Vedran Šošić

Regulation and Flexibility of the Croatian Labour Market

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Global Development Network Southeast Europe

Vedran Šošic
Croatian National Bank
Trg hrvatskih velikana 3
Zagreb
Tel.: +385-1-4564615
Fax.:+385-1-4564784
E-mail: vsosic@hnb.hr

Regulation and flexibility of the Croatian labor market

Summary

The Croatian Labor Code was significantly reformed in 2003 as a result of extensive negotiations lasting about two years. Proponents of the reform emphasized the supposed rigidity of the labor market, resulting from restrictive employment protection legislation, as a main rationale for the reform. Critics believed that the labor market is much more flexible than often thought due to inadequate enforcement of legislation.

This study aims to assess the level of labor market dynamics by constructing disaggregated indicators of job and worker flows, according to different types of enterprises and workers. Job and worker flows reveal that the overall degree of flexibility is not below that observed in other transition countries as employers learned to increasingly use flexible contracts. However, the findings confirm a strong dualism in the Croatian labor market. While labor market regulation did not significantly inhibit flexibility in the new private sector, it seems that regulation may have slowed down the process of restructuring and shedding labor in the state and newly privatized sectors. Also, as employers in the *de novo* private sector increasingly relied on short-term temporary contracts, it seems that incentives for engaging informal labor diminished. Therefore, the reform of regulation is likely to foster employment restructuring in state and newly privatized sectors, but cannot be expected to facilitate more flexibility in the *de novo* private sector.

Introduction

A debate on the optimal form of labor market legislation developed in Croatia during the 2001-2003 period. The source of the debate has been government's intention to reform allegedly rigid labor market regulation and bring it more in line with regulation in other transition countries. However, it seems that the degree of labor market flexibility has not been properly addressed as protracted discussion brought to light remarkably little evidence on the actual level of Croatian labor market flexibility. Rare reports came mostly from foreign and international organizations backing the reform. The process of reform finally ended during summer 2003 with the introduction of the new Labor Code, which significantly eased regulation. This paper looks at some indicators brought up in the discussion, seeks to assess the level of labor market flexibility in more detail and compares it with available indicators for other transition countries.

The process of labor legislation reform in Croatia, the rationale for the reform as well as the outcome of the process is outlined in the first part of the paper. The second part of the paper examines the concept of labor market flexibility and establishes the link between some specific types of flexibility and labor market flows. The third part presents disaggregated data on patterns of worker flows and underlying job reallocation between different firms. This section also addresses the question of whether Croatian labor market really exhibits significantly lower degree of flexibility than other transition countries and which segments of the labor market are more flexible than the others. Finally, a conclusion on the scope of labor market adjustment and possible impact of regulation is made.

The Reform of Croatian labor legislation

Croatia has recently conducted a comprehensive reform of its Labor Code. Previous amendments to the Labor Code date back to 2001 and 1995, but it was not until 2003 that the reform process seriously gathered pace. The process of negotiations surrounding the most recent reform lasted about two years and finally ended in July 2003 with the introduction of the new Labor Code. Although both trade unions and

employers associations participating in the negotiations process publicly expressed their discontent with the final result, no one took serious action to prevent the law from coming into force.

The change of the Labor Code was substantial. It transformed Croatia from one of the European countries with the most stringent labor market regulation, as measured by EPL (Employment protection legislation) index[1], to a country with an EPL index close to the EU average. Changes in labor legislation have caused a 23% decrease of EPL index, from 3.59 to 2.76. More flexibility was introduced in all three major components of the EPL index, permanent employment, temporary employment and collective dismissals, yet the introduction of temporary work agencies had the strongest influence on overall change of the Croatian EPL index. Early versions of the Labor Code reform included changes that would have reduced the EPL index to 2.25, below the averages of EU and transition countries, but the negotiation process among social partners restricted the scope of reforms in the fields of regular employment and fixed-term contracts. Therefore, as a final result of the reform, employment protection features in the new Labor Code were not reduced as much as the government initially suggested. Croatia still has a bit more heavily regulated labor market than the average of EU and transition countries (Biondic and Matkovic, 2003).

The relaxation of the EPL was accompanied by certain government concessions in the form of increased level and duration of unemployment benefits. This is not surprising since the basic rationale for EPL is to provide insurance against reduction in income associated with job loss. Such insurance in an explicit form would be subject to moral hazard and adverse selection problems, which makes it impossible to offer insurance under reasonable premia. Therefore, governments usually provide EPL and unemployment insurance to resolve such problems. In line with this observation, available evidence suggests the existence of a trade-off between EPL and the level of unemployment insurance among EU member countries. Some offer higher unemployment insurance benefits, while others engage in more strict provision of

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[1] EPL index measures different procedures, costs, restrictions and periods required for the dismissal of employees. It is calculated as a weighted mean of 22 different indicators. Some of these indicators are numerically expressed within the law (such as severance pay and notice period), while others are qualitative in nature and have to be quantified according to the specified methodology (for detail on the

EPL (Young, 2003). This view implies that some countries with high levels of EPL might try to substitute decreases in EPL with increases in unemployment insurance benefits. The new trade-off between EPL and unemployment benefits may prove to be more efficient than the old as it may facilitate labor market adjustment. The profile of the reform conducted in Croatia, more or less complies with this pattern since both the coverage and total spending on unemployment insurance in Croatia were fairly low prior to the reform, while the EPL level was high. Unemployment insurance benefits on average amounted to one quarter of the average wage and the share of unemployment benefit recipients (coverage ratio) was never higher than 20% of registered unemployment[2].

Foreign and international organizations, such as the World Bank[3] and USAID, provided much of the intellectual support for introducing more flexibility into the labor market during the negotiations process. Although the government presented some scattered evidence on the impact of EPL and its reform on the labor market to trade unions prior to the beginning of the negotiations, the government did not present any coherent document to the public on the reasons to reform the Labor code. Therefore, the two reports mentioned above can be considered as the only articulated explanations of the necessity of implementing Labor Code reform in Croatia.

The report by USAID (Lowther, 2003) does not assess the degree of flexibility of the Croatian labor market and its impact on labor market outcomes, but it rather focuses on the general reasons for introducing more flexibility. It focuses on specific social benefits arising from a more flexible labor market, such as higher productivity and better international competitiveness of domestic firms as well as higher rate of economic growth with beneficial effects on employment and wages in the medium

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calculation of the EPL index see OECD, 1997). Nevertheless, some important limitations of the EPL index have to be acknowledged when interpreting the data.

[2] It has to be acknowledged that registered unemployment was 40% -50% higher than survey unemployment due to various other benefits such as health insurance, subsidized public transportation, subsidized kindergarten and education costs and lower court fees.

[3] In addition to analytical assistance, World Bank included Labor Code reform as one of the requirements for the release of the second part of the Structural adjustment loan, amounting to USD 100 million (and the IMF supported the reform as well by including it as one of the structural benchmarks in the stand-by arrangement, but the IMF didn't trouble the government after it repeatedly broke the deadlines for completion of the reform), which gave an additional push to the reform. However, trade unions felt it as an attempt to exhort the reform in a specific form and repeatedly asked

term. Also, inclusion of marginal groups, such as women with children and older workers, into the labor force and better alignment of work and personal interests were emphasized in the report. The report also acknowledges that there are costs for workers arising from introduction of more flexibility into the labor market in the form of higher unemployment risk. In addition, the report considers the roles of interested parties in promotion of flexibility and suggests reduction of government regulation accompanied by more active involvement of trade unions and employers associations in the form of collective bargaining.

The definition of flexibility adopted in the Lowther report has been widely used. The report describes flexibility as the ability of a firm and its employees to: 1) adjust the level and timing of labor inputs in response to changes in demand, 2) vary wage levels according to productivity and/or profitability, and 3) change workers' tasks in response to changes in demand (Lowther, 2003). Flexibility defined in this way has four specific forms: time flexibility, flexible (or atypical) employment, flexibility of pay and work organization flexibility. However, as it is not an easy task to assess the actual level of flexibility according to this definition, since there is no reference to measurement of any component of flexibility in the Croatian labor market.

