Preliminary draft

Job Destruction, Job Creation and Unemployment in Transition Countries: What can we learn?

by

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1. Introduction

Fifteen years into the transition, most countries of Central and Eastern Europe (CEECs) and the former Soviet Union (FSU) are experiencing high unemployment rates (see Table 1). There are, however, differences across countries. While unemployment rates are double-digit in Poland, Croatia, Bulgaria and the Baltic states, Hungary reports rates in line with the EU15 average, which was 7.7 per cent in 2005. What is a matter of concern is that in each country more than half of the unemployed are long-term (i.e. they have been unemployed for more than 12 months) – the EU15 average of the incidence of long-term unemployment was about 44 per cent in 2005 (OECD, 2006). Another matter of concern is that inactivity rates have substantially increased during the 1990s. One might suggest that the substantial increase in inactivity was due to a large proportion of older (55-64 year old) workers going into early retirement. A quick look at the data, however, shows that this is not the case (see Table 2, Panel A and B). Apart from the experiences of Poland, Croatia and Slovenia, the substantial increase in inactivity is largely explained by the increase in inactivity among prime-age (25-54 year old) individuals.

There are three possible explanations for what we observe. First, the process of transformation from central planning to a free market could be still at work. In other words, countries are still reallocating resources from an inefficient initial allocation of labour and capital to more efficient uses. Along the path this process might also have been hindered by a series of macro-economic shocks (e.g., the tightening of monetary policy; delays in the implementation of reforms; the effects of the Russian financial crisis etc.) which might have added to the equilibrium unemployment rate. Secondly, job reallocation due to initial conditions is largely over, but it has left a legacy of unemployable workers-- some with the *wrong* skills and others located in the *wrong* regions[1]. This group of unemployable workers might be the main cause of the higher incidence of long-term unemployment we observe today. Thirdly, countries are experiencing high unemployment rates because they might have adopted the *wrong* institutions; thereby systematically increasing the long-term equilibrium rate of unemployment.

The purpose of this paper is to try to assess the importance of the first hypothesis: the continuing process of transformation or transition. In order to identify

whether the process of job reallocation is still at work and, more importantly, whether the high rate of unemployment today is a direct consequence of how the reallocation process has occurred over time, we look at the relationship between job creation, job destruction and unemployment taking into account pre-transition (initial) conditions and policies that vary across countries. In doing so, we also address three issues that since the beginning of the 1990s dominated the debate on how best to secure the transition from socialism to capitalism: shock therapy versus gradual change; privatization of state enterprises; the link between political change and economic change.

At the beginning of the 1990s, two school of thoughts developed, one advocating shock therapy and the other supporting gradual change. The former contended that the faster these countries achieved an economic structure similar to market economies, the better their economic performance would be, and that the best way to do so was to liberalise and privatise as quickly as possible. The latter school worried that without the institutional infrastructure, which could only be created gradually, privatization and liberalization might lead to asset stripping rather than wealth creation.

Recently, Godoy and Stiglitz (2006) have re-opened the debate addressing the relevance of both the 'level' and the 'speed' of reform in a paper that uses a cross-country estimation of economic performance among 23 transition countries. They find that while shock therapy was not conducive to success (measured in terms of higher GDP growth), a gradual change was. In this paper, we also analyse the role of both the level and the speed of reform in explaining job creation in the private sector and job destruction in the old sector using a panel of 12 transition countries over the years 1989-2003.

Our results suggest that neither shock therapy nor gradualism were conducive to higher job creation in the private sector and higher job destruction in the old sector. Instead, the debate over the level and speed of reform took precedence; with the issue of speed giving a greater insight into private sector growth and state firm downsizing.

Privatization was another crucial component of the debate on how best to secure the transition. Privatization was intended to address the fundamental problems of enterprise inefficiency, lack of market orientation and lack of innovation that

[1] As documented in Bornhorst and Commander (2006), regional migration flows within countries of

characterised enterprises under central planning. In early transition, countries suffered from a lack of domestic savings and an underdeveloped institutional framework, particularly with respect to capital markets. It was then realised that conventional methods of privatization by tender and through public offerings would not always be appropriate (Blanchard *et al*., 1991). New privatization methods were developed, including manager-employee buyouts (MEBOs) and mass privatization.

An extensive literature looks at the impact of privatization on firm performance (as summarised in Djankov and Murrell, 2002) and on how different methods of privatization have affected the structure of private ownership post-privatization (see, e.g., Meggison and Netter, 2001). To our knowledge, only one study looks at the impact of different privatization methods on economic performance (see Bennett *et al*., 2004). In this paper, we apply the classification of privatization methods introduced by Bennett *et al*. (2004) and investigate the impact of different privatization methods on job destruction in state firms.

Different privatization methods may lead to different ownership structures that have a higher or lower propensity towards firm restructuring and firm downsizing. For instance, while MEBOs are more likely to create an environment that opposes restructuring, full privatization – the sale of firms to outsider investors for a positive nominal price – is more likely to bring about restructuring (see Aghion and Blanchard, 1994; Blanchard, 1997). Our results confirm the expectation that full privatization is associated with higher job destruction in the old sector.

The third component of the debate was the link between political change and economic change. Since the beginning of the 1990s, much debate has taken place regarding the role of democratic institutions in achieving economic prosperity in former socialist economies (see, e.g., Shleifer, 1997; Shleifer and Vishny, 1996). Kornai (2006) goes so far to assert that:

"There is no democracy without capitalism, *but there is capitalism without democracy*" (Kornai, 2006, pag. 217, emphasis added)

Kornai (2006) describes the example of China: well on the road to economic reform without embracing the western democratic process. He contrasts this with the CEECs: struggling with the economic reform, but having embraced democracy and working on establishing democratic institutions. He warns us not to judge the process

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Central and Eastern Europe are typically small.

of transformation looking only at economic results, but also taking into account the progress in democratization.

In this paper, we use a simple measure of political change defined as the first election year that has brought a new coalition or a new government into power that represented the first clear cut from the past. We look at the impact of this political measure on the rate of job destruction in the old sector. It seems that when countries adopted a democratic system of government, they were more willing to engage in reform, allowing substantial downsizing of state-owned enterprises. Thus, we see a positive relationship between political change and firm downsizing in the old sector.

The paper is organised as follows. Section 2 presents a simple theoretical framework that describes the transition process in terms of job destruction in the state sector and job creation in the private sector. We describe the data in section 3. We conduct our empirical analysis in section 4. First, we investigate the relationship between job creation in the new private sector and unemployment. Secondly, we look at the determinants of job destruction in the old sector. Thirdly, we look at how the rate of job destruction and the history of past unemployment rates can affect long-term unemployment and, therefore, total unemployment in the economy. We conclude in section 5.

2. Theoretical framework

Following the literature (see, e.g., Flemming, 1993, Aghion and Blanchard, 1994, Blanchard and Keeling, 1996, Blanchard, 1997), we also discuss transition by using a two-sector model. The model is usually presented in the form of a 'state sector' producing a mediocre good and receiving state subsidies before transition, and a 'new sector' producing a better quality good and bearing the burden of taxation. Transition is typically modelled as a removal of subsidies to state firms or an elimination of taxes to private firms. In early transition, the removal of subsidies results in a decrease in state employment and (as long as real wage does not change) in an increase in unemployment. Private employment is unaffected. As transition proceeds and the initial phase of disorganisation is over, private alternatives increase (Blanchard and Kremer, 1997). Private sectors firms become net job creators.

Unemployment might also increase as state firms restructure. On a micro level, restructuring implies that state firms must change in the structure and organisation of their production. They must close inefficient plants and open new

ones, they musts close low quality product lines and open high quality ones; and they must replace obsolete equipment and capital. On a macro level, restructuring has two implications. On one hand, it increases production and output because restructured firms are more efficient and, on the other hand, it leads to an increase in unemployment because firms that engage in restructuring experience a drop in production, at least for some time.

As long as job destruction in the old sector is at work, unemployment will be higher than in the steady state. Even when job destruction in the old sector is achieved, it will take some time for the private sector to reduce unemployment.

What can we learn from looking at the co-movement of job creation, job destruction and unemployment, taking into account that initial conditions and policies vary across countries and the fact that we can only hope to observe them imperfectly? In order to answer this question, we need to express the model in mathematical terms and derive testable specifications[2].

Job destruction in the state sector depends on initial conditions (I), policies affecting destruction (P_D) and negatively on the remaining size of the state sector (S):

$$JDS = JDS(I, P_D, S) \qquad \text{where } JDS(., ., 0)=0 \qquad (1)$$

Job creation in the new sector is determined by initial conditions, policies affecting creation (P_C) and labour market conditions measured by unemployment (U):

$$JCN = JCN(U, I, P_C) \qquad (2)$$

Since JCS and JDN are assumed equal to zero, JDS and JCN also measure net destruction in the state sector and net creation in the private sector. Thus, any change in unemployment is expressed as:

$$\Delta U \equiv JDS - JCN \qquad (3)$$

The steady state of this model is given by $JDS = 0$ and net job creation in the new sector equal to zero:

[2] I am indebted to Olivier Blanchard for suggesting a framework for this idea to me.

$$JCN\ (U^*, I, P_C) = 0 \qquad (4)$$

The solution to equation *(4)* gives us the equilibrium unemployment rate *(U*)*. In this case, we do not have path-dependence. Path-dependence implies that current unemployment depends on past unemployment and thus on the history of job destruction and creation.

Our empirical strategy is as follows. We are interested in knowing the effect of *U* on *JCN* in equation *(4)*. The effect can either be positive or negative. A positive effect suggests that higher unemployment is associated with lower wages, higher profits and, thus, higher job creation in the new private sector. A negative effect indicates that higher unemployment is associated with higher unemployment benefits, higher taxes and, thus, lower job creation in the new private sector. A negative effect also suggests that higher unemployment is associated with lower wages, lower disposable income and lower consumption and, thus, with lower production and job creation in the private sector. In this latter case, high unemployment is expression of a depressed demand and a depressed economy. This model still does not exhibit path-dependence.

An extension of the model which does distinguish between active or short-term unemployment *(U_A)* and inactive or long-term unemployment *(U_{NA})* can exhibit path-dependence. The unemployed in the first pool are employable; those in the second are not:

$$JDS = JDS(I, P_D, S) \quad \text{where } JDS(.,.,0)=0 \qquad (6)$$

$$JCN = JCN(U_A, I, P_C) \qquad (7)$$

$$\Delta U_A = JDS - JCN - \delta U_A \qquad (8)$$

$$\Delta U_{NA} = \delta U_A \qquad (9)$$

Eq.(8) and (9) suggest that each year there is a fraction of the active unemployed (measured by δ) that cannot find a job and moves into long-term unemployment. The long-term unemployed have greater difficulties exiting the unemployment pool.

