

**THE MICROECONOMICS OF CREATING
PRODUCTIVE JOBS:**

**A SYNTHESIS OF FIRM-LEVEL STUDIES IN
TRANSITION ECONOMIES**

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Abstract

The challenge for labor market policy in the transition economies has been to redress the sharp drops in employment and rises in unemployment in a way that fosters the creation of productive jobs. This paper first documents the magnitude and productivity of job and worker reallocation. It then investigates the effects of privatization, product and labor market liberalization, and obstacles to growth in the new private sector on reallocation and its productivity in Hungary, Romania, Russia, and Ukraine. We find that market reform has resulted in a large increase in the pace of job reallocation, particularly that occurring between sectors and via firm turnover. Unlike under central planning, the job reallocation during the transition has contributed significantly to aggregate productivity growth. Privatization has not only stimulated intrasectoral job reallocation, but the reallocation is more productive than that among remaining state firms. The effect of privatization on firm productivity varies considerably across countries and is not always positive. The productivity gains from privatization have generally not come at the expense of workers, but are rather associated with increased wages and employment.

INTRODUCTION

The planned economies in Eastern Europe and the former Soviet Union began the transition around 1990 with very high employment rates and negligible open unemployment. But productive jobs were scarce. Many workers and firms found themselves producing goods and services whose demand plummeted once planning was relaxed and markets were liberalized. These unproductive jobs were not only associated with unwanted and low value output, but they also carried falling real wages, increased insecurity, and low job satisfaction for workers. At the same time, sectors where demand appeared and grew rapidly – such as consumer goods, trade, and services – were underdeveloped and faced obstacles to growth, so potentially productive jobs proved to be difficult to create. The challenge for labor market policy in the transition economies, therefore, has been not merely to redress the sharp drops in employment and rises in unemployment, but to do so in a way that fosters the creation of productive jobs.

This paper addresses the challenge of creating productive jobs by decomposing the problem into two equally crucial parts. The first concerns the dynamics of labor reallocation across firms – worker flows, the processes of job destruction and job creation, and their relationships with relative productivity. Although the aggregate statistics show large employment declines in virtually all countries, have the declines tended to be concentrated in the least productive sectors and firms, so that there has been “creative destruction”? Have the new jobs been created where productivity is relatively high, so that the overall shifts of employment are in a direction that is productivity-enhancing? The paper, therefore, documents not only the magnitudes of job and worker reallocation, but also permits an evaluation of the degree to which the result has been creation of productive jobs.

While the first part of the analysis concerns the flows of workers and jobs across firms, the second focuses on increasing the productivity of jobs within firms. The productivity of firms within sectors differed widely at the beginning of the transition, because the market mechanisms which force unproductive firms to downsize and exit in market economies and allow entrepreneurs to establish more productive firms were absent. A variety of types of restructuring within firms such as changes in product mix, organizational structure, and technological improvements can

make the jobs workers already have more productive. These improvements could allow firms not only to raise the quality of existing jobs, but to create new ones as well.

A theme running through both parts of the analysis is the extent to which market reforms have facilitated productive job creation. Because the main concern of the paper is firm-level evidence, the focus is on policies that have affected firms: privatization, product and labor market liberalization, and obstacles to growth, particularly in the new private sector.¹ Have these policies helped create more productive jobs through between- and within-sector job reallocation, worker flows, and within-firm productivity growth? The evidence on these questions comes from studies employing firm-level data in Hungary, Romania, Russia, and Ukraine. Most of the data, and therefore most of the evidence, pertain to manufacturing, particularly large and medium-size firms inherited from the planning system. These data are comprehensive in coverage, but they contain relatively few labor market variables (principally, employment and wages) for each firm. The analysis is therefore supplemented by survey data, in Russia based on a stratified probability sample of manufacturing firms and in Romania based on a sample of micro and small enterprises in all sectors.

The main messages from a review of available evidence are as follows. Market reform has resulted in a very large increase in the pace of job reallocation. This was mainly in the form of job destruction in the manufacturing sector during the early years of reform, but job creation has also increased in recent years as the economies recovered. The depth of the reallocation process is signified by a relatively large proportion of job reallocation occurring between sectors (compared with OECD economies, see the summary in Davis and Haltiwanger, 1999). But the pace has also been fast and increasing among firms within the same narrow sectors.

Firms appear to have changed their employment levels primarily, however, by adjusting separations rather than hiring rates. Over the course of the transition period, job reallocation became a much larger proportion of worker turnover, again indicating that the flurry of labor market activity involved significant restructuring. Firm turnover has sharply increased from very low levels, and entry and exit are now important contributors to job creation and destruction, respectively.

¹ On the other hand, labor market policies geared to unemployed workers are not addressed in this paper.

Firm and environmental characteristics, including those affected by public policies, have influenced job and worker flow rates. Product market competition has increased excess job reallocation and churning (replaced separations). Job destruction has been lower in labor markets where employment is concentrated among a few dominant firms, perhaps due to stronger political pressure to maintain employment in those areas. Higher unionization is associated with reduced quits. New and small firms have been particularly active job creators and destroyers, while reorganized firms have experienced high churning.

Unlike under central planning, job reallocation during the transition has contributed significantly to aggregate productivity growth. Jobs have been reallocated from less to more productive incumbent firms, and the exiting firms have been predominantly less productive ones. Though entering firms have not initially been more productive than incumbents, the surviving ones have caught or surpassed incumbents within three years.

Privatization has affected labor markets, leading to greater excess job reallocation in both Russia and Ukraine. Privatized firms with domestic owners have created more jobs in Hungary, Romania, and Ukraine and destroyed more in Russia. Concentrated outside ownership has not led to higher job or worker flows. Firms with foreign blockholders actually experienced less job reallocation and worker churning.

Not only has privatization increased job reallocation among firms within the same narrow sectors, but privatized firms' reallocation has been more productive than that of state firms: privatized firms' employment change decisions have been more strongly related to their relative productivity within their sector.

Firm productivity has usually improved as a result of privatization, but the magnitude and timing of the effect has varied considerably across countries and types of privatization. Privatization to foreign owners has consistently led to large productivity increases within a year after privatization. The effects of domestic privatization have varied considerably across countries, however. In Romania and Hungary, strong positive effects already appeared in the year of privatization, whereas the effect was negative until five years after privatization in Russia. The effect was also weak in Ukraine. We find little support for a number of plausible hypotheses for why the privatization effect might differ across countries.

The available evidence is mixed on whether the productivity gains from privatization have come at the expense of workers. Foreign privatizations, which

were most productive on average, have generally had a positive effect on employment and wages. Domestic privatizations, however, have had a negative effect on wages, even in Hungary and Romania where post-privatization productivity gains were substantial. Privatization has also increased inequality. White-collar workers have benefited more from privatization than blue-collar workers, both in terms of employment and wages, especially in foreign-owned firms.

The rest of the paper is structured as follows. Section II.1 discusses the main questions to be addressed in more depth. The data are described in section II.2. Section II.3 displays the results on job and worker flows, their relationships with firm and environmental characteristics, their productivity consequences, and the effects of privatization on productivity and workers. Section III concludes with a discussion of policy implications of these results.

II. FINDINGS

II.1 Main Questions

II.1.1 Job and Worker Flows

How do firms' adjustments to changes in the environment vary with economic policy and the institutional environment? The Soviet system of governing enterprises was very different from that in a market economy. Most business decision variables, including output, product variety, prices, technology, wages, and investment levels, were either specifically planned or indirectly controlled. Incentives to meet planned output targets were much higher than those to contain costs, innovate, and produce goods of value. There was no effective domestic or import competition, private ownership, entry, or exit. So the usual factors thought to influence business decisions were largely absent.

Worker mobility was restricted by a number of practices, and enterprises had little discretion in their employment decisions. There were constraints on the ability to fire workers. Soft budget constraints, planned output targets, and unreliable input supplies combined to produce continual excess demand for labor and other inputs (Kornai, 1992).

Factors affecting restructuring behavior during the transition should be quite different. Liberalization permits enterprises, even those remaining in state ownership,

to make most decisions autonomously. The extent to which firms actually adjust in response to changes in their environment is likely to be a function of strength of competitive pressures, the objectives of the owners, the effectiveness of the owners' corporate governance, and information conveyed by prices and wages. These factors are influenced by the specific design of policies of liberalization, privatization, stabilization, and others (e.g., policies concerning layoffs and unemployment).

The restructuring will be studied along several different dimensions. The first is the magnitude of job flows. Have they increased in response to reform? The rates can tell us about the amount of restructuring going on, as well as provide a measure of the flexibility of the labor market.

Are the observed employment changes temporary or permanent? If of a permanent nature, then the restructuring should have more long-lasting effects on the economy.

The synchronization of job creation and destruction will be analyzed. If job creation and destruction both rose at the same time, then the effects on the size of the manufacturing sector, flows to other sectors, unemployment, and out of the labor force will be less than if one rose before the other. The analysis will also shed light on whether it takes different lengths of time for reform to influence destruction vs. creation.

The next task is to measure the extent to which excess job reallocation (the reallocation above that necessary to achieve a certain net employment change in the manufacturing sector) has occurred within narrow sectors vs. across sectors. These types of reallocation have important, but different functions. Between-sector reallocation can bring resources in alignment with relative demand across sectors. Within-sector reallocation can move resources to more productive firms within the sector, raising the overall efficiency of the sector. The relative sizes of sectors were likely to have been far out of alignment with relative market demand on the eve of transition, so one might expect to see some sectors gain employment and others decline (between-sector reallocation). There should have been considerable scope for within-sector reallocation as well, though, as planners may not have allocated resources among enterprises within sectors in perfect alignment with differences in productivity and market opportunities. And market economies are characterized by a high proportion of excess job reallocation within sectors, so if the reforms cause these

economies to function more like market economies, one might expect to see a higher proportion of within-sector reallocation than before.

During the Soviet period enterprise entry occurred only when planners decided to expand a sector where the existing enterprises had reached economies of scale. There were no entrepreneurs starting new firms because they thought they could introduce a new product to the market or produce an existing one more efficiently. Exit was an even rarer occurrence, as planners did not wish to admit failure. As a result, resources were often locked in inefficient enterprises.

