DETERMINANTS OF JOB CREATION AND JOB DESTRUCTION IN UKRAINE

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Abstract

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In the present research we analyze gross job flows in Ukraine over the years 1997-2000 using firm-level data for nearly 250 Ukrainian enterprises. We find that job destruction dominates job creation for all the years, covered by the analysis, and that job creation tends to decrease over time, while job destruction is permanently high and does not have decreasing tendency. We find that job creation and job destruction in Ukraine are heterogeneous: simultaneous job creation and job destruction are found within narrowly defined regional, industrial, ownership type and firm size sectors. We find, that job creation and job destruction are largely determined by ownership type and firm size: higher job creation rates are observed for *de novo* private and small firms. We did not find substantial difference between employment behavior of state-owned and privatized firms.

We analyze determinants of the firm-level employment growth using panel data fixed effects estimation technique. We test for age, size, industrial sector and ownership effects on the firm level employment growth and find that all these effects are present in our data. Results suggest, that there exists negative effect from firm age and size on the firm-level employment growth, and that belonging to heavy industry negatively influences firm growth, while belonging to light industry is associated with higher firm growth. We also found that *de novo* private ownership positively influences firm-level employment growth, while privatized and state ownership have no significant effect. However, after we defined narrower ownership categories for privatized enterprises according to dominant owner, we find negative effect from being outsider-owned on the firm-level employment growth.

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GLOSSARY

***De novo* private firm.** Newly established private firm that never was state-owned

Gibrat's Law. Firm's growth is independent of it's age and size.

Gross job flows Net employment changes in the economy resulting from expansion and contraction of the firms

Insiders. Manages and employees of a firm.

Job creation rate. Net employment change in the expanding firms of the sector as a proportion of the total employment in the sector.

Job destruction. Net employment change in the contracting firms of the sector as a proportion of the total employment in the sector.

Job reallocation rate. Sum of job creation rate and job destruction rate.

Outsiders. Investors that provide finance to a particular firm but not manager or employees of the firm

INTRODUCTION

Flexibility of the labor market is an indicator of the efficient market economy. Davis and Haltiwanger (1998) found that in most Western economies on average 1 out of 10 jobs is created and 1 out of 10 jobs is destroyed per year. They reported that a large part of worker reallocation (30 - 50%) is explained by the reallocation of employment opportunities. Caballero and Hammour (1994) brought in the Schumpeterian term "*creative destruction*" to name the process of reallocation of factors of production from the contracting economic units to those which expand. Most easily process of creative destruction can be observed through the reallocation of labor as a factor of production. Accounting for the large fraction of worker reallocation, job creation in one sector of the economy and job destruction in another one create a basis for resource reallocation and move economy to a more efficient structure.

Last times the interest from labor and industrial organization economists to gross job flows increased (e.g. Davis and Haltiwanger, 1992). Job creation and job destruction rates are likely to vary across time depending on the state of economy. High rates of job creation and destruction mean large number of workers to shuffle between jobs and higher incidence of unemployment. Higher rates of job creation mean that it is easier for displaced workers to find a new job while higher rates of job destruction mean that less job opportunities are open for unemployed. Higher rates of job creation and job destruction signal about high heterogeneity in the employment behavior across firms and sectors of the economy. Thus, job creation and job destruction analysis bring

to light firm-level employment dynamics, which is usually hidden by the aggregate unemployment statistics.

Creation and destruction of jobs makes workers to move from one job to another, to switch between employment and joblessness. Of course, supply – side factors such as education, working experience, health, etc also determine labor market state of individual. Nevertheless, job reallocation on the firm level is one of the most decisive forces behind the reallocation activity of the workers. Evidence for this may be stagnant unemployment in the transition economies, which can not be explained by the supply-side factors. In the beginning of the reforms these countries implemented policies which were intended to increase job search efforts of the unemployed, such as decrease in unemployment benefits and time, during which unemployment benefits are paid. However, these policies did not turn out to be efficient in rising rates of outflow from unemployment in these countries (Boeri, 1996). Thus, one can conclude, that it is weak labor demand, which mostly determines labor market flows in transition economies, and gross job flows analysis, being the specific aspect of the demand-side analysis, can help to explain fluctuations occurring on this side of the labor market.

The last decade has seen the use of the gross job flows approach for the investigation of labor market dynamics and restructuring in transitional economies. A number of studies on job creation and job destruction were done for CEE countries such as Poland (Konings, Lehmann and Shaffer, 1991), Slovenia (Bojnec and Konings, 1999), Estonia (Haltiwanger and Vodopivec, 1999), Russia (Acquisti and Lehmann, 2000). In these studies authors found very high job destruction rates and very low job creation rates in all the sectors

of the economy at the beginning of transition, with subsequent increase of job creation rates, which can be the evidence of the restructuring process.

According to Pohl *et al.* (1997) enterprise restructuring during the transition to market economy "…is a complex process of changes at the firm level to support profitability under conditions of a continuously changing economic environment, technological progress and competition from other market participants." Roland (2001) defines two types of restructuring: defensive and strategic. Changes in market environment impose defensive restructuring on almost all enterprises in the economy. Defensive restructuring consists of short-run adjustment measures of the enterprise: postponing production of outputs not demanded by the market, reducing cost by sale or lease of the surplus assets and by decreasing excess labor, decreasing real wages, etc. Strategic restructuring is intended to improve long-run performance of the enterprise, strategically restructuring enterprises develop new business strategies and new product, make organizational changes, invest into new production lines and technologies, etc. Usually result of strategic restructuring is an increase in output and new job creation. So, patterns of gross job flows observed for transitional economies of CEE suggest that defensive restructuring is more likely to take place on the early stage of transition and strategic restructuring is attributable to the more advanced transition stage.

Transition-specific restructuring results in the reallocation of productive factors, including labor, from old inefficient sectors of the economy to emerging more efficient ones. Up to now no study of resource reallocation patterns was made with respect to the Ukrainian economy. Ukraine, comparing to the CEE economies, proceeds slowly with economic reforms. Privatization

was carried out on the basis of the voucher scheme, and results were positive only for small-scaled enterprises. New private sector is still underdeveloped because of the limited availability of domestic and foreign capital, excessive tax burden, etc. In such slowly developing economy as the Ukrainian one patterns of gross job flows and determinants of firm growth may be different from those of more successfully reforming transitional economies and we investigate, if this is so, in the present research.

Furthermore, last years spurred a number of researches whose purpose was to find determinants of enterprise performance in the transition economy, with emphasis on ownership effects on performance. (e.g.Djankov (1990), Frydman et. al.(1997), Estrin &Rosevear (1999)). Because the capital data in the transition economies are often unreliable, and it is impossible to calculate total factor productivity, authors used various proxies for performance, such as sales per worker, assets sales ((Diankov, 1999), growth rates of revenues, revenue per employee (Frydman et. al.(1997)), sales, employment, barter (Estrin &Rosevear (1999)). Firm employment growth can also be a good proxy for enterprise performance because, on one hand, employment data is more reliable than sales and profit indicators derived from the balance sheets of the enterprises and, on the other, employment dynamics reflect how well the enterprise performs. For new private enterprises in transition economies positive employment growth is an indicator of good performance, while for privatized enterprises negative employment growth suggests better performance, because means defensive restructuring, whose important component is decrease of superfluous employment inherited from the Soviet times. However, if privatized enterprises are already engaged in strategic restructuring, they are expected to grow and increase employment. Therefore,

analysis of job creation and job destruction which we perform using enterprise-level data may be treated as alternative way of evaluation of enterprise performance in Ukraine.

In this paper we address a number of issues concerning gross job flows dynamics in Ukraine. We asses the magnitudes of job creation and job destruction and investigate differences in magnitudes of job creation and job destruction across sectors and regions. We also investigate the persistence of the job flows and show which fraction of jobs that were created (destroyed) by a firm in a particular year are preserved (are not reopened) in the subsequent years. Our primary question of interest is what is the ownership effect on the firm employment dynamics in Ukraine. The paper is organized as follows. In Chapter 1 a literature review is presented. Chapter 2 deals with the economic and institutional changes, which took place in Ukraine during the transition period. Chapter 3 presents the methodology of gross job flows analysis and the results of this analysis for Ukraine. In chapter 4 determinants of the firm employment growth in Ukraine are investigated, while chapter 5 concludes.

Chapter 1

JOB CREATION AND DESTRUCTION IN ECONOMIC LITERATURE

A lot of literature in economics lays down theoretical and empirical basis for analysis of job creation and job destruction patterns in the economy. In this literature two approaches can be distinguished, one of which is empirical Industrial Organization approach, which focuses on the entry and exit of firms and investigates the progress of entrants. The main conclusion of authors writing under this approach (e.g. Evans (1987), Dunne, Roberts, Samuelson, (1989 b)), is that for developed economies (such as US and UK) a major proportion of new entrants is situated on the bottom end of the size distribution. These new small firms remain on the market for only a short time, because either entrants perform successfully and grow or exit the market short after the establishment date.

In Evans(1987) tests of alternative theories of the firm growth were made. The author studied the relationship between the firm growth, size and age of the firm. He successfully tested the validity of the theory of firm growth, developed by the Jovanovic(1982), who stated that with size and age firm growth rates decline because of the learning effect, versus Gibrat's theory, which assumed no relationship between these variables.

