much below the regional average. For example, in 1995 in some regions the wages in small businesses were just 0.09 to those in the wage sector, which averages 0.55. Surveys of workers show that actual pay received in the small business sector can be 25-fold the calculated wage. For the most part, wages were paid, as a rule, in "black cash," which made it possible to avoid taxation. Yearly losses of the federal budget as a result of hidden real wages in the small enterprise sector alone were, by the author's estimate, a minimum of 1.5–3%. In 1990–1992, relative wages in small businesses were to the wage sector averaged 1.16, and were a maximum of 2.69.

The task of searching for variables measuring enterprise potential of a region and enterprise risks both in the general case and with reference to the Russian situation seems rather difficult. We assumed that a good indicator of low risk aversion can be the stability of the political preferences of the inhabitants.

In present-day Russia, entrepreneurship is a new kind of activity. It is undertaken mostly by those inhabitants who have the inclination towards and receptivity to social innovations and, in a broader sense, to economic and political reforms. The results of election campaigns in Russia rather consistently demonstrate the political preference of the electorate, which can imply that behind these results steady factors of the territorial differentiation of society in the propensity to risk-bearing exist. Variable *PolElect* — stability of the political preference of inhabitants estimated through processing the election data that was taken from a database prepared by the order of the Russian Unions of Industrialists and Entrepreneurs. The higher *PolElect* variable, the more consistent and liberally oriented preferences, are demonstrated by the region's inhabitants and the higher proportion of them who have low risk aversion.

The theory assumes that an effect on enterprise formation is made by the share of inhabitants with low risk aversion and presumably necessary capital. The effect of *PolElect* variable in our model is increasing (decreasing) according to the presence of capital needed to start up one's own business. For appraisal of this capital, we used the indicators of balance on deposits in savings banks. We were guided by information obtained from questionnaire data of the surveys of entrepreneurs which show that starting capital for opening one's own business in Russia was, as a rule, borrowed from near relatives, acquaintances or was the property of the entrepreneur. Bank loans practically were not used because of high interest rates. Before price liberalization, the inhabitants in Russian regions preferred to keep their money in savings banks. Therefore, the entrepreneur potential of the region — variable *PolElect DepBal_{it-1}* — is determined in our model by the combined effect or product of two variables — *PolElect* — assessment of propensity to risk and *DepBal_{it-1}* — demand balances in saving banks in year $t - 1$.

Variable *PolElect DepBal_{it-1}* corresponds to our conceptual model where enterprise formation depends on the availability of required capital among individuals with low risk aversion.

RegElit_{it} BudGRm_{it} is a measure of regional policy in region i in year t . The product of two variables is *RegElit_{it} BudGRm_{it}*; *BudGRm_{it}* is an indicator of the economic potential of institutions in region i in year t . It is measured as a ratio of expenditures of regional budgets to GRP

in region i in year t . It is used in measures relative to the national average.

This indicator was suggested by Kolodko (2000) and Popov (2000), who noted that the dynamics of state expenditures in the period of transition turns out to be a factor important for successful transformation. A sharp cutback in state expenditures is a straight way to the collapse of institutions and to a deep fall in output accompanied by increased social inequality. This observation concerns not only the national but also the regional level as well. For estimation of the indicator of economic potential of regional institutions, data on GRP obtained by Mikheeva (1999) were used. (Official data began to be published in 1994). Data on the expenditures of regional budgets in 1990–1992 are taken from working documents of the RF Ministry of Finance.³

For regions in Russia at the beginning of perestroika, not only was the relative size of the economic potential of institutions very important but also the political orientation of those who disposed of these resources. As an indicator we used a combined effect of variables $RegElit_{it}$ and $BudGRm_{it}$. Variable $RegElit_{it}$ — the measure of influence of the regional elite and the attitudes of authorities toward reform — is taken from the database prepared on the request of the Russian Union of Industrialists and Entrepreneurs. The higher is this measure, the more influential and more liberal are the regional elite.

The statement "elite as a variable" is central among the reasons for the regime's downfall is a keystone in transition studies (Rustow, 1970). It is argued that the role of the elite in nations in transition is multiplied many times since the process itself necessarily destroys the consensus within the old elite, creates a cleavage between old and new elite in the field of ideology, demanding negotiations between the old elite and new public forces. The establishment of democracy requires that there is a moral cohesion within the elite (Higey and Burton, 1989).

The combined effect of the variables $RegElit_{it}$ and $BudGRm_{it}$ shows the presumed strategy of economic reformation. The higher this measure, the higher is the size of resources under the jurisdiction of

³ This information was meticulously hidden over a number of years in the beginning of perestroika for fear of a possible undesirable initiative of "parade of sovereignties" and did not appear in the open press. These data were given to author as to an expert of the Committee of the Supreme Council of the RSFSR and have survived only by chance.

liberally oriented government officials in the region and, therefore, the more probable it is that economic transformations in the region will go in the democratic direction, business risks will go down, and the credibility of business rules among entrepreneurs will be enhanced. This measure is one of those determining political risks.

$Crime_{it}$ is a measure of crime in the region. It is inserted into the model as a measure of increasing risk. Presumably, the more crime in the region, the more dangerous the environment, the lower enterprise formation, and the lower demand for labor.

$ExpRisk_{it}$ is an index of investment risk. It measures the kind of environment for an investor, that is the probability of loss of investments and of yield. It is the average weighted sum of private risks. The data are taken from "Expert" journal.

