

# **Self-Employment in Transitional Economies: Entrepreneurship or Disguised Unemployment?**

John S. Earle

Stockholm Institute of Transition Economics, Stockholm School of Economics  
and Economics Department and Labor Project, Central European University  
(john.earle@hhs.se)

and

Zuzana Sakova

Rutgers University and CEU Labor Project  
(sakovaz@ceu.hu)

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## **Abstract**

This paper analyzes the magnitude and character of self-employment in a comparative study of six economies in transition: Bulgaria, Czech Republic, Hungary, Poland, Russia, and Slovakia. Drawing upon retrospective and contemporaneous information from a 1993 survey of some 27,000 adults, we find large cross-country differences in the growth, level, and nature of self-employment, particularly distinguishing self-employed who create paid employment for others from those who do not. For each country, we estimate multinomial logistic functions of the probability that labor force participants are employees, own-account workers, employers, or unemployed in 1993 as functions of several potential determinants: demographics, family background, previous economic and political status, and receipt of property in restitution. The data show a strong impact of (unexpected) restitution in the Czech Republic, consistent with the finance constraint hypothesis, and they reject pooling of the categories, including the unemployed and own-account workers, in each of the countries. We also estimate earnings and satisfaction functions, with own-account and employer dummies and standard controls, and find significantly higher earnings and satisfaction for both self-employed groups relative to employees in most countries, although with substantial cross-country variation. Such residual variation may be due to differences in the history of reforms or other elements of the political and economic environment.

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## 1 Introduction

The concept of self-employment is fraught with ambiguity. Understanding it theoretically and measuring it empirically requires wrestling with some of the deepest and least-resolved issues in all of economics: the nature and boundaries of the firm, and the meaningfulness of standard classifications of labor force states. If a firm is nothing but a “nexus of contracts” (Alchian and Demsetz (1972) and Jensen and Meckling (1976)), then the employment relationship is just a form of relational contracting, and paid employment can be distinguished from self-employment at best as a matter of degree, not as something qualitatively different.<sup>1</sup> The recent rise in “flexible” staffing and temporary employment arrangements (see, e.g., Abraham (1988)) and the importance of employee status for tax purposes have further muddled the issue, making it still more difficult to measure who is an employee and who is an independent contractor.

Concerning labor force classifications, the distinction of self-employment as a separate state faces similar difficulties to those involved in the analysis of unemployment and nonparticipation in the labor force (Clark and Summers (1979) and Flinn and Heckman (1983)). Self-employment activities frequently take place in what is sometimes called the “informal economy” (Turnham *et al* (1990)), they may involve home production rather than sales to the market, and they may be closely related to hobbies, avocations that sometimes become part- or full-time vocations. Further problems include the issue of the “voluntariness” or “involuntariness” of self-employment (like that of unemployment), the status of family workers (unpaid, but nonetheless stakeholders) in a family business, and the possibility that self-employment (unlike paid employment) may generate no income at all in a bad period or in one where investment takes place with little return.

These ambiguities of theory and measurement are reflected in the difficulty of evaluating the level and changes in the extent of self-employment in an economy. On the one hand, a self-employed worker may be an entrepreneur exploiting new opportunities and inventing and improving products, production processes, and ways of distribution. At the other extreme, self-employment

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<sup>1</sup> In an analysis of CPS data in the US, Carrington *et al* (1996) examine the cyclicity of hours and earnings of reported employees and self-employed workers; the results show some evidence of

status may reflect the inability of a perhaps destitute worker to find a satisfactory “regular” job as an employee, and her activities and income may differ little from those of an unemployed person. A self-employed worker may be striving to grow wealthy by taking risks with new ventures, or she may be casting about desperately for any means to ensure survival. She may be developing new markets and creating jobs for others – her employees – or her self-employment may involve a withdrawal from markets, a return to pre-modern self-sufficiency.

Both points of view may be found in the existing literature on self-employment. Recent studies of the developed market economies (mostly Canada, the U.S., and the U.K.) tend to emphasize the positive, entrepreneurial aspects of self-employment, and some of the empirical findings in this research lends some support to this view. The role of liquidity constraints on entering self-employment is perhaps the most studied issue, and Evans and Leighton (1989), Evans and Jovanovic (1989), Holtz-Eakin *et al* (1994a and b), and Blanchflower and Oswald (1998) finding that self-employment is positively associated with measures of wealth, although Meyer (1990) finds only a weak relationship. Studies of the characteristics of the self-employed find that they tend to be older and better educated and are more likely to be male and white (see, e.g., Fairlie and Meyer (1996), or Fairlie (1997) for a summary) than are employees. To the extent that these groups are advantaged relative to others, the results are consistent with the studies’ presumption that self-employment is voluntary, and even that entry into self-employment is somehow rationed.<sup>2</sup> Nonetheless, the equation of the concepts of self-employment and entrepreneurship in most of these studies must be reckoned as a maintained, rather than a tested hypothesis. A positive view of self-employment also emerges from the recent attention devoted to the possibility for active labor market policies, including subsidies to unemployed individuals interested in starting new businesses, to combat high unemployment rates in Western Europe (see, e.g., Meager (1994)).

That self-employment might take on a different meaning in a different context is shown by studies of the long-term trend in the self-employment rate, which until recently (around 1970 in the U.S.; see Aronson (1991)) was in steady decline, and by those in developing countries, where the

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contracts that smooth earnings for employees, thus that these categories may be meaningful.

<sup>2</sup> Blanchflower and Oswald (1998) report still more direct evidence that the self-employed are happier and have higher job satisfaction than those in paid employment.

rise of paid employment may be associated with other processes of economic development, including greater interdependency, capital accumulation, and improved organization and division of labor. Particularly in rural areas, self-employment may be closer to a last resort grasping for survival where regular jobs are scarce and poorly paid (the classic articles are Lewis (1954) and Harris and Todaro (1970); recent critiques include Blau (1985) and Sharif (1993)).

Although all of these characteristics of self-employment may also be present in all countries and times, understanding them is particularly critical to an evaluation of the process of transition underway in the formerly socialist economies of Eastern Europe. Socialism itself has an ambiguous relationship with self-employment. One way of briefly summarizing the Marxian communist utopia might be to say that it involves the abolition of the distinction between self-employment and paid employment: “in working for himself, the individual works for society, and in working for society, he works for himself.” The advance of technology was supposed to obviate the capitalist need for private property and division of labor, leaving workers free to “fish in the morning and farm in the afternoon.” Nevertheless, it is difficult to imagine a regime more hostile to self-employment than that of the socialist economies of Eastern Europe. While not completely prohibited, it was heavily discouraged, and the expansion of a business through the accumulation of capital and the hiring of employees was nearly impossible, at least until some partial reforms began in some countries (especially Poland and Hungary) in the 1980s.

As we shall show, the fraction of workers classifying their major activity as self-employed has risen dramatically throughout Eastern Europe since the great changes of 1989. How shall we interpret this rise – as a move towards markets and improving economic performance, or as a reflection of the destitution created by the tremendous shocks of economic reform? Twin processes are at work in the transition economies. The first, the liberalization of economic activity and entry in economies with repressed private activity for decades, would suggest that self-employment should rise as entrepreneurs exploit the many new opportunities. The second, the large-scale economic restructuring in economies with an inherited highly inefficient allocation of resources, suggests that self-employment should rise as displaced workers seek activities for survival. Which process dominates? And does the answer vary across countries?

The answer to this question has important implications for our evaluation of the success of

economic transition in various countries and, more generally, for our understanding of the nature of self-employment and its connection to economic growth. That new firms begin with self-employment is almost tautological, particularly in capital-constrained Eastern Europe, but the critical question is whether the startups lead to successful businesses, filling gaps in the economy and providing paid employment for other individuals. Given the disastrous condition in which decades of communism left most state enterprises, even if many of them have been privatized recently, a number of scholars (e.g. Murrell (1992) and Blanchard (1997)) have argued that the new private sector is probably the main hope for economic growth in Eastern Europe. An assessment of the sector's character and prospects requires an examination of the self-employed who are its driving force.

This paper attempts to contribute to a comparative evaluation of the success of economic transition by analyzing the magnitude and characteristics of self-employment in six countries: Bulgaria, Czech Republic, Hungary, Poland, Russia, and Slovakia. We begin, in section 2, by describing our data set, which contains observations on some 27,000 individuals who were interviewed in mid-1993. The data contains both current and retrospective information, and we are able to construct a set of alternative measures of the growth and level of self-employment across the six countries, which we report in section 3. To aid an evaluation of the character of self-employment in each of the countries, we decompose total self-employment into three main categories: self-employed who hire employees for pay, those who engage unpaid family helpers, and those who are sole self-employed. We also analyze the industrial distribution of the activities of each type of self-employment and their growth since the transition process began in 1989.