A recent World Bank report (Rutkowski, 2003) provided another piece of expert assistance to the Labor Code reform[4]. In that report, problems of low employment and high unemployment in Croatia are attributed to poor job creation that falls short of job destruction. Moreover, Rutkowski (2003) finds evidence that both the job creation rate and the job turnover rate in Croatia, which he uses to approximate labor market flexibility, are significantly lower than corresponding rates in either other transition countries of the Central and Eastern Europe or in the mature market economies. This feature of the Croatian labor market was supposedly caused by one of the highest EPL levels in Europe (as documented by Biondic, et al, 2002), which is in line with theoretical predictions of EPL effects. However, it has to be noted that the definition

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the government to confirm that it was not acting under pressure from those organizations to introduce new provisions into the Labor Code.

[4] The paper by Rutkowski (2003) does not constitute a separate report but it was written as a part of a Country economic memorandum by the World Bank, which also includes chapters on other important topic such as trade issues, macroeconomic and financial sector issues, reform of the agricultural sector etc.

of labor market flexibility as a sufficiently high job turnover rate differs from the definition of flexibility in the Lowther report.

The connection between a high level of EPL and a low job turnover rate in Croatia is largely based on circumstantial evidence and Rutkowski does not explore it in detail. The report still asserts that scaling-back of the EPL should facilitate increasing the job turnover rate and reducing unemployment. However, the final conclusion of the report does not seem entirely warranted. First of all, empirical research does not confirm with certainty the theoretical link between EPL and job turnover, as will later be elaborated at greater length. Furthermore, even theoretical models of EPL effects suggest that a high level of EPL reduces employment variability, but the impact on average level of employment is considered to be ambiguous (Young, 2003). This is the case because a reduction in the level of EPL has two opposing effects. First, it increases the incidence of unemployment. Second, it reduces the average duration of unemployment as it increases the outflow from unemployment into employment. Therefore, reduction of EPL level leads to a fall in unemployment only if the second effect prevails (OECD, 1997). Nevertheless, an increase in job creation and turnover, regardless of whether it reduces the level of unemployment, may seem a worthwhile reform goal. I deal with this in more detail in the next section.

The main criticisms of the reform rested on the argument that the law was poorly implemented in practice and therefore diagnoses of labor market impacts were misguided. Trade unions opposed the change because, in their view, employers did not always adhere to the letter of the law as they managed to avoid enforcement. Of course, this is not a firm counter-argument to the reform, as an overarching regulation may be a major motivation to employ workers informally, but it suggests that there may be more forces at work and that the Croatian labor market could prove to be more flexible than expected.

Flexibility and labor market flows

According to Monastiriotis (2003), labor market flexibility refers to the extent to which labor market forces determine labor market outcomes, or the absence of any factors entering the labor market other than supply and demand. This approach looks at flexibility as an outcome, which can be measured, rather than some unrealized potential. However, labor market flexibility is neither uniform nor homogeneous. In line with this notion as well as the discussion above of the studies assessing the flexibility of the Croatian labor market, labor market flexibility can be decomposed in different ways. One logical ways is along two axes: numerical versus functional and internal versus external flexibility. This decomposition gives four different types of flexibility: internal numerical flexibility (adjustability of labor inputs already employed by the firm – working hours, working time, leave and holidays), external numerical flexibility (adjustability of labor intake from the external labor market), internal functional flexibility (ability to improve efficiency by reorganizing the methods of production and labor content) and finally external functional flexibility (ability to externalize or diversify parts of production through sub-contracting). These categories overlap to some extent with the approach employed by Lowther as well as with the indicators Rutkowski used. Monastiriotis prefers to take a somewhat wider perspective encompassing three different broad domains of flexibility: production function flexibility, labor costs flexibility and supply side flexibility, which further collapse into smaller sub-domains.

Table 1 Types of labor market flexibility

Labor market flexibility						
Production-function		Labor-Costs			Supply - side	
		Wage costs (pay)				
Flex. in labor input	Flex. in work content	Determination of reservation wages	Determination of average wages	Flex. in non-wage costs	Labor mobility	Flex. in skills acquisition

Source: Monastiriotis (2003)

There are many possible impediments to flexibility, defined in this manner. EPL and other regulations are not the only forces shaping labor market flexibility, but they are

prominent in practice. Also, regulations are more likely to affect particular dimensions of flexibility, such as numerical flexibility or flexibility in labor input and labor mobility. Therefore, it is possible for the labor market to retain a certain level of flexibility regardless of increased regulation due to compensating movements in other areas and conversely, more flexible regulation may not to result in the expected increases in overall flexibility. For example, Abraham and Houseman (1993) find that adjustment of the employment level to a fall in demand is much slower in Belgium and Germany than in the United States, but adjustment in the hours of work is similar, which means that internal flexibility almost fully compensates for the lack of external flexibility. However, it is also possible that different restrictions sometimes reinforce each other. For instance, stricter firing regulation is likely to increase insider power of employees and hence reduce wage flexibility (Rutkowski, 2003).

Two reports backing the reform of the Croatian Labor Code argue decisively that reform is necessary in order to enhance labor market flexibility. However, as can be seen from the discussion above, there is no agreement on the proper way to define labor market flexibility, let alone to measure it. Moreover, although some of the effects arising from relaxation of EPL have been touched upon in both reports, the discussion from the literature on the overall balance has not been adequately covered. There are some potential benefits of EPL that have to be taken into the account when considering its impact on labor market. The first is the reduction of uninsurable risk, which is the standard reason for the introduction and support of the EPL. In addition to this, EPL may encourage human capital investment by making the relationship between employer and employee more secure. This should have beneficial effects on productivity. EPL also internalizes part of the social costs arising from worker dismissals (OECD, 1999).

On the other side, as was properly addressed in the report by Rutkowski (2003), rigid labor market regulation is often blamed for increasing unemployment and decreasing employment in transition countries as well as in Western European countries that have enacted such regulation. However, some authors have taken position that increasing unemployment is not the most costly feature of EPL. Aghion and Howitt (1994) suggest a relationship between job creation, job destruction, and productivity growth. They model a process of creative destruction in which job turnover leads to labor

productivity increases. The logic of their theoretical model suggests that firms engaging in restructuring destroy low productivity jobs and create high productivity ones. Therefore, a positive correlation between productivity growth and job turnover, facilitated by low level of EPL, might be expected.

To the extent that productivity growth results from the entry of new firms and the experimentation they introduce, the most harmful effect of EPL may not be on job turnover between existing firms, but rather on entry and exit of firms. Scarpetta, Hemmings, Tressel and Jaejoon (2002) report that shifts in market shares of operating firms influence productivity only modestly, while entry and exit of firms can account for 20% to 40% of total productivity growth. Their empirical analysis confirms that EPL has a strong effect on market access of small and medium-sized firms, which indirectly affects productivity growth. Although there are no similar studies performed in transition countries, intuition would suggest that both of these effects would be particularly harmful in a transition economy needing rapid reallocation of jobs and workers away from the old, inefficient sectors.

A high degree of job reallocation may also have some negative effects, at least in the short run, in terms of worker displacement and earnings losses, but the aggregate and long-run benefits are likely to compensate the individual costs (Faggio and Konings, 2003). Having all this in mind, there are several good reasons to focus on labor market flows or external numerical flexibility in order to assess the impact of EPL on labor market flexibility[5]. First of all, given the theoretical background, the assumption that job and worker flows may capture the impact of labor market regulations such as EPL on labor market adjustment seems acceptable. Theoretical models are mostly concerned with the impact of EPL on job flows, but it is clear that job turnover also affects worker turnover. Although there are supply-side reasons, such as job-shopping, human capital acquisition, career progression and events that affect preferences regarding work (like children), it is a consensus now that there is a major role for demand-side disturbances in explaining worker mobility (Davis and Haltiwanger, 1999). Therefore, it is reasonable to assume that all regulations affecting

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[5] Thorough definitions of labor market flows are provided in Annex 1.

firms' decisions to employ or dismiss workers have a decisive impact on both job and worker flows.

Furthermore, job and worker flows are already widely used to evaluate the functioning of the labor market, which generates some comparative empirical evidence. Faggio and Konings (1998) emphasize that job flows reflect the processes of reallocation and restructuring underlying the reform in transition countries, at least for the initial restructuring that followed the imposition of hard budget constraint and start of labor shedding. Haltiwanger and Vodopivec (2002) consider a labor market to be flexible when it is characterized by the simultaneous presence of contracting and expanding firms. Faggio and Konnings (2003) adopt this definition and supplement it with a notion that in a flexible labor market, workers can move and jobs can be easily created/destroyed in order to meet new economic conditions. Davis and Haltiwanger (1999) stress that the extent to which labor reallocation and matching process operates smoothly measures the difference between successful and unsuccessful macroeconomic performance. Bertola, Boeri and Cazes (1999) as well as Cazes and Nesporova (2003) emphasize the magnitude of hirings and firings, or worker flows as a means of capturing the impact of regulation on labor market adjustment.