Dunne, Roberts and Samuelson (1989b) examined the patters of employment growth for a sample of US plants in the period of 1967-1979. They found that size, age and ownership type significantly influence job creation and job

destruction patterns, in particular, as size and the age of the firms went up, on average growth rates of the firms declined. They also found that growth rate declined with the size of the enterprises owned by a single plant firm, but increased with the size of the multiplant firm.

Another approach is more focused on the labor market flows. Dunne, Roberts and Samuleson (1989 a) investigated the importance of firms establishment, expansion, contraction and exiting as a determinants for the net and gross changes in US manufacturing employment over 1963-82 period. Davis and Haltiwanger (1992) measured heterogeneity of firm-level employment changes in the US manufacturing sector over the 1972 to 1986 period in terms of job creation and job destruction and rates of employment reallocation. In contrast to previous studies the authors concentrated on gross job flows rather than on the gross workers flows. This approach allowed determining whether gross workers flows were the result of layoffs and recalls or were driven by the destruction and creation of employment opportunities. The authors found that decrease of employment opportunities in one firm and increase in another one was one of the most important reasons that workers change employers or move between employment and unemployment.

This new approach to the investigation of labor market dynamics spurred a number of studies in most OECD countries. It was found that job creation is positively correlated with net employment changes and job destruction is negatively correlated. Garibaldi (1995) investigated behavior of the job flows in developed economies (USA, Canada, UK) depending on the stage of the business cycle and found that job destruction reacts more to the cycle than job creation thus making job reallocation rate to move countercyclically. He also

found that cyclical variation of job reallocation rate is correlated with a measure of employment protection legislation. In countries where legislation contains a lot (a few) of job security provisions, job destruction is less (more) volatile than job creation.

Davis and Haltiwanger (1996) made a study of the patterns of job creation and job destruction in the US economy for the period from 1972 to 1988. Authors found that job creation and job destruction patterns varied among industries and regions for the US during last decades and depended on the age and size of the firms. The authors traced out the impact of governmental subsidies to advance technology products and to development of alternative energy sources on job creation and job destruction patterns as well as the impact of preferential tax reliefs, protection from foreign competition, regularity exemptions for small business and other instruments of governmental economy regulation.

Konings, Lehmann and Shaffer (1996) applied methodology developed for gross job flows analysis in western economies for economies of transition. They employed this technique to investigate how changing institutional environment affects the performance of the transitional economy with respect to restructuring. Research was carried out in Poland to investigate performance of the firms during the period of 1988-1991 years. The main finding of the authors was that since the beginning of transition in Poland job destruction and reallocation rates increased both for private sector and for state-owned and privatized sectors, while job creation rates increased significantly for small private firms. But even controlling for size, industry and region, authors found, that newly created domestic private firms had higher employment growth rates.

Bilsen and Konings (1998) used the gross job flows approach to investigate the growth process and restructuring in Romania, Bulgaria and Hungary. Authors found that *de novo* private firms were the most dynamic in terms of job creation and after controlling for the size and life-cycle effect considerably outperformed state-owned and privatized enterprises. Authors also found that state-owned and privatized had the same firm-level employment growth.

Bojnec and Konings (1999) investigated gross job flows for the Slovenia and found that job destruction was higher than job creation rate for the early periods of transition with subsequent decrease of the job destruction rate. They also found that *de novo* private firms were more dynamic with respect the job creation than state-owned and privatized firms and that de-novo firms had higher employment growth rate than traditional firms had.

Haltiwanger and Vodopivec (1999) investigated gross worker and job flows in Estonia. They found that at the beginning of the reforms in Estonia job destruction rates were higher than job creation rates with subsequent converging of the both rates to the values similar to those of Western developed economies. They also found that private enterprises are accounted for almost all job creation and that small enterprises contributed disproportionately to the job creation all over the sample under investigation.

Acquisti and Lehmann (2000) investigated patterns of job creation and job destruction in the Russian Federation, using firm-level data. Authors found that in Russia small firms were the most successful in creating jobs while medium and large firms mostly destroyed them. Authors also found that privatized firms did not perform better with respect to job creation rates than

state-owned firms and that new private firms were more successful in creating new jobs than state owned and privatized ones.

Faggio and Konings (2001) analyzed gross job flows in five transition countries, Poland, Estonia, Slovenia, Bulgaria and Romania. They found, that at the early stages of transition job destruction dominates job creation, but at more advanced stages job creation catches job destruction up. The authors found that for economies in mature stages of transition aggregate job flows patterns are similar to those of Western economies. They also proposed the "excess job reallocation rate" to be used as a measure for restructuring and found that it is positively correlated with the positive employment growth in the sector. Testing for ownership and size effects on job creation and job destruction at the firm level the authors found that foreign ownership is positively correlated with firm growth and size effect was negative.

The main findings about job creation and job destruction patterns in transition economies are summarized in the table 1.

Table 1. Patterns of gross job flows in some transitional economies.

Author	Country	Period	Finding
Konings, Lehmann and Shaffer (1996)	Poland	1988-1991	-Since the beginning of transition job destruction and reallocation rates increased for private and for state sectors -job creation rates increased for small private firms.
Bilsen and Konings (1998)	Romania, Bulgaria and Hungary.	1991-1996	- the highest job creation was observed for *de novo* private firms - no difference in employment behavior between state-owned and privatized enterprises
Bojnec and Konings (1999) , Haltiwanger and Vodopivec (1999) Faggio and Konings (2001)	Slovenia Estonia Poland, Estonia, Slovenia, Bulgaria., Romania	1991-1995 1992-1995 1994-1997	-job destruction was higher than job creation rate for the early periods of transition -job destruction rate subsequently decreased -*de novo* private firms and foreign-owned firms contributed significantly to job creation
Acquisti and Lehmann (2000)	Russian Federation	1997	-job creation concentrated in small enterprises -job destruction concentrated in large and medium enterprises -no difference in employment behavior between state-owned and privatized enterprises

From all these findings some common features of gross job flows in transition economy can be derived. Particularly, the early period of transition is characterized by high job destruction and low job creation, while at a more advanced stage of transition job creation rates increase and approach job destruction rates in magnitude. Eventually both rates converge to some moderate values, comparable to those of western economies. Moreover, there is a significant ownership effect on gross job flows in transition economies. For example, *de novo* private and small firms are likely to contribute more to job creation than state-owned, privatized enterprises and large, while it is

reasonable to expect no difference between job creation and destruction rates of state-owned and privatized enterprises.

Chapter 2

TRANSITION IN UKRAINE

2.1 Aggregate economic trends

After getting independence, Ukraine started its transition to a market economy. It turned out to be a difficult process, since Ukraine inherited from the Soviet times all negative signs of the command-administrative system. Fischer (1994) proposed, that for the transition to be successful, former soviet economy has to undertake fast reforms, including trade liberalization, price liberalization, macroeconomic stabilization and privatization. Ukraine as well as other members of former Soviet Union (FSU) started transition process later than countries of Central and Eastern Europe. Political reforms started in 1991, price liberalization was achieved only in 1994, and gradual enterprise restructuring started in 1995 (Roland, 2001). Despite several attempts to implement radical transitional reforms just after obtaining independence in 1991, actually transition in Ukraine began only in 1994-1995 because of the political constraints. Moreover, as in majority of countries which started transition later, reforms in Ukraine slowed down eventually. So, after 10 years of independence Ukraine still lags far behind a lot of other successful transitional economies of FSU and CEE. It achieved a fragile macroeconomic stabilization with partially liberalized prices and trade, however, reforms stalled and efficient market institutions still need to be developed.

We start with description of the aggregate Ukrainian economic trends. Figure A1 of Appendix gives dynamics of Ukrainian output for 1992-2000. In the first

years after independence Ukraine experienced a huge 60% decline in total output which did not recover in subsequent years. According to the official State Statistic Committee (DerzhKomStat) as well as Ukrainian-European Policy and Legal Advice Centre (UEPLAC) indexes, Ukraine's real GDP over the period 1990-1999 demonstrated permanently negative annual changes, and only in the second half of 1999 and at the beginning of 2000 the Ukrainian economy started to recover. According to UEPLAC, in the first quarter of 2000 industrial output grew by 9.7% and by the end of 2000 industrial output in Ukraine grew by 13% and total output by 6%. The increase came from export oriented and processing industries. Leaders are chemicals, pharmaceuticals, food and wood processing industries, ferrous metals industry. This output dynamics already suggest that during almost all the years of Ukrainian transition job destruction dominated job creation, and results, which we obtained from the micro-level data set and which will be discussed later, confirm this assertion.

Figure A2 of Appendix gives disaggregated by industries output dynamics for the years 1990-2000. Although all the sectors experienced severe output decline, its magnitudes were different for different industries. Maximum decline is observed in machine building industry (about 90%), while in power industry the lowest decline occurred (40%). For steel and food industries even output growth is observed during last three years.

The Ukrainian industry started to experience considerable structural changes since 1993. The share of such industries like power, fuel and metallurgy in industrial output increased from 38% to 64%. However, the share of manufacturing industries, such as machine building and light industry

considerably decreased (UEPLAC). This suggests that job creation and job destruction behavior may be heterogeneous across industries.