To better understand the character of self-employment in the transition economies, and how it may differ across them, we next construct an econometric model of the process by which a participant in the labor force of one of these countries may be allocated to one of four possible states: employee, self-employed without employees, self-employed hiring employees, and unemployed. Our hypothesis is that, if self-employment with employees is more likely to be entrepreneurial than is self-employment without employees, then certain determinants should more strongly influence the probability of the former relative to the latter. For instance, if the extent to which access to capital is an important constraint in determining self-employment, then the effect of this variable should be

still more pronounced in the former than in the latter case.

The transition situation offers an unusual opportunity to test the importance of financing constraints for entrepreneurship, because few individuals in these countries had significant savings in 1989, and a main source of capital for start-ups is restitution of property nationalized during the Communist years, a variable much less likely to be plagued by problems of endogeneity than wealth measures or even inheritance (Blanchflower and Oswald (1998)). Moreover, our framework permits us to address the question of the degree of difference of each type of self-employment from unemployed in terms of relevant observables. We report the results from this investigation in section 4.

Section 5 turns the analysis on its head: what is the impact of self-employment (again of various types) on the income and well-being of the individual? Here we report the estimation of a conventional earnings function, with added dummies for own-account workers and employers. Given the problems in measuring income, which may be particularly great for self-employed workers in transition economies, we also report the results from similar estimations where the dependent variable is alternative qualitative measures of individual satisfaction and his/her own evaluation of income. Again, the transition situation we observe provides useful leverage for these tests. In equilibrium, there should be no difference in the returns on the margin to self-employment; any extra-normal returns would be reduced by entry. We argue that the “early transition” situation we observe in our data constitutes a disequilibrium, however, in one of two senses. First, if self-employment offers positive returns (the entrepreneurship view), then there would not have been time, by 1992/3, for them to be competed away. Second, if it offers negative returns (because it represents involuntary disemployment), then again there may not have been enough time for the wage paid to employees to adjust. Thus, our data offer some hope of being able to separate out these competing interpretations of self-employment in transitional economies.

Despite the inherent interest of these issues and their obvious importance to a comparative evaluation of a key element in the transition, there has been rather little previous research in this area using microdata. The main exception is Hanley (1996), who studies self-employment and employer status in the Czech Republic, Hungary, and Poland from a sociological perspective. A number of our results parallel his, but frequently we employ alternative definitions of variables (for instance,

we analyze the impact of self-employment on self-employment income rather than total income, his dependent variable), and our inclusion of Bulgaria, Russia, and Slovakia in the analysis provides interesting contrast. Lengyel and Toth (1994), also sociologists, have used data on individuals to study “entrepreneurial inclinations” – the expressed desire of respondents to become entrepreneurs – in Hungary. Other studies using individual data include Earle and Rose (1996), who investigate the characteristics of the labor force by property form of employer (including the self-employed as a separate category) in Russia; and Earle, Gehlbach, Sakova, and Vecernik (1997), who analyze the implications of ownership of employer for political attitudes and voting behavior in the Czech Republic. The most relevant to the present work is perhaps Earle and Sabirianova (1998), who find that wage arrears increase worker flows from paid to self-employment in Russia.

With these exceptions, economic research attempting to analyze self-employment and the new private sector in transition has been purely theoretical (e.g., Berkowitz and Cooper (1997) and Blanchard (1997)); or it has been forced to work with crude aggregate information (e.g., Aslund (1997), Gabor (1994), Johnson *et al* (1997)), with case studies (e.g., Johnson and Loveman (1995)), or with small sample surveys restricted either to manufacturing firms (e.g., Webster 1993a and b or Earle, Estrin, and Leshchenko (1996)) or retail shops (e.g., Earle *et al* (1994), Barberis *et al* (1996), or Frye and Shleifer (1997)). The problem is not only that such data are unrepresentative, nor just that they are generally limited to a single country or sector, thus preventing the reliable cross-country and cross-sectoral comparisons in which we are interested. More fundamentally, we would argue that these data are less useful for investigating the roots of entrepreneurship, since the lack of outside finance in transitional economies implies that practically all new businesses and sources of job creation begin with innovative experiments in self-employment activities.

## **2 Data**

Our data are drawn from a survey of about 5000 adult individuals (ages 20 to 69) in each of six countries: Bulgaria, Czech Republic, Hungary, Poland, Russia, and Slovakia. The sample was drawn by random selection of regions within each country, followed by random sampling of individuals (from either residence or voting lists) within the selected regions. The survey was carried out in spring 1993 (with the exception of Poland, which was done in early 1994) by the local

Institutes of Sociology of the Academy of Sciences in each country. Weights that enable the sample to reproduce census proportions of key variables (gender, age, community size, and education) are provided with the data. More information about the survey and sample can be found in Treiman and Szelenyi (1993), Mateju (1995), and Hanley (1996). The questionnaire was designed to be nearly identical across countries, thus facilitating the cross-country comparative analysis we undertake in this paper. Moreover, it contains extensive information on a variety of economic activities, including informal activities and both retrospectively and contemporaneously.

Table 1 shows summary statistics for important variables in the sample of labor force participants that we analyze below. Information on our dependent variables – various measures of self-employment and its characteristics, and outcome variables such as income and qualitative measures of satisfaction – are described in sections 3 and 5 respectively.

Table 1: Summary Statistics for Sample

Most of the variables are self-explanatory. MALE, AGE, EDUYRS (years of schooling), SINGLE (marital status, including widowed, divorced, and separated, and excluding currently married), NUMCHILD (number of children), and CAPITAL (in place of the usual urban/rural distinction) are fairly standard variables included in self-employment functions (e.g., Evans and Leighton (1989), Fairlie and Meyer (1996), or Blanchflower and Oswald (1998)).

### **3 Measures of Self-Employment and Entrepreneurship**

Definitions of entrepreneurship may range from the very abstract, as in Schultz' (1975) "dealing with disequilibrium," to the very concrete, for instance the number of new businesses registered in a certain period or the number of individuals counted as self-employed in a labor force survey (e.g., Evans and Leighton (1989), Meyer (1990), or Blanchflower and Oswald (1998)). The abstract definition, which could include changes within existing organizations ("restructuring," in the transition context) and a wide variety of marginal activities more oriented to survival than to innovation, is difficult to operationalize. The more concrete definitions suffer not only because they exclude important categories, but also from the problem that they do not account for the intensity and character of the activity, as discussed in section 1 above. Registration information may be particularly meaningless in Eastern Europe where many registered businesses have no activities or



employees, while many true businesses may not register at all.

In this paper, we examine several types of self-employment activities, and consider the extent to which the self-employed hire other individuals as their employees, i.e. engage in job creation, and other measures of the success and the intensity with which the new activities are conducted. In a broad measurement of the magnitude of self-employment and entrepreneurship across countries, we take into account all types of self-employment and of job creation, first considering not only primary, full-time self-employment, but also activities conducted part-time and in addition to the main job.

We measure not only the number of paid employees associated with each of these categories, but also the number of unpaid family members who also contribute their time to the family business.

We are able to distinguish the more significant types of entrepreneurship from relatively marginal activities, such as tending a family plot and irregular work, by the number of employees hired and by the fraction of family income and/or food generated from them and the amount of work time allocated to them. We also consider the nature of the activities, examining the broad industry (agriculture, manufacturing, and services).<sup>3</sup> On the basis of these distinctions, the paper provides a set of alternative measures of the extent of entrepreneurship and of the characteristics of entrepreneurial activities across the six countries. We are also able to provide statistical tests of the differences across countries in the size and composition of entrepreneurial activities.

Table 2 shows two alternative measures of self-employment, “main-activity” and what we call “all self-employment,” the former for the years 1978, 1983, 1988, and 1993, and the latter for 1988 and 1993 (it is unavailable for the earlier years). The accompanying chart shows the same information graphically. An individual is defined as engaged in main-activity self-employment if he or she reports the main activity as working and claims self-employment status. An individual is defined as a member of all self-employment if he or she is main-activity self-employed or grows food for home consumption of at least “about half” or for sales exceeding 10 percent of income, or runs a side business providing greater than 10 percent of income, or has irregular secondary activities (not a “regular second job”) that generates more than 10 percent of income.

Table 2: Measures of Self-Employment

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<sup>3</sup> In future work, we may examine finer industrial categories and measures of the size of the business, such as estimated value and, in the case of a farm, the number of hectares.