The theoretical model of Section 4 determines the specification of the equation of relative labor supply. Two hypotheses are tested. One is that at higher relative utility, the overflow from the wage sector to the new sector was increasing — relative labor supply is increasing under a higher level of utility. The second is that labor supply depends on the state of the local labor market of the region — on the number of employable inhabitants and graduates from all kinds of educational institutions. To measure these indicators, the RF Goskomstat data were used. The indicators are standardized to the number of the region's inhabitants.

In preliminary estimations the effect of a region's educational potential (percentage of specialists with higher occupational education among the employed) and sex-specific structure of the inhabitants (percentage of men among the region's employable inhabitants) was tested. The significance of these factors was not supported by the estimations. Besides that, as a measure of the relationship (in work earnings) between new and enduring sectors of enterprises variable $lnWsmgov_{it}$ was introduced. No appreciable improvement in the statistical characteristics of the model was obtained.

In the course of measuring the parameters of the system of simultaneous equations, it is necessary to distinguish between endogenous and exogenous variables. A variable is endogenous if its value is determined within the model. A variable is exogenous if its value is determined outside the model and, therefore, is taken as preset. The classification is important since the methods of measuring presuppose that in each equation exogenous variables are not correlated with error. Endogenous variables, as a rule, have non-zero correlation. Two variables are endogenous in the model: $Sharesm_{it}$ — the

share of small enterprise employment in year t over the employment in the wage sector and $Wsmwgov_{it}$ — relative earnings of employment in small enterprises.

The other regressors are exogenous variables. They are determined outside the model: $RegElit_{it}$ — the measure of influence of the regional elite, $Crime_{it}$ — crime, $PolElect_{it}$ — propensity to risk-taking, $Workpop_{it}$ — percent of employable population in the region's economy, $SumGrad_{it}$ — the relationship of the number of graduates of all types of learning institutions in the region to the number of the region's inhabitants.

$ExpRisk_{it}$ — an index of investment risk. It is possible to suppose that $DepBal_{it-1}$ — demand deposits in saving banks — is contingent on wages, but we use a lagged variable of the previous year.

The measure of the economic power of institutions in the region $BudGRm_{it}$ is estimated on the data on expenditures of regional budgets. Methods for estimation of regional budgets in the 1990–1992 period was based on annual changes in the structure of regulating income sources. The structure of "splitting" the federal taxes and determining the share that will be assigned to the regional budget were determined by the Center for each region separately. The size of the region's budget, therefore, characterized the region/federal relationship and is therefore an exogenous variable.

There is also other evidence of the exogenous quality of the chosen variables given by Earle and Sakova (1999). Pondering whether the choice of a particular kind of education is endogenous or exogenous variable, they note that while for a market economy this variable is endogenous (this choice can be done with self-employment intention), and in the case of transition economies of the early 1990-s, the choice of particular education is an exogenous variable. When this choice is being made, the individual can not foresee the possibility of self-employment. In socialist nations no such alternative existed at that time. It is suggested that such variables are called quasi-experimental. They break apart some relationships or groups of variables which under other conditions would be defined as endogenous. Our variables relate to the 1990–1992 period. Before that time actually there were no small businesses, which makes an additional argument to recognize the exogenous quality of the regressors.

Turning back to the system of equations, note that both equations describing the relative demand-supply in the aggregate segment of small businesses are overidentifiable. The order condition holds with ">" sign.

6. METHODS AND RESULTS OF ESTIMATIONS

The estimation of the model was done in two ways: by 2SLS (two-stage least squares), which is a partial case of methods IV (instrumental variable estimators) and FIML (full-information maximum likelihood) (Green, 1997, chapter 16). While the former method estimates each equation separately, the latter estimates all equations and parameters together. Estimation by the OLS method is given as an illustration to show that the estimates are skewed and not robust.

The results of the estimations are shown in Tables 2 and 3.

Table 2. Model of relative labor demand in small businesses (base variant for 1990–1992).

	2SLS	FIML	OLS
Constant	5.05** [3.608]	5.83** [2.979]	-1.1219 [-1.086]
<i>Wsmwgov</i>	-0.865** [-8.339]	-0.949* [-6.393]	-0.300** [-6.092]
<i>PolElect DepBal</i>	0.0009* [2.312]	0.0009** [3.023]	0.0015** [7.115]
<i>Crime</i>	0.0017** [8.770]	0.0016** [5.472]	0.0018** [8.476]
<i>RegElit BudGRm</i>	0.1283* [1.708]	0.110 [1.032]	0.137** [1.717]
<i>Exprisk</i>	0.993* [2.312]	1.182* [1.815]	1.360** [3.001]
Dummy 1990	8.1252** [10.749]	8.617** [7.528]	4.540** [9.182]
Dummy 1991	2.15* [6.771]	2.246** [4.703]	1.230** [4.112]
Number of observations	212	212	212
R ² adj.	34.7%	34%	37%
F-statistics	F(7.204) = 34.74 Prob > F = [0.0000]	F(7.204) = 16.46 Prob > F = [0.0000]	F(7.204) = 27.28 Prob > F = 0.0000

Wsmwgov — Relative earnings in small business sector;

PolElect DepBal — Region's enterprise potential;

RegElit BudGRm — Regional policy;

Exprisk — Regional risks;

T-statistics are in brackets;

* — 5% level of significance;

** — 1% level of significance.

Table 3. Model of relative earnings from employment in the small business sector (basic variant of 1990–1992).