1.2 Labor market developments

Now we turn to the description of recent developments of the labor market of Ukraine and policies employed by the government to facilitate job reallocation in the economy. In Soviet times government policies were mainly devoted to job creation, despite the fact that new jobs did not always possess economic value and labor was not always used efficiently. Wage, educational and social policies were set so as to preserve a stable labor force. Because of this Ukraine inherited very low open unemployment. However, after the break-up of the Soviet Union, production and trade links were disrupted, and hard budget constraints started to be imposed on the enterprises, which made a reform of the labor market in Ukraine imperative.

To stimulate reallocation of labor, the Law on Employment of the Population was adopted in 1991. The Law on Employment gave all types of economic activity, including entrepreneurial and self-employment, the same legal base. It defined and legalized unemployment (until that time unemployment was a criminal offence). According to the Law unemployed is working-age, able-bodied person, which is out of employment for reasons that do not depend on him, because of absence of a suitable work, is registered at a local employment exchange, is looking for paid employment, and is ready to start employment within two weeks. These provisions of the Law on Employment of the Population created legal foundations for job and worker reallocation in the economy , for made it possible for enterprises to lay off workers and for

workers to quit enterprises and look for a more preferable positions. In the Aghion-Blanchard (1994) model of resource reallocation during transition importance of unemployment as an intermediate stage between working in the state and private sectors is underlined. According to the model, unemployment caused by job destruction in the old inefficient state sector pushes real wages down. As a result, labor demand in newly emerging private sector increases and *de novo* firms begin to absorb labor dispelled from the state enterprises. So, having legalized unemployment, the Law created foundations for job creation in the expanding sectors of the economy as well.

The Law stated ways of regulation and stimulation of employment, tasks and responsibilities of the National employment Service, and the ways of financing of employment policies. The state employment policy is declared such as to promote employment and combat unemployment. Government stated some measures which are crucial for this, such as specific investment and tax policies, stimulation of labor mobility, entrepreneurship, creation of small businesses, etc. The Law required central and regional authorities to design national and regional employment programs for the economic development and restructuring, prevention of unemployment, training and retraining of workers, providing social protection for the unemployed and their families. Law stated also that the job creation by the enterprises would be subsidized by the state.

Unfortunately, the Law could not help to change transition scenario of labor market development, for after introducing economic reforms in 1992 Ukraine started to experience unemployment. However, the dynamics of registered unemployment in Ukraine (according to official Ukrainian statistics) was different from those of other countries undergoing transition. For that

countries unemployment reached more than 10% in the first years after the beginning of economic transformation. However, registered unemployment in Ukraine was small and increased slowly, with registered unemployment of 1% in September 1996 and maximum registered unemployment of 5,2% in the fourth quarter of 2000. (figure A3 of the Appendix).

So, Ukrainian figures for registered unemployment do not correspond to the output decline during the transition years. The possible explanation for this inconsistency may be inability of official statistic to capture the magnitude the hidden unemployment, number of people on the unpaid leaves, which makes total unemployment understated. Moreover, due to low unemployment benefits and excessively bureaucratized procedure to become eligible to it, many job seekers simply decide not to turn to the employment centers for assistance, thus not being registered as unemployed. Furthermore, according to official statistics, unemployment rate is the ratio of the number of unemployed (which registered an the State unemployment service) to the labor force (number of people able to work within specified age category). Employment level calculated by Derzhkomstat is based on the companies' payroll sheets, and includes all workers working at the enterprise on permanent or temporary basis and receiving salary or wage. It does not include self-employment persons, unpaid working and is subject to double counting (UEPLAC). According to the International Labor Organization (ILO), the labor force (or currently active population) includes all people who is employed (having paid employment or self-employment) or unemployed (individuals of working age without work, who seek works and are available for work currently). In order to overcome drawbacks of official Ukrainian statistics from 1995 Derzhkomstat started to conduct Labor Force Survey. In Labor Force Survey

unemployment rate is measured in accordance with the ILO methodology. According to the estimates of Labor Force Surveys, unemployment progressed in Ukraine rather quickly, from 5,6 % in 1995 till 11.5 % in the first half of 2000, which makes unemployment dynamics in Ukraine more consistent with those of other transitional countries.

However, even these corrected unemployment figures do not match huge output decline experienced, which suggests substantial labor hoarding on the Ukrainian enterprises and, consequently, labor productivity decline. Figure 4 of the Appendix gives dynamics of labor productivity in Ukraine for 1992-1999. We observe almost 65% decline of productivity index by the year 1996 and slight increase in subsequent years. This dynamics suggest extensive labor hoarding in the early years of the reforms which eventually turned to job destruction and defensive restructuring.

So, labor market in Ukraine adjusts differently from countries of Central and Eastern Europe (CEE) to the changes the transition brings in. OECD (1995) admitted very high flexibility of real wages in Russia as well as widespread phenomenon of the wage arrears on the Russian enterprises, emerged short after the transition began. It is very likely that these features of the Russian labor market are also present in Ukrainian labor market because both economies have a lot in common. A number of studies on labor market adjustment in Russia (e.g. Earl and Sabirianova, 1999) investigated the phenomenon of wage arrears in Russia as a way for a firm to reduce costs in a face of the output decline. They underlined that wage arrears in Russia were not confined to particular industries or regions, but were widespread in almost all sectors, industries and types of enterprises. Accumulation of the wage

arrears allowed enterprises not to shed surplus labor much, but rather to hoard it. So, widespread wage arrears, which are present in Ukrainian economy as well, can be one of the explanations of slow decline of the employment in Ukraine and appearance of a large number of the labor hoarded and labor on the unpaid leaves in Ukrainian enterprises. Accumulation of the wage arrears slows down the process of labor reallocation, for significantly influence workers' decisions regarding employment switch. For example, some workers do not quit from the owing enterprise because of the never be paid wages accumulated in arrears in the case of quit. On the other hand, wage arrears are so widespread, that outside employment opportunities for workers do not guarantee them timely payments, therefore their incentives to look for alternative job are undermined.

2.3 Private sector developments

Privatization of state-owned enterprises is an important institutional change which could substantially affect patterns of labor reallocation in the economy. Private ownership is usually associated with better performance, therefore it is likely that privatized enterprises would on first hand involve in the defensive restructuring, whose key element is the shedding of surplus labor. So, we may expect privatized enterprises to be one of the sources of job destruction in the economy on early stages of transition. On the other hand, eventually private ownership makes privatized enterprises engage themselves in strategic restructuring, therefore on the later stages of transition privatized enterprises are expected to grow and to create job opportunities.

Process of ownership transformation in Ukraine can be divided into four periods: pre-privatization stage (1988-1992), individual technologies stage (1992-1994), mass privatization stage (1995-1998), stage of the individual money privatization (since 1999) (The Ukrainian Economic Monitor, May 2000). At the first stage legal foundations for private business undertaking were created, and privatization of the enterprises which were previously leased by workers has begun. On the second stage, 11 000 enterprises majority large and middle ones were privatized. Notwithstanding with the privatization practice in other countries, where the prior objects of privatization were trade and services enterprises, at this stage of privatization in Ukraine big industrial enterprises and monopolies were the main category of enterprises to be privatized. At this stage privatization was carried out through non-competitive methods like leasing with further enterprise buying out by managers or employees at very cheap prices. At the third stage, mass privatization for privatization certificates was carried out. During this stage about 50000 enterprises were privatized among which were 40400 small enterprises. Upon adopting of several President's Decrees on privatization more than 90% of trade, services and public catering enterprises were privatized during this period. By the fourth stage, which started in 1999, privatization of large and middle enterprises was completed. Only on the fourth stage the State Property Fund abandoned practice of non-money privatization thus hoping to attract investment to the enterprises. Since 1992, when the first Ukrainian laws on privatization were adopted, 73349 enterprises have been privatized. By the end of 2000 share of non-state industrial enterprises in total number of enterprises constituted 85,7% and in total output - 75,7% (UEPLAC). Among the leaders of privatization are Donetsk, Lviv, Dnipropetrovsk, Kharkiv and Odessa regions

of Ukraine and Kiev city. The dominant way the ownership transfer was performed was non-competitive one. By 01.01.99 share of enterprises privatized by the non-competitive way among total number of enterprises privatized made 62,5%. Employees are dominant owners of the large number of medium and large enterprises. One of the reasons for this is that during second and third stages of privatization Parliament of Ukraine was very active in giving priority to employee privatization. A number of legislative acts on privatization granted lessees a priority rights in purchasing the leased object.

Contrary to expectations, privatization of Ukrainian state enterprises did not yield apparent improvements in enterprises' performance and employment decisions. Currently several studies show that ownership transformation in Ukraine *per se* did not have considerable effect on revenues, profits or employment and that it is necessary to take into account the nature of the ultimate owner of the enterprises while evaluating effects of privatization. (e.g Akimova, Shwodiauer, (2000), Estrin, Rosevear (1999, 2001)).