The results show large variation in the self-employment rate (the ratio of the number self-employed, by each definition, to the relevant employment measure) across measures, countries, and time. The growth in the rate is significant for both measures, but it is much larger for main-activity self-employment than for the broader measure of all types of self-employment. All self-employment is apparently picking up a variety of activities – including informal, illegal, and “second economy” – that were quite prevalent even under the Communist regime.<sup>4</sup>

The cross-country variation is striking, both in its magnitude and in the different pattern for the two self-employment measures. Concerning the main-activity definition, Poland has a self-employment rate of about 22 percent in 1993, by far the highest, followed at a distance by a cluster of four countries (Bulgaria, Czech Republic, Hungary, and Slovakia) in the range of 8 to 11 percent, with Russia at less than 4 percent far behind. A very different picture emerges from all self-employment, however, where nearly half of Russians in employment engage in some significant self-employment activity, followed by Hungary and Poland at around 30 percent, Bulgaria about 20 percent, and the Czech Republic and Slovakia bringing up the lead at about 10 percent.

Table 3 and the accompanying chart provide information on the job-creation issue, disaggregating the main-activity self-employed (all self-employed have very few employees) into three groups: “employers” (who hire others as their employees), “family self-employed” (non-employer self-employed who make use of unpaid family helpers), and “individual self-employed” (who work alone, with neither employees nor family helpers). Although these distinctions are well-known in the development economics literature, they have generally been neglected in empirical studies of self-employment in both developing and developed economies.<sup>5</sup>

Table 3: Self-Employment and Job Creation

Finally, we have broken down the main-activity self-employed by the major industry of their activity: agriculture, manufacturing and mining, construction, transportation, and trade and services. The results are shown in Table 4 and accompanying chart. Agriculture accounts for nearly three-

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<sup>4</sup> Grossman and Treml (1987) discuss measures of unofficial income-generating activities in the USSR, and Johnson *et al* (1997) provide some estimates of the evolution of the share of such activities in a number of transitional economies.

<sup>5</sup> The reasons for this neglect may include both lack of data and the indication in such data as exists that “in a majority of cases the self-employed are creating their own jobs.” (Aronson (1991), p. 90)

quarters of Polish self-employment in 1988 and for about half in 1993; the only other country where it accounts for a sizable fraction of self-employment is Bulgaria, and to a lesser extent Hungary. Manufacturing includes handicrafts, thus is not necessarily representing modern capital-intensive industry; it is rather small in all the countries. More interesting is the growth in construction in some countries (Czech Republic, Poland, and Slovakia) and transportation (Hungary and Poland). The largest growth is in services, particularly retail and wholesale trade, which grow by a factor varying from three (Poland and Russia) to ten (Czech Republic). The highest level in both 1988 and 1993 is found in Poland, but the Czech Republic and Hungary were closing the gap rapidly.

Table 4: Self-Employment by Industry

#### 4 Determinants of Self-Employment

In this section, we investigate the process determining whether a labor force participant is engaged in main-activity self-employment in 1993. In order to analyze the successful market development of entrepreneurship, we are particularly interested in distinguishing self-employed who hire employees – “employers” – from those who do not. Also for reasons of sample size, and the ambiguity of the unpaid family worker category, we include self-employed with unpaid family workers together with sole self-employed as “own-account workers” (following the standard international terminology; see, e.g., ILO (1997)). Finally, in order to have another reference point to compare the self-employed, we also include unemployed individuals as a separate category in the analysis, although they are self-defined in our survey data rather than according to the standard set of questions on search and availability.

Conditional on labor force participation, and relative to paid employment, what characteristics of individuals make them more likely to become self-employed, which increase the probability they will hire employees, and which tend to be associated with unemployment? We provide evidence on these determinants using a multinomial logit framework.

The probability that individual  $i$  is found in state  $j$  (paid employee, own-account worker, employer, or unemployed) is assumed to take the following functional form:<sup>6</sup>

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<sup>6</sup>This functional form can be justified as the outcome of a random utility maximization model, where  $Y_j^* = U_j(X_i) + \varepsilon_j$ ,  $U_j$  represents the systematic component and  $\varepsilon_j$  the random component of utility,

$$P(Y_i = j | X_i; Z_i) = \frac{e^{X_i' \beta_j + Z_i' \gamma_j}}{\sum_{k=0}^3 e^{X_i' \beta_k + Z_i' \gamma_k}}$$

where  $Y_j$  = the state observed in 1993, with  $j$  varying from 0 to 3;  $X$  and  $Z$  are vectors of independent variables varying across individuals, who are indexed by  $i$ ; and the  $\beta$  and  $\gamma$  are sets of parameters to be estimated. The distinction between  $X$  and  $Z$  is made to facilitate the explanation of the simulations below.

In the results presented in Tables 5a-5f, we include  $X$  and  $Z$  variables that are standard in analyses of self-employment in the West (e.g., in Evans and Leighton (1989), Fairlie and Meyer (1996), and Blanchflower and Oswald (1998): MALE, AGE, EDUYRS (years of schooling), SINGLE (marital status, including widowed and divorced, excluding currently married), NUMCHILD (number of children), and CAPITAL (in place of the usual urban/rural distinction).

To represent family background, we have included the variable MOFAHIGH is a dummy equal to one if either parent had attained education beyond primary. Besides wanting to test familiar relationships in a new context, and provide a set of controls, our motivation for including these variables is because the impact of each of them on the probability of self-employment is germane to the focus of this paper: whether self-employment in the transition economies should be viewed as desirable entrepreneurship, or if it should rather be viewed as disguised unemployment. Below we describe the pooling tests that we employ to see whether the process generating employer status is observational equivalent to that for own-account workers and whether the latter differs from the process for the unemployed.

Table 5: Determinants of Self-Employment – Multinomial Logit Estimates for Six Economies

Our research also provides evidence concerning an issue that has received considerable attention in most studies by economists of entrepreneurship: the potential financing constraint on starting a new business. The argument is that because banks are generally reluctant to make unsecured loans for start-ups, the individual's own assets may play a key role in enabling her to pursue some entrepreneurial idea; Evans and Jovanovic (1989) and Blanchflower and Oswald (1998)

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and the  $\epsilon_j$  are distributed independently and identically according to the type 1 extreme-value

contain formal models. The empirical literature has attempted to circumvent possible endogeneity problems in the individual assets variable by measuring wealth prior to entering self-employment (e.g., in Evans and Leighton (1989) and Evans and Jovanovic (1989)), while others have used events such as inheritance (Holtz-Eakin *et al* (1994) and Blanchflower and Oswald (1998)) or lottery winnings (Lindh and Ohlsson (1996)) as the regressor instead. But it is not hard to think of plausible arguments why each of these alternative measures might also suffer from endogeneity: prior wealth is influenced by prior savings which may be correlated with a planned business startup; inheritance may have a substantial expected component; and while winning the lottery is presumably exogenous, entering it is probably correlated with attitudes toward risk.

The transition situation we observe in our data offers an unusual opportunity to test the importance of capital constraints for entrepreneurship, because few individuals in these countries had significant savings in 1989, and a main source of capital for start-ups could be restitution of property nationalized during the Communist years, a variable that we argue is much less likely to be plagued by problems of endogeneity. Although the political and economic transition in Eastern Europe has been the subject of great controversy, one thing that everyone agrees about it is that the abrupt changeover from Communist rule in 1989 and the rapid liberalization subsequently were completely unexpected. The question of restitution of confiscated property or compensation to the former owners (or their heirs) immediately came on the agenda in all the countries, and in the Czech Republic and Slovakia substantial amounts of property – mostly land and structures – were returned.<sup>7</sup> Compensation (rather than restitution of real property) was widespread in Hungary, but the value of the coupons distributed was usually small. In the other countries of our sample, restitution only of housing has taken place, and that mostly in small quantities by the time of the survey. Thus, our test is most likely to yield significant results in the Czech Republic and Slovakia, and to a lesser extent Hungary.

Of course, there was some income inequality and some individuals did manage to save during the Communist years; thus we also include SUBINC88, a subjective indicator of the level of income in 1988, defined as a mean-variance normalized (by country) derived from a set of

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distribution. See Maddala (1983) for the derivation.

<sup>7</sup> Earle *et al* (1994) contains a description of the Czech restitution program.

categorical responses to the question: “Compared with other families of your country, would you say your family income in 1988 was far below average, below average, average, above average, or far above average?”<sup>8</sup>

The final two variables concern the extent to which individuals who had been relatively successful under the communist regime may have been able to convert their “political capital” into positions of economic advantage. Are the communists of yesterday the new entrepreneurs of today?

In the results presented here, we have included MEMBER (a dummy for former Communist Party membership) and a subjective indicator of social position in 1988, SUBTOT88, defined similarly to SUBINC88 as a mean-variance normalized (by country) derived from a set of categorical responses to the question: “In our society there are groups which tend to be towards the top and those that are towards the bottom. Here we have a scale that runs from top to bottom [integers from one to ten]. Where would you have placed yourself on this scale in 1988?”