	2SLS	FIML	OLS
Constant	39.432** [6.551]	38.912** [5.292]	25.287** [6.881]
<i>Sharesm</i>	0.357* [1.781]	0.377* [1.463]	-0.1849* [2.134]
<i>Workpop</i>	-0.563** [-4.931]	-0.536** [-3.783]	-0.285** [-4.349]
<i>SumGrad</i>	-0.208* [2.282]	-0.288** [-2.891]	-0.077 [0.980]
Dummy 1990	8.032** [22.627]	8.072** [19.367]	7.753** [22.944]
Dummy 1991	2.307** [6.662]	2.230** [5.648]	2.155** [6.479]
Number of observations	212	212	212
R ² adj.	74%	70%	75%
F-statistics	F(5.206) = 101.83 Prob > F = 0.0000	F(5.206) = 91.86 Prob > F = 0.0000	F(5.206) = 101.85 Prob > F = 0.0000

Sharesm — Proportion of small business employment;

Workpop — Employable population;

SumGrad — Graduates from higher learning institutions;

T-statistics are in brackets;

* — 5% level of significance;

** — 1% level of significance.

Obtained is a model with the expected signs of the relationship of relative labor demand to relative earnings ("–") and relative labor supply to relative earnings ("+"). Both are significant in their equations.

In the demand equation relative earnings is significant at the 1% level. The coefficients obtained by the 2SLS and FIML methods have similar values. With increasing relative earnings by unity, relative labor demand decreased 0.86 (elasticity of labor to earnings). The analysis was made on the results of the 2SLS estimation.

Risks are considered in the model through their effect on demand by three measures: the level of crime, the index of investment risk *ExpRisk*

and the institutional variable *RegElit BudGRm*. The variable *Crime* was significant in the equation, but the sign of the variable does not fit the prediction. It was supposed that crime checks small business growth. But as was shown by the estimations, crime promotes business. There is evidence confirming that such a regularity can take place. Brown and Earle (2000), who applied the share of regional economy controlled by criminal groups as an indicator of crime, drew the conclusion that criminal groups might facilitate the supply of goods due, for example, to bypassing bureaucratic barriers or to protecting deliveries from plunder, thus helping to improve the efficiency of enterprises.

Regressor *ExpRisk* entered the equation with a sign opposite to that expected. The higher is the risk for an investor, the higher is the labor demand in the small enterprise sector. There can be more than one explanation for this. The index of investment risk has been estimated by the Russian rating agency "Export-PA" for large investors, mostly foreign. This summary measure consists of estimations of legislative, political, economic, financial, social, criminal and economic risks. The weights of the components of the summary measures of investment risk were obtained through a survey of experts. It is not ruled out that the measure, derived in this way, is far from reality. On the other hand, it is possible that when regions with high investment risk are avoided by respectable international investors, an environment with low competition arises with a niche left for small investors running businesses in their native places. It is also possible that initial enterprise formation in Russia has given birth to initiatives taken earlier by unskilled people. Creating their small enterprises, they did not think much about real risks. This is also in line with the positive coefficient of *Crime*.

The hypothesis that liberal authorities, with control over their capital stock, are successful in attracting new enterprise was confirmed. The coefficient of the variable *RegElit BudGRm* is "plus," but in the FIML estimation it is insignificant. The 2SLS method produced a model with a significant positive coefficient at the 0.5% level. The elasticity of labor demand under the institutional variable is 0.12. Important evidence was obtained indicating that for regional economic growth, not only is the amount of state expenditures critical which was repeatedly noted by analysts, for example, by Sonin (2000), but also critical is the political orientation of policy-makers who control and manage these resources. In fact we obtained an estimation of the influence and role of policy makers' political orientation on the course of economic reform.

Federal legislation has empowered local governments to interfere in the activity of private enterprises as they like. Mechanisms of such interference are well known: the support of "right" enterprises by giving them

tax exemptions and soft credits, bias in authorization of economic activity which permits such enterprises to get monopolistic profit, and bribing of local governments. The present wide spread range of prices within Russian borders is mostly explained by the fact that local government can use judiciary processes to hinder some kinds of trade and check competition. Inspections performed by different regional agencies concerning all aspects of enterprises activity are an impediment to all entrepreneurs.

Channels of pressure do exist, and how local officials make use of them depends on concrete personalities, the situation in the region and the size of the resources that are at the disposal of the officials. The hypothesis that a well-knit and liberally disposed elite assists reforms, entrepreneur activity and, ultimately, the flow of labor resources from the wage sector to the new enterprise sector received statistical substantiation. It is possible to presume that this influence takes place due to the higher credibility of entrepreneurs and to the reduction of their transaction costs associated with insurance against risks in case of possible resignation of regional officials.

The absence of conflicts between power branches would cut transaction costs borne by entrepreneurs, otherwise local clashes provoke extortions and expenditures must be guarded against unexpected blows from the camp of enemies. Locally, entrepreneurs are divided, as a rule, into enterprise networks lobbying for access to the network of members of regional or local governments. Entrepreneurs set up associations, unions, amalgamations, etc. At present, in the period of governor election campaigns and existing opposition between mayors of regional capitals and serving governors, shadowy networks become visible. In the case that authorities are replaced, the established channels are broken and efforts to create new ones are required. That is why entrepreneurs have begun to seek ways to enter the governments themselves. This would spare them these expenditures. At the ground level, in fact, a transition has taken place to a political order known from pre-revolutionary Russia as vote qualification. In those times and in some provinces, there was an open law according to which the right to vote was given only to those people owning some property. At present this law is obscured, making a kind of institutional trap for an emerging democracy.