In this new scenario, steady-state active unemployment is still determined independently of the path of unemployment:

$$JCN\ (U_A^*, I, P_C) = 0 \qquad (10)$$

Total employment is equal to the sum of active and inactive unemployment (U_A+U_{NA}) and the second term depends on the history of active unemployment and thus on the rate of job destruction and creation. By using equation *(9)*, we can express long-term unemployment as a function of contemporaneous and past short-term unemployment rates:

$$U_{NA\ t} = \delta_0\ U_{A,\ t} + \delta_1\ U_{A,\ t-1} + \delta_2\ U_{A,\ t-2} + \delta 3\ U_{A,\ t-3} + \ldots + \delta_s\ U_{A,\ t-s} \qquad (11)$$

or

$$U_{NA,t} = \sum_{i=0}^{I} \delta_i U_{A,t-i} \qquad (12)$$

where (*t-I)* refers to the beginning or start of transition when we assume that unemployment was negligible. By using equation *(8)*, we can express short-term unemployment as a function of the history of job destruction and job creations rates:

$$U_{A,t} = \sum_{j=1}^{J} \left(\frac{1}{1+\delta} \right)^j (JDS_{t-j+1} - JCN_{t-j+1}) \qquad (13)$$

By substituting equation *(13)* in equation *(12)* and recognising that *i=j-1*, we obtain that long-term unemployment or inactive unemployment depends also on the history of job destruction and creation:

$$U_{NA,t} = \left(\frac{1}{1+\delta} \right) * \sum_{i=0}^{I} \left(\frac{1}{1+\delta} \right)^i \delta_i (JDS_{t-i} - JCN_{t-i}) \qquad (14)$$

In our empirical analysis we proceed as follows: firstly, we estimate the steady-state relationship between unemployment and private sector growth; secondly, we analyse the determinants of job destruction in the old sector; thirdly, we analyse the steady-state relationship between active unemployment and job creation in the private sector; and finally, we estimate long-term unemployment level and growth rate as a function of contemporaneous and past short-term unemployment rates. In the

latter set of regressions, we apply both a fixed effect estimation and a fixed effect estimation with AR(1) residuals.

3. Description of the data

We construct job creation and destruction rates by country, year and firm ownership using company accounts data collected in the Amadeus Database. The data at our disposal consist of annual samples of large and medium enterprises in ten CEECs (i.e. Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovenia) and two countries of the Former Soviet Union (i.e. Russia and Ukriane).

Since Amadeus data only cover the period 1995-2003 and do not provide employment information for Hungarian firms, we use data on job flows published in other studies to create the series or to complete the series in early years[3]. Job flow rates for Hungary are taken entirely from Korosi (2003). Old sector destruction rates for Ukraine and Russia are taken from Brown and Earle (2002, 2004). Job flow rates for the Czech Republic which cover the period 1991-1996 are taken from Jurajda and Terrell (2002). Data on Estonia for the period 1989-1994 are taken from Haltiwanger and Vodopivec (2002), and Jurajda and Terrell (2002). Early data on traditional Polish firms are taken from Konings, Lehman and Schaffer (1996). Old sector destruction rates in Slovenia are taken from Bojnec and Konings (1998).

We are aware of the difficulties in combining data from different data bases. This comparison may suffer from inconsistency because of different data coverage, different representation of the economy, different type of data. Notwithstanding these limitations, we believe the exercise is worth pursuing with the caveat that the results of our analysis could only be suggestive. For a limited number of countries, we compared job creation and destruction rates computed using the Amadeus data base with country studies based on other firm level data (i.e., Markov and Dobrinsky, 2005, for Bulgaria; Korosi and Turlea, 2005, for Estonia; Masso *et al*., 2005, for Estonia). Looking at the samples of foreign-owned and state owned firms, we find that the rate differentials between Amadeus and other data sets are negligible.

The Amadeus database consists of company accounts data of incorporated firms that satisfy at least one of the following criteria: number of employees greater than or equal to 15, total assets greater than or equal to €2 million and operating revenues greater than or equal to €1 million. For the Ukrainian sample, the selection criteria are stricter: number of employees greater than or equal to 20, total assets

[3] For more information on data sources, see Tables A.1 and A.2 in Appendix A.

greater or equal to €3 million and operating revenues greater or equal to €1.5 million. Data are collected by independent research units, under the supervision of the national official agency in charge of collecting company accounts data for each respective country (i.e. Companies House in the UK, Kamers van Koophandel in the Netherlands, and INPI in France). Data are then compiled by the research units in a consistent format following guidelines given by Bureau van Dijk, the publisher of the Amadeus data base. Thus, the main advantage of the data is that they are comparable within a country and across countries.

The Amadeus data set has, nevertheless, some drawbacks: (1) it neither provides information on the skill-composition of a firm workforce nor does it provide information on the extent to which a firm employs temporary workers; (2) given the selection criteria, it is not representative of small enterprises; (3) Amadeus data are better described as a collection of cross-sectional samples rather than a panel of firms that can be followed over time; (4) ownership information was collected only recently but, unfortunately, there is no information on the history of the firm's ownership[4].

We distinguish three ownership types: foreign, state and domestic private firms. We use state and domestic private firms to describe the behavior of firms in the old sector. We use foreign firms to infer the behavior of enterprises in the new private sector[5]. We refer to foreign firms as majority foreign-owned enterprises, i.e. firms characterized by a foreign equity share greater than 50 percent. We refer to state firms as majority state-owned enterprises, i.e. firms characterized by state participation greater than 50 percent. We refer to domestic private firms as those firms which are characterized by either state or foreign minority participation, and firms that are totally domestically-owned. This category includes domestically-owned privatized firms[6].

We also experiment with a different method to split foreign and state firms. We refer to foreign firms as all firms with a foreign participation apart from when the State owns more than 50% of the firm equity. We refer to state firms as all firms with

[4] For Poland, Bulgaria and Romania, we combined three different waves of the Amadeus database (the first retrieved in January 1999, the second in October 2003 and the third in January 2005) for which we have ownership information on firms. For a sub-sample of these firms, it is then possible to construct the history of the firm's ownership.

[5] The share of foreign-owned firms in total firms computed using the Amadeus database is shown in Table A.3 in Appendix A.

[6] Co-operatives are also included in this residual category but the number of co-operatives in our data is small.

a state participation if there are not already defined as foreign-owned. We refer to domestic firms as those with neither foreign nor state participation. We obtain very similar job creation and job destruction rates using either ownership classification. In the paper we concentrate on the former[7].

4. Empirical analysis

4.1 Job creation in the new sector

Job creation rates for the private sector as a whole are available for Estonia (1989-1995) and the Czech Republic (1990-1996). Job creation rates across foreign-owned firms, retrieved from Amadeus and taken from Korosi (2003), are used instead of job creation rates across private firms for all other countries. Slovenia cannot be included in the analysis because ownership information was not available. Notwithstanding these limitations, we conduct the analysis regressing job creation rate in the private sector on log unemployment rate, initial conditions ($\hat{I}$) and policies affecting job creation ($\hat{C}$):

$$JCN_{it} = \beta_0 + \beta_1 \ln(U_{it}) + \beta_2 \hat{I}_{it} + \beta_3 \hat{C} + \beta_4 \sum_i \mathrm{X}_i + \beta_5 \sum_t \mathrm{X}_t + \varepsilon_{it} \qquad (15)$$

U is unemployment rate, end-year. Unemployment is taken from the EBRD Annual Transition Report (1995-2004), ILO, Key Labour Market Indicators (2005) and OECD, Employment Outlook (2006).

We experiment with different measures of initial conditions ($\hat{I}$), such as the country share of industry in employment and the current account in GDP. While the share of industry in employment may capture the initial distortion in the allocation of resources towards industry and manufacturing, the trade variable may capture the fall and re-direction of trade after the collapse of the Council for Mutual Economic Assistance (COMECON). We expect that countries with a large share of industry in employment or a current account in GDP will be slower in shedding labour from the old sector perhaps because of a stronger opposition to restructuring expressed by insiders and the Government concern to avoid mass lay-offs. This might hinder job creation in the private sector.

[7] See Appendix B and Appendix C for a description of job destruction and job creation rates in the new sector and old sector, respectively.

Policies affecting creation ($\hat{C}$) might be measured by: (1) the money market rate or the lending rate which regulates the firm's access to credit; (2) the corporate tax rate which measures how the burden of taxation may hinder private sector growth; (3) the foreign direct investment (FDI) share in GDP or the trade share in GDP, which capture the effect of foreign capital and country's openness on private sector growth; (4) the EBRD indices of small scale and large scale privatization, which have been used to measure the progress in liberalization reforms (see Godoy and Stiglitz, 2006). We will consider both the level and the rate of change of these indices. As Heybey and Murrell (1999) and Godoy and Stiglitz (2006) so forcefully explained, it is important to discriminate the effect of policy *level* from policy *change* on growth.

We also include country and year dummy variables in equation (15). We can either measure time as calendar time (i.e. chronological time) or as time since the beginning of transition in each country (i.e. transition time). While calendar time dummies capture current macro-economic shocks, transition time dummies better control for the pace of reform implementation in each country during the transition process. Thus, we choose the latter measure. For each country, there is one year in the early 1990s in which there was a sharp decrease in industrial production. We set time equal to zero in that year. Since Blanchard (1997), this measure has been used as a good indicator for the change in economic regime.

4.1.1 Relationship between job creation in the new sector and unemployment

We start investigating the correlation between job creation in the private sector and unemployment. We are interested in knowing whether unemployment affects job creation in the new sector and the magnitude and direction of this effect. As suggested in section 2, the effect can either be positive or negative. A positive effect indicates that higher unemployment is related to lower wages and higher profitability. A negative effect indicates that higher unemployment is related to higher unemployment benefits and the possibility of higher taxation or, alternatively, that higher unemployment is related to lower income and lower demand. Thus, it might be sign of a depressed economy.

We find a negative correlation between job creation in the new sector and unemployment (see Tables 3, column 1)[8]. By including country and time dummies in the estimation, we apply a fixed effects or within-estimator model. Precisely, this method is referred to as the *least squares dummy variable* (LSDV) estimation and gives identical results as the standard fixed effects model. Taking into account these effects, the correlation between unemployment and job creation in the new sector is about -14 per cent: an increase of 1 per cent in unemployment is associated with a decrease of 14 per cent in private sector growth.

In order to interpret this negative correlation, we evaluate the two explanations previously suggested: (1) the high unemployment benefits-high taxation channel and (2) the lower demand-lower production channel. In early transition, most CEECs introduced relatively generous unemployment benefit systems compare to Western standards; a few years into the transition, however, they restricted their generous allowances. As documented by Blanchard, Commander and Heitmueller (2006), net replacement rates and the share of individuals eligible for unemployment benefits declined over the 1990s. In addition, corporate tax rates declined in all countries over the last decade in an effort to stimulate private sector growth. These facts indicate that the high unemployment benefits-high taxation channel cannot provide a convincing explanation for the negative correlation between unemployment and new firms' activity that we find.

Taking final household consumption per capita as a measure of aggregate demand, we find a negative and significant correlation between unemployment and

aggregate demand: a 1 per cent increase of unemployment is associated with a 9 percent decrease in final consumption per capita. This finding gives some support to the lower demand-lower production channel hypothesis.