New entry is considered to be a crucial source of jobs in transition economies. Most old firms need to downsize, but they may be pressured not to if new jobs aren't available. Exit of less productive firms is beneficial for overall productivity, but workers bear particularly large costs, since exit involves large layoffs in particular locations. We study how the contributions of entry and exit to job creation and destruction, respectively, have changed during the transition.

A firm could reduce its employment level by raising its separation rate, lowering its hiring rate (i.e., through attrition), or a combination of both. Though the net employment rate is the same in either case, worker turnover both in this and other firms will be higher if the firm cuts employment mainly by raising the separation rate.² High worker turnover may or may not be good for the economy. On one hand, it is costly for workers and their employers (e.g., training costs, hiring costs, and moving costs). But it has the potential to increase match quality between the employer and employee. State labor market policies such as mandatory severance pay can influence which method firms use to change their employment levels.³ We will analyze worker flows with this in mind.

Worker flows may be thought to be more beneficial for the economy if they are associated with job flows. If a person quits because he would like a change of scenery, that imposes costs on the new employer to train him and on the old employer to recruit and train a replacement. The productivity of the new match may not be higher than the previous one. In contrast, if the separation is due to lack of demand for the firm's product and is thus not replaced, and the worker moves to a newly created job where demand is greater, that is a more economically useful worker flow. We thus

² This also raises worker turnover for other firms. Hires coming directly from other jobs create vacancies that need to be filled (a vacancy chain).

³ Mandatory severance pay raises the attractiveness of a hiring freeze relative to layoffs.

measure the proportion of worker flows made up by job flows and how it has changed during the transition.

If increased labor market flexibility is a desirable goal, then it would be useful to know what firm and environmental characteristics influence job and worker flow rates. One might expect more reallocation within competitive sectors, as more productive firms take market share away from the less productive ones. More dispersed sectors also provide more alternative job opportunities for workers in the sector, so churning may also be higher.

Political pressure to maintain employment may be more intense in labor markets dominated by a few large employers, as workers have fewer outside opportunities. Workers are also less likely to quit in such markets.

Unions may work to prevent firms from cutting employment. Alternatively, they could try to keep the firm from replacing incumbent workers with ones the firm may feel are better matches. Unions could also provide workers with a mechanism to influence firm policy. Workers who feel they have been heard by management may feel greater attachment to the firm, reducing quits.

New firms may not know their optimal size upon entry, so they could require further adjustments over time. It can also take time to recruit all the workers necessary to achieve the optimal size. So job flows are likely to be higher in new firms. Churning flows may be higher as well: since new firms have less information about match quality, they might need to replace more of their workers.

If a firm has been reorganized through a split-up or spin-off, some of its previous functional units may have gone with the other part(s) of the former firm. A new mix of skills may therefore be required, leading to job creation or churning. If a merger or acquisition took place, redundancies may have been created, leading to job destruction. Hence, reorganized firms are likely to experience high job and worker flow rates.

Workers in larger firms tend to receive more firm-specific training, since they can more easily build a career by advancing in the internal hierarchy. This raises adjustment costs in large firms compared to small firms. As a result, large firms are likely to be slower to adjust employment levels and work harder to keep workers from quitting.

Given the need for most old firms to shed labor, it is especially important that new firms create jobs to keep unemployment down. There are numerous potential

constraints on their growth, however. Entrepreneurs could lack the knowledge of how to write a business plan, be successful at obtaining financing, and run a successful business. Even with knowledge of how to obtain it, entrepreneurs may lack access to financing due to market imperfections. High taxes could limit the scope for internal financing of growth. The necessary managerial or employee human capital could be in short supply. And state bureaucrats could hinder growth by extracting bribes rather than protecting property rights and enforcing contracts. Evidence from a special survey will be employed to determine which of these factors are most important for growth.

Has the economy received any productivity benefit from the destruction, or has the worker dislocation been all pain and no gain? Many cases of direct subsidization and other forms of support for weak and failing enterprises are known to have occurred, while discriminatory taxes, bureaucratic interference, poor contract enforcement, and uncertain property rights protection have impeded those that are more successful (e.g., Frye and Shleifer, 1997; Aslund, Boone, and Johnson, 1996). Russia and Ukraine could thus be subject to “sclerosis” (Caballero and Hammour, 2000), in which less productive resources remain employed due to market imperfections and government policies, while the creation of more productive matches of resources and enterprises is impeded. Alternatively, less productive firms may have been pressured by competition and profit-seeking private owners to downsize, while more productive firms seized new profit-making opportunities and created jobs in the process. Such a scenario would positively contribute to aggregate productivity growth. Not only does the answer to this question affect productivity growth during the transition, but it is also important for future growth prospects. Productive firms should be able to respond more quickly to the recovery in demand, as well as be in a better position to compete in world markets, so future growth prospects will be brighter if more resources are concentrated among the most productive firms.

The productivity effects of firm turnover are of particular importance. Exit tends to be more costly to workers than job destruction in continuing firms – the concentrated nature of the destruction can make finding a new job even harder. So if firm turnover isn’t productive, that would be even worse for the economy than destructive continuing firm job flows. Productivity growth from firm turnover is not guaranteed. New entrants may lack the political connections and financing needed to

compete successfully, so even the potentially productive ones may be short-lived. Exit may not be productive if survival depends more on political connections than relative efficiency. For example, the state may protect less productive incumbent firms from exiting, particularly when they are dominant employers in the region. The analysis investigates whether new entrants are actually more productive than incumbents, as is often assumed but seldom checked. Even if new entrants are not as productive as incumbents initially, they could learn how to be productive with time, provided they survive that long. This suggests a test for learning effects among surviving entrants. The analysis also examines whether exiting firms tend to be more or less productive than survivors, as well as measures the overall contributions of entry and exit to productivity growth.

II.1.2 Privatization

Has privatization improved firm productivity? Has the effect been universal across countries and different types of firms, or has the effect varied according to such factors as privatization design and institutional environment? There are reasons to believe that each matters.

Starting with privatization policy design, the implications are quite controversial. Privatization through transfers to employees has been common in transition economies, due to relative ease of administrative and political implementation, and it is possible that employee ownership may improve work incentives, company loyalty, and support for restructuring.⁴ Widely dispersed ownership among employees may facilitate takeovers by outsiders (Earle and Estrin, 1996), and there is some anecdotal evidence that this evolution is taking place in a number of transition economies. On the other hand, insider privatization is frequently alleged to be ill-suited to the restructuring demands of the transition.⁵ Employees may lack the necessary skills, capital, access to markets and technologies necessary to turn their firms around, and corporate governance by employees may function

⁴ For evidence on the productivity effects of worker ownership in the West, see Estrin, Jones, and Svejnar (1987) and Bonin, Jones and Putterman (1993).

⁵ Frydman and Rapaczynski (1994) and Lipton and Sachs (1990), for instance, argue against privatization to employees, while Ellerman (1993), Stiglitz (1999) and Weitzman (1993) argue in favor. Earle and Estrin (1996) discuss the advantages and disadvantages of worker and manager ownership in the transition setting.

particularly poorly when the firm requires difficult restructuring choices involving disparate distributional impacts within the firm.⁶

Mass privatization programs, typically involving vouchers distributed to citizens, have also accounted for a substantial share of privatization in many transition countries (e.g., Bulgaria, Czech Republic, Latvia, Poland, Romania, Russia, Slovakia, Ukraine, and several Central Asian economies). The intention of these programs is to increase the speed of privatization by overcoming the problems of insufficient demand due to low domestic savings and reluctance of foreign investors, and if possible to jump-start domestic equity markets with a rapid release of shares (e.g., Lipton and Sachs, 1990; Earle, Frydman, and Rapaczynski, 1993a; Boycko, Shleifer, and Vishny, 1994). In principle, such programs may avoid high levels of inside ownership, but in Russia and Ukraine they were in fact combined with strong preferences for employees to use their vouchers in acquiring shares in their employer. A serious problem with the programs is the risk of highly dispersed ownership structures, a problem normally addressed through the creation of intermediaries – either by the state as part of the program (e.g., in Poland and Romania), or by private parties competing for individuals' vouchers (e.g., in the Czech Republic, Russia, and Slovakia). Although there has been rather little empirical evidence on the effects of these programs, a number of authors have been highly critical of them.⁷

The final major privatization method, case-by-case sales of large blocks of shares to outside investors, is the method used most often in the West and to many observers would appear to be the most likely to encourage productivity-enhancing restructuring. The disadvantages of sales are related to insufficient demand and political difficulties compounded by problems of valuation.⁸ In addition, it has frequently been the case that sales contracts include not only a price, but also commitments regarding investment and employment, which are taken into account in

⁶ See Hansmann (1990) for this argument in explaining the patterns of worker ownership in Western economies. The institutional form of employee ownership, including voting and share trading practices, may also have implications for firm performance (Earle and Estrin, 1996; Earle and Telegdy, 2002).

⁷ See, e.g., Stiglitz (1999); Black, Kraakman and Tarrasova (2000); Kornai (2000); Spicer, McDermott, and Kogut (2000); and Roland (2001). Proponents of such programs include Lipton and Sachs (1990), Blanchard et al. (1993), Frydman and Rapaczynski (1994), and Boycko, Shleifer, and Vishny (1995).

⁸ These difficulties probably explain why only three transition countries – Eastern Germany, Hungary, and Estonia, each of which had clear advantages in selling to outsiders – were the only ones to adopt sales as the principal privatization method, although the pace was criticized even in these three countries.

selecting a buyer.⁹ Although policymakers may feel themselves politically constrained to ensure continued employment and operation of privatized firms, such restrictions could have reduced restructuring in the companies privatized through block sales, attenuating any potential benefits of privatization.

Among the recipients of blocks of shares through sales, it may be important to distinguish foreign from domestic investors. Most observers would probably agree that foreign owners are likely to have better access to finance, management skills, new technologies, and knowledge of markets (e.g., Kogut, 1996), which would suggest a higher productivity effect when privatization results in foreign ownership. On the other hand, foreigners may face special difficulties restructuring firms in transition economies, where layoff decisions are highly politicized, for example, and where local networks and knowledge of local conditions may be unusually nontransparent. Under such conditions, any advantage of foreign ownership in raising productivity may be reduced, and foreigners might even do worse than well-selected domestic investors.