Unlike those studies, Monastiriotis (2003) considers the extent of alternative types of employment, such as home work, part-time and temporary work, to capture external numerical flexibility, which is related to EPL. However, while confining worker mobility and tenure indicators to the supply-side flexibility sub-index, he acknowledges that there is significant overlap between different types of flexibility and certain indicators do not correspond directly and exclusively to one group only. Although it may be difficult to distinguish between worker and job mobility driven by labor supply and labor demand and therefore hard to judge how to represent each of the flexibility dimensions, this paper supports the more conventional view that labor demand is guiding the process of worker and job reallocation and therefore employs those indicators to assess the impact of labor market regulation.

There are also a few disadvantages associated with the use of worker and job flows to approximate labor market flexibility. First of all, these indicators are not readily available and they are usually the products of comprehensive research, such as that of

Rutkowski (2003). Furthermore, research methodologies conducted for different countries usually differ, as one study uses firm level data, while others also capture within-firm flows that arise between different establishments. There are also some studies that seek to capture flows within establishments, which are the hardest to measure, but give the most accurate measure of flows (Davis and Haltiwanger, 1999). Even if there is the same basic unit of observation, definitions of firms and establishments do not necessarily coincide between different countries and periods. It is also hard to adequately capture organizational changes and change of ownership over time. Finally, definitions of jobs, sampling intervals and sectoral coverage differ as well. All these problems combine to make data on labor market flows hard to compare.

Labor market adjustment in international perspective

The most comprehensive work undertaken so far on the impact of EPL on labor market adjustment are the OECD (1997) and OECD (1999) studies conducted for members of that organization. The first study finds job turnover rates to be high across all member states, well in excess of net job creation rates. Also, the flows appear to be remarkably stable for most OECD member countries during the late 1970's – early 1990's period, even for those that significantly liberalized their labor market regulation at that time, although there is some variation along the business cycle. The most interesting finding appears to be on the relationship between EPL and job turnover, which is statistically insignificant, while the link between the EPL governing temporary workers and job turnover is somewhat stronger. If there is any relationship between the EPL and turnover, it looks as if a high level of EPL dampens only the cyclical fluctuations of job turnover rates. Also, restrictive EPL may transfer some of the turnover from permanent to temporary workers and from large to small companies, which are less likely to be affected by the regulation. The subsequent study (OECD, 1999) included different measures of labor market dynamics and found some evidence of stricter EPL having somewhat stronger effects on worker turnover than job turnover as it decreases churning of workers between different jobs. This effect is also visible in higher mean job tenure in countries with stricter EPL.

The average EPL level in Central and Eastern European transition countries does not differ much from the EU average. There are large differences between these countries as well, reflecting the fact that many of them shaped their labor market regulation according to legislation in neighboring EU countries (e.g. EPL features in Estonia are similar to Sweden, while Slovenian EPL reflects Italian influences; Riboud et al., 2001). This means that transition countries on average have a fairly restrictive labor market regulation and there is also ample variation amongst them, allowing the effects of those differences to be explored.

Table 2 EPL index in transition countries

| | EPL index | EPL components | | |
		Regular employment	Temporary Employment	Collective dismissals
Bulgaria	2.5	1.9	3.4	1.8
Croatia (before 2003 reform)	3.6	2.8	3.9	5.0
Croatia (after 2003 reform)	2.7	2.6	2.6	3.5
Croatia – gov't proposal	2.3	2.4	1.6	3.5
Czech Republic	2.1	2.8	0.5	4.3
Estonia	2.6	3.1	1.4	4.1
Hungary	1.7	2.1	0.6	3.4
Poland	2.0	2.2	1.0	3.9
Romania	2.8	1.7	3.0	4.8
Slovak Republic	2.4	2.6	1.4	4.4
Slovenia	3.5	3.4	2.4	4.8
Average (Croatia excl.)	2.5	2.5	1.7	3.9
EU average	2.4	2.4	2.1	3.2

Sources: Rutkowski (2003), Biondic and Matkovic (2003) and Micevska (2003)

Comparative studies of labor market flows in transition countries are particularly scarce, while there are a few more utilizing case-study approaches. Important comparative studies on labor market adjustment in transition countries include recent papers by Faggio and Konings (2003) as well as Cazes and Nesporova (2003). Faggio and Konings (2003) examine job flows in five transition countries. Their study concludes that in countries with more rapid reform, job creation catches-up faster with job destruction. Moreover, the study finds Estonia to be the most dynamic among the transition countries, as job turnover rates in Estonia resemble the behavior of more dynamic market economies, such as the US or UK. Other transition countries included in the study, Bulgaria, Romania, Poland and Slovenia, are more similar to regulated labor markets of Western European countries. What is particularly striking about these job flows is that the volumes involved are not exceptional, as one might expect

from the transition process requiring a massive reallocation of resources. However, this finding might be biased because flow data are extracted from the AMADEUS enterprise database comprising data for medium and large enterprises, while small enterprises, which usually account for a substantial part of the overall job turnover, are not included in the database.

Table 3 Job flows in transition countries (Faggio-Konings dataset)

	Job creation	Job turnover	Excess job reallocation
Bulgaria 1994-1997	5.7	8.1	4.8
Estonia 1994-1997	8.1	16	13.5
Poland 1994-1997	5.4	8.5	6.3
Romania 1994-1997	9.0	13.0	8.0
Slovenia 1995-1997	5.2	9.6	8.6

Source: Faggio and Konings (2003)

If EPL indices for transition countries and data on job flows reported by Faggio and Konings (2003) are observed together, there seems to be no apparent relationship, which is similar to previous findings for OECD member countries. Since EPL data cover late 1990's period, there is a possibility that reform of the labor market regulation in some of those countries changed the EPL level somewhat compared to the mid 1990's period, to which jobs flow data refer. But it is unlikely that their relative rankings changed much. Also, it remains an open question to what extent enterprises in the sample used for the calculation of job flows are representative of the entire enterprise population in those countries.

Figure 1 EPL indeks and job flows (Faggio-Konings dataset)
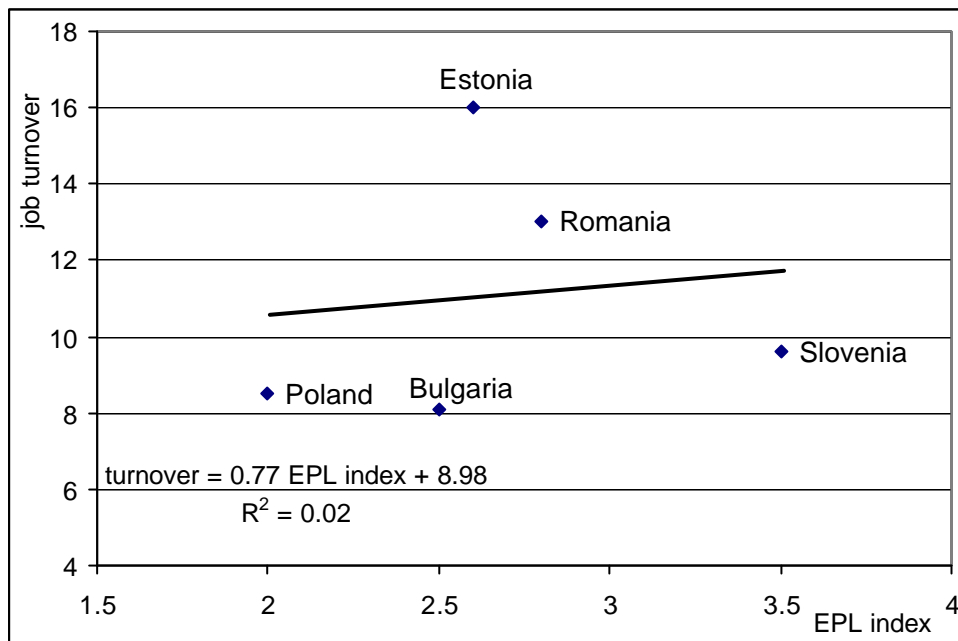
Sources: same as for tables 2&3

Cazes and Nesporova (2003), using a bivariate approach, find some connection between EPL index, especially the difficulty of dismissal sub-index, and worker turnover in six transition countries (Bulgaria, Czech Republic, Estonia, Poland, Russia and Slovenia). However, the link is very weak as it appears that the impact of other factors, such as macroeconomic and structural reforms, passive and active labor market policies, remains important. Also, their results seem to heavily depend on Slovenia, which has a considerably higher EPL level than other countries in the sample and somewhat lower worker turnover than the average.