With respect to the Czech Republic, the results provide strong support for the capital-constraint hypothesis. Receipt of property in restitution raises the relative odds that an individual becomes an employer (relative to paid employment), with a large statistically significant coefficient.

The sign for own-account workers is positive and that for the unemployed is negative, but neither is estimated precisely. This result accords well with the hypothesis, however, and it also provides some evidence for our contention that employers should be distinguished from own-account workers for this kind of analysis. Hungary, which had a program of financial compensation, also shows a positive, statistically significant impact of restitution on employer status, but no significant results for own-account work or unemployment. The estimated coefficients on REST in the Slovak data are positive but insignificant, however, for all three states.

The coefficient estimates, of course, provide no information concerning the magnitude of the effects. For this purpose, we compute the mean predicted probabilities of each 1995 employment status associated with alternative values for the categorical independent variables. For example, where  $Z$  is a dummy variable (for instance: REST), the predicted probability that  $Y_i = j$  conditional upon  $Z_i = 0$  and all the other  $X_i$  is defined as follows:

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<sup>8</sup> We analyze the responses to this question with respect to the respondent’s current situation in

$$P_{ij0} = P(Y_i = j | X_i; Z_i = 0) = \frac{e^{X_i' \beta_j}}{\sum_{k=0}^3 e^{X_i' \beta_k}},$$

and the predicted probability that  $Y_i = j$  conditional upon  $Z_i = 1$  and all the other  $X_i$  is

$$P_{ij1} = P(Y_i = j | X_i; Z_i = 1) = \frac{e^{X_i' \beta_j + \gamma_j}}{\sum_{k=0}^3 e^{X_i' \beta_k + \gamma_k}}.$$

Taking the mean across the sample of each of these yields  $P_{j0}$  and  $P_{j1}$ :

$$P_{j0} = \frac{1}{n} \sum_{i=1}^n P_{ij0}$$

and

$$P_{j1} = \frac{1}{n} \sum_{i=1}^n P_{ij1}.$$

This method of computing the magnitudes of the effects implied by the nonlinear estimation assumes that the other independent variables (the  $X$  vector) take on their true values for each individual. We simulate changing the value of some dummy variables for the whole sample, allowing all other characteristics to take their true values. The results of the computations are shown in table 6 (to be added, together with more discussion of the other estimated impacts.<sup>9</sup>

Finally, we report the results from pooling tests (Cramer and Ridder (1991)). The null hypothesis for these tests is that two states have the same coefficients:  $\beta_j = \beta_k$  for two alternatives  $j$  and  $k$ . In particular we were interested in testing whether the process generating own-account work can be distinguished statistically from that generating unemployment, and whether the process generating employer status can be distinguished statistically from that generating own-account work. Table 6 contains the results. For these data, and for every country, we can reject pooling at very

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section 5 below.

<sup>9</sup> Other variables that we plan to examine in later work includes ethnicity (gypsy or other minority), muslims, jews, type of education, parental characteristics (including education in more detail), paternal and maternal grandfathers' property ownership, Communist Party office-holding, pre-1989 self-employment, and ability to speak a foreign language (the data include English, French, German, and Russian). We also plan to analyze information for each country on policies (when self-employment and hiring employees was liberalized; price liberalization) and on economic environment as it affects entrepreneurship. Finally, we plan to include measures of local labor

high levels of significance. It appears the data provide support for the contention that self-employment is not just another form of unemployment and that, however, the self-employed who engage others as their paid employees are quite different from those who do not.

Table 6: Pooling Tests

## 5 Impact of Self-Employment on Earnings and Satisfaction

Finally, we turn to an analysis of differentials in earnings and satisfaction levels by employment status. Here we restrict the sample to respondents who are employed by main-activity, and we again distinguish two groups of self-employed: own-account workers (including those making use of unpaid family helpers) and employers (who hire employees for pay). We not only measure the premia associated with own-account work and employer status (relative to paid employment), but also test whether these differentials vary significant across countries, controlling for gender and standard human capital controls.

Summary statistics for our dependent variables are shown in Table 7. Earnings is defined as monthly income on current main-activity (at the time of the survey); the mean and standard deviations in the national currencies are shown in the top part of the table. To estimate pooled regressions, we normalized earnings in each country by dividing by the mean, then took the natural logarithm of this normalized income to produce the dependent variable we use in the earnings function. Thus, we abstract from the question of differences across countries in the level of average earnings to focus attention on relative earnings for each country and in cross-country comparison.<sup>10</sup>

Table 7: Dependent Variables

We also analyze several subjective measures of earnings, quality of life and social position, as shown in the table. The first variable, CHLIFE, contains the responses to the question: “Comparing your life now and in 1988, would you say your life is much better now, a little better now, about the same, a little worse now, or much worse now?” As the table shows, well over half the respondents report a worse quality of life, and only 5.5 percent opt for the top category of “much

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market performance (local unemployment rate, average wage, etc.).

<sup>10</sup> The mean of log (normalized income) in Table 7 is not precisely equal to zero because of missing values.



better.”

The second qualitative variable, CHFIN, contains the responses to the following question: “Since 1988, has your financial situation gotten better, stayed the same, or gotten worse?” Again, most respondents consider that things have gotten worse, and less than one-fifth claim and improvement.

The last two variables, STOT93 and SINC93, have already been discussed in section 2, above, because we used their 1988 equivalents to compute regressors for the multinomial logit functions reported in section 4. The former represents subjective relative social position and the latter subjective relative income position. The mnemonics are slightly different from those in sections 2 and 4, because here we make use of all the categories in defining them as dependent variables.

With respect to these qualitative dependent variables, our estimation method is ordered probit. To clarify our assumptions and the simulations we shall present, it is useful to discuss the model in some detail. Formally, we assume that each individual, again indexed by subscript “i,” evaluates his/her income, social position, and quality of life with a latent variable  $Y_i^*$ . We further assume that each such evaluation may be expressed as a linear function, common across individuals, of the individual’s employment status,  $Z_i$ , and of other characteristics,  $X_i$ :

$$Y_i^* = X_i\beta + Z_i\gamma + \varepsilon_i,$$

where

$Y_i^*$  = evaluation of income, position, quality of life

$Z_i$  = vector of employment status (employee, own-account worker, employer)

$X_i$  = vector of personal characteristics (gender, age, education)

$\beta, \gamma$  = vectors of parameters to be estimated

$\varepsilon_i$  = unobserved residual.

We are interested in estimating  $\gamma$ , the impact of  $Z$  on  $Y^*$ , and testing the hypothesis that  $\gamma$  is significantly different from zero. The employment status variables in  $Z$  are two dummy variables, equal to 1 if the individual was an own-account worker or an employer, respectively, and 0 otherwise, so that  $\gamma$  reflects the difference between individuals in the self-employment group relative to employees. If we scale  $Y^*$  such that larger values imply better evaluation, then we are interested

in the possibility that  $\gamma$  is positive for own-account workers (or negative, if self-employment is involuntary for this group) and that it is positive and much larger for employers. We are also interested in how  $\gamma$  varies across countries; thus, we pool the data and estimate separate  $\gamma$ s, which also permits us to conduct tests of the statistical significance of any differences observed.

Of course, the estimation problem is that we do not observe  $Y^*$  directly. As described above, we observe only the responses within a set of categories. Taking the three-category variable CHFIN as an example, the data can be treated as though we observe a qualitative variable  $Y$ , with 3 categories as follows:

$$\begin{aligned} Y_i &= 0 && \text{if } Y_i^* \leq 0 && \text{("worse")} \\ &= 1 && \text{if } 0 < Y_i^* \leq \mu_1 && \text{("about the same")} \\ &= 2 && \text{if } \mu_1 < Y_i^* && \text{("better")} \end{aligned}$$

where  $\mu_1$  represents the common “threshold” across which individuals switch categories, with  $0 < \mu_1$ . Together with  $\beta$  and  $\gamma$ , the category thresholds (plural for the estimations in which more than 3 categories are involved) are parameters to be estimated by the model. Under the conventional assumption that  $\varepsilon$  is distributed as a standard normal [ $\varepsilon \sim N(0, 1)$ ], we can compute the probabilities of an observation falling within each category as a function of the  $X_i$  and  $Z_i$ :

$$\Pr(Y_i = 0) = \Pr(X_i\beta + Z_i\gamma + \varepsilon_i \leq 0) = \Phi(-X_i\beta - Z_i\gamma)$$

$$\Pr(Y_i = 1) = \Pr(0 < X_i\beta + Z_i\gamma + \varepsilon_i \leq \mu_1) = \Phi(\mu_1 - X_i\beta - Z_i\gamma) - \Phi(-X_i\beta - Z_i\gamma)$$

$$\Pr(Y_i = 2) = \Pr(\mu_1 < X_i\beta + Z_i\gamma + \varepsilon_i) = 1 - \Phi(\mu_1 - X_i\beta - Z_i\gamma),$$

where  $\Pr$  stands for probability, and  $\Phi(\omega)$  for the cumulative normal distribution from  $-\infty$  to  $\omega$ . The parameters of the  $Y^*$  function as well as the category thresholds can then be estimated using maximum likelihood, where the contribution of any single individual to the likelihood function is simply given by the formula for the probability of observing him/her in the observed category, conditional upon his/her characteristics.