The theoretical assumption about a favorable impact made on enterprise formation by the joint effect of low risk aversion and the amount of capital in the population has been corroborated. Measure $PolElect DepBal_{it}$ entered the equation with a "plus" sign in all three estimations. The measure is significant (2SLS — 5%, FILM — 1%).

In order to include the effect of the specifics of the year on the random term in regression, annual dummies were included in the demand equation. The significance of these variables is at the 1%-level, which indicates a difference between the processes in 1990 and 1991. This follows also from Section 2 analyzing interregional entrepreneur time-series on small enterprise formation per 1000 population. In 1990 the year effect was up 8.12 additional units of relative labor demand, and in 1991, 2.15 units. The demand intensity, therefore, went down in 1992.

Equation of relative labor supply (Table 3.) supports the hypothesis that under higher relative earnings, the overflow from the wage sector to the new sector increases — relative labor supply is increasing with increased earnings. In the earning equation, the factor of relative employment in the small business segment entered with the expected sign ("+") and is significant at the 5% level in two variants estimated by the 2SLS and FIML methods.

Theoretical propositions about the effect of the proportion of employable population in the total population on the amount of relative supply are supported. The variable entered the regression with the expected sign, and it is significant. The variable "proportion of graduates" needs special attention. Its significant effect can be explained by the fact that educated young people are willing to choose new enterprises for their career. Investment in education promotes new enterprise formation and economic growth.

In order to reflect the specific effect of the conditions of a year on the random term in regression, annual dummies were included in the supply equation. The significance of these variables is at the 1% level, which suggests a difference between the processes in 1990 and 1991. In 1990 the annual effect was 8.03 extra units of relative earnings, while in 1991, it was 2.3 units.

The influence of non-identified fixed regional distinctions are reflected in the model by inserting dummies for different territories (see Table 4–7). Two types of dummy were used. The first type was for individual subjects of the federation, which in the analysis of interregional differentiation in Section 2 manifested some deviations from the general trends. The second type of dummy was determined by the economic district to which the subject of the federation belongs. Dummies were included both in the demand and supply equations. The model was estimated by a two-stage least squares. Dummies were inserted for the following subjects: city of St. Petersburg, city of Moscow, the Tiumen province (Oblast), the Magadan province(Oblast). The use of these dummies did not lead to qualitative changes in the estimation. Only the dummies for the Magadan

province were significant for the demand equation (positive sign of the coefficient, 5% level of significance).

Table 4. Model of relative labor demand in small businesses with Magadan province dummy.

	Coefficient	t-statistics
Constant	5.294751**	3.830
<i>Wsmwgov</i>	-0.8320698**	-8.464
<i>PolElect DepBal</i>	0.0008414**	3.581
<i>Crime</i>	0.0017409**	8.515
<i>RegElit BudGRm</i>	0.0904893	1.173
<i>Exprisk</i>	0.7542927**	1.689
Dummy 1990	7.768986**	10.674
Dummy 1991	2.039834**	6.525
Dummy Magadan	1.849404*	1.914
Number of observations	212	
R ² adj.	0.5366	
F-statistics	F(8, 203) = 31.55	
	Prob > F = 0.0000	

Wsmwgov — Relative earnings in small business sector;

PolElect DepBal — Region's entrepreneurial potential;

RegElit BudGRm — Regional policy;

Exprisk — Regional risks;

* — 5% level of significance;

** — 1% level of significance.

For the earnings equation, the Tiumen province dummy had a significant influence (negative coefficient, 5% significance). The specifics of these regions are different. For the Magadan province, the dummy reflects its geographical location: the presence of a sea port, borders, opportunities for foreign economic activity. For the Tiumen province, the geographic specifics are its oil producing arctic region.

Table 5. Model of relative earnings from employment in the small business sector with Tiumen province dummy.

	Coefficient	t-statistics
Constant	38.25437**	6.591
<i>Sharesm</i>	0.3392688*	1.742
<i>Workpop</i>	-0.5384367**	-4.908
<i>SumGrad</i>	-0.2205492*	-2.399
Dummy 1990	8.020926**	22.718
Dummy 1991	2.302182**	6.672
Dummy Tiumen	-2.446488*	-1.947
Number of observations	212	
R ² adj.	0.7429	
F-statistics	F(6, 205) = 88.11	
	Prob > F = 0.0000	

Sharesm — Proportion of small business employment;

Workpop — Region's employable population;

SumGrad — Graduate from higher learning institutions;

* — 5% level of significance;

** — 1% level of significance.

The use of dummies by which the federal unit is related to a particular economic district has shown that, as in the first case, there are economic district with specifics in demand and those with specifics in supply. The demand model significantly included the Volga district, North-Caucasus, and the Ural district (positive sign). Keen demand in these regions is likely to be associated with entrepreneurial activity of the inhabitants.

The utility model significantly includes North-Western, Central, Northern Caucasus, and West-Siberian districts (negative sign) which provides evidence of additional labor supply in these economic regions.

Inclusion of dummies in the equations of regression did not lead to any quality changes in the estimations.

The obtained statistical estimations were tested for robustness for inclusion in equations of the so-called initial condition variables, reflecting the level of concentration of industry. The following variables were used:

value of fixed capital per individual employed in industry and number of employees in one enterprise. But the significance of these variables in the equations was not confirmed in the estimations.