We then conduct a series of robust checks. We first split the sample of countries into two groups: group A and group B. Group A consists of early-reforming countries, such as Estonia, the Czech Republic, Hungary, Poland, Latvia, and Lithuania. These countries have been characterised by a surge of economic activity in the private sector at the beginning of transition, followed by a more moderate activity rate in the subsequent years. The fact that unemployment seems to have followed just the opposite direction, lower in early transition and higher later on, explains why we find a negative correlation.

Group B consists of a few late-reforming countries such as Bulgaria, Romania, Russia, Ukraine and Croatia. Late-reforming countries have suffered low private sector activity in early transition and experienced higher rates as reforms were effectively implemented. For slow-reforming countries, we find a positive, but insignificant correlation between unemployment and private activity (see Table 3, column 2).

We then perform the same type of regressions replacing the unemployment rate, which is defined as the number of unemployed in the labour force, with another measure of labour market conditions: the number of unemployed among all those non-employed (i.e. the sum of the unemployed and the inactive). Compared to the unemployment rate, this latter measure takes into account those who do not have a job and are not part of the labour force: the inactive. Considering this group could be important in identifying the appropriate measure of joblessness. Hungary provides the example of a country with low unemployment, but high inactivity rate. Looking at the results, we still find a negative correlation between job creation in the private sector and the share of unemployed in non-employed. Moreover, we do not detect any difference between early-reforming and late-reforming countries.

We finally conduct a robust estimation which controls for outliers: the average negative correlation remains (table 3, column 4).

[8] We conduct estimations for both job creation and net job creation, i.e. the difference between job creation and job destruction in the private sector. Results are very similar.

4.1.2 Job creation in the new sector and the level and speed of reform

Godoy and Stiglitz (2006) point out the importance of distinguishing between the effects of the *level* of "reform" (the extent of liberalization) and the *speed* of reform. They find a negative and significant coefficient for policy speed on the 1989-2001 GDP growth differential among 23 transition countries. They interpret this result as evidence that countries that have adopted a gradual approach to reform have achieved higher prosperity than those which have adopted shock therapy. They use an average of the EBRD indices of small and large scale privatization as their measure of policy reform.

Following Godoy and Stiglitz (2006), we also include the growth rate of the EBRD small and large privatization indices in estimations that include the levels[9]. We compute our measure of policy change both as the annual rate of change in the EBRD indices of small scale and large scale privatization and as the annual fraction of the 1989-2005 differentials of the same indices. None of the measures is significant. In terms of private activity, countries that have adopted shock therapy do not seem to have been penalized relative to countries that have chosen of more gradualist approach to reform (see Table 4).

We have repeated the same exercise for several EBRD indices: the index of enterprise restructuring; index of banking reform; index of market and trade; index of price liberalization; index of trade and forex system; and index of increased competition. The EBRD index of banking reform has a positive impact on private activity. While the level of reform is again significant, the speed of reform is not. The impact of the level of reform on private activity disappears as soon as we control for other variables in the estimation.

4.1.3 Determinants of job creation in the private sector

The negative correlation between unemployment and private activity remains even after controlling for initial conditions and policies affecting creation (see Table 5). Indeed, initial conditions do not seem relevant in explaining job creation in the new sector. None of the initial condition measures give satisfactory results. Three possible explanations might be considered: (1) our measures of initial conditions cannot capture the extent to which initial distortions in the allocation of resources

affect the private sector; (2) as transition progresses, initial distortions become less important in explaining private sector growth; and (3) by including country fixed effects in our estimation, we control for country characteristics and indirectly for country initial conditions.

Among policies affecting creation, the most relevant are money market rate (or lending rate) and corporate tax rate, stressing the importance of facilitating the access to credit for private sector entrepreneurs and stimulating private sector activity through favourable tax regimes. Favourable corporate taxation can also stimulate inflows of foreign capital in the region. This implication may also explain why in our estimations the coefficient on the share of FDI in GDP becomes insignificant as soon as we include corporate tax rate in our regression (see Table 5, column 7).

Other relevant factors are the EBRD index of small scale privatization and the share of FDI in GDP. As seen above, the EBRD index of small scale privatization is likely to capture the progress in liberalization (and privatization) reform. Progress in liberalization is positive associated with job creation in the private sector. The share of FDI in GDP captures the importance of foreign capital and foreign activity for private sector growth. Since the beginning of transition, the role of foreign capital has been emphasised: Foreign investors were expected to bring about technological know-how, organisational structure, management practises, and capital that will allow firms to restructure and become viable in a market environment. An extensive literature has documented these effects (see, e.g.,). We can also observe that countries that have opened up to foreign capital (e.g. Hungary, Estonia and the Czech Republic) have experienced higher levels of economic activity, reform and progress towards a well-functioning market economy.

[9] When, as Godoy and Stiglitz (2006), we use the average of the EBRD indices of small scale and large scale privatization, we do not obtain any significant results.

4.2 Job destruction in the old sector

We now turn to analyse the determinants of job destruction in the old sector. As suggested by equation (1), job destruction in the old sector depends on initial conditions, the size of the state sector and policies affecting destruction:

$$JDS_{it} = \alpha_0 + \alpha_1 \ln(U_{it}) + \alpha_2 \hat{I}_{it} + \alpha_3 \hat{D} + \alpha_4 \sum_i \mathrm{X}_i + \alpha_5 \sum_t \mathrm{X}_t + \mu_{it} \qquad (16)$$

where $\hat{I}$ is measured by the share of industry in employment, S is expressed as the share of non-private sector in GDP and $\check{D}$ is measured by privatisation measures, the share of FDI in GDP and the share of trade in GDP.

4.2.1 The role of different privatization methods

Following Bennet *et al*. (2004), we can distinguish three alternative privatization methods. The first is *full privatization*, where the dominant form of privatization in an economy is the sale of firms for a positive price. The second is *mass privatization*, where the dominant form of privatization is that firms are sold at a zero (or nominal) price. The third category is *mixed privatization*, which covers all cases that are not adequately represented by either of the first two categories, and includes managers-employee buyouts (MEBOs) and leased buyouts. Of the three methods, full privatization typically yields the most revenue, at least in the short run, while mass privatization yields the least.

Dummy variables representing the three methods of privatization and the timing of privatization will be included in the job destruction equation. These dummies have both a cross-section and a time-series dimension. We specify the chosen method of privatization in each country as belonging to one of these three categories, and then identify the date in which this privatization method was introduced. This allows us to create three dummy variables, one for each method of privatization. In each case the dummy variable equals zero in the years before the relevant method of privatization was introduced and unity thereafter[10].

The privatization measure taken from Bennett *et al*. (2004) suggests that there is a positive correlation between full privatization method and job destruction in the state sector (see Table 6, column 2). As expected, full privatization method is positive

correlation with job destruction in the state sector. Full privatization involves the sale of firms at a positive price and, more likely, leads to the participation of foreign capital in privatization. Foreign investors are more likely to engage in restructuring. There is also a positive correlation between mass privatization method and job creation, but this correlation disappears as soon as we replace time dummies with transition time dummies.

We perform a robust check. The privatization measure taken from Bennett *et al*. (2004) contains cross-sectional and time-series elements that we want to distinguish. We first create three dummy variables indicating the chosen method of privatization. We then create a fourth dummy variable indicating the date in which the privatization method was introduced (*Privatization period*). As expected, job destruction in the state sector is higher during the process of privatization relative to the pre-privatization period. It is now apparent that the positive coefficient on full privatization method found in Table 6 column (3) combined the effect of full privatization with the timing of privatization (see Table 6 column 4).

4.2.2 The role of reform and other privatization variables

We also explore the impact of policy reform and other privatization variables on state firm downsizing: the EBRD indices of small scale and large scale privatization, and the share of privatization receipts in GDP.

The EBRD indices of small scale and large scale privatization do not have any major impact on job destruction in the state sector. There is a weak positive effect of the large scale privatization index on job destruction. When we distinguish between the level and the speed of reform (measured by the level and the rate of change in the EBRD indices), our results do not change (see Table 6 column 1). The speed of reform does not affect job destruction in the state sector. We cannot claim that countries that have followed a more gradualist (or aggressive) approach to privatization have experience a higher rate of job destruction in the state sector relative to countries that have chosen a more aggressive (or gradualist) approach.

The share of privatization receipts in GDP is highly positive correlated with job destruction in the state sector. Since countries that have adopted full privatization schemes are more likely to receive higher revenue for the selling of state assets at a

[10] See Bennet *et al*., 2004 and Appendix D for details.

nominal positive price; this finding may be another indication of the positive correlation between full privatization methods and state firm downsizing. Indeed, there is a high correlation between full privatization dummy and the share of privatization receipts in GDP.

4.2.3 The determinants of job destruction in the state sector

Looking at the steady-state relationship between unemployment and job destruction in the old sector, we find a positive correlation between unemployment and job destruction. A one per cent increase in unemployment is correlated with a 2 per cent increase in job destruction (see Table 7, column 1). By replacing unemployment with the share of unemployed in non-employed, the correlation does not change.

Regarding our measure of initial distortions, we find that countries characterised by a more distorted initial allocation of resources towards industry and manufacturing (higher *I*) have lower job destruction in the old sector (see Tables 7, column 3). Contrary to the results obtained for job creation in private firms, initial conditions seem important in explaining job destruction in state-owned enterprises. Also, countries characterised by a larger share of non-private sector in GDP (higher *S*), have lower job destruction in the old sector. This last finding might be related to three alternative explanations. The larger the state sector the lower the job destruction in the state sector. The larger the state sector the more opposition to privatisation and firm restructuring by insiders that are afraid of loosing their jobs. The larger the state sector the higher the Government concern to avoid mass lay-offs and unmanageable level of unemployment benefits. This correlation, however, disappears when we include transition time instead of calendar time dummies.

Full privatization method is still significant after controlling for initial distortions; it loses, however, its significance as we introduce our measure of political change in the estimation. We create a political change variable by (1) listing the political development in each country since 1989 for CEECs or 1991 for countries of the FSU; (2) identifying whether and when the country has embraced a semi-presidential or parliamentary system; (3) distinguishing election years from non-elections years and changes of the Head of State, either Prime Minister or President; (4) identifying the political orientation of the political party or, more frequently, the coalition which represents the majority in Parliament.

For each country there is an election year that has brought a new coalition or a new president to power and represented the first clear political change from the past. We take that year as a sign of political change and we construct a dummy variable equal to 1 that year and the three years that follow. We choose four years because four is the average political cycle (years between two parliamentary elections) that has emerged among CEECs and FSU republics since the collapse of communism[11]. For some countries (i.e. Poland, the Czech Republic and Hungary), this political change was at the very beginning of the transformation process, for others (i.e. Bulgaria and Romania) the first pro-reform government was elected much later[12].

In our estimations, results suggest that there is a positive and significant correlation between real political change variable and the rate of job destruction: controlling for initial condition and privatization methods, job destruction is 2.6% higher during the four years of real political change than anytime before and after (see Table 7, column 6).