Papers employing case-study approach provided some similar conclusions to these two studies. Haltiwanger and Vodopivec (2000) also deem Estonia to be a success story due to aggressive pursuit of decentralized wage setting and labor market reform. They contrast their findings with Slovenia, which pursued a more gradual labor market reform, provided more income support and implemented a higher level of EPL. Policies implemented in Slovenia increased the costs of separation for Slovenian firms, which resulted in a lower level of job flows, with the highest job creation rate in Slovenia during the early 1990's barely surpassing half of the observed maximum rate in Estonia. Jurajda and Terrel (2001) contrast Czech and Estonian transition

experiences, where Estonia represents a benchmark for rapid transition with high job turnover rates, while the Czech labor market exhibits lower job turnover rates during the early transition, which is symptomatic of a Czech gradualist approach to transition. Therefore, it seems that most comparative insights into the dynamics of job flows in transition countries rest on a few case studies finding contrasts between Estonia and other transition countries with less flexible labor markets, such as Slovenia, Poland or Czech Republic.

Table 4 Job flows in transition countries (Rutkowski dataset)

	Job creation	Job turnover	Excess job reallocation
Bulgaria 2000	6.8	17.6	13.5
Croatia 2001	3.5	8.4	7.0
Lithuania 1998-1999	9.7	20.4	19.4
Poland 1998-1999	5.3	15.4	10.5

Sources: Rutkowski (2003)

Labor market adjustment in Croatia

In his study of the Croatian labor market dynamics, Rutkowski (2003) especially emphasizes data on job flows and tenure structure. With a high EPL index and low job turnover rates reported by Rutkowski, the Croatian labor market most closely resembled the Slovenian case as an archetypal low-flexibility economy. This part of the paper will replicate job flow indicators and will also look at worker flow data as well as their particular characteristics, since the motivation for using these indicators in studies of labor market adjustment has already been extensively elaborated.

Job turnover rates in Croatia during the 1994-2001 period calculated using enterprise annual reports fluctuated around 16%, which is in the middle of the 10%-20% range of job turnover observed in most market economies (OECD, 1999). This job turnover rate is approximately double Rutkowski's (2003) indicator for 2001. Such a large difference between those two sets of job flow indicators could arise from two possible sources. The first is the sampling procedure used by Rutkowski. This study, in

contrast, encompasses the whole population of reporting enterprises[6]. As job turnover rates exhibited by different enterprises differ wildly, any bias towards government owned and large enterprises would severely reduce job turnover. The second reason for possible differences is the data cleaning procedure, which eliminated some job turnover arising from errors in the data[7]. Details on data sources and cleaning procedure used in this study are reported in annex 2.

Figure 2 GDP change, employment change and job flows in Croatia
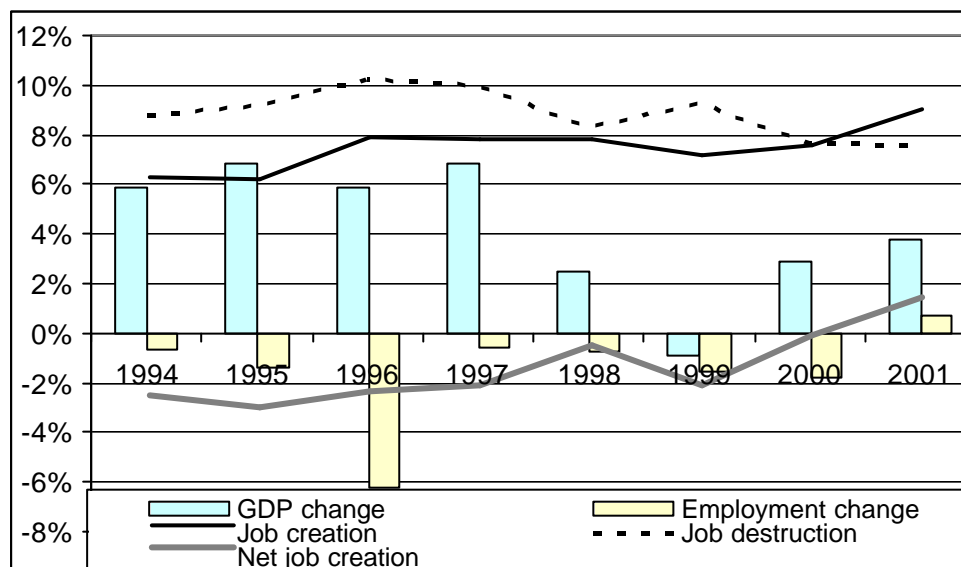
Source: Croatian Bureau of Statistics; authors calculations based on FINA database

The stagnation of the job turnover rate in Croatia during the 1994-2001 period resulted from falling job destruction rates and increasing job creation, which finally caught up with job destruction in 2001, as shown in figure 2. Such a pattern is typical for a transition economy, but the variation of those rates over the observed period is nevertheless small and convergence between job creation and job destruction took place late. This indicates that the adjustment process has been subdued, although the

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[6] Rutkowski drew a random sample of 12 thousands firms out of the full population, representing about a quarter of population. The sample was constructed to ensure representation of firms by ownership and region. However, it seems that sample enterprises differ from the population with respect to some of their properties. For instance, while enterprises with up to 50 employees account for less than 14% of total employment in Rutkowski's sample, they comprise one third of total employment in entire population of enterprises. Similarly, enterprises with more than 500 employees make up almost half of the total employment in the sample, while their share in the population is approximately one third.

[7] Sample bias alone does not explain different result because job turnover measures within certain size classes according to the whole population are somewhat higher than the sample -based turnover measures.

magnitude of the flows itself does not suggest so. Job turnover exhibits weak overall pro-cyclical properties, which grows somewhat stronger when job turnover is regressed on lagged GDP growth. Such behavior is untypical for market economies, where more variable counter-cyclical job destruction dominates over pro-cyclical job creation (Davis and Haltiwanger, 1999). The likely reason for low correlation between GDP and job flows is the disconnection of employment dynamics from GDP dynamics during most of the period under observation. The adjustment of the employment level to the transition shock in Croatia was, therefore, a prolonged process that lasted until 2001, regardless of the high level of overall job turnover and high excess job reallocation. Reported net job flows seem plausible when compared to the change in the overall employment. The correlation coefficient between the two is 0.42, and both of them turn positive in 2001. This means that employment in start-ups and outside the enterprise sector plays some role in explaining overall employment dynamics, but it does not cancel out the observed job flows in reporting continuing enterprises.

Table 5 Correlation coefficients of job flows with GDP and employment changes

	GDP change (t-1)	GDP change (t)	Employment change (t-1)	Employment change (t)
Job creation	0.38	-0.20	-0.18	0.06
Job destruction	0.35	0.37	-0.34	-0.59
Job turnover	0.62	0.15	-0.44	-0.46

Source: Croatian Bureau of Statistics; authors calculations based on FINA database

As net job creation rates were fairly small, excess job reallocation remained important during the whole period. Deeper insight into the forces driving excess job reallocation can be inferred from data on job flows and excess job reallocation, decomposed according to various enterprise characteristics, such as size, ownership, sector of economic activity and regional affiliation. Excess job reallocation can be decomposed in two components: the portion of such flows arising within a certain group of enterprises (such as enterprises operating within a certain economic activity) and flows arising between groups of enterprises. The first component is measured at the sectoral level as the sum across sectors of excess job reallocation in each sector. The second component is measured by summing across sectors the deviation of the

absolute value of the growth rate for that sector from the absolute value of the growth rate at the sectoral level (Faggio and Konings, 1998).

Decomposed data on job flows (Annex 3) raise a number of important points. First of all, there is a stark difference between job creation rates in *de novo* private enterprises and all other enterprises, including mixed ownership, majority private as well as fully privatized enterprises. Job creation rates in the former exceed rates in latter by a high multiple. At the same time, job destruction rates did not differ that much between different types of enterprises, although job destruction rates in *de novo* private enterprises were somewhat higher than the average throughout the entire period. Those enterprises on average accounted for almost three-quarters of the total job creation during the period under observation, while their share in total job destruction was about one-third. Such dynamics of job flows increased their share in total employment threefold during the period under observation as they reached 40% of employment in reporting enterprises by 2001.