Table 6. Model of relative labor demand in small businesses with economic districts dummy.

	Coefficient	t-statistics
Constant	4.208169**	3.603
<i>Wsmwgov</i>	-0.8961494**	-11.164
<i>PolElect DepBal</i>	0.0010385**	5.121
<i>Crime</i>	0.0021089**	10.773
<i>RegElit BudGRm</i>	0.1369517*	2.069
<i>Exprisk</i>	0.9154015*	2.302
Dummy 1990	8.654563**	14.280
Dummy 1991	2.303986**	8.491
Dummy North-Caucasus	0.9728534*	2.551
Dummy Ural district	0.722044*	2.319
Dummy Volga district	1.246388**	1.246388
Number of observations	212	
R ² adj.	0.6348	
F-statistics	F(10, 201) = 37.67	
	Prob > F = 0.0000	

Wsmwgov — Relative utility in small business sector;

PolElect DepBal — Entrepreneurial potential of the region;

RegElit BudGRm — Regional policy;

Exprisk — Regional risks;

* — 5% level of significance;

** — 1% level of significance.

Table 7. Model of relative earnings from employment in the small business sector with economic districts dummy.

	Coefficient	t-statistics
Constant	44.35371**	6.997
<i>Sharesm</i>	0.3684712	1.952
<i>Workpop</i>	-0.6500072**	-5.460
<i>SumGrad</i>	-0.1776277*	-2.029
Dummy 1990	8.020508**	23.426
Dummy 1991	2.265843**	6.773
Dummy North-West	-2.021219	-2.685
Dummy Central	-1.349458	-3.250
Dummy Northern Caucasus	-2.589782**	-3.610
Dummy West-Siberian	-1.133759	-2.158
Number of observations	212	
R ² adj.	0.7578	
F-statistics	F(9, 202) = 67.02	
	Prob > F = 0.0000	

Sharesm — Proportion of small business employment;

Workpop — Region's employable population;

SumGrad — Graduates of higher learning institutions;

* — 5% level of significance;

** — 1% level of significance.

The estimation methods used in this study can result in biased inconsistent estimates if some of the explanation variables are actually endogenous and thus are changing due to the same cause that affects the result under consideration. For example, in estimating the impact of education on incomes, it is possible to assume that education is actually an endogenous factor. Griliches (1977) statement that there exists some non-observable factor — aptitudes of the individual that correlate both with income (higher aptitudes — higher incomes) and with education (higher aptitudes — higher education) is quite plausible.

Formally such a situation appears in using the instrumental variable method when there is a weak correlation between instruments and endogenous explanation variables. This problem has been thoroughly ana-

lyzed by John Bound, David Jaeger, and Regina Baker (1995). The authors' advice is to select instruments drawing on the results of the estimation of the first step. In conclusion they write: "More generally, our results suggest that the partial R^2 and F statistic on the excluded instruments in the 2SLS first-stage regression are useful as rough guides to the quality of IV estimates. We suggest that both statistics be routinely reported when IV estimates are presented."

The test has shown that in our case, when using the 2SLS estimation method, this situation does not occur. Here are the statistics of the first step in the estimation of the demand-supply system of equations by the 2SLS method. This evidence relates to Tables 2 through 7.

Table 8. Estimation of the instrument to endogenous variable relationships when using 2SLS.

	R^2	F-statistics
Table 2	57%	$F(8.203) = 29.44$, Prob > F = 0.0000
Table 3	75%	$F(8.203) = 68.83$, Prob > F = 0.0000
Table 4	58%	$F(10.201) = 25.31$, Prob > F = 0.0000
Table 5	75.9%	$F(10.201) = 57.38$, Prob > F = 0.0000
Table 6	67%	$F(14.197) = 26.89$, Prob > F = 0.0000
Table 7	77%	$F(14.197) = 44.85$, Prob > F = 0.0000

The test has shown that in our 2SLS estimate of the first step, the relationship between endogenous explanation variables and the instruments cannot be recognized as weak.

7. CONCLUSION

One of the decisive problems of an economy in transition is the development of the new sector of entrepreneurship. This study shows the asymmetric character of entrepreneurship in the regions of Russia. The correlation of this trend with regional per capita income asymmetry indicates poor regional management of these processes on the part of federal and regional authorities in the 1990–1999 period.

In the Golden Age of entrepreneurship of 1990–1992, variation in enterprise formation was accounted for by different entrepreneurial initiatives

of the inhabitants and the different institutional environment supporting entrepreneurship. In this period a great number of unskilled lay people were involved in this process, and business formation was going on under conditions of high risk. Self- and small enterprise employment created advantages in income over the wages in the wage sector and thus compensated for the risks. It is argued in this study that institutional disparities arising in response to reforms on the part of inhabitants and local authorities impede enterprise formation. Decentralization of budgetary revenues promotes entrepreneurship if the regional elite is sufficiently liberal and consolidated. Taking into account specific Russian fiscal federalism, federal/regional relations need to be settled.

The results of the study essentially supplement the conclusions made by Earle and Sakova (1999). Although the data of this study refer to 1993, are based on questionnaire surveys of entrepreneurs, use different methods for estimation, and interpretation of the obtained results is based on a comparison with other post-socialist countries; the findings of both studies conform. While Earle and Sakova (1999) show that in Russia the expected share of entry to self-employment is lower and the premium higher and that this is due to the many barriers to entry faced by new businessmen in Russia, our study shows the mechanisms of these barriers.