Finally, we include the share of trade in GDP and we find surprisingly that country openness is negatively related to the downsizing of state firms. Perhaps old firms that can produce for Western markets have better chances to survive. Alternatively, firms that can produce for ex-partners of the COMECON have a better chance to delay restructuring. Either way the effect is negative (see Table 7, column 7). Since we can distinguish between the share of trade towards transition countries and the share of trade towards non-transition countries, we find that the share of trade towards transition countries is negatively associated with state firm downsizing. This confirms the idea that firms that can produce for ex-partners of the COMECON have a better chance to delay restructuring.

4.3 An extension of the model

An extension of the model which does distinguish between active or short-term unemployment (U_A) and inactive or long-term unemployment (U_{NA}) can exhibit path-dependence.

In this case, steady-state active unemployment is still determined independently of the path of unemployment. As suggested in equation (10), we

[11] We also experiment with five and three years: the results do not change.
[12] See Appendix E for details.

estimate the relationship between short-term unemployment and job creation in the new sector:

$$JCN = \alpha\, ln(U_A^*) + \beta\, \hat{I} + \gamma\, \hat{C} + \varepsilon \qquad (17)$$

Estimates of equation *(17)* follow very closely those obtained analysing the relationship between total unemployment and job creation in the new sector. There exists a negative association between active unemployment and job creation.

This extension of the model suggests that long-term or inactive unemployment depends on the history of active unemployment and, thus, on the pace and magnitude of job creation and destruction rates during the 1990s. We use the standard definition of long-term unemployment. Long-term unemployment rate is equal to the number of persons unemployed for a period of one year or beyond as a percentage of the labour force. Data on long-term unemployment have been retrieved from several sources: ILO Key Labour Market Indicators Database; Eurostat data; the OECD-CCNM database and the UNECE Statistical Division, OECD Database. Data for Russia and Ukraine have also been retrieved from National Statistical offices, namely Russian Federal State Statistics Service and State Statistics Committee of Ukraine. Short-term unemployment rates have been computed as a difference between total unemployment and long-term unemployment rate.

By transforming in logarithms and expressing empirical specifications of equations (13) and (14), we obtain:

$$ln(U_{NA,\,t}) = \alpha_i + \alpha_t + \delta_0\, ln(U_{A,\,t}) + \delta_1\, ln(U_{A,\,t-1}) + \delta_2\, ln(U_{A,\,t-2}) + \ldots + \varepsilon_t \qquad (18),$$

$$\begin{aligned} \ln U_{NA,t} &= \alpha_i + \alpha_t + \left(\frac{\delta_0}{1+\delta}\right)(JDS_t - JCN_t) + \\ &\left(\frac{1}{1+\delta}\right)^2 \delta_1 (JDS_{t-1} - JCN_{t-1}) + \left(\frac{1}{1+\delta}\right)^3 \delta_2 (JDS_{t-2} - JCN_{t-2}) + \ldots + \mu_t \end{aligned} \qquad (19)$$

or, by simplifying notation, equation (19) can be expressed as:

$$\begin{aligned} \ln U_{NA,t} &= \alpha_i + \alpha_t + \beta_0 (JDS_t - JCN_t) + \\ &\beta_1 (JDS_{t-1} - JCN_{t-1}) + \beta_2 (JDS_{t-2} - JCN_{t-2}) + \ldots + \mu_t \end{aligned} \qquad (20)$$

Given specifications (18) and (20), we cannot assume that the residuals ε_t, ε_{t-1} and μ_t, μ_{t-1} are uncorrelated over time. Under the assumption of correlation of the error terms, the fixed effects estimator is biased and inconsistent. We estimate equation (18) using a fixed effects model assuming either no residual autocorrelation or autocorrelation of order 1, i.e. AR(1), in the residuals. Results are provided in Tables 8 and 9. The modified Bhargava *et al*. Durbin Watson test for panel data seems to confirm the presence of autocorrelation of AR(1) in the residuals. Results suggest that there is path dependence of long-term unemployment on short-term unemployment: long-term unemployment depends on current and past values of short-term unemployment, and that this dependence fades away as soon as we reach time *t-3*.

5. Conclusions

High unemployment and inactivity rates characterize many CEECs and countries of the FSU today. Fifteen years into the transition, the problem of high joblessness has not been solved. Of the three explanations commonly discussed (i.e. ongoing reallocation; finished reallocation with redundant labour; wrong choice of institutional framework), we concentrated on the ongoing reallocation hypothesis.

In this paper, we wanted to verify whether the high rate of unemployment today is a direct consequence of how the job reallocation process has occurred over time. More specifically, we wanted to look at the relationship between job creation, job destruction and unemployment.

We found that there is a negative correlation between job creation in the private sector and unemployment. This negative correlation seems to be explained by lower consumption and, thus, lower aggregate demand: As workers lose their jobs and do not anticipate being re-employed in the new future, they reduce consumption, which also reduce aggregate demand in the economy. High unemployment then becomes an expression of a depressed economy.

We found that long-term unemployment depends on current and past values of short-term unemployment and that this path-dependence fades away as soon as we reach time *t-3*. We interpreted this result as an indication that the process of reallocation started at the beginning of the 1990s still influences today's labour market. A more difficult issue is to quantify the degree of influence of path-dependence on the unemployment that we observe today.

We explored the determinants of job creation and job destruction. We confirmed that lower corporate taxation, access to credit and foreign capital are crucial factors in stimulating private sector growth. We also found that job destruction depends on country initial conditions, the size of the state sector, political change and openness to trade.

We addressed three components of the transition debate: shock therapy versus gradualism; privatization; and political change. Contrary to Godoy and Stiglitz (2006), we did not find gradualism superior to shock therapy in terms of private sector growth. In addition, contrary to Bennett *et al*. (2004), we confirmed that full privatization is positively associated with job destruction in the state sector. Finally, we found that during early years of democratization the state sector was dismantled more vigorously than in other periods.

We can identify several policy implications of our analysis.

Path-dependence: being aware of the path-dependence of long-term unemployment on current and past values of active unemployment (i.e. job creation and destruction), transition countries should recognize where the limitations are, fix them where possible, and progress along the path of reform in order to conclude with the past and achieve a new level of development.

Shock therapy versus gradualism: transition countries should focus on progressing along the path of reform. They do not need to worry about the speed of reform, but about the level that has been achieved so far.

Privatization: Countries should apply full privatization methods if they want to achieve higher downsizing of state-owned enterprises. They should evaluate the necessary conditions (i.e. substantial domestic savings and developed capital markets) in order to avoid wealth stripping and concentration of money in the hands of few individuals. This recommendation can be extended to other developing countries in the process of adopting privatization schemes.

Political change: If countries have embarked in a democratic process, they should do so definitely and consistently in order to give stability to the chosen political regime. As Persson and Tabellini (2006) point out, the consolidation of a democracy is a lengthy process, requiring citizens to learn how to cherish and respect democracy as a form of government. According to this definition, transition economies have too little experience so far with the democratic process to have accumulated a high amount of 'democratic capital'. In addition, as suggested by Kornai (2006), countries should recognise that true democracy cannot be sustained without economic reforms because citizens will see higher inequality and high dispersion of resources brought about what leaders claim to be democracy (e.g., Russia is a good example).

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Table 1

Panel A: Unemployment rate (end-year) in per cent of labour force

	BG	***HR***	***CZ***	***EE***	***HU***	***LV***	***LT***	***PL***	***RO***	***RU***	***SL***	***UA***
1991	11.1	13.2	4.1		7.4		0.3	11.8	3	0	8.2	0
1992	15.3	13.2	2.6		9.3	3.9	1.3	14.3	8.2	5.3	8.3	0.2
1993	16.4	14.8	3.5	6.6	11.9	8.7	4.4	16.4	10.4	6	9.1	0.4
1994	12.8	14.5	4.4	7.6	10.7	16.7	3.8	16	10.1	7.8	9.1	0.4
1995	11.1	14.5	4.1	9.8	10.2	18.1	17.5	14.9	8.2	9	7.4	5.6
1996	12.5	10	3.9	10	9.9	19.4	16.4	13.2	6.5	9.9	7.3	7.6
1997	13.7	9.9	4.8	9.7	8.7	14.8	14.1	8.6	7.4	11.2	7.1	8.9
1998	16	11.4	6.4	9.8	7.8	14.1	13.2	10.2	10.4	12.3	7.6	11.3
1999	17	13.6	8.6	12.2	7	14.3	14.6	13.4	11.8	12.6	7.4	11.9
2000	16.4	16.1	8.7	13.6	6.4	14.4	16.4	16.4	10.5	10.2	7.6	11.7
2001	19.5	15.8	8.0	12.6	5.7	13.1	17.4	18.5	8.8	8.7	6.3	11.1
2002	16.8	14.8	7.3	10.3	5.8	12.4	13.8	19.8	8.4	8.8	6.4	10.2
2003	12.7	14.3	7.8	10	5.9	10.6	12.4	19.2	7.0	8.6	7.3	9.1
2004	12.0	13.8	8.3	9.7	6.3	10.4	11.4	19.1	6.3	8.5	6.8	
2005	*10*		*7.9*	*9.4*	*7.3*	*9.9*	*7.2*	*17.8*	*5.9*			

Note: Figures for 2005 are estimates.
Source: EBRD, Transition Report (various issues), and ILO, Key Labour Market Indicators database.

Panel B: Long-term unemployment rate (in per cent): unemployed for more than 1y

	BG	***HR***	***CZ***	***EE***	***HU***	***LV***	***LT***	***PL***	***RO***	***RU***	***SL***	***UA***
1989												
1990												
1991			0.7	0.4	1.8							
1992			0.4	1.1	2.0			5.5		0.6		0.1
1993	8.8		0.7	1.9	4.1			6.2		0.7	5.1	0.5
1994	9		0.9	3.0	4.5			6.7	2.4	1.5	3.7	0.5
1995	7.8		1.1	3.1	5.0	9.6		6.2	2.5	2.2	3.9	0.6
1996	6.4	5.1	1.1	5.5	5.2	10		5.6	2.3	2.5	3.8	1.5
1997	8.4	4.8	1.3	4.4	4.2	8.8	8	5	2.5	4.1	3.6	2.6
1998	8	5.7	1.9	4.7	3.6	7.9	7.5	4.7	2.3	4.9	3.9	4.0
1999	8.3	6.8	3.1	5.6	3.4	7.6	5.3	5.8	2.8	5.8	3.5	5.3
2000	9.4	9.1	4.1	6.2	3.1	7.9	8	7.6	3.5	4.4	3.9	5.1
2001	11.9	8.9	4.2	6.1	2.7	7.2	9.2	9.3	3.2	3.3	3.2	4.5
2002	11.7	8.9	3.7	5.5	2.6	5.7	7.2	10.8	4	3.7	3.5	4.7
2003	8.9	8.4	3.8	4.7	2.4	4.3	6.1	10.8	4.2	3.9	3.4	4.4
2004	7.1	7.3	4.2	5.1	2.6	4.3	5.5	10.2	4.2	4.6	3.1	

Note: Long-term unemployment rate is defined as the number of unemployed in the labour force that are unemployed for more than 12 month.
Source: EBRD, Transition Report (various issues); ILO, Key Labour Market Indicators database; Eurostat; the OECD-CCNM database; Russian Federal State Statistics Service; State Statistics Committee of Ukraine.