Besides estimating the  $\beta$  and  $\gamma$  parameters, and drawing inferences about the statistical significance of the estimates, we are interested in calculating the implied magnitude of the impact of  $Z$  on  $Y$ . For this purpose, we conduct simulations, using the predicted probabilities of observing an individual choosing each of the categories under different conditioning assumptions. For instance, consider a single  $Z$ , say employer status. We may compute the probability that an

individual chooses category “j” conditional on her/his characteristics, separately for  $Z_i = 0$  and  $Z_i = 1$ :  $\Pr(Y_i = j | X_i ; Z_i = 0)$  and  $\Pr(Y_i = j | X_i ; Z_i = 1)$  for each category “j” ( $j=0, 1, 2$ ) in our 3-category example. Defining these two estimated probabilities as  $P_{ij0}$  and  $P_{ij1}$ , respectively, a prediction of the conditional incidence of category j can be derived in each case:

$$P_{j|z=0} = (1/n)(\sum_i P_{ij0}) \text{ and}$$

$$P_{j|z=1} = (1/n)(\sum_i P_{ij1}).^{11}$$

The impact of Z on Y can then be summarized as the difference in the distribution of the 3 mean probabilities across states  $Z = 0$  and  $Z = 1$ .

Our estimation results are shown in Table 8. The earnings function shows a remarkably regular shape, particularly for pooled data from such countries as these.<sup>12</sup> The estimated gender gap is about 30 percent, the impact of a year of schooling is about 5 percent, and the age-earnings relationship follows a standard concave profile. The coefficients on the own-account and employer dummies reflect the premia in Bulgaria, the reference country, with the coefficients on the interaction terms showing the different results in each of them. In every country except Poland, the estimated premia for both types of self-employment are non-negative, probably due to the predominance of agriculture in Polish self-employment (Table 4). We plan to analyze some richer specifications of these equations and provide more discussion of the results and simulations in the near future.

Table 8: Estimation Results

## 6 Conclusion

The post-socialist transition offers an interesting and, we have argued, fruitful setting to investigate a number of important issues concerning self-employment. Starting from a situation in which private initiative had been severely repressed and possibilities to save had been extremely limited for decades, the liberalizations of prices, business entry, imports, capital accumulation, and employee hiring and firing were abrupt and unexpected. Because no one anticipated the rapid

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11 If we estimate the  $\Pr(Y_i | X_i, Z_i)$  function by maximum likelihood, then these are also the maximum likelihood predictors, and as such are consistent and asymptotically efficient. See Cramer (1991: 86).

12 Sakova (1997) and Chase (1998) also report the results from estimating earnings functions with these data for the Czech Republic and Slovakia.

changes, including the receipt of property through restitution, the transition has some elements of a “natural experiment,” in which some key variables are much closer to exogenous than in the typical research setting. In at least the early stages, the transition economies have clearly been in disequilibrium, which is characteristic of the two major interpretations of self-employment: entrepreneurship and unemployment.<sup>13</sup>

On the one hand, the resource misallocation inherited from decades of central planning implied that profit-making opportunities could be rife. The large rise in self-employment might be a reflection of a golden time for entrepreneurs to pursue dreams that had been unrealizable under the Communist regime. At the same time, the shocks of coordination breakdown, international competition, and structural change have sharply reduced output and domestic demand throughout the region.<sup>14</sup> The state sector, comprising most of employment and consisting mostly of large firms, cut hiring drastically and in some cases engaged in massive layoffs. Official unemployment appeared for the first time in decades (in most countries) and grew rapidly (in all of them). The rise in self-employment might be reflecting the forced search of displaced workers for new jobs and alternative means of survival.

Thus, we would argue that an understanding of the relative mix of these two alternative characterizations of self-employment is essential to a comparative evaluation of the reported growth in new private employment across transition economies.<sup>15</sup> We have provided three types of evidence on this issue. First, we have measured the extent and variety of self-employment in the six countries for which we have data. We have distinguished main-activity self-employed from those engaged in a wider variety of activity, we have examined main-activity self-employed who hire

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13 “Dealing with disequilibrium” was Schultz’ (1975) characterization of entrepreneurship.

14 Blanchard and Kremer (1997) offer a formal model of the breakdown in coordination and resulting hold-up after central planning was ended.

15 Johnson, Kaufmann, and Shleifer (1997) emphasize another perspective on the new private sector in transition economies: the extent to which it operates “unofficially,” defined as not paying taxes or benefitting from public goods. They provide some aggregate measures and cross-country comparisons of the unofficial sector and they argue that the choice to operate informally has negative externalities, so that there is a “bad” and a “good” equilibrium in which all or nearly all resources are unofficial or official, respectively. We are not able to measure whether the self-employed business people in our sample pay their taxes, so we cannot test the “bang-bang” implication of their argument.

employees, those who engage unpaid family helpers, and those who work alone, and we have broken down the main-activity self-employed by the major industry of their activity. Although these distinctions are well-known in the development economics literature, they have received little attention in studies of self-employment in both developed market and transitional economies.

Second, we have analyzed the origins and determinants of the process creating self-employment. For this purpose, we have included standard variables that have been analyzed in other settings, such as demographic factors, family background, and wealth, but we have argued that the transition environment offers an unusual opportunity to measure the separate impacts of family traits and of wealth constraints, given that there was little possibility to bequeath property and the new opportunities after 1989 came so unexpectedly. Restitution of property that had been confiscated provides a quasi-natural experiment for examining the impact of wealth on new business creation. We find strong evidence of such an effect in the Czech Republic. We also find statistical evidence that self-employment in these countries should be divided into employers and own-account workers, and that the latter are significantly different from the unemployed, in terms of the observable variables generating the labor force state.

Third, we have estimated earnings, quality of life, and social position differentials associated with self-employment. In general, we find that the self-employed, both employers and own-account workers, have higher levels of these dependent variables than do paid employees. Large cross-country variation in the outcomes of self-employment remains, however, even after we control for a number of important determinants, including human capital characteristics. At the present stage of our research, we can only speculate that this variation may be associated with differences in reform history (including pre-1989 partial reforms and the subsequent pace of transition policies) or with other aspects of the political and economic environment. Perhaps the variation reflects differences in the pace of governmental reform, as argued by Frye and Shleifer (1996) in a study of depoliticization and small businesses in Poland and Russia. We intend to follow up the present study with further analysis of the patterns and characteristics of self-employment in order to investigate such hypotheses.

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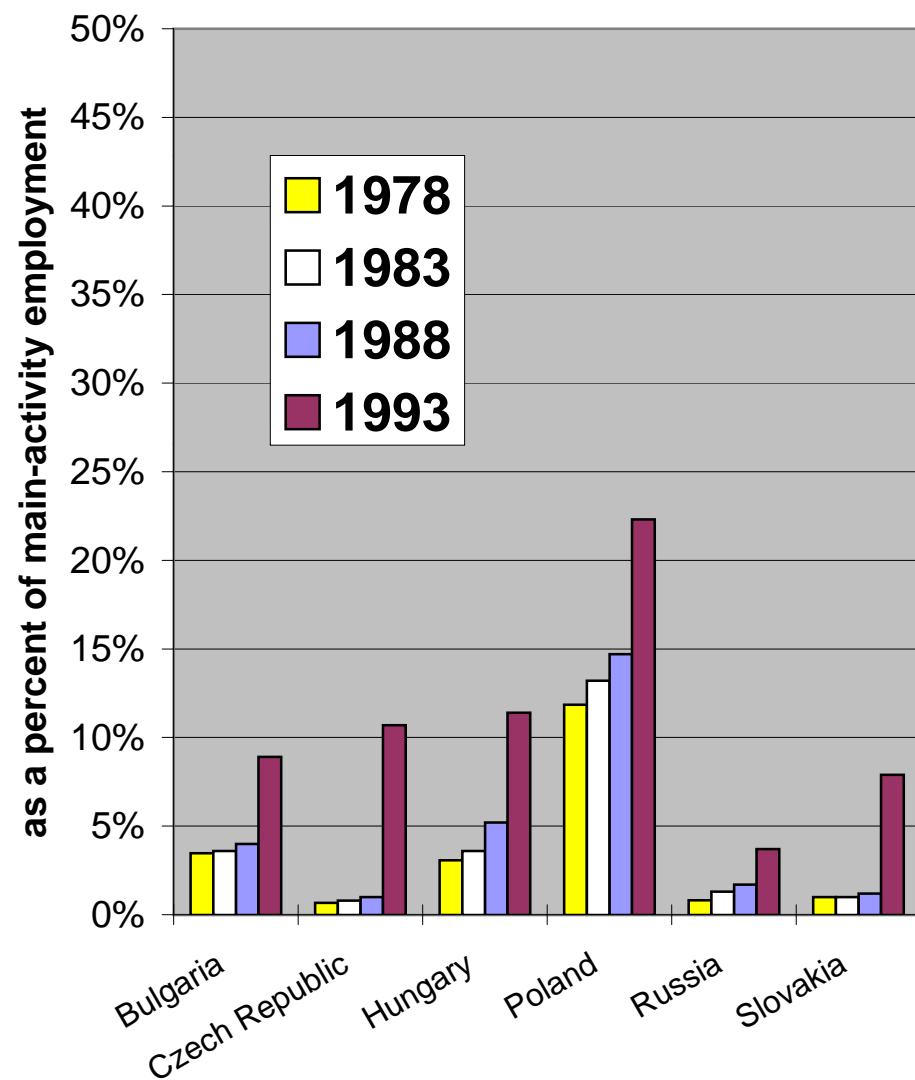
**Table 1**  
**Sample Description**  
**Summary Statistics**