The implications of the policy design for the relative effectiveness of privatization in raising productivity across countries depend on how one evaluates these divergent arguments. If privatization works most effectively when the new owners are concentrated outside investors, and even more so when they are foreign investors, then we would expect the strongest impact on enterprise productivity the closer the program comes to producing such ownership structures, i.e., in Hungary.¹⁰ In order of the importance of concentrated outsiders and foreign investors, the effect of privatization would be second largest in Romania, followed by Russia and Ukraine. If instead, however, insiders are the most effective at restructuring and running their companies, or if it is the case that an initial privatization to dispersed outsiders might lead to a better ultimate selection of a controlling owner than would have resulted from an initial sale of a controlling block, then the implications could be different, possibly even suggesting that the magnitude of the effect could decline across the four countries in inverse alphabetical order: Ukraine, Russia, Romania, and Hungary.

Even if the relative magnitudes of the privatization effects are not reversed, the consequences of different privatization methods might manifest themselves differently over time. For example, if concentrated private ownership is necessary to

⁹ See Negrescu (2000) for a discussion of these provisions in Romanian sales contracts.

¹⁰ The results we review below are primarily from Hungary, Romania, Russia, and Ukraine.

achieve restructuring, then one would expect to see more immediate effects from sales to concentrated outsiders than from voucher or insider privatization, where it takes time for concentrated blocks to form. In this case, the major differences across countries could arise in the timing of the potential benefits from privatization. A possible hypothesis would be that the speed of the impact of privatization falls alphabetically, as the initial ownership concentration is increasing in the fraction of sales in all privatization transactions. The subsequent dynamics of the privatization effect reflect the possibilities for secondary trading leading to increased concentration, however, and countries with high initial levels of inside and dispersed outside ownership initially may tend to catch up so that the final impact after several years is not very different across countries.

Turning to the business and policy environment, a natural hypothesis is that privatization works best in a business environment that protects the property rights and enforces the contracts that private owners require to ensure a return on their investment and effort (Anderson, Lee, and Murrell, 2000; Black, Kraakman, and Tarrasova, 2000). In this case, countries with better institutional ratings should also have the strongest privatization effects. Conditional on institutional ratings made by international organizations, the size of the privatization effect should decline in alphabetical order among our four countries.¹¹ An alternative view of the business and policy environment might be that ownership matters least when the environment functions well, as regulation, competition, and hard budget constraints serve to discipline firm behavior. From that point of view, the institutional environment could be a substitute rather than a complement for private ownership.¹²

The quality of the institutional environment may also affect the dynamics of the privatization effect. For example, if better institutions result in faster development of financial markets that facilitate ownership reallocation and concentration, then a country with a relatively poor initial ownership structure but good institutions may tend to start off with a low privatization effect but then catch up over time. If we adopt the conventional assumption that concentrated outside ownership is the most likely to deliver productivity improvements, however, then our data do not contain

¹¹ These are documented in Brown, Earle, and Telegdy (2004a).

¹² A related argument is that concentrated ownership is more effective when legal protections are weaker; see LaPorta, Lopez-de-Silanes, and Shleifer (1999). Brown and Earle (2001) investigate the complementarity or substitutability of private ownership with the competitiveness of product markets and with the privatization of competitors.

examples of countries with poor ownership but good institutions and vice versa (the Czech Republic, Estonia, Poland, and Slovakia might be more instructive in this regard). Among our four countries, where (again under the conventional ownership assumption) the quality of privatization and the quality of institutions are positively correlated, these arguments imply that the initial differential privatization effect may not wear off so quickly, as the same countries that start with greater ownership concentration also have the best chances for further productivity-enhancing ownership reallocation.

Yet another possibility would be that the nature of the privatization policy design and the quality of the institutional environment have offsetting effects. For example, it might be the case that private ownership is generally most effective in a poor institutional environment but that concentrated outside investors tend to have the strongest effect on productivity in all types of environments. Or perhaps the reverse is true, or perhaps the factors interact; for instance, inside ownership might be relatively efficacious in a poor environment and outside ownership might be superior when institutions function well. In any of these situations, the predicted cross-country ranking of the coefficient magnitudes becomes ambiguous. How the effects of privatization vary is ultimately of course an empirical question, one on which our results may be able to provide some evidence.

How has privatization affected workers? Have the effects varied across privatization methods? Workers often opposed privatization, because they feared that new private owners, particularly foreigners, would increase profitability through mass layoffs and wage cuts (see, e.g., Aghion and Blanchard (1998)). On the other hand, privatized firms could engage more vigorously in the restructuring necessary for survival and growth, leading to higher employment and wages than in firms remaining in state control.

The objectives of different types of private owners vis-à-vis employment policy are likely to vary. Workers are presumably interested in keeping their jobs and receiving the highest wage they can, and ownership may give workers additional influence to block employment and wage reductions. Workers may also be more reluctant to leave a job in a firm where they have influence in exchange for a job in one where they do not. Managers are usually assumed to have a preference for managing larger firms, as size raises their status. The effect of increasing managerial ownership is ambiguous – more control rights could help managers to achieve their

status objective, but higher cash flow rights could instead align the manager's incentives with profit maximization, which may be inconsistent with the size goal.

Outside owners are usually assumed to maximize profit.¹³ Depending on the circumstances in the firm, profit maximization could be associated with either high or low flows. Workers may feel less certain about the future direction of the firm when it is outsider-owned, so they may be more apt to search for other employment opportunities. Outsiders may also have a desire to replace workers with people of their own choosing. So compared to the state and possibly to insiders, one would expect higher flows on average.

It may matter whether the outside owners are dispersed individuals or concentrated legal entities or foreign investors. The concentrated groups are more likely to be able to exert control. If the outsiders do not exert control, then insiders will be free to pursue their employment preservation objective, which will not be tempered by their own ownership. In such a scenario, flows may be lower than under insider ownership. But if the outsider owners are concentrated, profit-maximizing objectives should dominate. Foreign owners could have an additional effect, either by scaring off xenophobic workers (increasing turnover), or by retaining more of them because workers anticipate that foreign-owned firms will have better prospects.

The variation in effects on workers could also be related to the nature of productivity gains from privatization. If productivity gains are results of strategic restructuring (e.g., the introduction of new technologies, products, or organizational improvements), the firm could become more competitive and expand its market share, leading to employment and wage growth. If, however, the restructuring is defensive (reductions in hoarding of labor and other inputs), then employment and wages are likely to fall.¹⁴ It is not clear what the effects of defensive vs. strategic restructuring will be on worker churning. Strategic restructuring could require a different skill mix, resulting in more churning. But this restructuring could make the firm more viable, and thus a more attractive employer, reducing quits.

Some owners are likely to be more capable of strategic restructuring (e.g., foreigners) than others. So the differences in effects on workers are likely to be

¹³ Legal entities may wish to siphon off profits ("tunnelling," in the *mot de jour*) from the firm of study to their own firm, but even then the legal entity should wish to minimize personnel costs.

¹⁴ See Grosfeld and Roland (1996) for a discussion of defensive vs. strategic restructuring.

related to both the capability of the owner to exert influence on firm policy and the type of restructuring it can implement once gaining control.

II.2 Data

For the job flow and productivity of job flow analysis, the paper uses annual industrial registries provided by the State Committees for Statistics in Russia (the Goskomstat) and Ukraine (the Derzhkomstat). In Soviet Russia, the data include the universe of civilian industrial enterprises, while after 1991 the coverage is supposed to be all industrial firms with more than 100 employees plus those that are more than 25 percent owned by the state and/or by legal entities that are themselves included in the registry. The firms in the Russian registry accounted for 90.5 percent of officially reported total industrial employment in 1992, while the Ukrainian registry covered 94.1 percent. The coverage rate in relation to official employment declined somewhat thereafter, falling by the year 2000 to 69.8 percent in Russia and 85.2 percent in Ukraine. No doubt the decline is due partially to the entrance of new small firms owned by individuals, since the registries do not include such entities. Our analysis includes cases of entry and exit, probably due in most cases to reorganization rather than genuine startup or shutdown.¹⁵

The worker flow and worker flow relationships with job flows analysis is based on a survey of 530 industrial firms, selected through national probability sampling in 32 Russian *oblasts*, with a probability proportional to employment size. The data permit us to estimate annual rates of both job flows and worker flows for a consistent set of firms for the period 1990-1999 and to relate these flows to detailed information on firm characteristics.

A 2001 survey of 297 new small enterprises in Romania is used to investigate the determinants of employment growth in the new private sector. The data contain detailed measures of loans, tax breaks, technical assistance, managerial and employee human capital, and the business environment, as well as employment in 1992-2001.

Russian registry data for 1985-2001, Ukrainian registry data for 1989 and 1992-2002, Hungarian registry data for 1986-2001, Romanian registry data for 1992-2002 are used in the studies of privatization's effects on productivity and workers. In

¹⁵ The size and ownership selection criteria for the registry imply that observed entrants are more likely to represent reorganizations of existing assets than startups from scratch.

all countries, the data contain over 90 percent of employment of the old firm manufacturing sector in 1992.

For a more detailed description of the job flows and job flow productivity data, see Brown and Earle (2004). Biletsky et al. (2002) contains more information on the data for worker and job flows. Brown, Earle, and Lup (2004) gives details about the Romanian new small firm survey. See Brown, Earle, and Telegdy (2004a, 2004b) for further information about the privatization data.

II.3.1 Job and Worker Flows and Firm Turnover

The first results are the basic job flow rates for the Russian and Ukrainian manufacturing sectors in Figure 1. The job creation rate is negligible in Russian manufacturing during the Soviet period, but by the late 1990s both the Russian and Ukrainian rates are well within the range of creation rates of the full manufacturing sectors in the U.S. and other market economies.

The calculated job destruction is also very low in the Soviet period, but the rate rises rapidly in the early reform period, quickly reaching the upper end of the typical range of rates found in the U.S. The Russian and Ukrainian creation and destruction rates show very similar patterns, the main difference being that Ukrainian destruction did not rise as quickly as Russian destruction at the beginning of the reform period. These results suggest that labor market flexibility increased substantially in response to market reforms.