Table 2: Inactivity rates (in per cent)

Panel A: 15-64 year old males and females

	BG	***HR***	***CZ***	***EE***	***HU***	***LV***	***LT***	***PL***	***RO***	***RU***	***SL***	***UA***
1989	24.9	34.1	21.8	20.3	33.9	20.6	23.9	27.5	30.6	23.1	29.6	24.7
1990	25	34.1	21.9	20.8	34.3	21	24.2	27.9	30.9	23.5	29.9	25
1991	26.4	34.5	23.3	21.6	35.1	22.1	24.6	29.5	30.2	25	32.9	25.4
1992	27.7	34.7	25.2	23.1	35.4	23.4	25	31	29.4	27.3	35.9	25.8
1993	29.2	35	27.7	24.4	37.8	24.7	25.5	31.5	28.7	27.8	38.9	26.3
1994	30.8	35.2	27.5	25.9	39.7	26.4	25.9	32.4	28	28.4	32.8	27
1995	32.5	35.5	27.7	27.8	40.7	27.9	26.4	33.6	27.3	29	31.8	27.9
1996	34	35.5	28	28.1	41.1	30	27.1	34.1	29.3	30	32.5	26.9
1997	35.6	35.6	28.1	28.9	42	30.1	27.9	34.6	29.3	30.3	31.9	26.1
1998	37.3	35.6	28.1	28.4	41.8	31.1	27	34.9	30.8	30.7	30.9	25.3
1999	39.3	35.7	28	29	40.4	31.6	27.8	35.1	31	31.2	31.8	33.7
2000	41.2	35.7	28.5	29.6	40	32.8	28.6	35.2	31.2	30.8	32	32.9
2001	37.1	35.7	29	30.2	40.3	32.3	29.4	35.2	32.4	30.1	32.2	33.7
2002	37.6	35.6	29.3	31.1	40.3	31	30.3	36	36.3	29.5	31.3	33.7
2003	39	35.7	29.6	30.1	39.4	30.6	30.1	36.2	37.5	30.2	32.9	33.8
Δ*89-03*	14.1	1.6	7.8	9.8	5.5	10	6.2	8.7	6.9	7.1	3.3	9.1

Panel B: 25-54 year old males and females

	BG	***HR***	***CZ***	***EE***	***HU***	***LV***	***LT***	***PL***	***RO***	***RU***	***SL***	***UA***
1989	6.4	17.9	4.9	5.1	15.4	5.6	6.8	14.1	15.5	6.1	12	6.2
1990	6.3	17.4	4.9	5.2	15.7	5.7	7	14.1	15.8	6.2	12.2	6.2
1991	7.1	17.3	6.2	5.7	16.4	6.7	7.3	14.6	15.2	7.4	13.8	6.9
1992	8	17.3	8.1	7	17.2	7.7	7.8	15.2	14.6	9.6	16	7.7
1993	9	17.1	10.6	8.3	19.2	8.8	8.2	14.8	14.2	10.4	18.2	8.7
1994	10.2	17.2	10.8	9.5	21	10.4	8.7	15.3	13.8	11.3	12.1	10
1995	11.5	17.1	10.8	11.4	22.5	11.8	9.2	15.9	13.4	12.3	11.2	11.6
1996	13	17.4	11.4	11.5	23	13.8	9.8	16.4	15	12.2	11.6	10.7
1997	14.7	17.6	11.4	12.4	24.2	13.4	10.6	17	15.2	12.4	13.5	9.9
1998	16.6	17.8	11.5	12	24.6	13.4	8.8	17.1	16.8	12.7	12.5	9.3
1999	18.8	18.1	11.4	12.6	22.9	13.9	9.3	17.2	17	13.1	12.4	15.8
2000	21.1	18.2	11.6	13.2	22.6	14.2	9.9	17.4	17.2	12.5	12.1	14.4
2001	17.9	18.4	11.5	14.1	22.9	13.8	10.4	17.5	18.4	12.1	11.8	15.1
2002	18.9	18.3	11.7	14.9	22.9	14.4	11	17.9	21.4	11.9	11.2	15.8
2003	21.1	18.3	12.1	14.3	22	13.8	11.1	18	22	12.4	12.3	16.1
Δ*89-03*	14.7	0.4	7.2	9.2	6.6	8.2	4.3	3.9	6.5	6.3	0.3	9.9

Source: ILO, Key Labour Market Indicators database.

Table 3: The relationship between job creation in the private sector and unemployment rate

Dep. Var.: Job creation in the new sector	***(1) Fixed-effects***	***(2) Fixed-effects***	***(3) Robust estimation***
Log(U)	-.138***		-.084***
	(.038)		(.023)
*Log(U)*group A*		-.193***	
		(.040)	
*Log(U)*group B*		.108	
		(.085)	
Adj-R^2	0.77	0.80	
No. of observations	92	92	91
Log(Unemployed/Non-employed)	-.207***		-.115***
	(.045)		(.028)
*Log(Unemployed/Non-employed)*group A*		-.222***	
		(.051)	
*Log(Unemployed/Non-employed)*group B*		-.153*	
		(.090)	
Adj-R^2	0.79	0.79	
No. of observations	92	92	92

Note: All estimations include country and transition time dummies.
Columns (2) and (3) split the sample of countries in group A and group B. Group A consists of early-reforming countries such as Estonia, the Czech Republic, Hungary, Poland, Latvia and Lithuania. Group B consists of late-reforming countries such as Bulgaria, Romania, Russia, Ukraine and Croatia.
Column (3) reports robust estimates which control for outliers and use Huber weights and Biweights until convergence.
Column (4) reports IV estimates obtained using privatization variables (full privatization, mass privatization and mixed privatization) and other exogenous variables as instruments for Log(U).
Testing whether Group A and Group B coefficients are the same (hypothesis Ho): the Ho is rejected in the case of unemployment; Ho is accepted in the case of unemployment as a share of non-employment.

Table 4: The relationship between job creation in the private sector and the 'level' and 'speed' of reform

Dep. Var.: Job creation in the new sector	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***	***(9)***
Log(U)		-.086***			-.085***			-.083***	
		(.03)			(.031)			(.031)	
Log(Unemployed/Non-employed)			-.117***			-.120***			-.115***
			(.037)			(.039)			(.039)
EBRD index of small privatization	.184***	.167***	.158***	.184***	.163***	.152***	.192***	.171***	.16***
	(.024)	(.023)	(.024)	(.027)	(.026)	(.027)	(.027)	(.027)	(.028)
EBRD index of large privatization	.015	.021	.013	.008	.019	.014	.001	.010	.005
	(.022)	(.021)	(.021)	(.025)	(.024)	(.023)	(.026)	(.025)	(.025)
Rate of change in the EBRD index of small privatization				-.017	.003	.022			-.027
				(.038)	(.037)	(.046)			(.091)
Rate of change in the EBRD index of large privatization				.016	.019	.013			.029
				(.05)	(.024)	(.037)			(.065)
Yearly fraction of the 1989-2005 EBRD index of small privatization differential							-.083	-.047	
							(.094)	(.091)	
Yearly fraction of the 1989-2005 EBRD index of large privatization differential							.022	.028	
							(.069)	(.066)	
Adj-R^2	0.86	0.87	0.87	0.85	0.87	0.87	0.86	0.87	0.87
No. of observations	92	92	92	92	92	92	92	92	92

Note: All estimations include country and transition time dummies. Estimates are equivalent to fixed-effects estimates.
Privatization dummies are full privatization, mass privatization and mixed privatization; the benchmark being mixed privatization.

Table 5: The determinants of job creation in the private sector

Dep. Var.: Job creation in the new sector	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***
Log(U)	-.136***	-.154***	-.156***	-.144***	-.147***	-.098***	-.09***	
	(.038)	(.035)	(.037)	(.035)	(.034)	(.028)	(.024)	
Log(Short-term unemployment)								-.074***
								(.024)
Share of industry in employment	-.589							
	(.501)							
Money Market rate		-.20***		-.201***	-.165***	-.135***	-.067*	-.064*
		(.049)		(.049)	(.05)	(.044)	(.037)	(.038)
Lending rate			-.18***					
			(.059)					
Trade share in GDP				.087				
				(.062)				
FDI share in GDP					.806**	.522*	.166	.061
					(.336)	(.280)	(.248)	(.26)
EBRD index of small privatization						.138***	.141***	.141***
						(.023)	(.02)	(.021)
EBRD index of large privatization						-.023		
						(.023)		
Corporate tax rate							-.537***	-.533***
							(.123)	(.138)
Adj-R^2	0.77	0.81	0.78	0.82	0.83	0.89	0.92	0.90
No. of observations	92	92	92	92	92	92	91	85

Note: All estimations include country and transition time dummies. Estimates are equivalent to fixed-effects estimates.
Privatization dummies are full privatization, mass privatization and mixed privatization; the benchmark being mixed privatization.

Table 6: The determinants of job destruction in the old sector: Privatization variables

Dep. Var.: Job destruction in the old sector	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***
EBRD index of small scale privatisation	-.01				
	(.008)				
EBRD index of large scale privatisation	.015*				
	(.008)				
Rate of change in the EBRD index of small privatization	.018				
	(.011)				
Rate of change in the EBRD index of large privatization	-.020				
	(.013)				
Full privatization method		.106***	.053**		
		(.021)	(.022)		
Mass privatization method		.092***	.018		
		(.014)	(.020)		
Mixed Privatization method		.025	.024		
		(.016)	(.016)		
Full privatization dummy				.025*	
				(.013)	
Mass privatization dummy				.015	
				(.014)	
Privatization period				.026**	
				(.013)	
Share of Privatization receipts in GDP					.642***
					(.229)
Transition time dummies	√		√	√	√
Year dummies		√			
Adj-R^2	0.48	0.49	0.49	0.48	.48
No. of observations	134	134	134	134	129

Note: All estimations include country dummy variables and calendar time or transition time dummies.
Privatization dummies are full privatization dummy, mass privatization dummy and mixed privatization dummy: mixed privatization dummy is the benchmark in column (4).

Table 7: The determinants of job destruction in the old sector

Dep. Var.: Job destruction in the old sector	***(1)***	***(2)***	***(2)***	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***
Log(U)	.018***							
	(.006)							
Log(Unemployed/Non-employed)		.021***						
		(.006)						
Non-private sector share in GDP			-.083*	.032				
			(.049)	(.039)				
Share of industry in employment					-528***	.-545***	-.577***	-.407***
					(.161)	(.167)	(.158)	(.157)
Full privatization method						.062*	.038	.044
						(.031)	(.031)	(.029)
Mass privatization method						.018	.005	.009
						(.022)	(.021)	(.02)
Mixed privatization method						.014	.009	.009
						(.015)	(.015)	(.014)
Real political change							.026***	.022***
							(.008)	(.007)
Share of trade in GDP								-.075***
								(.021)
Transition time dummies	√	√		√	√	√	√	√
Year dummies			√					
Adj-R^2	0.51	0.52	0.32	0.47	0.52	0.53	0.57	0.62
No. of observations	128	128	128	128	128	128	128	128

Note: All estimations include country and calendar time or transition time dummies.
Privatization dummies are full privatization dummy, mass privatization dummy and mixed privatization dummy: mixed privatization dummy is the benchmark in column (2).