New private sector development is core issue of labor reallocation in the economy, for de novo enterprises entering previously underrepresented sectors of the economy such as trade, services, certain consumer goods are invoked to absorb labor shed from the restructuring state-owned and privatized enterprises. Unfortunately, new private sector is still underdeveloped in Ukraine. Although official Ukrainian statistics does not provide performance indexes for de novo private enterprises, it does so for small enterprises. Utilizing EBRD finding that 95% of new starts-up in transitional economies constitute small and medium enterprises (EBRD, 1999), we quote some

performance statistics for small[1] enterprises, assuming this type of enterprises be well representative for new private sector in Ukraine. According to Derzhkomstat estimates, in 1999 there were 40 small enterprises per 10000 of population in Ukraine, totaling to 197121 enterprises. Although number of small enterprises has been increasing since the beginning of transition (in 1991 there were only 9 small enterprises per 10000 of population totaling to 47084), small sector development in Ukraine shows modest progress in comparison to transitional countries of CEE. For example, in Poland in 1999 there were 35 small enterprises per 1000 of population, 25 in Estonia and 12 in Latvia (Yacoub ans Senchuk, 2000). Share of small enterprises in total employment in the economy constitutes only 7.7% in Ukraine.

It is not surprising that privatization did not yield apparent improvements in the enterprise performance in Ukraine and new private sector expands very slowly. Market distortions like barter, shadow economy, rent seeking, etc. widespread in the Ukrainian economy as well as weak legislative enforcement of investor rights discourage competition and disable efficient governance. As for the slowness of new private sector development, lack of external financing (Shvydko, 2001) and excessive tax burden can be reasonable explanations for it. Therefore, we may conclude that proposed by Blanchard scenario of transition economy restructuring with shrinking old state sector and quickly emerging private one which actively absorbs released resources is not valid for Ukraine.

[1] According to the Law of Ukraine on Enterprises in Ukraine (1991), small enterprises are enterprises, which employ up to 200 workers in manufacturing and construction, up to 100 workers in science, up to 50 in other manufacturing sectors, up to 25 is services and up to 15 in trade.

Chapter 3

JOB CREATION AND DESTRUCTION IN UKRAINE

3.1 Gross job flows: basic definitions

Expansion of employment in some firms and decrease in another is the major driving force behind the net employment change in the economy. This assertion is especially valid for transition economies, where policies, intended to increase job search efforts of the unemployed, failed to decrease unemployment, caused by huge and abrupt output decline. Employment flows which result from this dynamic behavior of firms are called gross job flows. Gross job flows are calculated from firm-level employment data and give more information on employment dynamics in an economy, than aggregated macro-level employment data, because allow to trace employment changes within narrowly defined sectors of the economy as well as labor reallocation between these sectors.

We calculate gross job flows from the firm-level employment changes over the year. Davis and Haltiwanger (1996) suggest, that decrease and increase in the firm-level employment over the year should be interpreted as "…changes in desired employment level rather than as changes in the stock of unfilled positions", because it is likely that vacancy which arises at the enterprise as a result of the worker's quit will be refilled in a short period and will not affect firm's annual net employment change. Unfortunately, gross job flows accounting fails to measure job reallocation within firm, thus understating true job reallocation. But assuming, that firms in our data sample do not comprise

subdivisions which operate in different sectors, we may discard this methodological drawback.

According to the literature (Davis and Haltiwanger, 1992), gross job flows variables are defined as follows:

Job creation rate (pos_t) = $\sum_{i \in I^+} (n_{it} - n_{it-1}) / \sum_{i \in I} x_{it}$ (1)

where

I is the set of all firms of the relevant sector,

I^+ is the set of all expanding firms in the sector,

n_{it} is employment in firm i at time t ,

$x_{it} = (n_{it} + n_{it-1}) / 2$ (2)

is the average employment in firm i over the two periods.

Job creation rate measures the increase in employment in expanding firms as a proportion of the total employment in the sector.

Job destruction rate (neg_t) = $\left| \sum_{i \in I^-} (n_{it} - n_{it-1}) / \sum_{i \in I} x_{it} \right|$ (3)

where

I^- is the set of all contracting firms in the sector and the rest of the variables are the same as in *pos*. Job destruction rate measures the decrease in employment in the contrasting firms expressed as proportion of the total employment.

Net employment growth rate (*net*) = $pos - neg$, (4)

This measure is symmetric and lies in the interval (-2, 2).

Gross job reallocation rate (*gross*) = $pos + neg$. (5)

This measure gives jobs turnover, however, in situations, when *neg* is high and *pos* is equal zero (or visa verse) , this measure gives deceptive picture of high gross job reallocation rate when reallocation, in fact, didn't happen. Therefore alternative measure for the gross job reallocation, *excess*, can be used.

Exess job reallocation rate ($excess$) = $gross - |net|$ (6)

This measure accounts for the job creation and job destruction rates above those required by the net employment change and represents simultaneous creation and destruction of jobs . Faggio and Konings (2001) propose, that this measure can be interpreted as index of restructuring. They suggest, that if it is the case that resources are being reallocated from declining to expanding firms, sectors, regions, it can be expected that restructuring and excess job reallocation are positively correlated. Thus, high excess job reallocation rates is the evidence of the turbulence of the resource reallocation process and a signal of restructuring.

There is a wide-spread opinion, that during transition major part of resource reallocation occurs between sectors or regions (if the assumption about perfect labor mobility is valid for a particular economy) . However, Faggio and Koning (2001) have shown that for the countries they studied (Poland, Estonia, Slovenia, Bulgaria and Romania) it was not the case, and major part of resource reallocation took place within rather then between regions and sectors. To find out which kind of resource reallocation takes place in Ukraine, we follow Davis and Haltiwanger (1999) and decompose the excess job reallocation rate into between and within components. Equation (6) gives this decomposition of excess job reallocation rate:

$$exess_t = \left(\sum_{s \subset S} |net_{s,t}| - |net_t| \right) + \sum_{s \subset S} excess_{s,t} \quad (7)$$

Here the first term on the right hand-side is *between* component of the excess job reallocation, which is just a summation across sectors, S, (if we are interested in decomposition of excess job reallocation rate for between and

within *sector* components) of the deviations of absolute net employment change for every sector from the absolute net employment change of the overall economy. The second term on the right-hand side is *within* component of the *excess* job reallocation rate, which is just an across sectors sum of the *excess* job reallocation rates for each sector. In the same way we may decompose excess job reallocation rate to find the *between* and *within* ownership type, region, firm size job reallocation rate components.

It is also important that newly created jobs are of long duration and not transitory jobs. In order to investigate if new jobs possess persistent nature we calculate rates of persistence of job creation and job destruction. According to Davis (1996), persistence of job creation (destruction) in period t is defined as a fraction of jobs created (destroyed) in period that continue to exist (fail to reappear) through period $t+j$ at the same firm. The calculation of persistence of job created in the expanding firm at time t is done according to the following rule:

1) if $n_{i,t+j} \geq n_{i,t}$, then all of the jobs created at a firm in period t are said to be present in $t+j$;
2) if $n_{i,t+j} \leq n_{i,t}$, then none of the jobs created at a firm in period t are present in $t+j$;
3) If $n_{i,t+j} \in [n_{i,t-1}, n_{it}]$, then $(n_{i,t+j} - n_{i,t-1})$ of the new jobs created at a firm in t are present in $t+j$.

According to this rule, let $\delta_{it}(j)$ be the number of jobs newly created at firm i in period t that are present in period $t+j$, and let $P_{it}^{c}(j) = \min\langle \delta_{it}(1), \delta_{it}(2), ... \delta_{it}(j) \rangle$, that is P_{it}^{c} equals the number of jobs

newly created at firm *i* in period *t* that remain present in all periods from *t+1* through *t+j*. Summing $P_{it}(j)$ over expanding firms at time *t* and dividing by gross job creation rate at *t*, yields the *j*-period persistence rate for new jobs created at *t*:

$$p_t^c(j) = \sum_{i \in I^+} \frac{P_{it}^c(j)}{C_t} \qquad (8)$$

where C_t is number of jobs created at *t*

Analogously, the *j*-period job destruction persistence rate for jobs destroyed at *t* is given by:

$$p_t^d(j) = \sum_{i \in I^-} \frac{P_{it}^d(j)}{D_t} \quad (9)$$

where Dt is number of jobs destroyed in period t.

3.2 Description of data

The data are based on the firm level-data surveys of more than 250 state-owned, privatized and de-novo private Ukrainian enterprises from the Kyiv, Lviv, Kharkiv and Odessa regions. Data were collected by the International Centre for Policy Studies for the project "Business Opinion Survey". Enterprises included in the sample represent heavy, light, machine building, wood production, construction, food, printing and other industries. Interviews were performed during the period from April 1997 till April 2000. The questionnaire covered basic information about the enterprise and different aspects of firm performance and environment, including sales, ownership type and structure, industrial sector the enterprise belongs to, employment, investment, competitive pressure, etc. (see questionnaire in Appendix).

Unfortunately, in our disposal we have only data on employment, ownership type and structure and industrial sector the enterprise belongs to.