Brown and Earle (2002) measure the persistence of these employment changes among continuing firms, i.e., the extent to which jobs added or subtracted from the firm remain gained or lost in future years. Results are displayed in Table 1. Persistence rates are calculated for one- and two-year periods, and both have fallen slightly during the reform period by comparison with Soviet socialism. Apparently, the planners had little tendency to reverse their decisions on changing employment levels! As in other countries, the persistence rate is lower for job creation than for job destruction, but for the latter it is quite high by international standards. Thus, while creation persistence falls substantially during the transition, the measured flows do not appear to be the result of highly volatile behavior or noise in the data. They are not primarily temporary phenomena, but rather appear to be signs of longer-term restructuring.

Job destruction rises much more quickly than job creation in both countries, resulting in substantial outflows from the manufacturing sector into other economic sectors, unemployment, and inactivity. Creation catches up to destruction only after the 1998 Russian financial crisis. The correlation between creation and destruction rates in Soviet Russia (1985-91) is 4.6 percent. The Russian correlation in 1991-2001 is -58.9 percent, and in Ukraine in 1993-98 it is even more negative at -95.4 percent. The transition experience is more similar to that in U.S. and Canadian manufacturing. Baldwin, Dunne, and Haltiwanger (1998) report the correlation to be -29.1 percent in Canada and -67.6 percent in the U.S.

Since both creation and destruction have risen substantially during the transition, that means that excess job reallocation has also risen. Brown and Earle (2002) calculate the percentage of the excess job reallocation that occurs between as opposed to within narrow industries, and these results appear in Table 2. Similar to Davis and Haltiwanger's (1999) results for the U.S., the results imply that most excess job reallocation occurs within rather than between narrow industries. The average levels for the early reform period of 1992-1996 are greater than any of the estimates for comparable sets of industries in the country studies reported in Davis and Haltiwanger (1999, Table 5). This finding suggests that inter-industry flows may be relatively large in the reallocation process of the early transition. Nonetheless, the intra-industry flows still dominate, and they become even more important in the late 1990s, moving in the direction of market economies.

Entry and exit account for 19 and 15 percent of job creation and destruction, respectively, in Soviet Russia (1985-92). This translates to a contribution of 0.52 and 1.65 percentage points to the creation and destruction rates. This increases to 33 (1.16 percentage points) and 32 (5.66) percent in 1993-96 and 39 (1.32) and 28 (4.48) percent in 1996-98. Ukraine's entry and exit contribute 53 (1.80) and 15 (2.01) percent of creation and destruction in the early reform period and 54 (2.08) and 24 (3.52) percent in the late reform period.

So entry and particularly exit have generated much higher job flows than during the Soviet period. Ukrainian entry contributes relatively more to creation and less to destruction than is the case in transition Russia. The corresponding figures in Davis and Haltiwanger (1992) for the U.S. are 20 (1.84) percent for creation and 25 (2.84) percent for destruction, so Russia and Ukraine's proportions of job flows accounted for by firm turnover during the transition tend to be higher than in the U.S.

The percentage point contribution made by entry is actually lower in Russia and about the same in the Ukraine as in the U.S., while the percentage point contributions made by exit are higher than in the U.S.

Russian accession and separation rates from Brown and Earle (2003) are displayed in Figure 2. Worker flows are considerable during the Soviet period, and total worker flows rise further during the transition. Somewhat surprisingly, hiring has continued at a high rate despite the downsizing. Separations have risen more than hiring has fallen, suggesting that firms have adjusted employment more through increased separations than hiring freezes. It also means that total worker flows have been higher than they would have if the hiring rate had been the main adjustment tool.

Figure 3 shows the relationships between job and worker flows. During the late Soviet period, job flows made up a small proportion of worker flows. This continued to be the case for job creation until the economic recovery began in 1999. Job destruction, however, became a quite high proportion of separations, causing total job reallocation to be a larger fraction of worker flows. The job destruction fraction of separations approaches the levels found in Western countries (see Davis and Haltiwanger, 1999), while the job creation fraction of accessions remains less than half Western levels throughout the period. Nevertheless, the rise in the absolute level and the relative importance of job flows do suggest increased dynamism of Russian labor markets compared to their behavior under socialism.

An important set of questions concerns the determinants of job and worker flows. Table 3 summarizes the main results from Brown and Earle (2002, 2003) for Russia and Ukraine. Product market competition is associated with more excess job reallocation, especially when adjustment costs are low. Thus, more changes in market shares are occurring in competitive industries. Churning is also higher in such sectors, particularly when adjustment costs are low. This may be because of the larger number of alternative job opportunities for workers in competitive sectors. The higher churning could also be due to greater pressure to restructure the workforce.

Firms are slower to reduce employment when the labor market is dominated by a few employers. In Russia excess job reallocation is lower in such markets. This lack of labor market flexibility could be a symptom of extra political pressure to avoid unemployment in these regions. Surprisingly, workers are just as likely to quit in concentrated labor markets as in more dispersed ones, despite having fewer outside options.

There is no evidence that unions are hindering employment reductions. Excess job reallocation is lower, with the greatest effect when adjustment costs are high. Hence unionized firms tend to be less flexible on average, but the difference is not so great except when the cost of being flexible is high. Workers quit at a much lower rate in more unionized firms. This could reflect union interference with the firm's attempts to change personnel (e.g., to obtain a different skill mix). Alternatively, the union may give workers more opportunities to influence firm policies, leading to a stronger feeling of attachment.

New firms show much greater dynamism than old firms, as all the components of job flows are higher.¹⁶ Their employment growth is also much higher, but this may be overstated because the rates do not take exit into account, and new firms are likely to have a greater propensity to exit. Unexpectedly, the churning rate is no higher than for old firms.

Reorganized firms show more flexibility and churning than unreorganized old firms, the latter particularly when adjustment costs are low. Such firms may need to change their skill mix as a result of the reorganization.

As is the case in market economies, smaller firms create and destroy jobs at a higher rate and produce more excess job reallocation. Unlike in the U.S. (see Davis and Haltiwanger (1999)), employment growth is higher in small firms, but again this could be because exit is not taken into account (small firms exit at a higher rate). The higher flexibility in small firms can be explained by the fact that large firms incur higher adjustment costs.¹⁷ Strangely, churning rates do not vary by firm size, contrary to expectations that large firms would exert more effort to retain workers they want to keep.

II.3.2 Job Creation in New Private Firms

Although the development of a new private sector is generally considered crucial to economic transition and development, there has been rather little empirical research on the determinants of startup firm growth. In a recent study of small private firms in Romania, Brown, Earle, and Lup (2004) find that finance is an important determinant of employment growth. Some results are shown in Table 4. Loans, reinvested profit, trade credit, and tax breaks (which leave more profit for

¹⁶ This is similar to Davis and Haltiwanger's (1999) results for the U.S.

¹⁷ See Brown and Earle (2003).

reinvestment) are all associated with higher employment growth.¹⁸ Despite using a large number of different measures, they are unable to detect any effect of the business environment in their sample. Technical assistance and entrepreneurial and worker human capital do not appear to matter either.

Some constraints on growth are difficult to quantify. Thus, Brown, Earle, and Lup (2004) also report managerial opinions on the extent to which various factors constrain their growth. Managers most commonly report the level and administrative burden of taxation to be very constraining on their firm's growth. Inflation and insufficient finance are also reported as severe constraints by most managers. Difficulties with obtaining inputs, low product demand, and business environment factors other than administrative burden of taxation are considered very constraining by less than half of managers. So whether one uses quantitative or qualitative information, insufficient finance and a high burden of taxation appear to be particularly important constraints on growth for new start-ups.

II.3.3 Job Reallocation and Productivity Growth

Job reallocation did not contribute to productivity growth in Soviet Russia, as shown in Figure 4.¹⁹ This changed dramatically after market reforms, as job reallocation contributed 3-4 percentage points to annual aggregate manufacturing labor productivity growth soon after market reforms were introduced. The contribution of job reallocation to productivity growth is of a similar magnitude in Ukraine, though the positive effect did not begin to appear until two years after it appeared in Russia, perhaps a symptom of a more gradual reform strategy.

Most of the contribution of reallocation to productivity growth has come through gains in market share of more productive continuing firms at the expense of less productive continuing firms. Exit has also made an important contribution to productivity growth, as exiting firms have been less productive than survivors on average.

¹⁸ Table 4 shows the basic specification. In alternative specifications shown in Brown, Earle, and Lup (2004), reinvested profits, trade credit, and numerous measures of the business environment are included.

¹⁹ Figure 4 shows the overall effect of job reallocation on labor productivity growth, based on calculations from Brown and Earle (2004). Half the cross term in the productivity growth decomposition is allocated to the reallocation effect, as is the case in Griliches and Regev's (1995) decomposition. The effects on multifactor productivity growth are similar.

In stark contrast to the other reallocation components, entry has had a negative effect on labor productivity growth in the year of entry in both Russia and Ukraine. As shown in Figure 5, entrants have much lower labor productivity than surviving incumbents in the year of entry. The medium-run contribution of entrants is zero or positive, however. The less productive entrants tend to exit soon after entry, and productivity growth among surviving entrants is higher than that of surviving incumbents: by three years after entry, surviving entrant productivity is at least as high as that of surviving incumbents. Thus both selection and learning effects are at work here. These are similar patterns to those found by Foster, Haltiwanger, and Krizan (2001) for the U.S.

The above picture is not one of sclerosis. Market reforms have made reallocation quite productive, despite the continued presence of soft budget constraints, credit and labor market imperfections, and weak property rights and corporate governance.

II.3.4 Privatization, Productivity, Employment, and Wages

Privatization has had very different effects on firm-level productivity across countries. As shown in Table 5, it has increased multifactor productivity substantially in Romania and Hungary, while the effect has been weaker or insignificant in Ukraine and insignificant or negative in Russia. Djankov and Murrell (2002) come to a similar conclusion after reviewing dozens of studies: the privatization effect has been quite positive in Eastern Europe, but insignificant or negative in the former Soviet Union (FSU).