As almost one third of excess job reallocation throughout the entire period took place between enterprises belonging to different ownership types, mostly between *de novo* private enterprises and all other enterprises, difference in ownership was the most important factor driving reallocation of jobs during the transition process in Croatia. However, attrition of jobs in the government sector was nevertheless slow during the whole observed period, although the process gained a new momentum in 2001. The decline of total employment was spread over a long period of time due to slow employment adjustment in state owned and privatized enterprises.

Table 6: Decomposition of excess job reallocation arising from shifts within and between different regions, ownership types, size classes and economic activities

	1994	1995	1996	1997	1998	1999	2000	2001
Within regions	98.5	99.7	95.7	98.5	94.0	99.8	92.6	94.0
Between regions	1.5	0.3	4.3	1.5	6.0	0.2	7.4	6.0
CV (turnover)	0.22	0.23	0.20	0.25	0.21	0.21	0.20	0.17
Within the same ownership type	51.5	62.1	61.3	63.1	68.8	85.7	80.9	71.1
Between different ownership types	48.5	37.9	38.7	36.9	31.2	14.3	19.1	28.9
CV (turnover)	0.74	0.65	0.58	0.43	0.49	0.47	0.55	0.50
Within the same size class	79.5	82.8	83.4	83.6	82.8	92.8	94.0	92.3
Between different size classes	20.5	17.2	16.6	16.4	17.2	7.2	6.0	7.7
CV (turnover)	0.61	0.55	0.51	0,41	0.48	0.50	0.45	0.39

Within sectors	82.6	79.3	79.2	86.6	77.8	81.8
Between sectors	17.4	20.7	20.8	13.4	22.2	18.2
CV (turnover)	0.62	1.30	0.61	1.14	1.42	0.75

Source: authors calculations based on FINA database

Note: CV – coefficient of variation of disaggregated job turnover

Other enterprise attributes are not as important for explaining the dynamics of job reallocation. Most excess job reallocation occurred within economic activities (defined at NACE-2 level), with less than 20% of total excess reallocation going on between different sectors. Faggio and Konings (1998) report similar results for Romania, while inter-sectoral reallocation accounted for only 10% of total excess job reallocation in Bulgaria and as much as half of excess reallocation in Estonia. Although regional imbalances in Croatia are sometimes alleged to be particularly large, according to the regional decomposition of excess job reallocation, this kind of mobility appears low, with an average of 3.5% of jobs reallocating between the regions. However, this indicator has to be looked at cautiously since employment is registered by enterprise headquarters and not by actual location where the work takes place, which may bias the indicator either way. Finally, net job creation rates in small enterprises during the early years seem dramatic, but as the share of firms with less than 20 employees approached a quarter of total employment by the end of the period, their growth stalled and the reallocation of jobs between firms of different sizes did not appear to be particularly important. The thresholds for firm size classes were chosen somewhat arbitrarily, but the choice of six relevant groups would probably capture any more significant movements of jobs between enterprises of different size.

The aggregate magnitude of job flows that can be considered normal for most countries masks a high degree of segmentation in the Croatian labor market. While state owned enterprises as well as privatized enterprises, still accounting for a major portion of overall employment, remain stagnant throughout the period, the new private sector was exceptionally dynamic. Part of the difference could probably be attributed to the fact that small enterprises (with less than 10 employees) were treated favorably by the Employment Law, with less cumbersome legal firing procedures, which facilitated job reallocation into *de novo* enterprises. *De novo* enterprises also did not have to bear disproportionate costs of separation for workers with long tenures

that burdened state owned and privatized enterprises. However, due to the sheer volume of job flows, EPL does not seem to seriously affect employment adjustment in *de novo* enterprises. Stringent regulation perhaps even additionally strained the adjustment in *de novo* enterprises as other enterprises did not seem to perform substantial adjustment.

The results reported confirming a considerable degree of overall flexibility as well as exceptional dynamics among some enterprises simultaneous with a high EPL level are not unique to Croatia. There are other studies of transition countries that are equally inconclusive on the empirical validity of the theoretical relationship between EPL and job flows in transition countries. Davis and Haltiwanger (1999) conclude that there is really not that much variation among countries as roughly one job in ten is created and destroyed every year in most advanced economies and transition countries, regardless of labor market regulation. These authors base their observations in part on the weak comparability of job flow data across countries due to sample and firm differences. According to Davis and Haltiwanger (1999), careful disaggregated analysis, performed to some extent in this study of the Croatian labor market, is essential in order to identify the effects of labor market institutions and policies on labor market flows.

Similar to the finding of a fairly high level of job creation in Croatia reported in this paper, Haltiwanger and Vodopivec (2003), using matched employer-employee data, find evidence for Slovenia, another country with a high EPL level, of job turnover rates approaching 20% during the 1997-1999 period. These turnover rates, which are even a bit higher than the rates found in Croatia but in line with figures observed in most dynamic transition countries, challenge their older work. There are several possible explanations for empirical findings contrasting theoretical predictions on EPL effects, going beyond problems in measurement of job flows.

The first reason is that the EPL index, as the most comprehensive indicator available, is far from perfect in capturing all the regulatory restrictions on hiring and firing. Even Estonia, considered to be the prime example of flexible labor market, has a higher value of its EPL index than Czech Republic or Poland, whose labor markets are regarded as more rigid. Macculloch and Di Tella (2002) for that reason in their

study of labor market rigidities rely on an alternative source--survey based data on hiring and firing restrictions from the World Competitiveness Report.

Monastiriotis (2003) and Bertola, Boeri and Cazes (2000) also emphasize insufficiencies in the measurement of labor market regulation. Bertola, Boeri and Cazes (2000) take the position that EPL index, as well as other available protection indicators, are based on unsatisfactory information and capture neither the increasing complexity of legal provisions nor their interactions, such as the rise of temporary work. The validity of the EPL index became especially problematic after the reform process gathered pace during the 1980's and 1990's, since this diminished correlations between different components of EPL. The authors conclude that there is no simple means of calculating the relevant indicators and rankings and that there is a need to pursuit further research on that subject. Also, it seems that enforcement of regulation matters very much since available evidence points to differences in the frequency of labor disputes and national practices in interpretation and resolving cases. In light of the ambiguous empirical evidence and the measurement issues, the authors believe that policy recommendations should be formulated with caution.

Furthermore, there are many labor market institutions at work beyond the EPL. Cazes and Nesporova (2003) point out that labor market adjustment in transition countries was significantly affected by macroeconomic and structural reforms. Also the role of other labor market institutions, such as passive and active labor market policies, the power of trade unions or the tax burden on labor have to be considered. The failure to adequately account for all such factors may give rise to flawed conjectures on the impact of EPL.

Haltiwanger and Vodopivec (2003) offer an alternative view on the relevant labor market institutions influencing job flows. Their study does not assess dynamics of the Slovenian labor market in a comparative perspective, but detailed analysis of the flows gives some clues as to the forces behind them. Findings concerning the determinants of flows at the firm level show that enterprises with higher wage dispersion exhibit lower job turnover rates. Therefore, although the study does not extend the conclusion too far, high turnover rates may be the consequence of compressed wage structures throughout the economy. This possibility is in line with

the theoretical model of Bertola and Rogerson (1996) that emphasizes the possible role of wage setting institutions on job flows as higher job flows offset for lack of wage flexibility.

The route taken in this paper suggests that EPL may affect some workers and enterprises, but that their impact on aggregate flexibility becomes less important as employers learn to cope with the burden of regulation. However, the impact of EPL is not negligible, as it moves turnover from enterprises of one type to enterprises of other type. Therefore, it affects the distribution of turnover across enterprises more than turnover volume.

The second line of reasoning Rutkowski (2003) used in order to confirm low level of flexibility in Croatian labor market was to compare data on tenures. As was previously showed, some studies using worker flows and tenure data were more successful in finding the impact of EPL on labor market dynamics. Data on average tenures and worker flows may also give more precise information on types of workers that managed to keep their jobs due to EPL and workers that do not seem so well protected by EPL. Indeed, average and median tenures in Croatia, according to the labor force survey data, are together with Slovenian and Polish figures (later based on Cazes and Nesporova, 2003) among the highest in the group of transition countries.