The data have several advantages. First, it contains information on the same enterprises for three-years period and may be treated as a panel data set. Second, it represents de-novo private, privatized and state-owned enterprises, so we have the possibility to analyze employment dynamics for *de novo* private enterprises relative to traditional firms. Third, the data contains information on size and age of the firm as well as sector and region to which the firm belongs, which allows to determine size, age, sector and region effects on the firms employment dynamics. Fourth, along with the information about the total employment of the enterprise data contains information on the number of "workers on floor" (total employment of the enterprise minus number of workers on the forced leaves). Using this data allows us to estimate "workers on the floor" job flows, compare it to those calculated for the total employment and trace how "floor" job flows translate into total job flows.All enterprises in the sample are divided into three ownership categories: state-owned, privatized, *de novo* private. *State-owned* enterprise are those whose capital is more than 50% in the state hands. *Privatized firms* are those, which were in state hands before the transition began, were privatized during the transition leaving less than 50% of property in state hands. *De novo private f*irms are firms, which were private since the time of their establishment. Table 2 gives the sample structure and summary statistics on employment for those three categories for 1997 and 2000. As for 1997, state-owned enterprises are the largest (average employment is 1094), de-novo private enterprises are the smallest (average employment is 165). Privatized enterprises account for the largest employment share in the sample (64%). Noteworthy, is that average

employment and standard deviations of the employment from the mean decreased by 2000 in all the ownership categories, that already suggests job destruction to prevail over job creation in our sample.

Table 2. Description of the sample according to ownership type in 1997 and 2000

Ownership type	Year	Number of firms	Frequency	Total employment	Average employment	Employment share
State-owned	1997	48	0.195	52524	1094.25(2207.95)*	0.33
	2000	41	0.154	31656	772.10(130.27)	0.25
Privatized	1997	173	0.706	101343	585(1243.68)	0.64
	2000	208	0.782	92494	444.68(1029.95)	0.74
De novo private	1997	24	0.098	3757	165.54(294.45)	0.03
	2000	17	0.063	1264	74.35(63.55)	0.01
Total	1997	245	1.000	157624	643.36	1.00
	2000	266	1.000	125414	471.48	1.00

*standard deviations are in brackets

Source: ICPS database, own calculations

We would like to mention that in our study we concentrated on continuing firms only, since the nature of our data does not allow us to interpret entry and exit of firm to and from the sample as entry and exit to and from the economy. However, we believe, that survival bias thus created did not affect significantly main results.

3.3.Job creation and job destruction in Ukraine: results

Table 3 gives measures of gross job flow for Ukraine for the period 1997-2000 calculated for total employment and for workers on the floor (we do not have data on firms' floor employment for 1996, so gross job flows measure for floor employment are given only for the period 1998-2000), and for Poland, Estonia, Slovenia, Bulgaria and Romania, estimated by Faggio and Konings (2001) for 1997.

Table 3. Gross job flow measures for Ukraine and some other transitional countries.

Country/year	POS	NEG	NET	GROSS	EXESS[2]
Ukraine (total)					
1997	0.101	0.212	-0.111	0.313	0.201
1998	0.092	0.195	-0.103	0.288	0.185
1999	0.017	0.336	-0.319	0.353	0.034
2000	0.021	0.133	-0.112	0.155	0.043
Average	0.058	0.219	-0.161	0.277	0.116
Ukraine (floor*)					
1998	0.326	0.165	0.160	0.491	0.330
1999	0.085	0.302	-0.217	0.387	0.170
2000	0.042	0.118	-0.077	0.160	0.083
Average	0.151	0.195	-0.044	0.346	0.194
Poland, 1997	0.030	0.037	0.067	-0.006	0.061
Estonia, 1997	0.093	0.088	0.181	0.060	0.175
Slovenia, 1997	0.033	0.054	0.088	-0.021	0.067

*workers engaged in production. Source: own calculations, Faggio and Konings (2001).

We see, that job flows in Ukraine for the period 1997-2000 are rather turbulent, with high excess job reallocation rate for the earlier period 1997-

[2] We do not discuss variations in EXCESS, because it can be shown that it equals 2*POS in a case of negative NET and 2*NEG in a case of positive NET, so in Ukrainian case, when negative NET is observed for almost all periods and enterprise categories, EXESS is just a linear combination of POS.

1999 both for total and floor employment, which slows down in the later period. Job destruction rate is higher than job creation rates for all the years covered by the analysis for both total and floor employment except for 1998 for "floor" employment. We observe huge drop in job creation rate in 1999, the year of the financial crisis. Actually, for this year the lowest job creation rate and the highest job destruction rate are observed. This gives us a slight indication that job destruction and job creation in Ukraine are very sensitive to negative external shocks, which means that firms react to changing environment quickly by ceasing to create new employment opportunities and downsizing.

We have to admit, that in Ukraine job flows are more turbulent than in states on the more mature stages of transition, for job reallocation rate in Ukraine is higher. While job creation magnitudes are roughly comparable to those of the countries presented in the table, job destruction rate is much higher than that for these countries.

Usually on the earlier stages of transition low rates of job creation and high rates of job destruction are observed, which means that as a result of opening up markets, relaxing labor market regulation, factor prices liberalization, hardening budget constraints, etc traditional firms engage in restructuring, some of them downsize, some exit the market, while employment opportunities in the new sectors remain to be created. On the later stages of transition job creation rate usually increases because traditional firms start to grow after restructuring and new firms enter the market. Subsequently job

However, EXCESS is still useful, because it's decomposition presented in section 3.1can give fractions of job reallocation between sectors and within sectors.

creation, job destruction and job reallocation rates converge to some stable moderate values, close to those found for developed Western economies. For example, in Poland dominance of job destruction in traditional sector was observed in 1988-1991, and job creation caught up job destruction in 1997, in Estonia dominance of job destruction over job creation was observed in 1992-1994 and in 1996 job creation was already dominating job destruction, in Hungary high rates on job destruction were observed in 1992 - 1993 and in 1995 job creation was larger than job destruction. (Konings, Lehmann and Shaffer (1996), Faggio and Konings (2001), Haltiwanger and Vodopivec (1999), Stepanian (1998)). So, our results suggest that Ukraine is still in the early stage of transition, for according to gross job flows rates resource reallocation is far from being completed and destruction prevails in the economy.

Noteworthy is the fact that magnitudes of job destruction we found for Ukraine are higher that those of CEE countries in the early transition years, during which the highest job destruction rates were observed. For example, in Poland job destruction rate in traditional sector was only 0.17 in 1991, in Estonia – 9.2 in 1994, in Hungary – 0.20 in 1993 (Konings, Lehmann and Shaffer (1996), Faggio and Konings (2001), Haltiwanger and Vodopivec (1999), Stepanian (1998)).

In the case of Ukraine we found average annual job destruction rate about 0.22 for the 1997-2000 period which is much higher than above mentioned numbers. This finding suggests that during transition Ukrainian economy experienced deeper structural changes, than economies of CEE. It is understandable, since at the beginning of transition Ukraine's economy was fully integrated into economic system of FSU and characterized by a large

number of large-scale over-manned industrial enterprises, supplying their products to all republics of the Former Soviet Union. Nowadays because of the weak domestic and foreign demand for their products capacities of these large-scale enterprises are underutilized, and restructuring on these enterprises began with widespread labor shedding. Evidently this process takes more time and is more painful in terms of jobs destroyed than it was in CEE transitional economies.

Next we analyze job creation and job destruction by employer characteristics, such as industry, region and ownership type.

Since different sectors of the economy have different market structures, employ different technologies and thus respond to transition shocks differently, we may expect different patterns of aggregate job flows for different industries. In table A1 of Appendix we give aggregate job flow measures for seven sectors, present in our sample: heavy industry, machine building, construction, food, wood, light and printing industries for the period of 1997-2000 for total employment. In table A2 of Appendix the same measures for "floor" employment for the period 1998-2000 are presented.

In the economy subject to negative shocks like the Ukrainian one we observe heterogeneous behavior of sectors in terms of job creation and job destruction for both total and floor employment. Job flows are highly turbulent for all the periods covered by the analysis and for both total and floor employment, and job destruction rate for total employment is generally higher for all the industries. As an exceptions we would like to admit wood and heavy industries, for which we observe positive *net* in 1999. Positive *net* for "floor" employment is observed more often for all the years for different industries,

for example, for machine building, food and printing industries in 1998, for heavy and wood industries in 1999 and for machine building, food and light industry in 2000. These results suggest that firms in all the industries hoard labor and if positive demand fluctuations leading to output expansion occur they engage in the production hoarded labor rather than create employment possibilities for outsiders. However, permanently negative *net* for total employment suggests that firms gradually reduce excessive employment, thus decreasing labor hoarded. *Excess* job reallocation rate varies among industries suggesting that within each sector there exist simultaneous creation and destruction of jobs.

Next we analyze gross job flows on the regional level. Table A3 of Appendix gives gross job flows for total employment for four regions of Ukraine: Lviv, Kiev, Kharkiv, Odessa. We observe large heterogeneity of the job flows across regions, and job destruction prevails over job creation over the entire period covered by the survey. On average Kiev and Odessa regions are the leaders in job creation, while Lviv and Odessa regions are the leaders in job destruction. The average lowest (negative) difference between job creation and job destruction is observed for Kiev region (-0.065), the highest one – for Lviv region(-0.15). This finding is not surprising, for Kiev region is one of the most economically active regions of Ukraine which attract entrepreneurs from all over Ukraine as well as from outside of Ukraine, while Lviv region is less industrially developed western region suffering from output decline and unemployment more severely than other parts of Ukraine.