		Bulgaria	Czech Republic	Hungary	Poland	Russia	Slovakia
<b>Variable</b>	<b>Mnemonic</b>	<b>Continuous Variables: Mean (Standard Deviation)</b>					
Years of age	AGE	42.199 (11.843)	41.141 (10.408)	39.174 (10.800)	38.956 (11.464)	41.153 (12.339)	40.348 (10.892)
Years of schooling	EDUYRS	10.342 (3.432)	12.238 (2.759)	11.520 (3.153)	11.472 (3.137)	11.980 (3.163)	12.138 (3.042)
Number of children	NUMCHILD	1.150 (1.014)	1.209 (1.047)	1.186 (1.063)	1.385 (1.251)	1.059 (0.973)	1.366 (1.159)
Subjective social position	SUBTOT88	0.022 (0.995)	0.027 (0.985)	0.100 (0.975)	0.031 (0.982)	0.018 (1.002)	0.031 (0.971)
Subjective income position	SUBINC88	0.040 (0.990)	0.024 (0.980)	0.120 (0.931)	0.029 (0.975)	0.029 (0.996)	0.032 (0.945)
<b>Dummy Variables: Mean</b>							
Male gender	MALE	0.520	0.529	0.542	0.541	0.497	0.533
Single, divorced, separated	SINGLE	0.195	0.199	0.241	0.241	0.247	0.228
Recipient of restitution	REST	0.076	0.107	0.308	0.037	0.000	0.096
Communist Party member	MEMBER	0.141	0.158	0.099	0.110	0.110	0.151
Resident of capital city	CAPITAL	0.197	0.172	0.252	0.070	0.087	0.157
<b>N</b>		<b>3,525</b>	<b>3,810</b>	<b>2,743</b>	<b>2,532</b>	<b>3,719</b>	<b>3,524</b>

*Note: Sample restricted to labor force participants. Data are drawn from 1993 Social Stratification Surveys in each country.*