Table 7 Distribution of tenures in transition countries

	Under 1 year	1 and under 2 years	2 and under 5 years	5 and under 10 years	10 and under 20 years	20 years or over	Average tenure (years)	Median tenure (years)
Nesporova and Cazes (2001) - data for 1999								
Czech R.	14.6	18.4*	15.3**	26.2	12.3	13.2	8.2	
Estonia	18.4	6.7	31.1	23.9	10.8	9.1	6.9	
Hungary	12.6	11.3	20.0	25.3	17.9	13.0	8.8	
Lithuania	12.8	9.2	29.0	24.8	14.5	9.6	7.6	
Poland	10.5	10.4	14.0	20.8	22.3	22.0	11.9	
Slovenia	12.0	5.1	18.2	16.5	23.6	24.6	12.0	
Rutkowski (2003)								
Bulgaria (2001)	14.0	9.5	25.2	20.8	19.8	10.8	8.1	5.5
Czech R. (1995)	19.2		36.6	12.0	14.8	17.4	9.0	2.0
Lithuania (2001)	15.4	8.9	21.6	25.4	16.8	11.9	8.3	5.0
Poland (1999)	14.5	11.7	19.0	17.7	20.3	16.7	9.6	6.2
Croatia (2001)	9.7	5.1	17.2	21.3	20.7	26.0	12.2	8.0
own calculation								

| Croatia (2002) | 13.4 | 6.3 | 16.7 | 21.1 | 19.2 | 23.3 | 11.8 | 7.9 |

Source: Rutkowski (2003), Nesporova and Cazes (2001) and own calculations based on Labor Force Survey, 1st half of 2002

Note: * refers to 1-3 years; ** refers to 3-5 years

Reliance on tenure and worker flow data rather than job flows also has some deficiencies. First of all, there are different sources of worker flow data yielding different results, such as enterprise surveys and labor force surveys, conducted with different frequencies. Second, participation rates of different age groups may affect tenure structure, with low participation rate of young persons increasing the share of persons with longer tenures and hence raising the average tenure[8]. Furthermore, tenure structures do not account for the dynamics of overall employment, which may also interact with age-specific participation rates. Employment reductions usually affect workers with shorter tenures as the seniority principle often prevails in case of redundancies, which increases average tenure throughout the economy. At the same time, larger number of newly employed persons, facilitated by employment growth, reduces average tenure. A final and more substantial problem with this approach is that EPL may have some effect on job stability only for employees with tenures exceeding a certain threshold, while average tenure may disregard churning that takes place amongst the most dynamic group of employees with the shortest tenures.

Table 8 Hiring rates, separation rates and worker turnover in transition countries

	Hiring rates	Separation rates	Worker turnover rate
Bulgaria (1999 -ES)	27.6	39.9	67.5
Estonia (1998-LFS)	16.0	19.0	35.0
Czech Republic (1998-LFS)	10.5	11.8	22.3
Poland (1998-ES)	24.6	22.8	47.4
Poland (1998-LFS)	21.2	17.0	38.2
Slovenia (2001-ES)	15.6	14.5	30.1
Croatia (2002-LFS-annual)	13.4	16.3	29.7
Croatia (2002-LFS-quarterly)	26.3	26.2	52.5

Source: Cazes and Nesporova (2001) and own calculations based on Labor Force Survey 2002

Notwithstanding the problems elaborated so far, how do worker flows in Croatia compare to other countries? The hiring rate in Croatia, calculated on an annual basis

from the LFS database, was 13.4% in 2002, while the worker turnover rate was 29.7%, which falls in the middle of the range observed in selected transition countries, close to the Estonian and Slovenian figures[9]. Higher rates compared to results Rutkowski (2003) reported probably stem from the employment growth taking place in 2002[10], on the one hand, and from the growing proportion of temporary workers among the newly employed, on the other hand[11]. This illustrates the importance of different effects other than EPL on worker flows, such as cyclical dynamics of employment and employers learning about new ways to facilitate flexible arrangements. Moreover, if worker flows are constructed on a quarterly basis, the resulting figures are almost twice as high, revealing the short average duration of many recent temporary contracts. Temporary workers accounted for 12.5% of total employment in 2002 and only 15% of those had contract duration above 1 year (Crnkovic-Pozaic, 2004)[12]. With significant churning taking place on the low end of the tenure structure, the comparatively high average tenure in Croatia resulted from the gap in the middle of the tenure structure and many workers with long tenures.

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[8] Low participation rate of young persons may itself be a consequence of labor market rigidities.

[9] The hiring rate calculated on an annual basis falls short of the separation rate despite employment growth because it is underestimated to a greater extent as some workers entering employment churn between jobs within the same year (all worker flows including multiple switches within a year under observation are not captured in this framework). The bias is significantly reduced in the quarterly figures.

[10] Employment rate of persons older than 15 years increased from 41.8% in 2001 to 43.3% in 2002.

[11] According to the data from Croatian employment service, in 2002 between 80% and 90% of the newly employed had temporary contracts, up from 50% to 60% in 1995.

[12] Contact expiration does not necessarily lead to separation, but temporary contracts can be renewed only a limited number of times as total cumulative duration of fixed-term contracts (accounting for almost four-fifths of all temporary contracts) could not exceed 2 years (this period was increased to 3 years after the 2003 changes of the Labor Code), while there were similar limitations to seasonal and other temporary contracts as well.

Figure 3 EPL index and worker turnover (Cazes-Nesporova dataset + own calculations)

Figure 3 EPL index and worker turnover. The chart plots worker turnover against EPL index. Data points: Bulgaria (~2.8, 67); Poland (~2.0, 38); Estonia (~2.6, 35); Slovenia (~3.5, 30.5); Croatia (~3.6, 30); Czech Republic (~2.1, 22). Trend line: turnover = -0.98 EPL indeks + 39.58, $R^2 = 0.0017$.
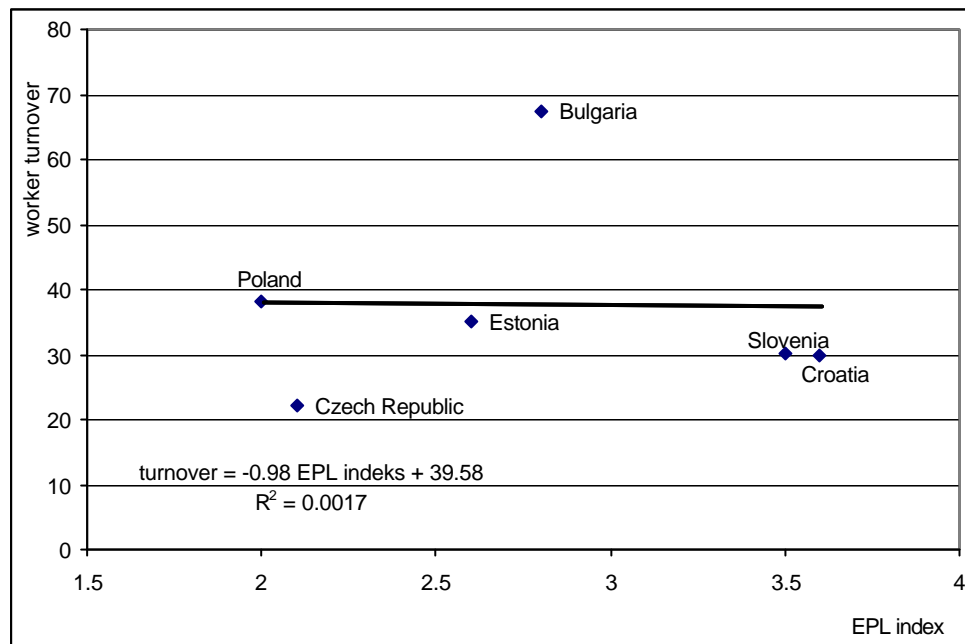
Source: tables 2 and 8

Disaggregated worker flow data according to ownership again reveal high turnover in the private sector, both on the hiring and separation sides, while turnover among the government employees and employees in state owned enterprises is less than half of that figure. Average tenures show the opposite picture, with average tenure in government and state owned sector of about 14 years, which is almost double as much as in the private sector. Unfortunately, the structure of the LFS does not allow us to distinguish between privatized enterprises and *de novo* private enterprises, which exhibit much higher job turnover rates. Therefore, the average for the largest employment category conceals some of the differences that job flow data indicate. It is also interesting to note that self-employment is the major employment category with the highest average tenure. This is obviously a heterogeneous category, but the average tenure of persons belonging to the self-employed category would suggest that they, on average, do not comprise a flexible group compensating for the lack of flexibility among employees in other sectors, as is sometimes thought about self-employed. It to some extent also reflects the impact of individuals engaged in agriculture, who often do not retire after the mandatory age. If the self-employed are excluded from the calculation, the average tenure for all other categories of

employment (comprising almost 83% of total employment) is 8.9 years, which is similar to transition countries with more flexible labor markets.