Our next step is to look at the gross job flows according to ownership type and size of the enterprise. Table A4 of the Appendix gives gross job flows by

ownership type for the period 1998-2000 for total employment. There is a common pattern that holds for all the ownership types studied. Measuring gross job flows for total employment we find that firms of all the ownership types are generally net destroyers of jobs, since negative *net* prevails for all the years covered. The exceptions are *de novo* private enterprises in 1998 and state enterprises in 1999. *De novo* private enterprises have the highest job creation in 1998 and 2000 for total employment (0.20 and 0.072). Privatized enterprises always have the lowest job creation rates and the highest job destruction rates in 1998 and 2000. On average, *de novo* private firms have the highest job creation rate (0.11) and the lowest (negative) difference between job creation and job destruction (-0.062). However, we have to admit that these enterprises also have very high job destruction rates (0.18 in 1998 and 0.228 in 2000, for example), being the most dynamic in terms of job reallocation. Explanation for this could be that these firms, which did not inherit redundant labor, equipment, technology and management from the Soviet times, as most state-owned and privatized enterprises, can be more flexible while searching for the efficient ways and places of production. In the process of this search they actively hire and fire labor, looking for the most productive and best-suited for their current activity workers. High job destruction rates among new private firms might also be explained by the lack of experience of managers of these firms, who sometimes make the wrong decisions facing declining product demand. These decisions then translate into large contractions of employment.

Privatized enterprises on average have the lowest job creation rate, while state enterprises on average have the highest job destruction rate. So, these results are comparable to those for other transitional countries, where *de novo* private enterprises were found to be the most dynamic in terms of job creation, and

state-owned and privatized enterprises were found to contribute mostly to job destruction.

Tables A5 of Appendix gives gross job flows measures for enterprises of different sizes for the period 1998-2000 for total employment. We see that small (0-250 employees) enterprises have on average the highest job creation rate (0.12) and the second lowest (negative) difference between job creation and job destruction (-0.084). However, job destruction rates are also very high for these enterprises for all the years, which could be explained by the fact that among these enterprises much are do novo private. Another explanation for the high job destruction rates for small enterprises is that worker productivity is better observed in a small firm. So, in small firms managers quickly learn productivity of new workers, soon fire low-productive ones and look for a better candidates.

Large (> 1000 employees) enterprises have the lowest job creation rates and the highest job destruction rates in 1998 and 2000 and average job destruction rate is the highest for these enterprises (0.22). They also have the highest (negative) average difference between job creation and job destruction.

Table A6 of the Appendix gives the fraction of the excess job reallocation which occurred between various sectors of the economy. We see, that only very small fraction of excess job reallocation is attributed to between sectors employment shifts. It suggests that the majority of job reallocation between firms took place within a particular sector (industrial, regional, ownership or size sector) in Ukraine in recent years, which is consistent with findings for other transitional economies (e.g. Faggio and Konings, 2001).

3.4 Persistence of job creation and destruction

Now we move to the analysis of persistence of job creation and job destruction. Table A7 of the Appendix gives one- and two-years aggregate rates for job creation and job destruction persistence for total employment. One-year persistence rates are higher than two-years rates, which means that the more time elapses since the moment the jobs were created (destroyed) the smaller fraction of them survives (fails to reappear). This feature of job creation and job destruction is common for transition economies as well as for developed Western ones. It is noteworthy that job creation persistence is lower than job destruction persistence, which means that it is less likely for the newly created jobs to survive over the particular period of time than for destroyed jobs to reappear over the same period of time. This feature of job flows is also found for transitional and Western economies, which means that in some respect job flows in Ukraine are similar to those in other transitional countries and even in western ones. However, the magnitudes of persistence are low compared with those in western economies and even lower than in some transition countries. For example, in Hungary annual average one- and two-years job creation persistence rates for the period 1992-1996 were 0.807 and 0.720 respectively and annual average of one- and two-years job destruction persistence rates over the same period were 0.973 and 0.953 (Stepanian, 1998).

Table A8 of Appendix gives one and two-years job creation and job destruction persistence rates for enterprises of different ownership categories for total employment. One year job creation and job destruction persistence

rates are higher than those for two-year period. One- and two years job creation persistence rates are higher for privatized enterprises (0.77 and 0.52) The smallest one-year job creation and job destruction persistence rates are observed for de-novo private enterprises (0.45 and 0.61).

Table A9 of the Appendix gives one- and two-years job creation and job destruction persistence rates for enterprises of different size categories. Again, we observe one-year persistence rates to be higher than two-years rates. For smaller enterprise job creation one- and two-years persistence rates are less than those of larger enterprises, while one-year job destruction persistence rates do not differ substantially for enterprises of different sizes.

Table A10 of the Appendix gives one- and two-years persistence of job creation and job destruction for different industrial sectors. One-year persistence rates are higher than two-years rates. The highest one- and two years job creation persistence is observed for machine building industry (0.80 and 0.67), and the lowest one for printing (0.22 and 0.17). High persistence rates are also observed for construction and light industries. One- and two-years job destruction persistence rates are higher for heavy industry and printing (0.95, 0.93 and 0.99, 0.98). The lowest one- and two-years job destruction persistence is found for light industry (0.47 and 0.41).

Table A11 of the Appendix gives one-year job creation and job destruction persistence by ownership type for jobs created or destroyed in the period April 1998-April 1999, crisis and just after-crisis period. It is easy to see that job creation persistence is the smallest for de-novo private enterprises (0.32) and smaller than job creation persistence for these enterprises for 1998-1999. So, *de novo* private enterprises destroyed the largest fraction of their jobs, created in

the crisis period. The reason for this may be that de-novo private enterprises turned out to be more vulnerable to the negative external shock and had to adjust quickly to changes in economic environment by laying off excessive labor. However, job destruction persistence rate is also the smallest for *de novo* private enterprises (0.31). It suggests that larger fraction of jobs destroyed by *de novo* private enterprises in 1998-1999 period reappeared on these enterprises in subsequent year. The explanation for this could be again dynamism and flexibility of *de novo* private enterprises, which increased employment just after negative shock subsided and economic environment became more stable.

Table A12 of Appendix gives job creation and job destruction persistence rates for jobs created or destroyed in the period 1998-1999 for the different firm sizes for total employment. It turns out that job creation and job destruction persistence rates are the lowest for small enterprises (0,32 and 0.30). Again, explanation for this could be higher dynamism and vulnerability to the negative external shocks of small enterprises, which in our sample are more likely to be among *de novo* private ones.

In this section we reported gross job flows which are the result of expansion or contraction of all the firms in a sector or region. We found that *de novo* private and small firms perform the best in terms of job creation and contribute more than larger firms and firms of other ownership types to the positive employment growth. Among privatized and state-owned firms we found job destruction prevailing, as well as among the large firms. However, the analysis in this section does not allow us to judge, which factors drive employment dynamics of individual firms. For example, from this analysis we can not say whether relative dynamism of *de novo* private firms in terms of job creation and

prevailing job destruction in state and privatized firms is result of the life-cycle effect, e.g. *de novo* private firms grow faster than traditional firms because they are young new-comers, or found employment dynamics are also driven by ownership effects, e.g. *de novo* private grow faster because ownership type induces better management, so these firms explore profit maximization opportunities more efficiently and expand.

In the same fashion, from this section analysis we can not say, whether job destruction predominating in the privatized enterprises is driven by life cycle-effect only, e.g. these firms being older ones tend to grow slower, or by ownership effect, e.g. private ownership results in more active defensive restructuring, so privatized firms tend to reduce excessive employment inherited from Soviet times more actively than state-owned enterprises.

The same considerations apply to separating size and ownership effects on the job creation and job destruction performance of enterprises of different sizes. The fact, that smaller firms in our sample tend to perform better than larger ones with respect to job creation may be explained by size as well as by ownership effects. On one hand, it is size hypothesis which predicts that smaller firms grow faster than larger ones. On the other, state owned and privatized enterprises, which are usually large, restructure and downsize, while *de novo* private firms, which in our sample are among small firms, being more efficient, grow faster and expand employment.

Therefore in the next section we analyze firm employment behavior in a regression framework, which allows to separate various effects driving employment growth at the individual firm level.

Chapter 4

DETERMINANTS OF FIRM GROWTH IN UKRAINE

4.1.Model specification

Analyzing determinants of the firm growth rate in the market economy, economists posed the question of the dependence of the mean growth rate of the firm on the firm size and age. Numerous studies have confirmed that there exists negative relationship between the firm growth and it's size and age (e.g. Evans, 1987,). Explanation for this is that smaller firms turn out to be more flexible than larger ones. Small firms usually pay lower wages and occupy special product market niches, which allow them to survive at the production scale which is below minimum efficient one. According to the passive learning model developed by Jovanovic (1982), firms do not observed their endowed efficiency level and learn about it through the process of Bayesian updating. The model predicts negative relationship between firm growth and age of the enterprise, given firm's size, and on the size, given it's age. These findings reject Gibrat's law, which says that firm growth rate does not depend on the firm size. So, the western economic literature hypothesis about the firms *i* 's growth is the following:

$$g_i = f(A_i, S_i)$$

where g_i stands for the firm's *i* employment growth rate, and A_i and S_i denote firm's *i* age and employment size respectively. Our purpose is to find determinants of the firm growth in the transition economy like Ukrainian one, therefore, following Konings, Lehmann and Shaffer (1996) we introduced into

usual specification transition- specific effects such as ownership type and control for the industry and regional location. So, we hypothesize that the function of firm's i growth rate looks like this :

$$g_i = f(A_i, S_i, Own_i, Z_i)$$

where A_i and S_i denote firm's *i* age and employment size respectively, Own_i stands for the firm's *i* ownership type, and Z_i denotes a vector of variables, which are exogenous to the firm *i* and may influence it's employment growth, in our case it is industrial sector the firm belongs to and regional location of the firm.