One possible factor contributing to the difference in the effect across countries is that Eastern European countries have placed fewer restrictions on and sometimes actively encouraged foreign participation in privatization. The investment climate in Eastern Europe is also more appealing. Thus, the share of foreign majority-owned privatized firms is much higher in Eastern Europe. As of 2002, 22 percent of Hungary's and six percent of Romania's privatized manufacturing firms are majority owned by foreign investors, while only one percent of Russia and Ukraine's are.

Table 6 shows that the productivity effects from foreign-majority privatizations have been much stronger in all four countries.²⁰ The foreign privatization effect is strikingly similar across countries, in contrast to the domestic

²⁰ This is also Djankov and Murrell's (2002) conclusion.

privatization effect. These results suggest that foreigners' advantages in accessing finance, new technologies, the latest managerial techniques, and world markets far outweigh any disadvantages due to unfamiliarity with local conditions and weak political connections.

Though having as high a percentage of foreign ownership as Hungary would make Russia and Ukraine's overall privatization effects positive, this only partly explains the gap. Another difference across countries that could matter is the fact that the privatization methods used in Hungary and Romania resulted in concentrated ownership from the time of privatization, whereas Russia and Ukraine's mass privatization led to dispersed ownership by employees and small outside investors.²¹ Secondary trading has resulted in more concentrated ownership in Russia and Ukraine, but this has taken time. This raises the possibility that if ownership concentration is a necessary condition for privatization to have a positive effect, then the effect may have appeared sooner in Hungary and Romania than in Russia and Ukraine. As illustrated in Figure 6, the timing of the foreign privatization effect is quite similar across countries, with the main difference being that it was positive from the year of privatization in Hungary and Romania, while it doesn't become positive until a year after privatization in Russia and Ukraine.

The timing of the domestic privatization effect varies considerably, however. Figure 7 shows that Romania and especially Hungary enjoy a strong positive effect already in the year of privatization, while Ukraine has a smaller positive effect a year later. Russia actually experiences a decline before the effect turns positive five years after privatization. This pattern is not inconsistent with the hypothesis that ownership concentration is an important precondition for productivity gains.²²

To investigate this hypothesis further, we use the fact that some privatization methods led to more concentrated ownership than others, and that privatization methods changed across time in each country. Brown, Earle, and Telegdy (2004a) estimate the privatization effect separately for each privatization year cohort. The differences across cohorts are insignificant in each country, so the in-country variation

²¹ Romania used management-employee buyouts early in the privatization process, but employees voted as a group, unlike in Russia and Ukraine.

²² Studies reviewed by Djankov and Murrell (2002) show that the privatization effect is stronger when ownership is concentrated. Lizal and Svejnar (2002) find, however, that the domestic privatization effect in the Czech Republic is weak or insignificant, even though ownership is concentrated. Many of the domestic firms were controlled by investment privatization funds run by majority state-owned banks. So the identity of the owner appears to matter as well.

in privatization method does not seem to matter. So for example, both manager-employee buyouts (leading to dispersed ownership) and cash sales (leading to concentrated ownership) in Hungary and Romania have been successful.

The privatization effect could be stronger in a better business environment. Brown, Earle, and Telegdy (2004a) estimate the privatization effect in each year. If the institutional environment is an important factor, one should see an increasingly positive privatization effect over time. A pattern emerges only in Russia, where the effect is increasingly negative until 1998. It becomes positive in 1999, coinciding with the economic recovery.

The time pattern of the Russian results could be consistent with the hypothesis that privatization works best in good macroeconomic conditions. Indeed, Brown, Earle, and Telegdy (2004a) find that the privatization effect is much stronger in Russian firms in expanding industries. When controlling for expanding vs. contracting industries, the time pattern of the Russian privatization effect vanishes. It thus appears that good macroeconomic conditions are an important precondition for successful privatization in Russia. These results do not provide support for the hypothesis that the institutional environment is an important factor.²³

Though privatization has had little effect on firm productivity in Russia, Brown and Earle (2004) find that it has a substantial effect on the productivity of job reallocation. Private owners appear to be better at defensive restructuring than the state, adding resources when the firm is strong relative to its competitors, and cutting their losses when the firm has been a poor competitor. Private owners also make better exit decisions in both Russia and Ukraine: the relationship between exit and productivity is more negative among privatized firms.

Privatization has also had significant effects on workers. Table 6 shows that foreign privatization has increased employment in all four countries and wages in three, though the effects are not always significant. Domestic privatization has been less kind to workers, however, as wages suffer in three countries, and employment rises only in Romania.

²³ The result that the Romanian privatization effect is stronger than Hungary's is also inconsistent with the institutional environment being an important factor, since Hungary's institutional environment is considered to be much better than Romania's.

Domestically privatized Russian firms appear to have delayed restructuring. They destroyed fewer jobs in the first two years after privatization.²⁴ Then restructuring began in earnest: they destroyed more jobs in years three through six. They did not create any more jobs than state firms until five years after privatization, about the time when their productivity started to rise relative to state firms. The wage effect closely mirrors the productivity effect, initially quite negative, then becoming positive five years after privatization. The employment composition and relative wages change slightly in favor of white-collar workers.

When breaking Russian domestic ownership down by type, we find that worker and dispersed outsider ownership is associated with less job creation, but the effects on the other job flow components are insignificant. Contrary to expectations, concentrated outsider ownership is not associated with higher job flows.

Foreign-privatization in Russia has led to relatively higher employment three years after privatization, while it has a sharply negative effect on wages in years two to four. Employment composition and relative wage changes in foreign-privatized firms have been significantly biased toward white-collar employees. This is consistent with skill-biased technical change. It also suggests that foreign privatization has increased inequality.

Figure 8 shows little effect of Ukrainian foreign privatization on the employment level until five years after privatization, while a positive effect on wages appears beginning three years after privatization. Domestic privatization has had a positive effect on job creation starting in the first year after privatization. The effect on destruction is just the opposite of that for Russian domestic privatization: it is positive in the first year, then increasingly negative. This would seem to suggest that Ukrainian domestically privatized firms began restructuring sooner than Russian domestically privatized firms. As shown in Figures 10 and 11, there is a weak positive effect on the employment level several years after privatization, while the effect on the wage level is negative.

Foreign privatization has an immediate and sustained positive effect on employment in Romania. It has a positive effect on wages as well, though this does not appear until two years after privatization. The effect of domestic privatization on

²⁴ The job creation, destruction, and employment growth results for Russian and Ukrainian domestic privatization come from regressions using the same samples as those employed in Brown, Earle, and Telegdy (2004b).

employment is similarly positive and sustained, but it increasingly depresses wages, suggesting an employment-wage trade-off. Domestic privatization has also increased job creation.

The Hungarian foreign privatization effects are very similar to those found in Romania: we find a strong, sustained positive effect on employment and a slower-to-appear positive effect on wages. Domestic privatization has had a smaller positive effect on employment, and a similarly sustained negative effect on wages in comparison to Romania. Job creation is higher in domestically privatized firms.

Putting these results together, the productivity gains from foreign privatization have not generally come at workers' expense, except for wages in Russia. Workers have fared less well in domestic privatizations. The employment effects have been neutral or positive, but wages have declined year-by-year. Domestic privatization has thus been less proficient at creating productive jobs.

Privatization has had an effect on the functioning of the labor market in general. As reported in Table 7, privatization has increased labor market flexibility, raising excess job reallocation in both Russia and Ukraine.

Brown and Earle (2003) find no effect of privatization on worker churning overall, though privatized firms experience less when adjustment costs are high. Firms with a higher foreign blockholder share experience less churning, but this is particularly true when adjustment costs are low. Perhaps lower skilled workers are reluctant to voluntarily leave good jobs in foreign firms.

III. CONCLUSION

“Labor market flexibility” and “job creation” have been the twin slogans of policymakers facing the challenges of falling employment and high unemployment in the transition economies of Eastern Europe and the former Soviet Union. But flexibility too frequently remains a theoretical concept, with relatively few measurements of its magnitude and estimates of how policies affect it. And, as even a glance at the employment situation under central planning makes plain better than any abstract arguments, increasing employment without concern for the productivity of the jobs created may be a misplaced effort.

Motivated by these premises, the paper has analyzed the magnitude and characteristics of employment growth within firms, the reallocation of employment across firms, and the relationship of the patterns to productivity growth.

Market reform has led to a sizeable increase in the pace of job reallocation. The nature of the reallocation suggests that significant restructuring has taken place, as a higher proportion of it is between sectors than in OECD countries, and job reallocation has made up an increasing proportion of overall worker turnover. Unlike under central planning, the reallocation has made an important contribution to aggregate productivity growth.

A principal concern of the paper has been the effects of measurable market reforms on reallocation and the creation of productive jobs. Product market competition has increased the amount of reallocation occurring among firms within the same sectors, as well as raising worker churning (replaced separations). Competition among firms in the labor market has facilitated firm downsizing. New and small firms have been particularly active job creators and destroyers, while firm reorganizations are associated with high churning.

Privatization has increased labor market flexibility and made reallocation more productive. Privatized firms with domestic owners have created more jobs in Hungary, Romania, and Ukraine and destroyed more in Russia. Concentrated outside ownership has not led to higher job or worker flows. Firms with foreign blockholders actually experienced less job reallocation and worker churning, however.

Not only has privatization increased job reallocation among firms within the same narrow sectors, but privatized firms' reallocation has been more productive than that of state firms: privatized firms' employment change decisions have been more strongly related to their relative productivity within their sector.

Firm productivity has usually improved as a result of privatization, but the magnitude and timing of the effect has varied considerably across countries and types of privatization. Privatization to foreign owners has consistently led to large productivity increases within a year after privatization. The effects of domestic privatization have varied considerably across countries, however. In Romania and Hungary, strong positive effects already appeared in the year of privatization, whereas the effect was negative until five years after privatization in Russia. The effect was also weak in Ukraine. We find little support for a number of plausible hypotheses for why the privatization effect might differ across countries.

The available evidence is mixed on whether the productivity gains from privatization have come at the expense of workers. Foreign privatizations, which were most productive on average, have generally had a positive effect on employment and wages. Domestic privatizations, however, have had a negative effect on wages, even in Hungary and Romania where post-privatization productivity gains were substantial. Privatization has also increased inequality. White-collar workers have benefited more from privatization than blue-collar workers, both in terms of employment and wages, especially in foreign-owned firms.