APPENDICES

A1. Data

The data panel is formed from the data from the RF Goskomstat, data of "Expert" journal assessing investment climate in the region, data from the survey "Entrepreneurial Climate of Russia's Regions, Geography of Russia for Investors and Entrepreneurs" made on order of the Russian Union of Industrialists and Entrepreneurs, and data obtained by Mikheeva (1999). For testing some hypotheses, the results of the questionnaire survey of entrepreneurs made by the author in October 1999 were used. Here are the variables used in the estimations for 1990–1992.

Sharesm_{it} is the proportion of small enterprise employment in year t compared to wage sector employment. Small enterprise employment for 1990 is the number of employed in co-operatives. The data is from "Basic Indicators of the Activity of Cooperatives in the RSFSR for 1990," and The statistical book of the RF Goskomstat. For 1991 and 1992, the number is estimated as the sum of those employed in cooperatives and small enterprises, obtained from "Basic Indicators of the Activity of Cooperatives and Small Enterprises in the Russian Federation for 1991"; RF Goskomstat, 1992; "Basic Indicators of the Activity of Cooperatives in the RSFSR for 1992"; and the RF Goskomstat, 1993.

Wsmwgov_{it} — relative earnings — relationship of wages fund of a worker in the new enterprise sector (co-operatives, small firms) to average monthly wage of the rest of the employed in region i in year t . Data on wages in the small enterprise sector are used. Data on wages in the small business sector were taken from "Basic Indicators of the Activity of Cooperatives in the RSFSR for 1990." The statistical volumes of the RSFSR Goskomstat entitled "Basic Indicators of the Activity of Cooperatives and Small Enterprises in the Russian Federation for 1991"; RF Goskomstat, 1992; and "Basic Indicators of the Activity of Cooperatives and Small Enterprises in the Russian Federation for 1992," RF Goskomstat, 1993 were also used. Data on average monthly wages are taken from the handbook "Regions of Russia," Goskomstat, 1998. Data are in current prices.

DepBal_{it-1} are balances on deposits in RF saving banks per capita in year $t - 1$ in region i . The variable is deflated to the consumer price index. In estimations, a lagged quantity was used.

BudGRm_{it} is an indicator of the economic power of institutions in region i in year t . It is measured as the relation of regional budgets to GRP in region i in year t to the national average. Official data for calculating this indicator for 1990–1992 are absent. Data on regional budgets for 1990–1992 are taken from working documents of the RSFSR Ministry of Finance. The estimation of gross regional production for 1990–1992 obtained by Mikheeva (1999) by World Bank procedures was used.

RegElit_{it} is the influence of the regional elite. It is based on expert measures of executive and legislative authorities and of the stability of the regional elite used in relative measures as deviation from the national average. The higher the measure, the more influential is the regional elite and the more reformist are the authorities. The source of this measure is "Entrepreneur Climate of Russia's Regions. Geography of Russia for Investors and Entrepreneurs."

PolElect_{it} is an index of electorate voting patterns. It is based on the voting results of the 1995 Duma and 1996 presidential elections. According to the share of votes given to a particular block or candidate, regions are divided into reformist (rank 4), moderately reformist (3), moderately conservative (2), conservative (1). It is the arithmetic mean of these ranks plus the rank of the stability of political preferences (the higher it is, the better for entrepreneurship). The result is divided by the mean for federation subjects. The higher the value, the more stable and democratic are the preferences of the region's inhabitants. This indicator can be interpreted also as pre-transition institutional conditions.

The data source is "Entrepreneur Climate of Russia's Regions. Geography of Russia for Investors and Entrepreneurs."

ExpRisk_{it} is an investment risk indicator. It is an indicator of investors' business conditions. It characterizes the probability of loss or income from investments. It is estimated as the expert average weighted values of partial ratings of the political, social, economic, environmental and criminal situation in a region. Value 1 in special risk was obtained by a region with the lowest risk. In estimating the integral value of the risk index, the weight estimation was obtained from the result of a survey of Russian and foreign experts. The average weighted index for Russia is unity. The data are from "PA-Expert."

Crime_{it} is a measure of crime in the region. It is inserted into the model as a measure of increasing risk. Presumably, the more crime in the region, the more dangerous is the environment, the lower is enterprise formation, and the lower is the demand for labor.

Workpop_{it} is the proportion of employable inhabitants in region i in year t . The RF Goskomstat data was used.

SumGrad_{it} is the total number of graduates from all learning institutions of region *i* in year *t*. The indicator is normalized at the number of inhabitants. The source is the RF Goskomstat data.