Following Konings, Lehmann and Shaffer (1996) we use the following basic model for the determinants of the firm growth analysis:

$$\mathbf{g}_{it} = \alpha_o + \alpha_1 \ln(SIZE_{it}) + \alpha_2 \ln(AGE_{it}) + \alpha_3 \ln(AGE_{it})^2 + \alpha_4 OWNERSHIP + \alpha_5 \ln(SIZE_{it}) * OWNERSHIP + \alpha_6 \mathbf{d} + u_{it} \quad (10)$$

where $\mathbf{g}_{it} = (n_{it} - n_{it-1}) / x_{it}$ is the firm's i growth rate in the period *t* and $SIZE_{it}$ is firm's i average employment size between periods *t-1* and *t*. We expect negative relationship between firm growth and size due to two reasons: Gibrat's law fails and transition-specific enterprise restructuring, first step in which is to decrease of excessive employment. We also hypothesize that firm growth is a quadratic function of its age. The logic behind this is the following: just after establishment firm does not grow fast because has to adjust to environment, to chose specialization, to accumulate experience. Eventually it explores it's market niche, establishes production and sales procedures and starts to grow faster. However, as the firm becomes more mature, it reaches optimal for its occupation size and it's growth slows down because of the learning effect. Quadratic dependence of growth rate of the firm on it's age was also used by Evans, (1987). OWNERSHIP is the ownership dummy and

$\ln(SIZE_{it})$*OWNERSHIP is the interaction term between ownership and size. This term allows the size effect to differ between enterprises of different ownership type. **d** is a set of variables controlling for industrial sector and region. Industrial and regional variables are introduced into the equation because it is expected that during transition employment dynamics are driven by industrial and regional effects, for firm enter into the previously underrepresented sectors and regions. u_i is a white noise error term. We estimate this model for the firm growth in total employment.

We estimate 3 specifications of the equation (10) in which different ownership categories were defined. In the first simplest model we defined just three ownership categories of enterprises: *de novo* private, privatized, and state-owned being the benchmark category. Formal representation of the first specification in terms of the variables used is given by the equation (11).

$$g = \alpha_0 + \alpha_1 \ln AGE + \alpha_2 (\ln AGE)^2 + \alpha_3 \ln SIZE + \alpha_4 PRIVATE + \alpha_5 PRIV + \\ + \alpha_6 LSPRIVAT + \alpha_7 LSPRIV + \sum_S \alpha_s SECTOR + \sum_R \alpha_r REGION + u \quad (11)$$

where PRIVATE and PRIV are dummy variables for *de novo* private and privatized ownership respectively and *LSPRIVAT* and *LSPRIV* stand for size – *de novo* private ownership and size-privatized ownership interaction terms respectively. *SECTOR* is a set of dummy variables controlling for belonging to heavy, machine building, food, wood, construction, light, printing industries respectively with *other* industries being the omitted category. *REGION* is a set of dummy variables controlling for belonging to Kiev, Odessa, Kharkiv regions respectively with Lviv region being the omitted category. (See table A13 of the Appendix for the more detailed description of variables).

Konings (1997) found significant positive impact of the de novo private ownership on the firm employment growth in the transition economies like Romania, Hungary, Bulgaria, even after age and size effects are taken into account. Thus, we also expect positive effect from *de novo* private ownership in our case. As for the privatized ownership, defensive restructuring hypothesis presupposes negative correlation between privatized ownership dummy variable and the firm employment growth, while strategic restructuring hypothesis predicts positive impact of private ownership on the firm employment growth. Empirical findings to date leave ambiguity as for the impact of privatization on the firm employment behavior. For example, Frydman *et. al* (1997) found positive impact of private ownership on the firm employment in transitional countries, while Konings (1997) did not find any significant effect from privatized ownership on the firm-level employment growth. Estrin and Roosevear (1999, 2001), who studied ownership effect on enterprise performance in Ukraine also found that being privatized *per se* does not significantly affect enterprise performance, including employment behavior. From the analysis of the previous section we can conclude that most enterprises in our sample are still involved in defensive restructuring, shedding excess labor. Assuming, that private ownership incurs better performance, we may expect privatized enterprises to be more active in this respect, and if it is so, negative coefficient at $PRIV$ dummy variable is likely to be obtained.

Estrin and Rosevear (1999, 2001) suggested that the nature of the dominant owner of the enterprise (state, outsider, managers, workers) must be taken into account while analyzing ownership determinants of the enterprise performance. So, we follow this suggestion and estimate the basic model (10) for more narrowly defied ownership categories of privatized enterprises. The

data in hand allow to define such categories, as commercialized firms (state owns >50% of company stock), outsider owned firm (company stock owned by foreigners, citizens of Ukraine, Ukrainian financial and other companies is >50%), insider owned firm (company stock owned of workers and managers is >50%), firm without owner (neither category has>50% of stake). Therefore, we employ our second specification to test for the difference in employment behavior between insider-owned and outsider-owned enterprises. Formal representation of the second specification is given by equation (12):

$$g = \alpha_0 + \alpha_1 \ln AGE + \alpha_2 (\ln AGE)^2 + \alpha_3 \ln SIZE + \alpha_4 PRIVATE + \alpha_5 INSIDER + \alpha_6 OUTSIDER + \alpha_7 COMMERS + \alpha_8 NOOWNER + \alpha_9 LSPRIVAT + \alpha_{10} LSPRIV + + \sum_S \alpha_s SECTOR + \sum_R \alpha_r REGION + u \quad (12)$$

where INSIDER, OUTSIDER, COMMERS, NOOWNER are dummy variables standing for insider-owned, outsider-owned, commercialized and without clear owner ownership categories of privatized enterprises respectively and the rest of the variables are the same as defined in (10) and (11) (see table A13 of the Appendix for the more detailed description of variables). We have to admit that there is no unique view in economic literature whether outsider or insider ownership is associated with better enterprise performance. Some studies found no significant difference in the performance between outsider-owned and insider-owned firms (Earle, 1999, Diankov and Pohl, 1998), some found that better performance is associated with insider ownership (Estrin and Rosevear (1999), 2001), Andreeva, 2000) and a number of studies found better performance of outsider-owned enterprises (Frydman, et.al, 1997, Barberis, et.al, 1997). In Western economies better performance of outsider-owned enterprises is explained by the possibility of owners-outsiders to exercise

effective control over the enterprise performance through the developed capital markets, while for transition economies, and particularly, for Ukraine, it may be not the case. However, outsider ownership effect may be underestimated in these studies, for usually positive effect from privatization to outsider requires long time period to become evident (Havrylyshin and McGettigan, 1999). All these findings suggest ambiguity as for the signs we should expected at coefficients of OUTSIDER and INSIDER dummy variables.

In order to test if manager-owned enterprises perform differently comparing to worker-owned enterprises with respect to employment we use one more (third) specification with the ownership categories defined in the narrowest way. We split insider-owned enterprises for worker-owned and manager-owned ones and estimate equation (10) for the following ownership categories of enterprises: *de novo* private, commercialized (state owns >50% of company stock), outsider owned (company stock owned by of foreigners, citizens of Ukraine, Ukrainian financial and other companies is >50%), manager owned (managers own > 50% of company stock), worker owned (workers own >50% of company stock), insider-owned (insiders own >50%, but separate stocks of workers and managers < 50%), with no owner (neither category owns >50% of the company stock). Formal representation of this specification in terms of the variables use is given by the equation 13:

$$g = \alpha_0 + \alpha_1 \ln AGE + \alpha_2 (\ln AGE)^2 + \alpha_3 \ln SIZE + \alpha_4 PRIVATE + \alpha_5 MANAGER + \\ + \alpha_6 WORKER + \alpha_7 INSOWN + \alpha_8 OUTSIDER + \alpha_9 COMMERS + \alpha_{10} NOOWNER + \\ + \alpha_{11} LSPRIVAT + \alpha_{12} LSPRIV + \sum_S \alpha_s SECTOR + \sum_R \alpha_r REGION + u \quad (13)$$

where MANAGER, WORKER, INSOWN are dummy variables standing for manager-owned, worker-owned and insider-owned (insiders own >50%, but separate stocks of workers and managers < 50) ownership categories of privatized enterprises respectively and the rest of the variables are the same as defined in (10), (11) and (12) (see table A13 of the Appendix for the more detailed description of variables). It is reasonably to expect that worker-owned enterprises will be more inclined to preserve excessive labor, than manager-owned, therefore we expect positive sign of coefficient at WORKER or negative of coefficient at manager dummy variables.

These is an econometric peculiarity we have to keep in mind while estimating the growth equations given in the specifications 8-10 above. In order to explore advantages of our data set we employ panel data estimation technique.

The basic equation for panel data estimation looks like:

$$y_{it} = a_i + \hat{\mathbf{a}}' \mathbf{x}_{it} + \boldsymbol{e}_{it}$$

where *i* stands for the individual and *t* for the time period.