Table 8: The relationship between long-term unemployment and short-term unemployment, Fixed effect estimation

Dep. Var.: Long-term unemployment growth	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***
$L(U_{A,\,t})$	.549***	.480***	.473***	.464***	.394**	.363**
$L(U_{A,\,t-1})$	.456***	.652***	.657***	.665***	.615***	.525**
$L(U_{A,\,t-2})$		.114	.299**	.261	.387*	.430**
$L(U_{A,\,t-3})$			-.020	.149	-.024	.003
$L(U_{A,\,t-4})$				.030	.271*	.132
$L(U_{A,\,t-5})$					-.062	.233*
$L(U_{A,\,t-6})$						-.116
Adj-R^2	.85	.84	.83	.83	.84	.87
No. of observations	119	108	97	86	75	64

Note: Results of estimation of: $\Delta\log(U_{NA})_t = \alpha + \delta_0 \log(U_{A,\,t}) + \delta_1 \log(U_{A,\,t-1}) + \delta_2 \log(U_{A,\,t-2}) + \delta_3 \log(U_{A,\,t-3}) + \ldots + \alpha_i + \varepsilon_t$

Table 9: The relationship between long-term unemployment and short-term unemployment, Fixed effect estimation with AR(1) residuals

Dep. Var.: Long-term unemployment growth	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***
$L(U_{A,\,t})$	.206**	.182*	.163	.188*	.200*
$L(U_{A,\,t-1})$	.437***	.548***	.586***	.531***	.452***
$L(U_{A,\,t-2})$		.161*	.071	.153	.170
$L(U_{A,\,t-3})$			-.012	-.045	-.037
$L(U_{A,\,t-4})$				.142*	.047
$L(U_{A,\,t-5})$					.048
$L(U_{A,\,t-6})$					
Adj-R^2	.39	.42	.43	.58	.47
No. of observations	108	97	86	75	64
No. of groups	11	11	11	11	11
Modified Bhargava et al. Durbin-Watson	.638	.635	.714	.657	.683
Baltagi-Wu LBI	.982	.949	1.0	1.03	1.25

Note: Results of estimation of: $\Delta\log(U_{NA})_t = \alpha + \delta_0 \log(U_{A,\,t}) + \delta_1 \log(U_{A,\,t-1}) + \delta_2 \log(U_{A,\,t-2}) + \delta_3 \log(U_{A,\,t-3}) + \ldots + \alpha_i + \varepsilon_t + \rho\varepsilon_{t-1} + \eta_t$

Appendix A

Table A.1: Job Creation in the new sector: Data Sources

Country	Firm type	Data Source	Time period
Bulgaria	Foreign	Markov and Dobrinsky(2005) and Amadeus	1993-2003
Czech Republic	New Sector	Jurajda & Terrell (2002)	1991-1996
Estonia	New Sector	Haltiwanger & Vodopivec (2002)	1989-1994
	Foreign	Amadeus	1995-2003
Hungary	Foreign	Korosi (2001)	1991-2002
Latvia	Foreign	Amadeus	1996-2003
Lithuania	Foreign	Amadeus	1998-2003
Poland	Foreign	Amadeus	1994-2003
Romania	Foreign	Korosi and Turlea (2005) and Amadeus	1995-2003
Ukraine	Foreign	Amadeus	1999-2003
Russia	Foreign	Amadeus	1999-2003

Table A.2: Job Destruction in the Old Sector: Data Sources

Country	Data source	Time period
Bulgaria	Markov and Dobrinsky(2005) and Amadeus	1993-2003
Czech Republic	Jurajda & Terrell (2001)	1991-1996
	Amadeus	1997-1999
Estonia	Haltiwanger & Vodopivec (2000)	1991-1994
	Amadeus	1995-2003
Hungary	Korosi (2001)	1991-2003
Latvia	Amadeus	1994-2003
Lithuania	Amadeus	1996-2003
Poland	Konings, Lehman & Schaffer (1996)	1989-1991
	Amadeus	1992-2003
Romania	Korosi and Turlea (2005) and Amadeus	1995-2003
Ukraine	Amadeus: linear interpolations	1991-1992
	Brown & Earle (2004)	1993-2000
Russia	Browne & Earle (2002)	1989-2002
Slovenia	Bojnec & Konings (1998)	1991-1993
	Amadeus	(1994-2003)

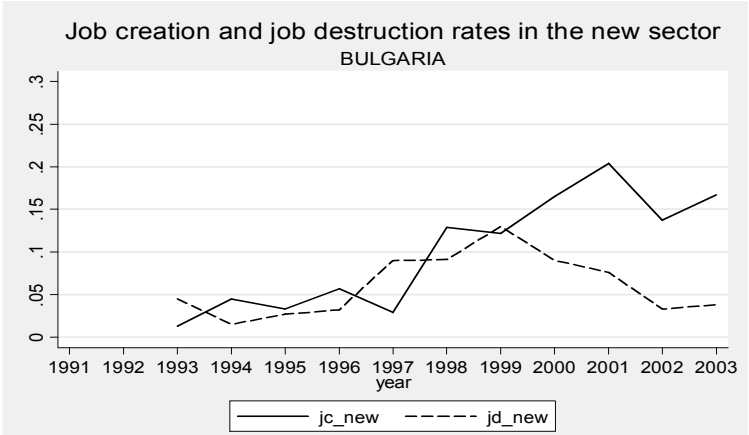
Table A.3: Share of foreign-owned firms in total firms, Amadeus data base

	BG	*HR*	*EE*	*LT*	*LV*	*PO*	*RO*	*HA*	*RU*
1994	8.0								
1995	8.1				42.2				
1996	8.9			12.3	45.3		19.2		
1997	9.0	22.6	46.2	15.3	42.7	28.4	22.4		
1998	10.0	19.5	41.5	17.1	41.9	28.9	23.9		
1999	10.3	20.0	40.6	16.2	42.3	29.0	26.2	3.6	8.7
2000	5.8	20.9	40.8	19.2	42.8	31.8	28.4	3.9	9.8
2001	6.4	21.3	39.4	18.7	43.1	32.2	30.2	3.1	9.3
2002	6.3	22.0	39.9	19.3	42.5	31.9	30.4	3.7	8.1
2003	6.6	22.4	36.4	18.1	40.3	31.5	30.6	4.0	8.1

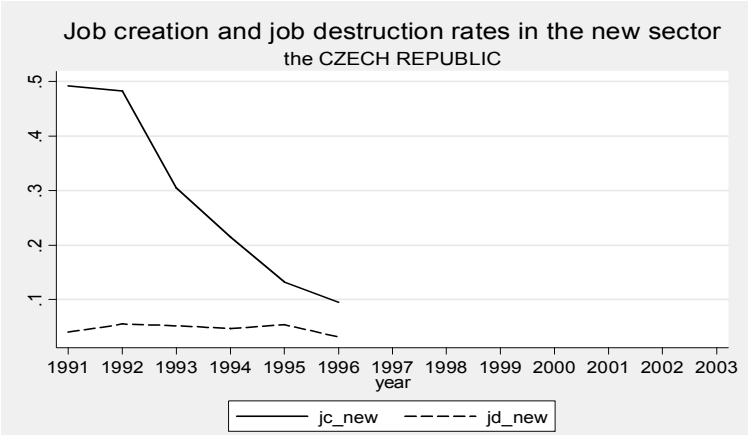
Source: Amadeus data base.

Note: the shares for Bulgaria and Poland are derived by using the Amadeus October 2003 (data until 1999) sample and the Amadeus January 2005 sample.

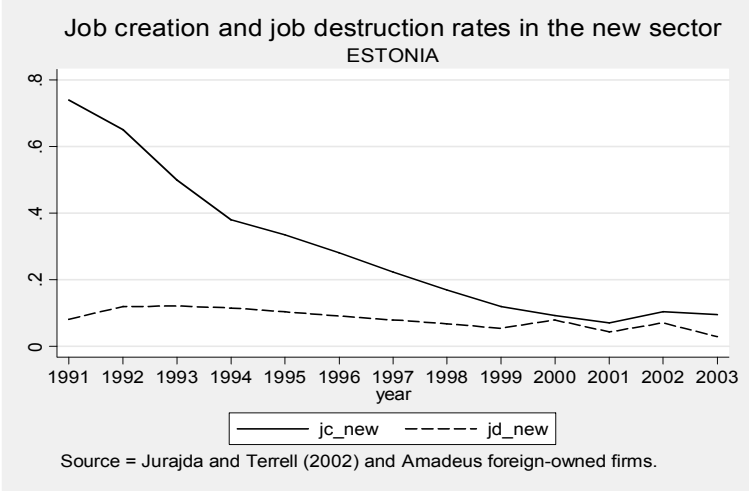
Appendix B
Job destruction and job creation rates in the new sector



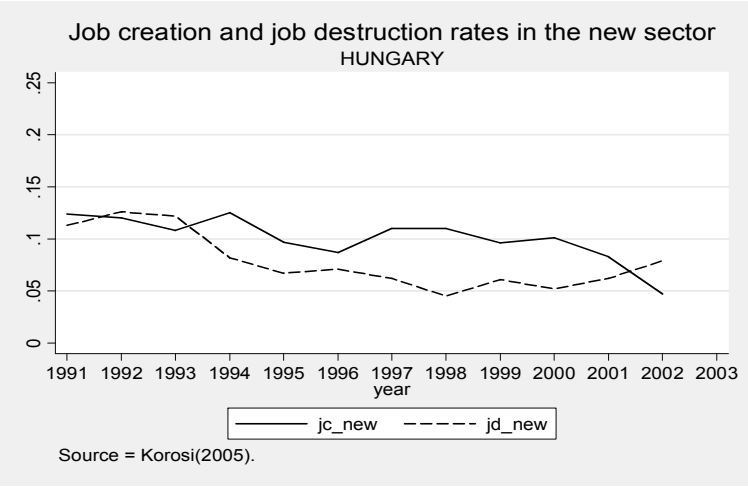
Source: Markov and Dobrinsky (2005) and Amadeus foreign-owned firms.



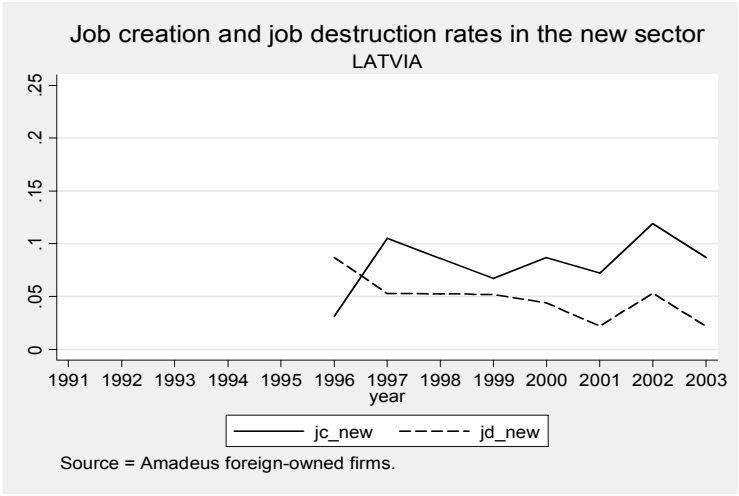
Source: Jurajda and Terrell (2002).