Table 9 Hirings and separation rates, according to sectors of ownership (2002)

	Self-employed	Government and state owned sector	Private sector	In privatization	Unpaid family workers	On contract
Hiring rate	6.9	6.5	22.1	6.4	9.1	39.5
Separation rate	10.4	11.7	21.3	19.4	23.2	29.5
of which: job to job	4.8	2.9	9.3	2.2	3.2	7.4
Total worker turnover rate	17.3	18.1	43.4	25.8	32.3	68.9
Employment share	17.2	35.1	37.9	2.5	5.0	2.4
Average tenure	14.9	14.3	7.8	16.3	16.8	4.2

Source: own calculations based on Labor Force Survey 2002

Worker turnover rates steadily decrease with age, reflecting both decreasing hiring and separation rates. Only the oldest category represents an exception with respect to the separation side, which shows an impact of retirement and persons leaving the labor force. It is particularly interesting to note that although young persons represent a category with exceptionally high unemployment, their turnover rates are tremendous. Although it seems that young persons find a job with ease, it is very hard for them to keep the job or transfer directly into another job as they face considerable job insecurity. Young persons, therefore, find it difficult to cross over the one year tenure threshold, which leads to the gap in the middle of the tenure structure. Older persons participating in the employment face a substantially lower possibility of separation than young persons, but chances of finding a new job decrease even more with age. Persons in each reported age-group on average have about five years longer tenure, except for the last category, reflecting again the impact of self-employed agriculture workers.

Table 10 Hirings and separation rates, according to age groups

	15-24	25-34	35-44	45-54	55-
Hirings	44.9	18.9	9.0	5.0	2.2
Total separations	28.6	17.8	11.4	10.4	22.8
of which: job-to-job	9.7	9.4	5.2	2.9	0.7
Total worker turnover rate	73.5	36.7	20.4	15.3	25.0
Employment share	9.0	23.2	29.9	26.8	11.0

Average tenure   1.8   5.2   10.8   16.7   26.2
Source: own calculations based on Labor Force Survey 2002

Since one possible reaction of employers to high level of EPL (or hiring and firing
restrictions) and high non-wage labor costs is to seek informality, it is interesting to
ask to what extent employers use informal employment in order to facilitate
flexibility. It is notoriously hard to estimate informal employment, although some
attempts have been made. Crnkovic-Pozaic (1997), using the Labor force survey,
estimates informal employment to be about a quarter of total employment in Croatia
in 1995. The largest part of informal employment, close to 40%, according to actual
status in employment of those persons, consisted of unpaid family workers. Persons
holding second (or multiple) jobs constitute another important form of informal
employment, accounting for about a quarter of the total.

As noted above, there are different sources of employment in the informal sector and
different degrees of informality as well. The "core" of informal employment is to a
large extent fueled by persons whose formal status differs from employment, such as
students, unemployed persons or retired persons engaged in economic activities.
During the early years of transition, many people officially left employment and went
into inactivity, mostly by means of early retirement. Crnkovic-Pozaic (1998)
estimates that 369 thousand people left activity over the 1990-1996 period[13]. Many of
those persons informally reentered employment as a socially insured group in an
attempt to top-up their income. This is not so remarkable since early retirees on
average aged 55. Retired persons constituted 6.5% of total employment according to
ILO criteria and were one of the largest groups in the informal economy. Persons
registered as unemployed constitute the second important source of informal
employment, but their number has been falling recently. Share of these persons in
total employment decreased from close to 4% in mid 1997 to a bit over 2% by the end
of 2000.

Several possible factors can account for the declining tendency of informal
employment, despite worsening labor market situation until 2001. The first is that

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[13] This figure is based on a Labor force survey conducted in 1996 and is therefore subject to a recall
error.

government institutions increased their efficiency and law enforcement as the immediate threat of war disappeared after 1995. Ott (2002) in a survey of unofficial economy in Croatia reports a number of different policy areas where significant progress was accomplished. The most important were tax reform, including the introduction of VAT in 1998, and drastic reduction of state arrears in 2000 that changed the image of the government with respect to payments. These changes were paralleled with the fall of attitudes towards opportunistic behavior also documented in Ott (2002) as the number of persons who think that tax evasion and bribe can never be justified has doubled between 1995 and 1999, indicating a rise in tax morality. Simultaneous change in the structure of spending to consumer durables (cars, flats) mainly bought with loans, stabilization of large retail systems and the introduction of foreign firms into the Croatian market also implied fewer opportunities for the work in unofficial economy and reinforced the effect of reforms and change in the attitudes.

In addition to these factors, labor tax wedge was reduced from about 48% of total labor costs in 1995 to about 41% in 2001 (Rutkowski, 2003), which reduced the potential benefits of concealing economic activities. This reduction may not seem substantial, but it means that the amount of taxes and contributions paid on net wage were reduced by about a quarter - from 92% to 69% of net wage. To the extent that firing restrictions acted as a barrier for formalization of employee status, the growing share of temporary workers with short-term contract demonstrates how employers learned to exploit opportunities to enhance flexibility without violating the law. Finally and more recently, in early 2002 Croatian employment service introduced a number of so called "activation" measures designed to ensure that unemployed people are looking actively for work and to help them to do so. These measures facilitated identification and deletion from the unemployment register of those persons who did not fulfill new obligations due to engagement in informal activities.

Table 11 Employed persons according to their formal status

							Informal employment			
	Emplo-yees	Self-employed	Self-employed (agricul.)	On contract	Unpaid family workers	Pupils and students	Retired	Unem-ployed	In-active	House-wives
Employ. share	73.8	8.6	4.7	0.8	1.6	0.5	4.2	2.8	1.5	1.4
Average	11.3	8.4	23.1	4.5	17.0	2.4	22.2	4.0	2.7	25.1

	tenure									
Hirings rate	13.4	10.1	2.0	38.5	5.9	61.7	3.4	37.1	42.7	3.8

Source: own calculations based on Labor Force Survey 2002

Comparison of hiring rates in the formal and informal sector is one simple way to test whether informal employment was used to a large extent to promote flexibility. According to the "narrow" definition of informal employment, which excludes second job holders, but includes unpaid family workers as well as the formally unemployed and inactive (this category further collapses into retired persons, pupils and students and housewives) informal employment in 2002 declined to 12% of total employment (from over 19% of the total in 1995, according to Crnkovic-Pozaic, 1997). However, the share of hiring in informal sector in total hiring was 16.3%, which was not substantially higher than share of the informal sector in employment. Certain categories amongst informally employed exhibit higher job turnover, such as the unemployed, inactive and especially pupils and students, but hiring rates of those groups are again not substantially above those observed for workers engaged on formal job-specific contracts.

Although informal employment in Croatia comprises of diverse groups and the narrow definition employed above focuses only on one portion of informal employment, notwithstanding individuals omitted by the labor force survey, above results suggest that formal and informal employment do not differ significantly along the dimension of flexibility. Therefore, the description of the informal employment as an adjustment buffer substituting for the lack of flexibility in the formal sector, according to the "dual labor market" hypothesis, is not an appropriate analytical tool to assess the relationship between formal and informal employment in Croatia. The dynamics of informal employment is rather more similar to flows in and out of the formal employment and therefore more likely to support the modeling approach of Boeri and Garibaldi (2002), according to which formal and informal employment enter the matching function in a complementary fashion. Moreover, Boeri and Garibaldi (2002) view informal employment as a joint decision by worker and firm. Evidence on job turnover in informal sector confirms that it is not only an inclination of employers to foster flexibility but also a supply side of the labor market that is relevant for the decision to seek informality. An attempt to top-up income arising

from certain formal status, such as pensions or unemployment benefits, which would be lost in case of formal employment, with income from informal activities, acts as an important motivation for many persons engaged in informal activities. This means that if policymakers are determined to tackle the problem of informal employment in Croatia, they should also seek to monitor different groups of benefit recipients for participation in informal activities.