The choice between random effects and fixed effects model largely depends on the assumption about the individual effects α_i behavior. In order for the choice of random effects model to be correct, individual effects α_i must be purely random and uncorrelated with other regressors in the model. If this is not the case, random effects model gives inconsistent estimates and fixed effects model must be used (Greene, 2001). In order to test which model is appropriate in our case we test validity of random effects assumption using Hausman test for the choice of random effects versus fixed effects model (Greene, 2000). The idea of the test is that under hypothesis of no correlation between individual effects and other regressors in the model both OLS in the

fixed effects model and GLS in the random effects model are consistent, but OLS is inefficient. Under the alternative hypothesis OLS in fixed effects model is consistent but GLS in the random effects model is not. The test is based on the difference in the estimates obtained from fixed effects and random effects models. Under the null hypothesis Hausman test statistic is asymptotically distributed as χ^2 with degrees of freedom equal to the number of regressors in the model. In all the three growth equations that we estimate the null about no correlation between individual effects and other regressors in the model is rejected, for Hausman test statistic significantly exceeds it's χ^2 control values for each of the three models. Therefore, we proceed with fixed effects model estimation, although for comparison report results for random effects models as well.

We also suspect potential measurement error problem in the lnSIZE variable, because it is likely that for the purposes of tax evasion total number of employed is misreported by the enterprises (this problem is most likely to occur in privatized and new private enterprises). Presence of the measurement error in the explanatory variable makes it correlate with the error term, that violates assumptions of the Classical Linear Regression Model and renders OLS estimates inconsistent (Greene, 2001). An instrumental variables (IV) estimation must be used in order to overcome this problem. The instrument for the variable with measurement error must be highly correlated with variable instrumented and uncorrelated with the error term.

Following Durbin (1955) and Acquisti and Lehmann (2000) we use rank of the size as an instrument for size. In order to check appropriateness of IV use we again use Hausman test for choice of OLS versus IV estimation. Under the

null hypothesis of this test OLS and IV estimators are both consistent and OLS estimator is efficient relative to IV. Under the alternative hypothesis IV estimator remains consistent, while OLS does not (Greene, 2000). Under the null hypothesis Hausman test statistic is asymptotically distributed as χ^2 with degrees of freedom equal to the number of regressors with measurement error.

The coefficients we obtain from OLS and IV estimations do not discernibly differ in all three specifications, and Hausman χ^2 test statistic returns negative value, suggested interpretation for which is to treat it as zero and not to reject the null (Greene, 2000). Because OLS is more efficient we discuss results obtained from OLS estimation, although report both OLS and IV estimation results.

4.2.Determinants of the firm growth: results

Results of estimation of equations 11-13 are presented in tables 13-15 of the Appendix.. The results suggest that age and size of the firm as well as the ownership type are important determinants of the firm growth in Ukraine. Our hypothesis of firm employment growth being a quadratic function of the firm age turns out to be valid for we obtain positive significant coefficient at lnAGE variable and negative significant coefficient at $(\ln AGE)^2$ variable from all the three specification. This suggests, that after a certain stage of maximum growth there exists negative relationship between firm growth and age. Apart from convention life-cycle effect there can exist transition-specific explanation for the finding that old firms grow slower than younger ones: old firms in Ukraine

(among which a lot of heavy industry plants) often have outdated equipment and old redundant technology. Thus, their outputs can not compete with those of plants with more efficient technologies, which makes these firms downsize.

Negative significant coefficient at the lnSIZE variable, which is also obtained in all the three specifications means that there is negative relationship between firm size and growth, which suggest a rejection of the Gibrat's law. An additional explanation for this result could come from specifics of transition, for hardening of the budget constraints induces firms to lay off surplus labor. The constant term which stays for the state-ownership effect turned out to be insignificant in all the three specifications. So, there is no additional effect on the firm growth rate from the state ownership, which suggests that state-owned firms are not actively involved in defensive restructuring so far.

The negative significant coefficient on the heavy dummy and the positive significant coefficient on the LIGHT dummy, which we obtain from all three spacifications suggest that sectoral effects on employment growth are present in Ukraine, and enterprises from heavy industry are likely to grow slower than enterprises from light industry. If we interpret the HEAVY dummy as a proxy for capital intensive industry and the LIGHT dummy as a proxy for labor intensive industry, our results suggest that capital intensive industries are more likely to decrease employment.

From our first specification presented in equation (11) (Table A14 of the Appendix) we obtain positive significant coefficient at PRIVATE dummy variable. So, even after age and size effects are taken into account, *de novo* private enterprises grow faster than traditional firms. This effect comes solely from private ownership which induces better performance of the firm.

Negative significant coefficient at the LSPRIVATE, size-de novo private ownership interaction term, suggests, that for *de novo* private enterprises size effect is also negative and even more substantial than for traditional enterprises. However, the negative size effect is offset by positive ownership effect for *de novo* private enterprises, so even when the negative size effect is taken into account, *de novo* enterprises grow faster than traditional ones.

The coefficient on the PRIV dummy in the first specification is insignificant as well as at LSPRIV, size-privatized ownership interaction term, which means that privatized ownership *per se* does not have an impact on the enterprise employment growth rate and that more thorough analysis with more narrowly defined ownership categories is required in order to clarify the ownership effect.

Table A15 of Appendix gives results of the estimation of equation (12) for the second ownership classification. Again we find significant positive result for the *de novo* private enterprises and significant negative coefficients at the in the LSPRIVATE, size-de novo private ownership interaction term. We also find that the OUTSIDER dummy has negative significant coefficient, which suggests that enterprises owned by outsiders grow slower (or downsize more rapidly) than enterprises of other ownership types. Since some views connect outsider ownership with better performance, our finding suggests that privatized enterprises in Ukraine still experience defensive restructuring shedding excessive employment and that outsider-owned enterprises are more efficient in this respect.

In table A16 of the Appendix the results of the estimation of growth equation (13) for the ownership categories defined in the narrowest way are presented.

In this equation we tested for the difference between worker ownership and manager ownership impacts on the firm growth. However, coefficients on both WORKER and MANAGER dummies turned out to be insignificant, which suggests that there is no significant difference between employment performance of manager-owned and worker-owned enterprises.

The results obtained from the regression analysis suggest that size and age of the enterprise are important determinants of the firm employment growth, and the negative relationship between the firm growth and size and age of the firm established for Western economies is also valid for Ukraine. Moreover, *de novo* private enterprises are found to be the most important for the positive employment growth in Ukraine, while state and privatized ownership does not incur any significant effect of firms' employment behavior. However, outsider ownership is found to have negative impact on the firm employment growth. The results of regression estimation are consistent with the gross job flows that we reported in the previous section.

CONCLUSIONS

This paper is a first attempt to analyze resource reallocation in Ukrainian economy during transitional period. Its main results can be summarized as follows. First, there exists considerable firm heterogeneity of job destruction and job creation reflected in simultaneous creation and destruction of jobs in enterprises coming from various industries, ownership sectors and size categories. Second, job destruction in Ukraine dominates job creation, since the negative net job reallocation rate is observed almost for all enterprise categories in all of the periods covered by the data. This finding suggests that Ukrainian economy still undergoes the early stage of transition for which defensive restructuring is attributable. Similar behavior of gross job flows was observed in other transitional countries of CEE during the very early years of transition.

Results of our analysis was recently confirmed by the IFC survey of Ukrainian business in 2000, the first year when economic growth was achieved (Yacoub et. al., 2001). They analyzed restructuring activity and performance of 1005 manufacturing Ukrainian companies and found that economic growth of 2000 was not accompanied by the increase in the level of employment. Authors reported that of most of the surveyed enterprises shed labor and that average downsizing amounted to 3% of the total number of employed in the sample.

We also found that de novo private enterprises in our sample create more job as a proportion of their employment than state owned and privatized enterprises. Small enterprises were also found to be the most dynamic in terms of job creation, while large enterprises mostly contributed to job destruction.

These finding are consistent with those obtained by other authors for different transitional economies which underlined the importance of new private and small firms as a major source of job creation during transition. They are also consistent with IFS surveys results, which stated that in 2000 in Ukraine the only enterprises which did not shed labor and even increased employment were telecoms, trade, services and de novo private enterprises. Found importance of small new private enterprises for the positive employment changes in Ukraine brings in a policy implication, according to which government must concentrate on the development of this sector by virtue of creation of favorable institutional and economic environment for these enterprises. Up to now small private sector was underrepresented in the Ukrainian economy (see section 2).

Analyzing determinants of the individual firm growth in a regression framework we found that after age, size, industry and region are controlled for, there exists positive effect of *de novo* private ownership on the firm employment growth. Being privatized *per se* has no significant effect on the firm employment growth, and after more narrow categories of ownership were defined, we found significant negative effect from the outsider ownership on the firm employment growth. In compliance with the life-cycle firm growth theory we found that firm size and firm age have negative effect on the firm's employment growth.

So, gross job flows patterns we found for Ukrainian economy are consistent with those found for other transitional economies on the early stages of transition. Unfortunately, our data set does not allow us to analyze how other transition-specific factors such as competition, trade orientation effects,

management quality, etc. influence gross job flows patterns in Ukraine. Because of data limitations we can not investigate impact of job reallocation patterns on labor productivity in corresponding enterprises as well. It would also be interesting to investigate directions of the worker flows in Ukraine and match them with job flows in order to study which fraction total of worker flows in Ukraine job flows account for. All these issues constitute the agenda for future research.

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