REFERENCES

- Aghion, Phillipe, and Olivier Blanchard, "On Privatization Methods in Eastern Europe and Their Implications," *Economics of Transition*, Vol. 6, No. 1, 1998, pp. 87-99.
- Anderson, James H., Young Lee, and Peter Murell, "Competition and Privatization Amidst Weak Institutions: Evidence from Mongolia." *Economic Inquiry*, Vol. 38(4): 527–549, October 2000.
- Aslund, Anders, Peter Boone, and Simon Johnson, "How to Stabilize: Lessons from Post-Communist Countries." *Brookings Papers on Economic Activity*, 217-291, 1996.
- Baldwin, John, Timothy Dunne, and John Haltiwanger, "A Comparison of Job Creation and Job Destruction in Canada and the United States." *Review of Economics and Statistics*, Vol. LXXX(3), 347-356, August 1998.
- Biletsky, Serhiy, J. David Brown, John S. Earle, Julia Khaleeva, Ivan Komarov, Olga Lazareva, and Klara Z. Sabirianova, "Inside the Transforming Firm," mimeo, Central European University Labor Project, 2002.
- Black, Bernard, Reiner Kraakman, and Anna Tarrasova, "Russian Privatization and Corporate Governance: What Went Wrong?" *Stanford Law Review*, Vol. 52(6): 1731–1808, July 2000.
- Blanchard, Olivier, Maxim Boycko, Marek Dabrowski, Rudiger Dornbusch, Richard Layard, and Andrei Shleifer, *Post-Communist Reform: Pain and Progress*. Cambridge, MA: MIT Press, 1993.
- Bonin, John P., Derek C. Jones, and Luis Putterman, "Theoretical and Empirical Studies of Producer Cooperatives: Will Ever the Twain Meet?" *Journal of Economic Literature*, Vol. 31(3): 1290–1320, September 1993.
- Boycko, Maxim, Andrei Shleifer, and Robert W. Vishny, "Privatizing Russia," *Brookings Papers on Economic Activity*, No. 2, 1993, pp. 139-92.
- Boycko, Maxim, Andrei Shleifer, and Robert W. Vishny, *Privatizing Russia*. Cambridge, MA: MIT Press, 1995.
- Brown, J. David, and John S. Earle, "Privatization, Competition, and Reform Strategies: Theory and Evidence from Russian Enterprise Panel Data." Centre for Economic Policy Research Discussion Paper No. 2758. London: CEPR, 2001.
- Brown, J. David, and John S. Earle, "Job Reallocation and Productivity Growth Under Alternative Economic Systems and Policies: Evidence from the Soviet Transition." Upjohn Institute Staff Working Paper No. 02-88, December 2002.

Brown, J. David, and John S. Earle, "The Reallocation of Workers and Jobs in Russian Industry: New Evidence on Measures and Determinants." *Economics of Transition*, Vol. 11(2), 221-252, June 2003.

Brown, J. David, and John S. Earle, "Economic Reforms and Productivity-Enhancing Reallocation in the Post-Soviet Transition," IZA Discussion Paper No. 1044, March 2004.

Brown, J. David, John S. Earle, and Dana Lup, "What Makes Small Firms Grow? Finance, Human Capital, Technical Assistance, and the Business Environment in Romania," CERT Discussion Paper No. 04/05, November 2004.

Brown, J. David, John S. Earle, and Almos Telegdy, "Does Privatization Raise Productivity? Evidence from Comprehensive Panel Data on Manufacturing Firms in Hungary, Romania, Russia, and Ukraine," CEPR Discussion Paper No. 4791, December 2004a.

Brown, J. David, John S. Earle, and Almos Telegdy, "How Does Privatization Affect Workers? Evidence from Comprehensive Panel Data on Manufacturing Firms in Hungary, Romania, Russia, and Ukraine," mimeo, July 2004b.

Caballero, Ricardo J., and Mohammad L. Hammour, "Institutions, Restructuring, and Macroeconomic Performance." National Bureau for Economic Research Working Paper No. 7720. Cambridge, MA: NBER, May 2000.

Davis, Steven J., and John C. Haltiwanger, "Gross Job Creation, Gross Job Destruction and Employment Reallocation." *Quarterly Journal of Economics*, Vol. 107(3), 819-863, August 1992.

Davis, Steven J., and John C. Haltiwanger, "Gross Job Flows." In *Handbook of Labor Economics*, Vol. 3B, Orley Ashenfelter and David Card, eds. Amsterdam: Elsevier, 2712-2803, 1999.

Djankov, Simeon, and Peter Murrell, "Enterprise Restructuring in Transition: A Quantitative Survey." *Journal of Economic Literature*, Vol. XL(3), 739-792, September 2002.

Ellerman, David, "Management and Employee Buy-Outs in Central and Eastern Europe: Introduction." In David Ellerman, ed., *Management and Employee Buy-Outs as a Technique of Privatization*, pp. 13-30. Ljubljana: Central and Eastern European Privatization Network, 1993.

Estrin, Saul, Derek C. Jones, and Jan Svejnar, "The Productivity Effects of Worker Participation: Producer Cooperatives in Western Economies." *Journal of Comparative Economics*, Vol. 11(1): 40-61, March 1987.

Foster, Lucia, John C. Haltiwanger, and Cornell J. Krizan, "Aggregate Productivity Growth: Lessons from Microeconomic Evidence." In *New Developments in*

Productivity Analysis, Edward Dean, Michael Harper, and Charles Hulten, eds. Chicago: University of Chicago Press, 303-372, 2001.

Frydman, Roman, and Andrzej Rapaczynski, *Privatization in Eastern Europe: Is the State Withering Away?* Budapest: Central European University Press, 1994.

Frye, Timothy, and Andrei Shleifer, "The Invisible Hand and the Grabbing Hand." *American Economic Review Papers and Proceedings*, Vol. 87(2), 354-358, May 1997.

Griliches, Zvi, and Haim Regev, "Firm Productivity in Israeli Industry 1979-1988." *Journal of Econometrics*, Vol. 65, 175-203, 1995.

Grosfeld, Irena, and Gerard Roland, "Defensive and Strategic Restructuring in Central European Enterprises," *Emergo, Journal of Transforming Economies and Societies*, 3(4), 1996.

Hansmann, Henry, "When Does Worker Ownership Work? ESOPs, Law Firms, Codetermination, and Economic Democracy." *Yale Law Journal*, Vol. 99(8): 1749-1816, June 1990.

Kogut, Bruce, "Direct Investment, Experimentation, and Corporate Governance in Transition Economies." In Roman Frydman, Cheryl W. Gray, and Andrzej Rapaczynski, eds., *Corporate Governance in Central Europe and Russia. Banks, Funds, and Foreign Investors*, pp. 293-332. Budapest: World Bank and CEU Press, 1996.

Kornai, Janos, "Ten Years after 'The Road to a Free Economy: The Author's Self-Evaluation.'" *Economic Systems*, Vol. 24(4): 353-359, December 2000.

La Porta, Rafael, and Florencio Lopez-de-Silanes, "The Benefits of Privatization: Evidence from Mexico," NBER Working Paper No. 6215, October 1997.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, "Corporate Ownership Around the World." *Journal of Finance*, Vol. 54(2): 471-517, April 1999.

Lipton, David, and Jeffrey D. Sachs, "Privatization in Eastern Europe: The Case of Poland." *Brookings Papers on Economic Activity* 0/2: 293-333, 1990.

Lizal, Lubomir, and Jan Svejnar, "Privatization Revisited: The Effects of Foreign and Domestic Owners on Corporate Governance," CERGE-EI Discussion Paper No. 89, October 2002.

Negrescu, Dragos, "A Decade of Privatization in Romania." In Christof Ruhl and Daniel Daianu, eds., *The Economic Transition in Romania: Past, Present, and Future*, pp. 375-442. Bucharest: World Bank and Romanian Center for Economic Policies, 2000.

Shleifer, Andrei, and Robert W. Vishny, "Politicians and Firms," *Quarterly Journal of Economics*, 1994.

Spicer, Andrew, Gerald A. McDermott, and Bruce Kogut, "Entrepreneurship and Privatization in Central Europe: The Tenuous Balance Between Destruction and Creation." *Academy of Management Review*, Vol. 25(3): 630–649, 2000.

Stiglitz, Joseph, "Whither Reform? Ten Years of the Transition." Paper presented at the Annual World Bank Conference on Development Economics, http://www.worldbank.org/research/abcde/washington_11/stiglitz.html. Washington, D.C.: World Bank, 1999.

Table 1
Average Annual Job Flow Persistence Rates (%)

	Creation Persistence		Destruction Persistence	
	1-Year	2-Year	1-Year	2-Year
Soviet Russia	75.2	57.1	94.3	91.7
Reform Russia	66.6	50.9	96.4	94.2
Reform Ukraine	71.6	55.7	97.1	95.6*

Note: The Soviet 1-year and 2-year persistence rates are calculated for creation and destruction occurring between 1985–1992. The reform period 1-year persistence is calculated for job flows between 1992–1999 and the 2-year persistence is for 1992–1998. Job flows by entering and exiting firms are excluded here. The star (*) signifies that the Reform Ukraine rate is statistically significantly different from the Reform Russia rate at the one percent level. These results are from Brown and Earle (2002).

Table 2
Percentage of Excess Job Flows Between Five-Digit Industries

	Russia	Ukraine
Soviet (1985-92)	28.3	N.A.
Early Reform (1992-96)	25.2	40.0
Late Reform (1996-2000)	19.3	23.8

Note: These figures reflect average annual calculations of the decomposition of *XJR* into between- and within-industry components for each of the five country-periods. “N.A.” indicates not available. Job flows by entering and exiting firms are excluded here. These results are from Brown and Earle (2002).