**A2. The relation of those employed in cooperatives
and small enterprises to those employed in other sectors
of the economy across Russia's regions in 1990–1992**

	1990	1991	1992
Karelian	3.56	3.75	4.13
Republic of Komi	6.50	6.89	6.97
Archangelskaya Oblast	3.27	3.35	3.65
Vologodskaya Oblast	3.89	4.00	4.05
Murmanskaya Oblast	4.00	4.38	5.31
St-Petersburg	7.94	8.48	8.59
Leningradskaya Oblast	6.48	6.59	6.78
Novgorodskaya Oblast	5.55	5.81	6.26
Pskovskaya Oblast	4.58	4.88	5.22
Bryanskaya Oblast	2.37	2.50	2.74
Vladimirskaia Oblast	4.34	4.48	4.73
Ivanovskaya Oblast	4.98	5.20	5.57
Kaluzhskaya Oblast	4.56	4.58	4.77
Kostromskaya Oblast	3.94	5.41	7.07
Moscow	8.78	9.58	8.77
Moscovskaya Oblast	5.45	5.81	5.62
Orlovskaya Oblast	1.55	1.70	1.90
Ryazanskaya Oblast	3.47	3.62	3.88
Smolenskaya Oblast	3.00	3.17	3.46
Tverskaya Oblast	3.91	4.14	4.36
Tul'skaya Oblast	3.35	3.48	3.69
Jaroslavskaya Oblast	5.39	5.48	5.54

Continued from p. 45

	1990	1991	1992
Republic Marii El	4.00	4.07	4.35
Mordoviya	1.34	1.49	1.72
Chuvashiya	1.98	2.08	2.30
Kirovskaya Oblast	2.55	2.83	3.22
Nizhegorodskaya Oblast	2.82	2.92	3.00
Belgorodskaya Oblast	2.21	2.44	2.50
Voronezhskaya Oblast	2.00	2.10	2.21
Kurskaya Oblast	2.25	2.35	2.51
Lipetskaya Oblast	1.55	1.65	1.76
Tambovskaya Oblast	2.50	2.59	2.69
Republic of Kalmykiya	3.92	5.22	6.47
Tatarstan	5.12	5.29	5.14
Astrahanskaya Oblast	6.58	6.99	7.47
Volgogradskaya Oblast	4.10	4.27	4.43
Penzenskaya Oblast	1.98	2.17	2.51
Samarskaya Oblast	4.61	4.80	4.84
Saratovskaya Oblast	5.01	5.22	5.34
Ylyanovskaya Oblast	3.58	3.63	3.71
Adyheya		0.38	0.75
Dagestan	4.00	4.07	4.41
Kabardino-Balkarskaya	5.94	6.13	6.61
Karachaevo-Cherkesskaya		0.13	0.26
Osetiya	5.23	6.16	7.85
Krasnodarskiy Kray	5.52	5.73	5.66
Stavropolskiy Kray	5.78	5.98	6.13
Rostovskaya Oblast	8.67	8.97	9.66

Continued from p. 46

	1990	1991	1992
Bashkotorstan	4.33	4.47	4.59
Udmurtiya	3.95	4.06	4.57
Kurganskaya Oblast	3.58	3.78	4.10
Orenburskaya Oblast	3.43	3.63	3.86
Permskaya Oblast	3.80	4.07	4.39
Sverdlovskaya Oblast	5.14	5.55	5.76
Chelyabinskaya Oblast	6.25	6.35	6.46
Republic Altay		1.27	2.51
Altayskiy Kray	4.68	4.97	5.34
Kemerovskaya Oblast	3.98	4.20	4.63
Novosibirskaya Oblast	7.01	7.33	7.60
Omskaya Oblast	3.10	3.20	3.34
Tomskaya Oblast	9.23	9.73	10.71
Tumenskaya Oblast	8.34	8.70	8.55
Buryatiya	3.60	3.67	3.94
Republic of Tyva	7.02	7.19	7.90
Republic Khakassiya		0.54	1.16
Krasnoyarsky Kray	5.27	5.55	5.82
Irkutskaya Oblast	6.26	6.35	6.63
Chitinskaya Oblast	2.82	2.95	3.14
Republic Sakha	5.31	5.43	5.83
Primorskiy Kray			
Khabarovskaya Oblast	5.36	6.12	6.28
Amurskaya Oblast	5.42	5.60	5.87
Kamchatskaya Oblast	10.18	10.23	10.35
Magadanskaya Oblast	10.13	15.68	18.61
Sahalinskaya Oblast	7.75	8.18	8.18
Kaliningradskaya Oblast	5.50	5.51	5.66

A3. Wage funds in co-operatives and new enterprises in current prices 1990–1992

	Wagk90	Wagek91	Wsmall91	MeanW91	Wk92	Wsm92	MeanW92
Karelian	5422	6102	6363	6232	75920	45704	60812
Republic of Komi	6915	9949	6961	8455	97349	82015	89682
Archangelskaya Oblast	3140	5515	4318	4917	42180	39457	40819
Vologodskaya Oblast	4828	7769	5425	6597	79145	57590	68368
Murmanskaya Oblast	4560	6585	5852	6218	56376	58991	57684
St-Petersburg	4811	4758	3390	4074	27085	26203	26644
Leningradskaya Oblast	4059	5976	4877	5427	40150	31905	36028
Novgorodskaya Oblast	4392	5815	4948	5381	37192	32502	34847
Pskovskaya Oblast	4555	7579	5555	6567	45474	39781	42627
Bryanskaya Oblast	5064	5966	4546	5256	26267	27983	27125
Vladimirskaya Oblast	4366	5588	4425	5006	42601	35627	39114
Ivanovskaya Oblast	4716	5535	4177	4856	37470	37932	37701
Kaluzhskaya Oblast	3998	5234	4458	4846	27438	30050	28744
Kostromskaya Oblast	4858	6685	4332	5509	41909	39535	40722
Moscow	5109	4812	3048	3930	26663	27753	27208
Moscovskaya Oblast	4680	4232	3692	3962	39286	24111	31698
Orlovskaya Oblast	4305	6372	5240	5806	32172	38353	35262
Ryazanskaya Oblast	4416	3955	3781	3868	25561	28422	26992
Smolenskaya Oblast	5254	6140	3244	4692	42514	37064	39789
Tverskaya Oblast	4360	6854	4658	5756	49085	37397	43241
Tulskaya Oblast	4553	6667	4425	5546	44424	30165	37294