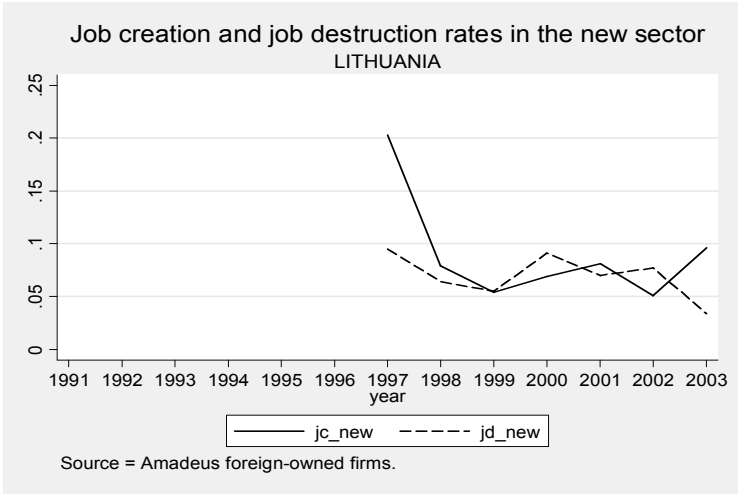


Source = Jurajda and Terrell (2002) and Amadeus foreign-owned firms.



Source = Korosi(2005).


Job creation and job destruction rates in the new sector
LATVIA
0
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Amadeus foreign-owned firms.


Job creation and job destruction rates in the new sector
LITHUANIA
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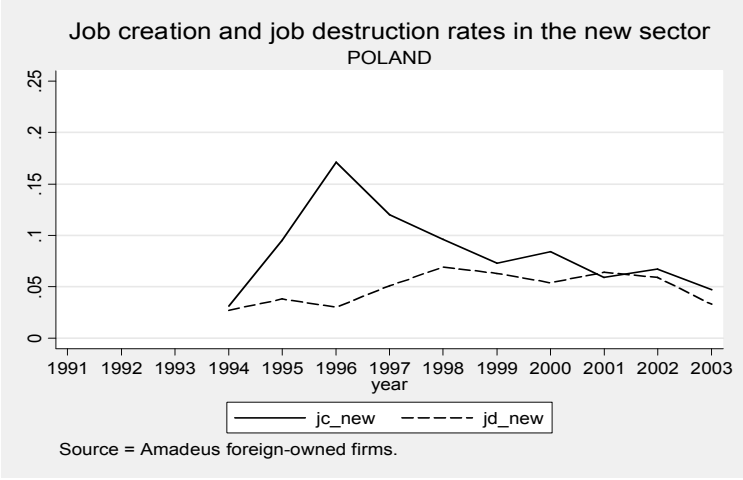
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Amadeus foreign-owned firms.


Job creation and job destruction rates in the new sector
POLAND
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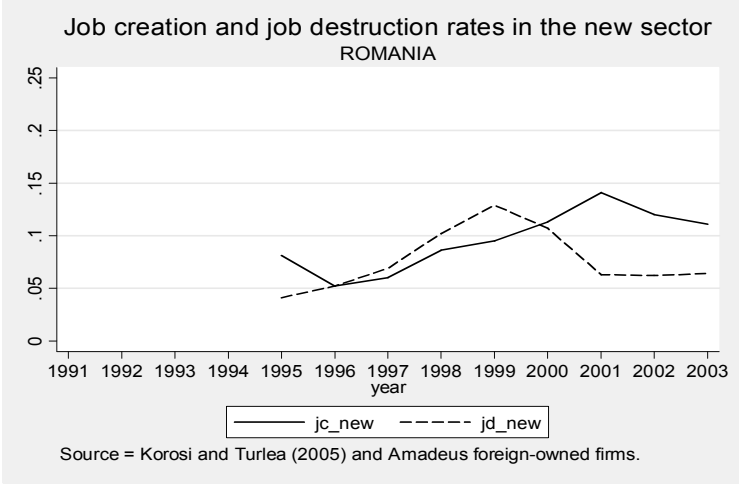
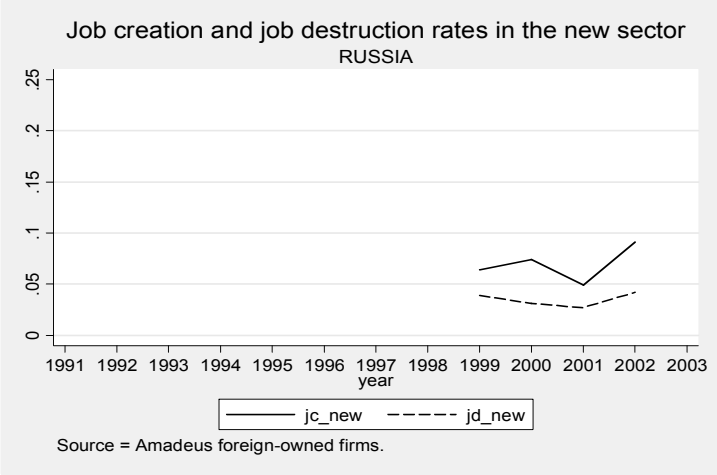
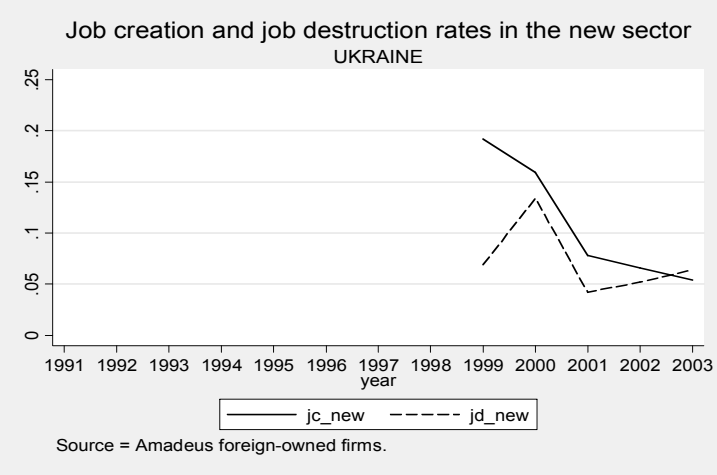
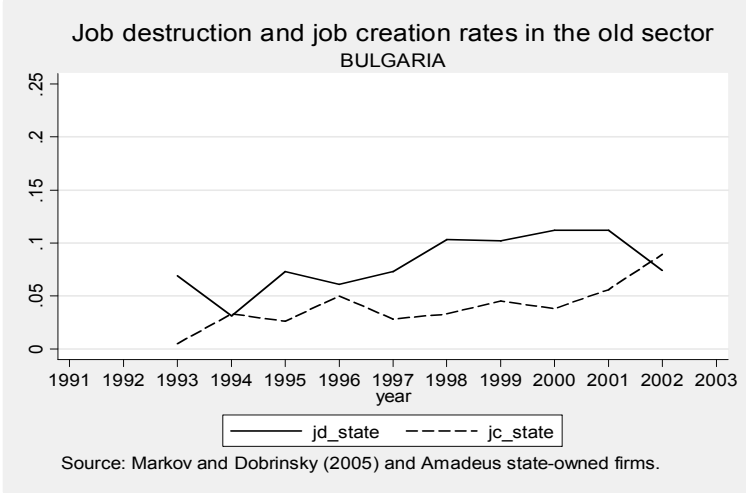
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Amadeus foreign-owned firms.


Job creation and job destruction rates in the new sector
ROMANIA
0
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Korosi and Turlea (2005) and Amadeus foreign-owned firms.

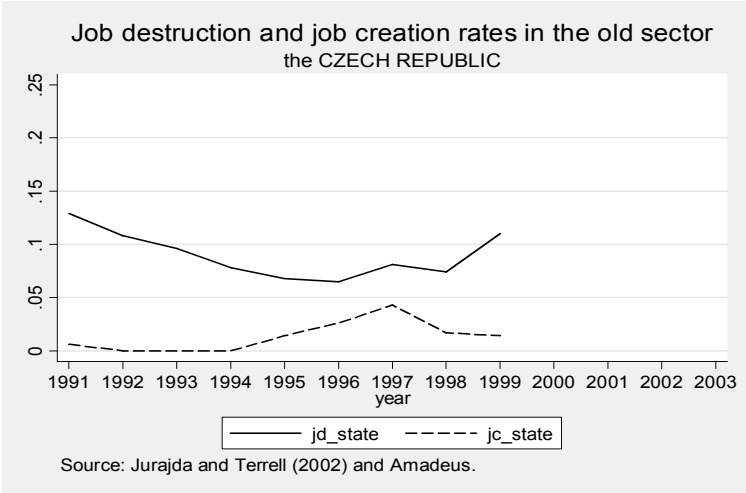

Job creation and job destruction rates in the new sector
RUSSIA
0
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Amadeus foreign-owned firms.


Job creation and job destruction rates in the new sector
UKRAINE
0
.05
.1
.15
.2
.25
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
year
jc_new
jd_new
Source = Amadeus foreign-owned firms.

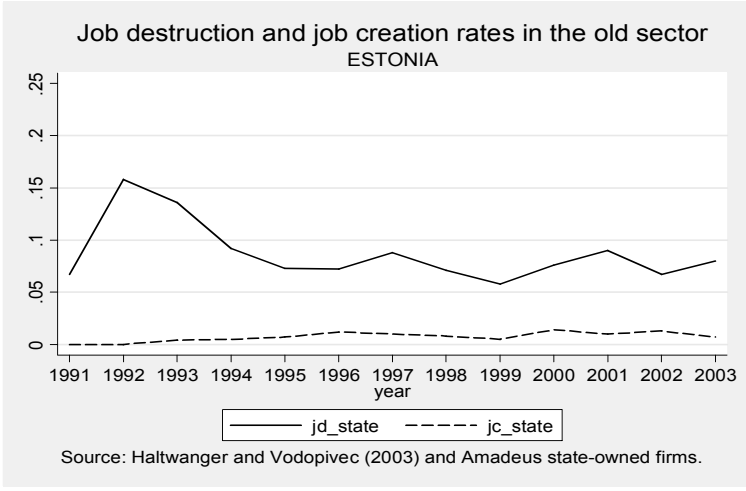
Appendix C
Job destruction and job creation rates in the old sector



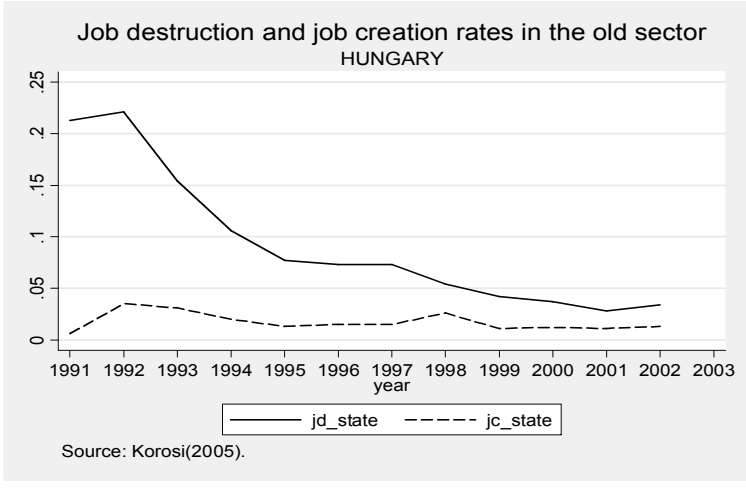
Source: Markov and Dobrinsky (2005) and Amadeus state-owned firms.