Table 3
Effects of Firm Characteristics on Job and Worker Flows

	Job Creation	Job Destruction	Job Reallocation	Excess Job Reallocation	Employment Growth	<i>Churning Flows</i>
Product Market Competition	$0_{r1}, 0_{r2}, 0_u$	$0_{r1}, 0_{r2}, -_u$	$0_{r1}, 0_{r2}, -_u$	$+_{r1}, -_{r2}, 0_u$	$0_{r1}, 0_{r2}, +_u$	$+_{r2}$
Labor Market Competition	$0_{r1}, 0_{r2}, 0_u$	$+_{r1}, 0_{r2}, +_u$	$+_{r1}, 0_{r2}, +_u$	$+_{r1}, 0_{r2}, 0_u$	$-_{r1}, 0_{r2}, -_u$	0_{r2}
Unionization	0_{r2}	0_{r2}	0_{r2}	$-_{r2}$	0_{r2}	$-_{r2}$
New Firm	$+_{r2}$	$+_{r2}$	$+_{r2}$	$+_{r2}$	$+_{r2}$	0_{r2}
Reorganized Firm	0_{r2}	0_{r2}	0_{r2}	$+_{r2}$	0_{r2}	$+_{r2}$
Firm Size	$-_{r1}, 0_{r2}, -_u$	$-_{r1}, 0_{r2}, -_u$	$-_{r1}, 0_{r2}, -_u$	$-_{r1}, -_{r2}, -_u$	$+_{r1}, 0_{r2}, +_u$	0_{r2}

Note: The subscripts r1, r2, and u refer to the Russian registry, Russian survey, and Ukrainian registry, respectively. The excess job reallocation results from the Russian and Ukrainian registries come from Brown and Earle (2002), and the remainder of the registry results are calculations done here using the same sample. The job reallocation, excess job reallocation, employment growth, and churning results from the Russian survey come from Brown and Earle (2003). The Russian survey job creation and job destruction results are calculations done here using the same sample. The +’s and -’s are significant at the 5 percent level, with the exception of excess job reallocation, for which we are unable to calculate a significance level.

Table 4
Determinants of Employment Growth
in Small Startup Firms in Romania

	Employment Growth	
	OLS	Fixed Effects
Financial:		
1 Year Lagged Loan Amount	0.034 (2.28)	0.072 (3.11)
Number of Fiscal Facilities	0.047 (2.18)	0.081 (1.91)
Entrepreneurs' Characteristics:		
Experience in Other Industry	0.044 (1.69)	-0.002 (-0.01)
Age	-0.023 (-2.33)	0.031 (0.72)
Age ²	0.000 (2.02)	-0.000 (-0.97)
Education:		
High School	-0.004 (0.11)	-0.008 (-0.03)
University	0.027 (0.66)	0.245 (0.43)
Foreign	-0.207 (-0.42)	0.999 (1.68)
Female	-0.025 (-0.82)	-0.284 (-1.24)
Workers' Education:		
High School	0.000 (1.47)	
University	-0.000 (-0.33)	
Technical Assistance Number	0.039 (0.90)	-0.021 (-0.31)
<i>N</i>		1031
<i>R</i> ²	0.100	0.185

Note: Results from Brown, Earle, and Lup (2004). T statistics based on firm-clustered standard errors are in parentheses. Though not reported here, the fixed effects regressions include the firm's age, dummies for acquisitions and spin-offs, two size-category dummies, year dummies, and employment growth in the firm's industry country. Besides these variables, the OLS regressions also include the population of the municipality, a dummy for reorganized firms, six sector dummies, and five regional dummies. $R^2 = R^2$ -within for fixed-effects regressions.

Table 5
Estimated Effects of Privatization on Multifactor Productivity

	Hungary	Romania	Russia	Ukraine
<i>Private</i>	0.222** (0.023)	0.250** (0.024)	-0.047** (0.016)	0.044* (0.019)
R ² -within	0.649	0.693	0.707	0.600
N	21,977	21,461	213,447	57,600

Note: These results come from Brown, Earle, and Telegdy (2004a). They are Cobb-Douglas production function estimations. Ln capital (*k*) and labor (*l*) are interacted with ten industry dummies; average coefficients are shown. Firm fixed effects and full sets of unrestricted industry-year dummies are also included. Private = 1 if the firm is majority private at end of year t-1. Ever Private = 1 if the firm is private in any year. Standard errors (corrected for clustering) shown in parentheses. ** = significant at 1-percent level.

Table 6
Estimated Effects of Foreign and Domestic Privatization

	Hungary	Romania	Russia	Ukraine
MFP				
<i>Foreign</i>	0.529** (0.050)	0.400** (0.094)	0.400** (0.154)	0.408** (0.158)
<i>Domestic</i>	0.187** (0.023)	0.241** (0.024)	-0.048** (0.016)	0.044* (0.020)
N	21,976	21,461	213,447	56,892
EMP				
<i>Foreign</i>	0.374** (0.073)	0.342** (0.092)	0.112 (0.070)	0.206* (0.099)
<i>Domestic</i>	-0.049 (0.035)	0.197** (0.029)	-0.015 (0.010)	0.011 (0.013)
N	22,781	23,350	230,545	62,339
WAGE				
<i>Foreign</i>	0.275** (0.030)	0.212** (0.055)	-0.309 (0.176)	0.227* (0.101)
<i>Domestic</i>	0.019 (0.015)	-0.050** (0.012)	-0.073** (0.011)	-0.080** (0.011)
N	21,798	20,107	169,478	56,102

Note: These results come from Brown, Earle, and Telegdy (2004a, 2004b). Foreign = 1 if the majority of the firm's shares are owned by foreigners in year t-1. Domestic = 1 if the firm was private in year t-1 but not majority-owned by foreigners. Otherwise, the definitions are the same as in Table 5. Standard errors (corrected for clustering) shown in parentheses. ** = significant at 1-percent level, and * = significant at 5-percent level.

Table 7
Effects of Ownership on Job and Worker Flows

	Job Creation	Job Destruction	Job Reallocation	Excess Job Reallocation	Employment Growth	<i>Churning Flows</i>
Domestic Private Dummy	$+_h, +_r, 0_{r1}, +_u$	$0_h, 0_r, +_{r1}, 0_u$	$0_h, 0_r, +_{r1}, 0_u$		$+_h, +_r, -_{r1}, 0_u$	
Foreign Private Dummy	$0_h, 0_r, 0_{r1}, 0_u$	$0_h, 0_r, -_{r1}, 0_u$	$0_h, 0_r, -_{r1}, 0_u$		$0_h, 0_r, +_{r1}, 0_u$	
Private Dummy				$+_{r1}, +_u$		
Private Share	$-_{r2}$	0_{r2}	0_{r2}	$-_{r2}$	0_{r2}	0_{r2}
Worker Share	$-_{r2}$	0_{r2}	0_{r2}	$-_{r2}$	0_{r2}	0_{r2}
Manager Share	0_{r2}	0_{r2}	0_{r2}	$+_{r2}$	0_{r2}	$+_{r2}$
Dispersed Outsider Share	$-_{r2}$	0_{r2}	0_{r2}	$-_{r2}$	0_{r2}	$+_{r2}$
Domestic Blockholder Share	0_{r2}	0_{r2}	0_{r2}	$-_{r2}$	0_{r2}	0_{r2}
Foreign Blockholder Share	0_{r2}	0_{r2}	$-_{r2}$	$-_{r2}$	0_{r2}	$-_{r2}$

Note: The subscripts h, r, r1, r2, and u refer to the Hungarian registry, Romanian registry, Russian registry, Russian survey, and Ukrainian registry respectively. The excess job reallocation results from the Russian and Ukrainian registries come from Brown and Earle (2002), and the remainder of the registry results are calculations done here using the same sample. The job reallocation, excess job reallocation, employment growth, and churning results from the Russian survey come from Brown and Earle (2003). The Russian survey job creation and job destruction results are calculations done here using the same sample. The +’s and –’s are significant at the 5 percent level, with the exception of excess job reallocation, for which we are unable to calculate a significance level.