Continued from p. 48

	Wagk90	Wagek91	Wsmall91	MeanW91	Wk92	Wsm92	MeanW92
Jaroslavskaya Oblast	4433	2099	3976	3038	36232	13667	24950
Republic of Marii El	3892	5814	4845	5329	30992	3045	17018
Mordoviya	4918	6238	4123	5180	35411	31968	33690
Chuvashiya	3826	5250	4595	4923	30991	30795	30893
Kirovskaya Oblast	4201	6791	4033	5412	53384	39239	46311
Nizhegorodskaya Oblast	5883	6013	4208	5111	59967	32668	46317
Belgorodskaya Oblast	5125	5817	4265	5041	50684	36246	43465
Voronezhskaya Oblast	4724	4603	4754	4678	25716	36364	31040
Kurskaya Oblast	4459	6620	4935	5778	35465	43607	39536
Lipetskaya Oblast	5269	6639	5197	5918	37521	40748	39134
Tambovskaya Oblast	5515	7017	4612	5814	44668	32029	38348
Republic of Kalmykiya	4771	5590	6215	5903	38247	30769	34508
Tatarstan	3953	5561	3852	4707	52727	39523	46125
Astrahanskaya Oblast	3853	5007	4176	4591	29124	29014	29069
Volgogradskaya Oblast	5114	6236	4235	5236	36729	35255	35992
Penzenskaya Oblast	5534	6067	4263	5165	32667	17702	25185
Samarskaya Oblast	4899	5037	3969	4503	33854	37921	35887
Saratovskaya Oblast	4162	5013	1513	3263	31320	27757	29539
Ylyanovskaya Oblast	4764	5780	4985	5383	35781	39731	37756
Adyheya		3804	3761	3782	38340	27198	32769
Dagestan	2748	2863	2794	2829	16341	19413	17877
Kabardino-Balkarskaya	3802	4761	2908	3834	30320	23189	26754

Continued from p. 49

	Wagk90	Wagek91	Wsmall91	MeanW91	Wk92	Wsm92	MeanW92
Karachaevo-Cherkesskaya Osetiya		5603	5210	5407	26206	30584	28395
	3620	3620	4837	4229	17274	27728	22501
Krasnodarskiy Kray	4028	4193	3952	4073	34609	40619	37614
Stavropolskiy Kray	4257	5966	4849	5407	35526	33196	34361
Rostovskaya Oblast	3468	6043	4341	5192	58413	35124	46769
Bashkortostan	4461	6059	4677	5368	62607	45246	53927
Udmurtiya	4270	7975	4923	6449	41340	32577	36958
Kurganskaya Oblast	5343	7633	5723	6678	58598	43790	51194
Orenburskaya Oblast	4960	7166	4477	5821	53385	42651	48018
Permskaya Oblast	4311	5040	4347	4693	44669	104180	74425
Sverdlovskaya Oblast	4600	7127	4664	5896	72756	42408	57582
Chelyabinskaya Oblast	4592	7077	4676	5876	54134	42740	48437
Republic Altay		6743	4320	5532	32150	34501	33326
Altayskiy Kray	5045	7118	5387	6253	49025	38659	43842
Kemerovskaya Oblast	4946	2041	5806	3923	49791	59684	54737
Novosibirskaya Oblast	4860	6293	4447	5370	37317	42643	39980
Omskaya Oblast	5433	5989	7384	6686	44856	41854	43355
Tomskaya Oblast	4998	7356	4942	6149	65973	65380	65676
Tumenskaya Oblast	6808	2710	7767	5238	109620	106693	108157
Buryatiya	4421	6750	5507	6129	44759	39930	42344
Republic of Tyva	4527	5101	4273	4687	41453	131615	86534
Republic Khakassiya		6810	5519	6165	44993	62014	53504

Continued from p. 50

	Wagk90	Wagek91	Wsmall91	MeanW91	Wk92	Wsm92	MeanW92
Krasnoyarsky Kray	4399	5682	6424	6053	49864	64907	57386
Irkutskaya Oblast	5324	5257	5083	5170	42831	43490	43160
Chitinskaya Oblast	4904	7237	5403	6320	177925	42384	110155
Republic Sakha	7863	8752	7765	8258	75956	69353	72654
Evreyskaja avtonomnaja oblast					55277	55337	55307
Chukotskiy avtonomniy okrug					119225		59613
Primorskiy Kray		10950	9977	10463	78969	57625	68297
Khabarovskiy kray	5812	7706	6679	7193	63640	53089	58364
Amurskaya Oblast	5085	8177	6569	7373	62201	60752	61476
Kamchatskaya Oblast	5540	9135	8000	8568	57505	61896	59701
Magadanskaya Oblast	8755	11178	9659	10419	123759	66508	95134
Sahalinskaya Oblast	7069	11035	8489	9762	89553	67045	78299
Kaliningradskaya Oblast	4205	5444	3729	4586	54123	28693	41408

Wagk90, Wagek91, Wk92 — Wage funds in co-operatives in 1990–1992.

Wsmall91, Wsmall92 — Wage funds in small firms in 1991–1992.

MeanW91, MeanW92 — Average wage funds in co-operatives and small firms in 1991–1992.

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