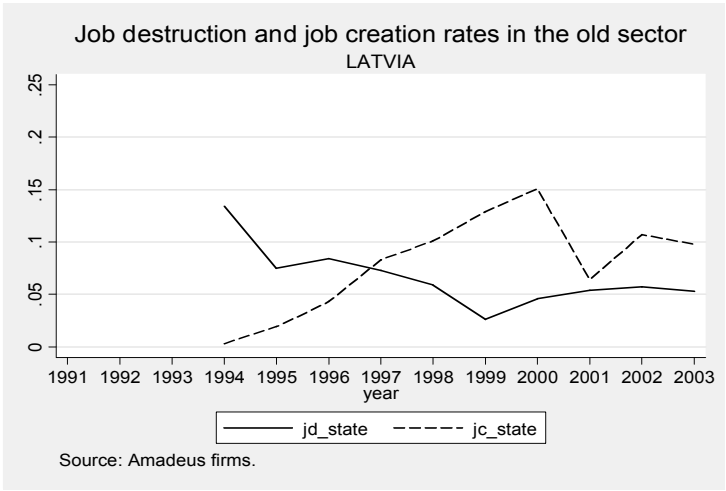
Source: Jurajda and Terrell (2002) and Amadeus.



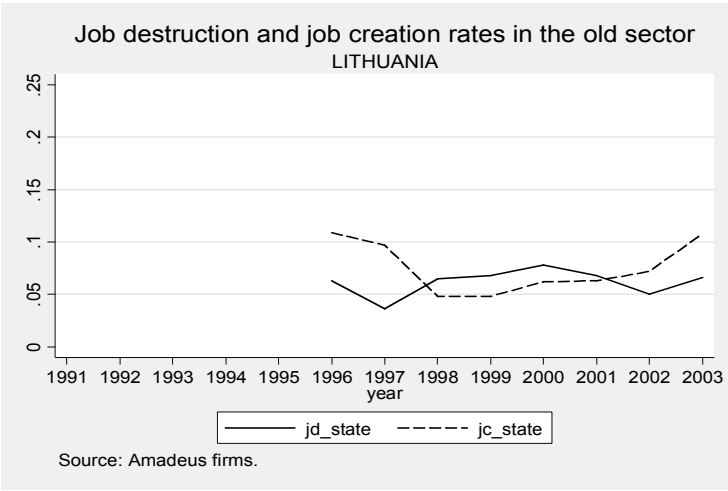
Source: Haltwanger and Vodopivec (2003) and Amadeus state-owned firms.



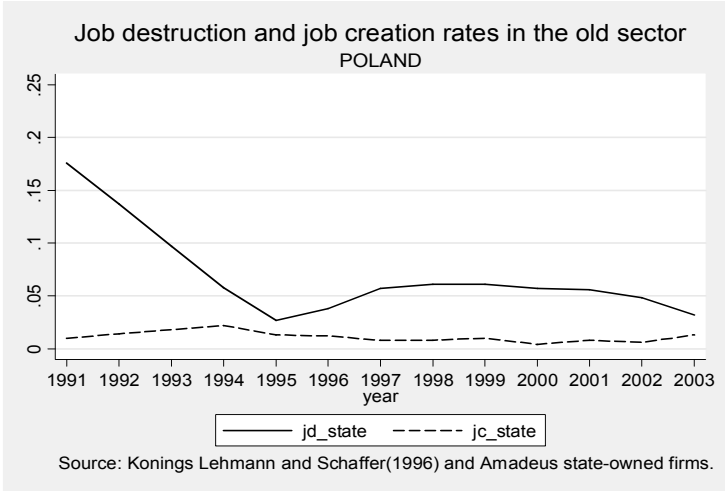
Source: Korosi(2005).



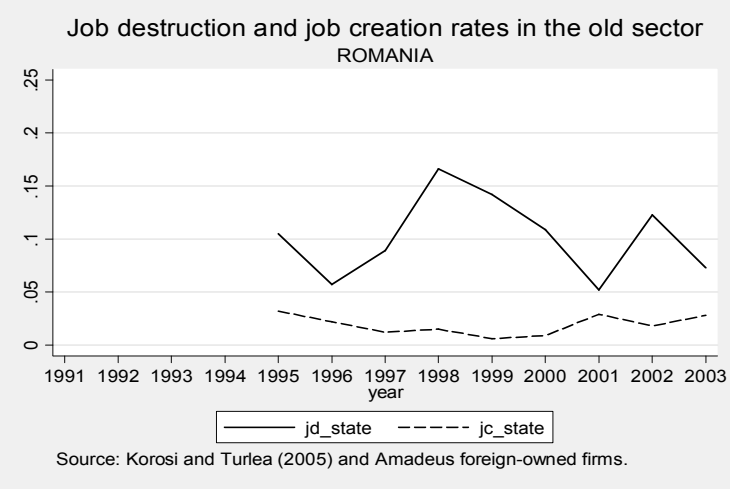
Source: Amadeus firms.



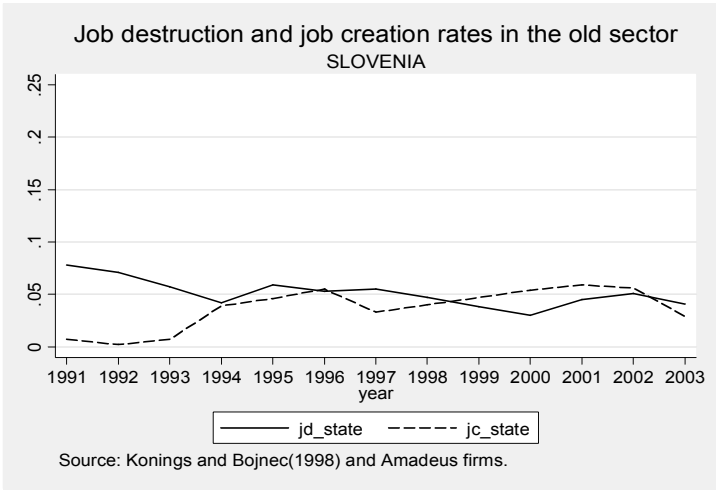
Source: Amadeus firms.



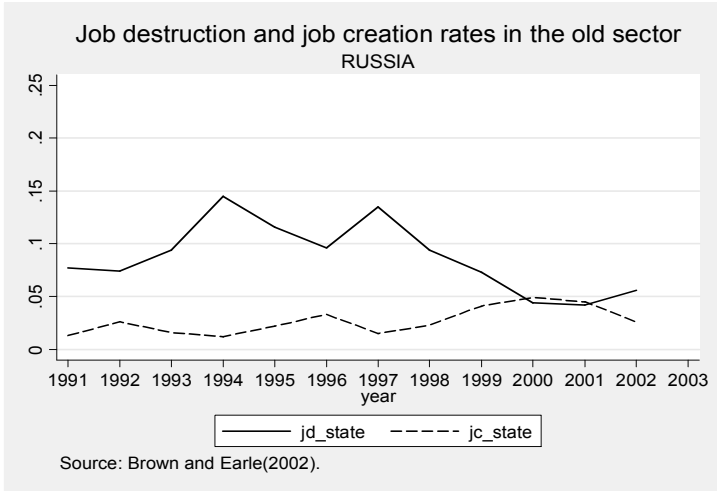
Source: Konings Lehmann and Schaffer(1996) and Amadeus state-owned firms.



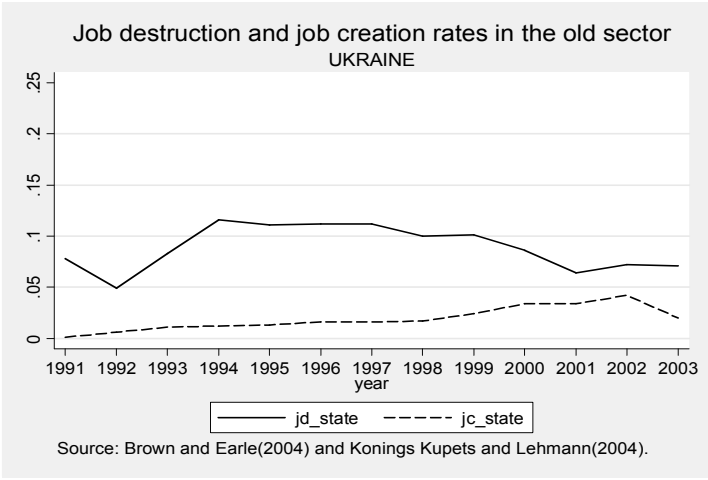
Source: Korosi and Turlea (2005) and Amadeus foreign-owned firms.



Source: Konings and Bojnec(1998) and Amadeus firms.



Source: Brown and Earle(2002).



Source: Brown and Earle(2004) and Konings Kupets and Lehmann(2004).

Appendix D

Table D.1: Country Privatization Nomenclature

Country	Classification of Privatisation	Year of Privatisation	Primary Method	Secondary Method
Albania	Mixed	1995	MEBO	vouchers
Armenia	Mass	1994	vouchers	MEBO
Azerbaijan	Mass	1997	vouchers	direct sales
Belarus	Mixed	1994	MEBO	vouchers
Bulgaria	Full	1993	direct sales	vouchers
Croatia	Mixed	1992	MEBO	vouchers
Czech Republic	Mass	1992	vouchers	direct sales
Estonia	Full	1993	direct sales	vouchers
FYR Macedonia	Mixed	1993	MEBO	direct sales
Georgia	Mass	1995	vouchers	direct sales
Hungary	Full	1990	direct sales	MEBO
Kazakhstan	Full	1994	direct sales	vouchers
Kyrgyzstan	Mass	1996	vouchers	MEBO
Latvia	Full	1992	direct sales	vouchers
Lithuania	Mass	1991	vouchers	direct sales
Moldova	Mass	1995	vouchers	direct sales
Poland	Full	1990	direct sales	MEBO
Romania	Mixed	1992	MEBO	direct sales
Russia	Mass	1993	vouchers	direct sales
Slovak Republic	Full	1995	direct sales	vouchers
Slovenia	Mixed	1998	MEBO	vouchers
Ukraine	Mass	1994	vouchers	MEBO
Uzbekistan	Mixed	1996	MEBO	direct sales

Source: Bennett *et al*. (2004).