**Table 2**  
**Self-Employment Dynamics**

**Self-Employment on the Main Activity**



**All Self-Employment**

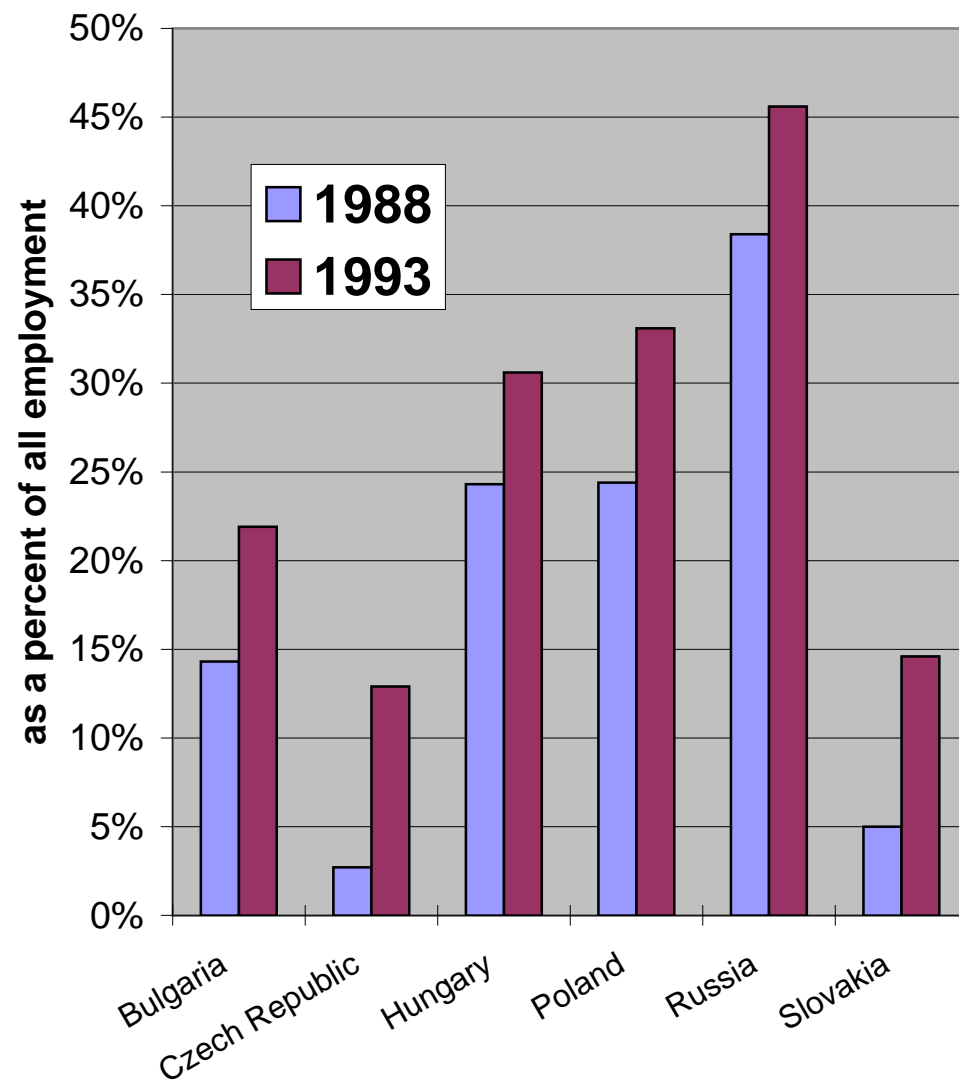


Table 3  
Self-Employment and Job Creation

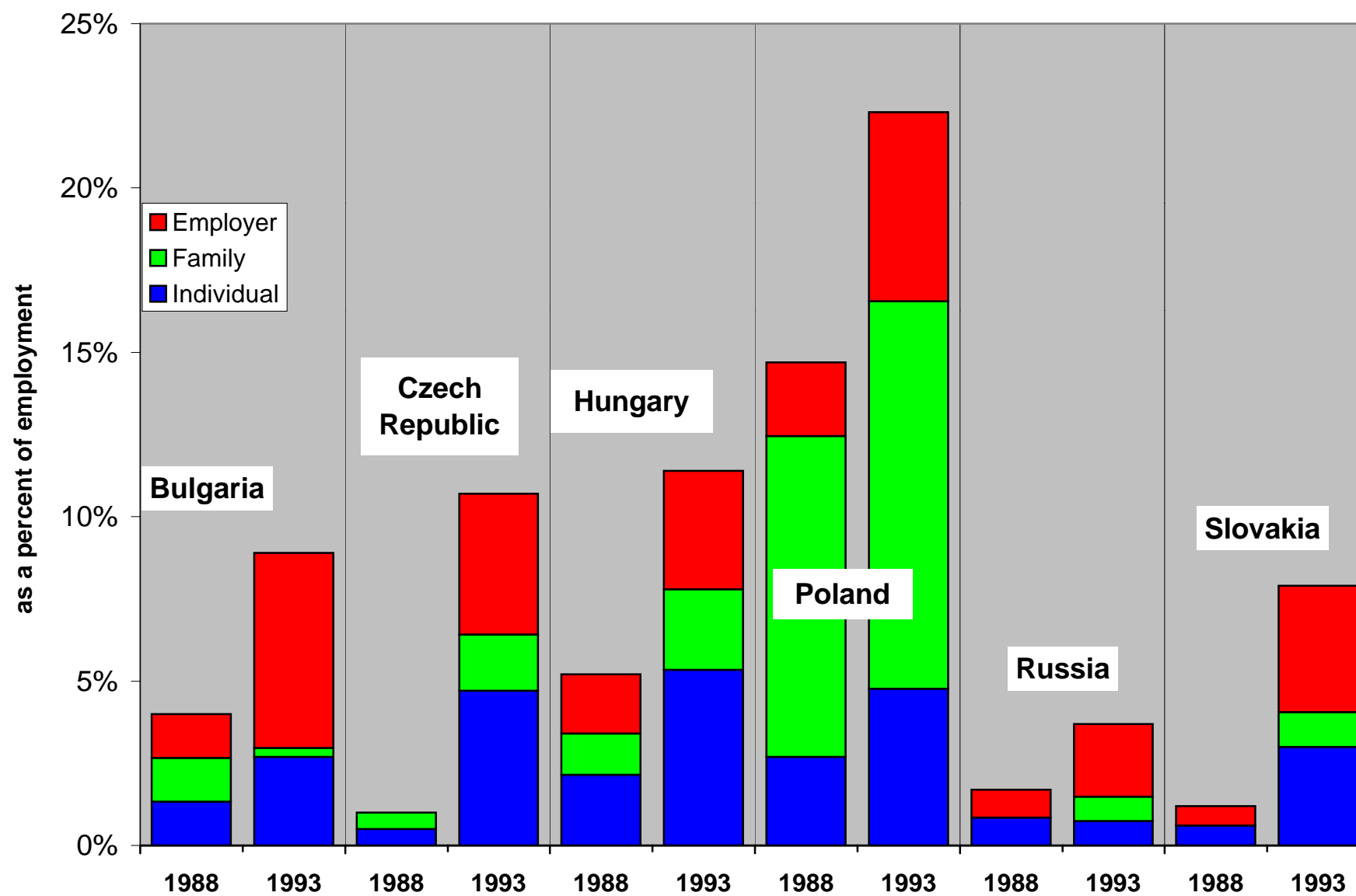
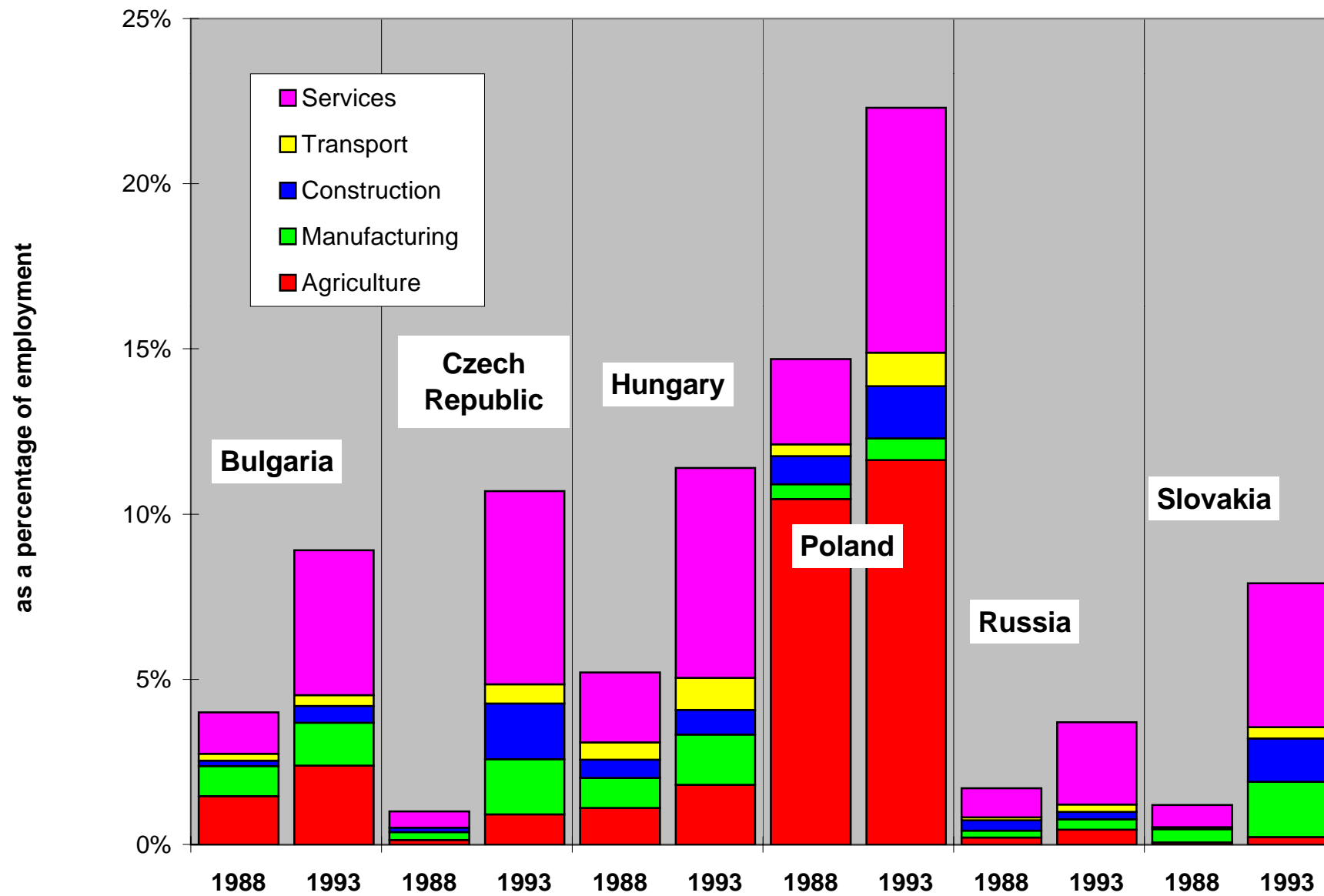


Table 4

# The Structure of Self-Employment by Industry



**Table 5a**  
**Determinants of Self-Employment in Bulgaria**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-6.792	0.000	-3.907	0.001	1.466	0.005
MALE	1.245	0.000	1.177	0.003	-0.019	0.899
AGE	-0.001	0.974	0.011	0.523	-0.053	0.000
EDUYRS	0.129	0.019	-0.126	0.379	-0.140	0.000
MOFAHIGH	0.663	0.061	0.754	0.065	0.061	0.743
SINGLE	0.489	0.257	0.199	0.685	0.139	0.508
NUMCHILD	0.387	0.035	0.070	0.730	0.033	0.714
MEMBER	-0.005	0.988	0.027	0.952	-0.480	0.080
CAPITAL	0.407	0.230	-0.568	0.260	0.057	0.773
REST	0.183	0.671	0.419	0.403	0.118	0.635
SUBTOT88	-0.175	0.354	-0.021	0.921	0.116	0.209
SUBINC88	0.218	0.232	0.109	0.957	0.008	0.930

Chi-squared = 145.958 (significance level = .000)  
N = 1940

**Table 5b**  
**Determinants of Self-Employment in the Czech Republic**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-4.455	0.000	-3.514	0.000	2.221	0.117
MALE	0.711	0.011	0.521	0.015	0.150	0.685
AGE	-0.006	0.639	-0.020	0.056	-0.038	0.033
EDUYRS	0.044	0.335	0.073	0.050	-0.399	0.000
MOFAHIGH	0.110	0.734	0.300	0.222	0.165	0.769
SINGLE	0.021	0.950	-0.300	0.262	0.176	0.667
NUMCHILD	0.161	0.257	0.081	0.480	-0.014	0.943
MEMBER	-0.062	0.857	-0.515	0.109	0.146	0.797
CAPITAL	0.211	0.437	0.443	0.036	-0.285	0.500
REST	0.774	0.014	0.177	0.532	-0.329	0.659
SUBTOT88	0.093	0.508	-0.161	0.137	-0.051	0.785
SUBINC88	0.005	0.971	0.266	0.007	0.087	0.633

Chi-squared = 84.415 (significance level = .000)  
N = 1939

**Table 5c**  
**Determinants of Self-Employment in Hungary**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-6.247	0.000	-3.215	0.000	1.001	0.046
MALE	1.309	0.001	0.318	0.170	0.367	0.018
AGE	-0.025	0.194	0.003	0.819	-0.031	0.000
EDUYRS	0.144	0.011	0.004	0.923	-0.171	0.000
MOFAHIGH	-0.218	0.555	0.269	0.318	0.148	0.438
SINGLE	0.156	0.751	-0.257	0.431	0.066	0.742
NUMCHILD	0.405	0.017	0.005	0.972	0.042	0.623
MEMBER	-1.593	0.015	-0.980	0.032	-0.171	0.577
CAPITAL	0.462	0.189	-0.195	0.472	-0.266	0.172
REST	0.073	0.831	-0.153	0.543	0.020	0.906
SUBTOT88	0.427	0.049	0.136	0.349	0.091	0.313
SUBINC88	0.435	0.049	0.416	0.008	-0.150	0.118