Figure 1
Job Flow Rates in Russian and Ukrainian Manufacturing

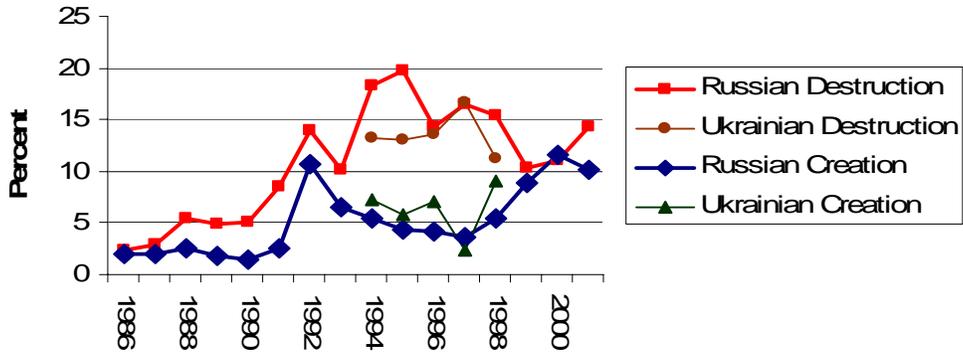


Figure 2
Worker Flows in Russian Industry

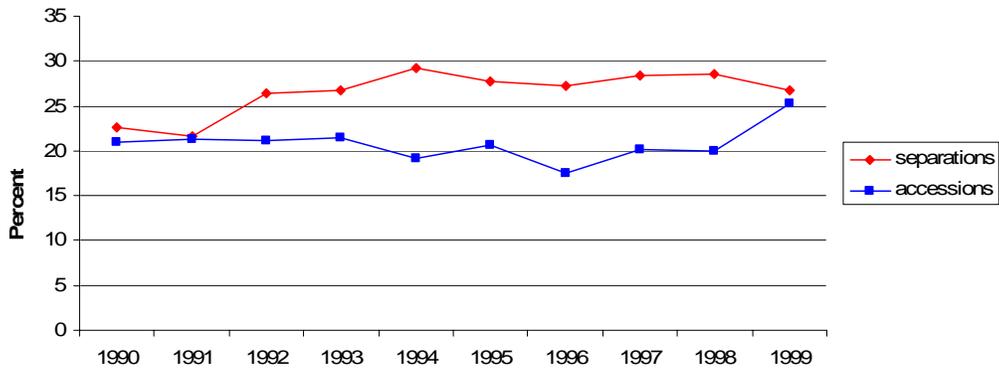


Figure 3
Relationship Between Job and Worker Flows

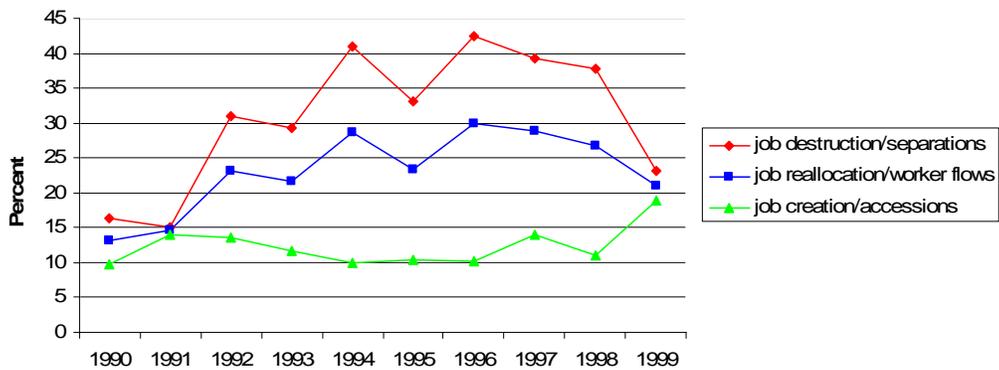


Figure 4
Contribution of Reallocation to Productivity Growth

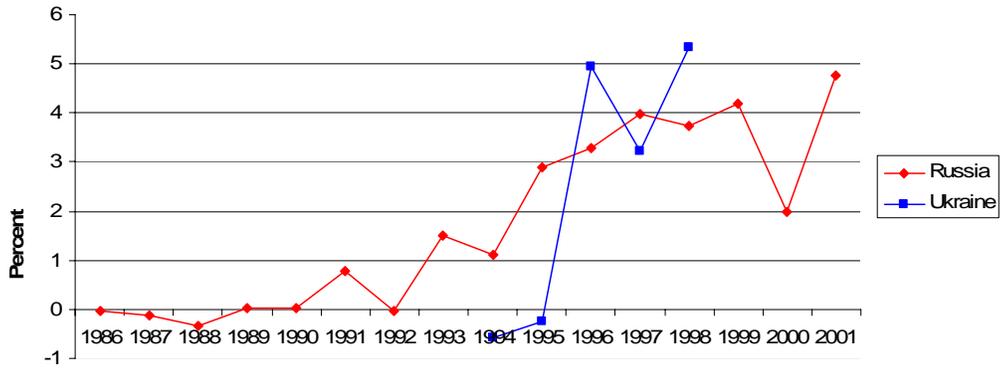


Figure 5
Labor Productivity of Entrants Relative to Surviving Incumbents

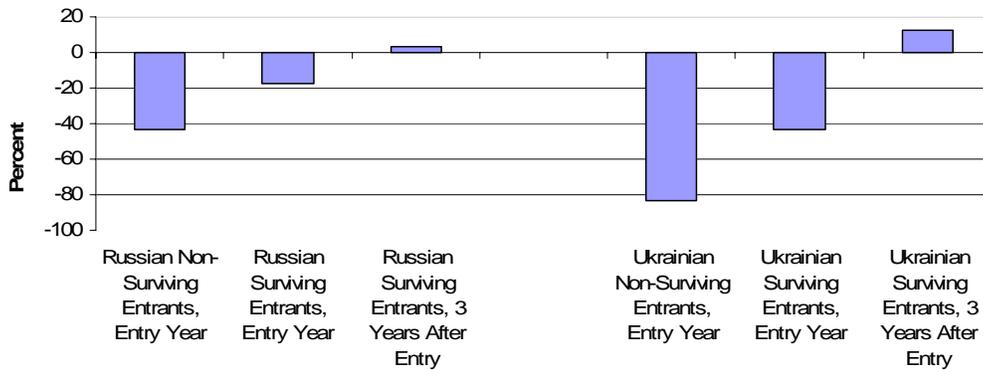


Figure 6
Dynamics of Foreign Privatization Effects

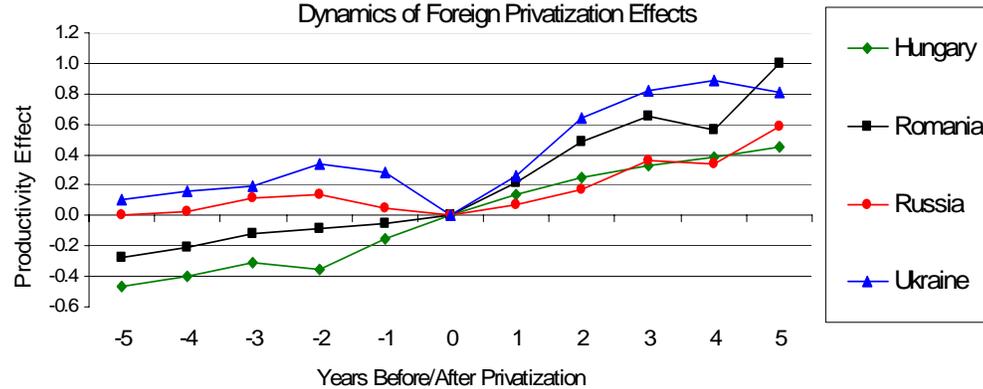


Figure 7
Dynamics of Domestic Privatization Effects

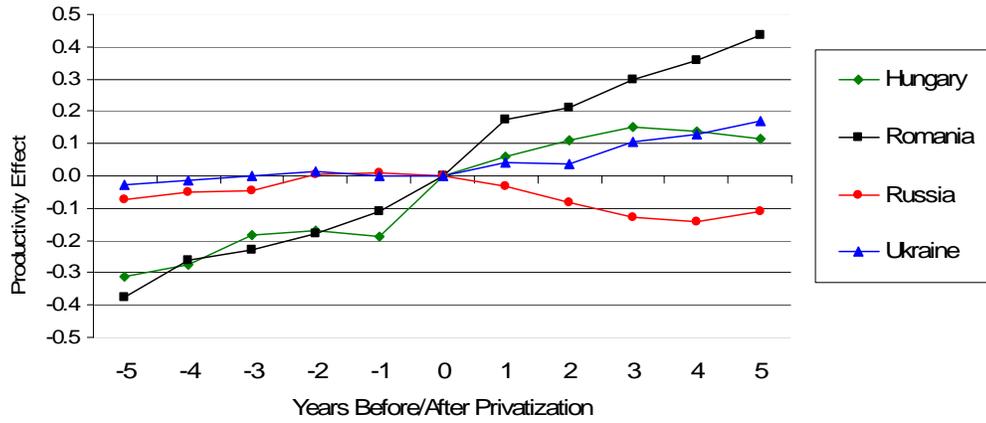


Figure 8
Dynamics of Foreign Privatization Effects on Employment

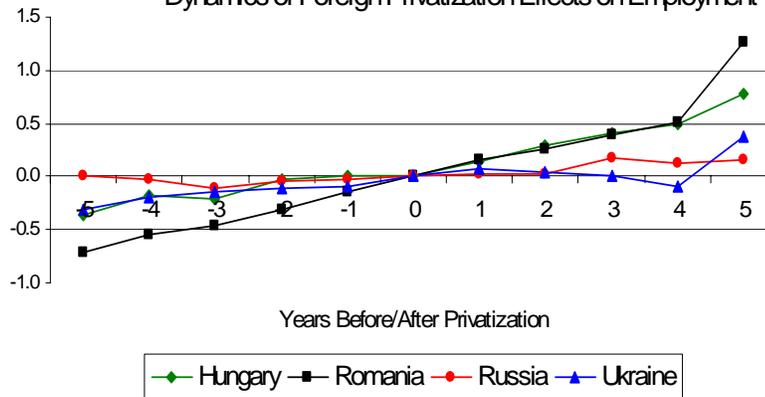


Figure 9
Dynamics of Foreign Privatization Effects on Wages

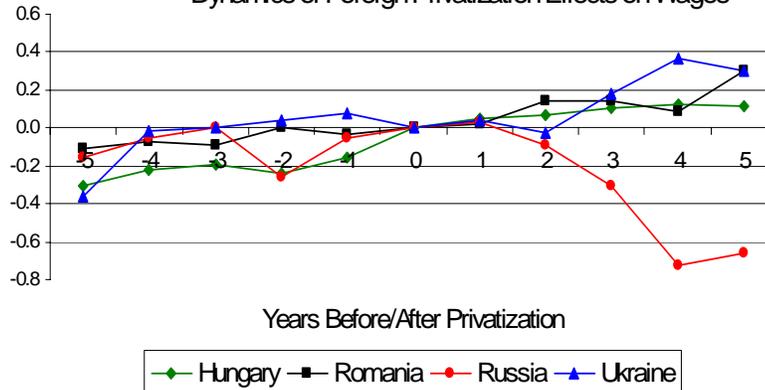


Figure 10
Dynamics of Domestic Privatization Effects on Employment

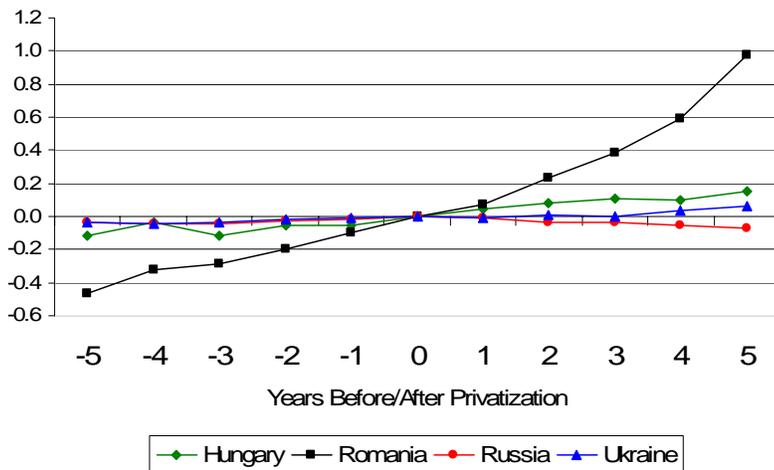


Figure 11
Dynamics of Domestic Privatization Effects on Wages