Chi-squared = 156.851 (significance level = .000)  
N = 1772

**Table 5d**  
**Determinants of Self-Employment in Poland**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-4.792	0.000	-3.132	0.000	1.533	0.036
MALE	0.627	0.018	1.216	0.000	-0.388	0.060
AGE	-0.023	0.121	0.007	0.597	-0.048	0.000
EDUYRS	0.151	0.000	-0.059	0.180	-0.126	0.003
MOFAHIGH	0.054	0.846	0.389	0.165	-0.102	0.678
SINGLE	0.382	0.280	-0.488	0.222	0.222	0.390
NUMCHILD	0.349	0.003	0.207	0.051	-0.113	0.307
MEMBER	-0.143	0.707	-0.614	0.116	-0.639	0.155
CAPITAL	-0.824	0.193	0.236	0.587	-2.001	0.050
REST	-1.105	0.295	-0.280	0.712	0.258	0.648
SUBTOT88	-0.121	0.385	-0.038	0.781	0.337	0.003
SUBINC88	0.750	0.000	0.318	0.025	0.199	0.101

Chi-squared = 171.727 (significance level = .000)  
N = 1235

**Table 5e**  
**Determinants of Self-Employment in Russia**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-5.666	0.000	-8.323	0.000	-4.335	0.000
MALE	1.584	0.000	2.114	0.010	-0.156	0.673
AGE	-0.049	0.006	-0.016	0.593	-0.016	0.263
EDUYRS	0.188	0.000	0.009	0.925	0.022	0.672
MOFAHIGH	0.123	0.734	1.460	0.047	0.378	0.285
SINGLE	-0.431	0.354	1.362	0.122	1.179	0.003
NUMCHILD	-0.215	0.354	0.561	0.187	0.062	0.787
MEMBER	0.078	0.864	-28.426	1.000	-1.633	0.115
CAPITAL	0.130	0.816	2.065	0.003	0.180	0.741
REST	na	na	na	na	na	na
SUBTOT88	0.017	0.933	0.300	0.465	0.173	0.392
SUBINC88	0.066	0.730	(0.265)	0.479	0.229	0.217

Chi-squared = 97.540 (significance level = .000)  
N = 2153

**Table 5f**  
**Determinants of Self-Employment in Slovakia**  
**Multinomial Logit Estimates**

Independent Variables	Dependent Variable (reference category: Employee (Y=0))					
	Employer (Y=1)		Own-Account (Y=2)		Unemployed (Y=3)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-5.040	0.000	-2.740	0.059	1.752	0.070
MALE	1.379	0.006	0.449	0.328	-0.088	0.738
AGE	-0.023	0.294	-0.042	0.093	-0.039	0.003
EDUYRS	0.045	0.494	-0.039	0.643	-0.262	0.000
MOFAHIGH	1.120	0.009	0.905	0.072	0.020	0.963
SINGLE	0.117	0.849	0.335	0.589	0.533	0.112
NUMCHILD	0.214	0.279	0.174	0.460	0.151	0.249
MEMBER	0.411	0.348	0.481	0.386	-0.111	0.797
CAPITAL	-0.456	0.421	0.282	0.595	-0.940	0.050
REST	0.122	0.817	0.050	0.937	0.312	0.417
SUBTOT88	-0.112	0.611	0.061	0.807	-0.038	0.786
SUBINC88	0.531	0.016	0.216	0.387	0.049	0.728

Chi-squared = 86.466 (significance level = .000)  
N = 1151



**Table 6**  
**Pooling Tests**  
**(Chi-squared statistics)**

<b>Test</b>	<b>Bulgaria</b>	<b>Czech Republic</b>	<b>Hungary</b>	<b>Poland</b>	<b>Russia</b>	<b>Slovakia</b>
Pooling employers and own-account workers	1,466.5	1,349.2	1,423.4	1,376.5	1,534.0	1,500.0
Pooling own-account workers and unemployed	2,692.6	2,761.3	2,570.2	2,666.0	2,890.4	2,789.5

Note: Degrees of freedom for each Chi-squared test is 11. All statistics are significant at the .001 level.

**Table 7**  
**Impact of Self-Employment**  
**Summary Statistics of Dependent Variables**

Income - Main Job	(in national currency)			
	Currency	Mean	Std. Deviation	Valid N
Bulgaria	Leva	2258	1591	2464
Czech Republic	Koruny	4293	3141	3688
Hungary	Forint	15578	9374	2089
Poland	Zloty	3795	2758	1885
Russia	Rouble	29126	66074	3434
Slovakia	Koruny	4013	2723	3061
Log (normalized income)		-0.1726	0.5413	16621

CHLIFE		Change in quality of life	
		Frequency	Number
0	worse	25.0%	4158
1		30.6%	5101
2	same	20.3%	3382
3		18.6%	3103
4	better	5.5%	912

CHFIN		Change in personal finance	
		Frequency	Number
0	worse	56.7%	9483
1	same	24.9%	4158
2	better	18.4%	3083

STOT93		Subjective relative position	
		Frequency	Number
0	low	8.3%	1367
1		10.6%	1752
2		17.4%	2868
3		19.9%	3279
4		25.4%	4183
5		12.1%	1989
6		4.4%	722
7	high	1.5%	244
8		0.3%	49
9		0.2%	41

SINC93		Subjective relative income	
		Frequency	Number
0	low	14.0%	2340
1		36.3%	6072
2		40.5%	6782
3		7.7%	1296
4	high	1.4%	236

**Table 8**  
**Impact of Self-Employment: Estimation Results**

Independent Variables	Dependent Variables									
	log (Y)		CHLIFE		CHFIN		STOT93		SINC93	
	OLS				ORDERED PROBIT					
	Coeff.	Std.Err.	(five categories) Coeff.	Std.Err.	(three categories) Coeff.	Std.Err.	(ten categories) Coeff.	Std.Err.	(five categories) Coeff.	Std.Err.
Male	0.293	0.008 ***	-0.005	0.017	-0.027	0.019	0.006	0.016	0.068	0.017 ***
Age	0.038	0.003 ***	-0.062	0.004 ***	-0.059	0.005 ***	-0.027	0.004 ***	-0.011	0.004 ***
Age2/100	-0.046	0.000 ***	0.059	0.005 ***	0.053	0.006 ***	0.024	0.005 ***	0.010	0.005 **
EDUYRS	0.047	0.001 ***	0.062	0.003 ***	0.051	0.003 ***	0.080	0.003 ***	0.068	0.003 ***
Own-account	0.173	0.080 **	0.162	0.135	0.335	0.173 **	0.545	0.128 ***	0.315	0.145 ***
<i>interactions</i>										
*Czech Republic	0.114	0.090	0.379	0.161 **	0.252	0.195	-0.254	0.159	-0.052	0.171
*Hungary	-0.038	0.129	0.123	0.170	-0.132	0.206	-0.231	0.163	0.040	0.176
*Poland	-0.260	0.088 ***	-0.188	0.147	-0.294	0.187	-0.574	0.141 ***	-0.404	0.156 ***
*Russia	0.525	0.135 ***	0.529	0.206 ***	0.513	0.226 **	0.182	0.181	0.829	0.219
*Slovakia	0.183	0.106 *	0.615	0.302 **	0.144	0.307	0.254	0.234	0.362	0.287
Employer	0.542	0.070 ***	0.868	0.145 ***	1.182	0.162 ***	0.995	0.133 ***	1.077	0.134 ***
<i>interactions</i>										
*Czech Republic	-0.093	0.085	-0.152	0.178	-0.681	0.200 *	-0.365	0.175 **	-0.515	0.177 ***
*Hungary	-0.231	0.176	-0.588	0.139 **	-0.492	0.220 ***	-0.269	0.203	-0.332	0.220
*Poland	-0.167	0.086 **	-0.247	0.173	-0.492	0.192 ***	-0.448	0.167 ***	-0.171	0.159
*Russia	0.366	0.111 ***	0.261	0.210	-0.099	0.236	-0.004	0.188	-0.204	0.189
*Slovakia	-0.146	0.102	-0.111	0.209	0.167	0.253	-0.009	0.232	-0.283	0.241
Adjusted R2	0.227									
Log Likelihood			-23912		-15536		-30324		-20306	
Chi-squared			2300		1688		2177		1781	
Number of observations	14431 ***		16656 ***		16724 ***		16495 ***		16726 ***	

*The regressors also included separate intercepts for each country.*

\*\*\* 0.01 significance level    \*\*0.05 significance level    \*0.10 significance level