The relationship between job and worker flows is another point of interest. The link between these two is of special interest because job turnover in market economies is an important determinant of the overall pace of worker reallocation, usually accounting for roughly 30 to 50 percent of worker turnover (OECD, 1997). In transition countries, an even larger portion of hiring and separation is driven by job destruction and job creation. This means that a major factor underlying worker mobility in transition countries is the changing allocation of jobs across businesses, as opposed to workers reallocating themselves for a given allocation of jobs across businesses (Haltiwanger, Lehmann and Terrell, 2003). Haltiwanger and Vodopivec (2000) report that in Estonia by 1993 job turnover comprised more than two-thirds of worker turnover (worker turnover rate exceeded 35% at that period of time). Haltiwanger and Vodopivec (2003) find remarkably similar results for Slovenia during the late 1990's as job turnover accounted for about two-thirds of worker turnover.

According to reported findings, job flows in Croatia comprised about a third of worker turnover (calculated on a quarterly basis, better approximating true extent of worker turnover), which is in line with results from advanced market economies, but there are comparatively more workers churning between jobs in Croatia than in other transition countries. With respect to this finding, Croatia is more similar to a mature market economy, as there appears to be significant churning of workers between jobs. However, there is a possibility that regulation provides an important foundation for such a pattern of job and worker flows. The limited maximum duration of temporary contracts drastically increases churning at the short end of the tenure structure, notably among young workers entering employment in the new private sector.

However, it has to be kept in mind that job and worker turnover data were constructed using different datasets which can bias the results[14].

Concluding remarks

Both job and worker flows, which approximate the extent of external flexibility in labor input that is most likely to be affected by restrictive dismissal regulation, confirm a substantial degree of dynamism in the Croatian labor market. This is not unusual since some other countries considered to have low degree of labor market flexibility (such as Slovenia) also demonstrate that the link between regulation and flexibility is sometimes very weak. Data on average tenure in Croatia, on the other hand, indeed indicate a somewhat higher degree of job stability than among some other transition countries due to the large share of persons with exceptionally long tenures. However, if self-employed persons (many of them in agriculture) are excluded from the aggregate, average tenure seems substantially lower, in line with the most flexible transition economies. Therefore, it seems that data on job flows and worker flows do not distinguish Croatia from other transition countries, which goes against some previous evidence (e.g. Rutkowski, 2003).

Although the overall degree of flexibility in Croatia is not especially low, it is confined to a small group of employees in the new private sector with a high chance for fluctuation between employment and unemployment. This lends support to the dualism hypothesis. While employment adjustment in state owned and privatized enterprises on average takes a long time, the new private sector takes a disproportionate burden of adjustment. Young workers recently entering employment are particularly prone to enter the cycle of excessively volatile employment. It is interesting to note that it is not the difference between formal and informal employment that is driving the wedge between the primary and the secondary tier of the labor market. Informal employment on average does not exhibit much higher turnover, and even the most dynamic groups amongst them do not surpass by far turnover rates of employees with formal contracts.

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[14] There is also a possibility that significant bias is introduced into the job flow data by drawing the data only from continuing firms between the subsequent reporting periods.

If the impact of EPL in Croatia is indeed mostly reflected in a different manner across sectors, it is unlikely that labor market reform will significantly increase overall flexibility or hinder informal employment. Less burdensome regulation is hence more likely to reduce large differences in job insecurity among workers in different sectors and facilitate labor market adjustment in state owned and privatized enterprises.

There are several reasons to remain cautious with respect to the findings reported here and the expected outcomes of reform. First, since reform is the most pronounced in the area of regulations governing temporary contracts, reform may actually exacerbate the existing duality even more. As the whole area of research is still sketchy and the available datasets still hinder cross-country comparisons, labor economists have so far not been very successful in measuring the impact of regulation on labor market flexibility in transition countries. This is not so odd, because similar problems are still present even in studies of advanced economies. As different studies reveal contradictory results, it seems that only a few vague policy conclusions can be drawn with confidence from recent research on labor market flexibility in transition countries.

Finally, it must be kept in mind that flexibility is not a single-dimensional variable. Although this paper looks at one dimension, which is most likely to be affected by regulation, in great detail, it does not attempt to give a comprehensive picture of labor market flexibility. It may be necessary to look at a battery of different indicators to asses the state of the labor market adequately. This is often hard to do in comparative studies. All this, of course, does not mean that labor market institutions and labor market flexibility are not important for overall labor market performance in transition countries. It simply means that the evidence we have is still scarce and more research on the dynamics of flows and their determinants has to be conducted to improve our knowledge of labor market adjustment.

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Annex 1: Definitions

Job flows

Job creation equals employment gains summed over all business units that expanded during the year under observation.

Job destruction is equal to employment losses summed over all business units that contracted during the year under observation.

Job flows are usually expressed as a proportion of average employment at the beginning and at the end of the period under observation. Capturing job flows taking place within firms or establishments would be highly desirable, but very few studies manage to do this and it is virtually impossible to directly measure these flows using firm-level data. In principle, capturing job flows occurring in firms starting and closing during the period under observation would also be highly desirable, but since it is hard to distinguish between these events and non-reporting, such flows are usually omitted, as was done is this study. Omitting both within-firm flows and flows taking place in starting/closing firms biases job flow data downward.

Net employment change equals the difference between job creation and job destruction.

Job turnover equals the sum of the absolute value of all business units' employment gains and losses, that is the sum of job creation and job destruction.

Excess job reallocation is equal to the difference between job turnover and the absolute value of net employment change. It represents the part of job turnover that is above the amount required to accommodate net employment change.

Worker flows

The hiring rate is calculated as a sum of aggregate flows from unemployment to employment, from inactivity to employment and from one employment to another during the year under observation, divided by total employment at the beginning of the period.

The separation rate is the sum of aggregate flows from employment to unemployment, from employment to inactivity and from one employment to another, divided by total employment at the beginning of the period (in both cases the average of the period to which Labor force survey refers was used because it is the most reliable estimate).

<u>Worker turnover</u> is the sum of hiring and separation rates.

Since rough data from the Labor force survey, which records only the last transition from one labor market state to another, was used to calculate worker flows, it is possible that the calculated rates understate the true turnover due to missed multiple transitions.

While worker turnover refers to the movement of persons, job turnover encompasses only those movements that involve movement of jobs. Therefore, worker turnover encompasses labor turnover, but these two overlap only if separation is not followed by hiring, or vice versa. Also the coverage of the LFS is much wider than that of the FINA database, as LFS estimates employment to be about twice as much as enterprises report. The difference is due to sectors that do not report to FINA, such as government (public services, defense, the health and education sector) and unincorporated business (trades and crafts).

Sources of definitions: Davis and Haltiwanger (1999), Rutkowski (2003) and Cazes and Nesporova (2003)

Annex 2: Data description

The data on job flows are extracted from the FINA (financial agency) database of enterprises' annual reports. This database includes 85,995 enterprises that reported their financial statement at least once in two subsequent surveys during the 1993-2001 period. Since submission of an annual report is a legal obligation for every enterprise operating in Croatia, FINA believes that the reporting enterprises account for the vast majority of operating enterprises. Only a negligible portion of enterprises decides not to report. The population for the calculation of job flow indicators in each single year includes between about 30 and 50 thousand enterprises reporting to subsequent surveys, depending on the actual year the survey was performed.

Table 12 The number of continuing reporting enterprises

1994	1995	1996	1997	1998	1999	2000	2001
27,959	39,679	48,845	51,734	51,619	50,792	50,048	48,778

Source: authors' calculations

In order to provide consistency of data and clean most of the errors and omissions from the database, a visual inspection of enterprises exhibiting the largest employment fluctuations during any of the years under observation was performed. Elimination of unusually large employment swings among those enterprises on average reduced total job turnover by 2.4 percentage points or 15% of corrected job flows.

The first Labor force survey in Croatia was conducted in 1996, while regular semi-annual surveys, which are conducted to this day, commenced at the beginning of 1998. The survey conducted in the first half of 2002, which is one of the last to become available, covered 8,095 households with a total of 22,592 persons who agreed to participate. The sample was constructed using a dual-stage stratified random sample procedure. The primary sampling units are segments that consist of one or more census districts formed for the needs of the last Population Census conducted in 2001, and it was from these segments that the final secondary units, inhabited homes, were chosen (Državni zavod za statistiku, 2003).

Annex 3: Data tables

Job flows by regions (counties)

Job creation	1994	1995	1996	1997	1998	1999	2000	2001	Average
Zagrebacka	7.0	8.8	10.9	11.4	8.9	9.7	10.4	13.4	10.1
Krapinsko-Zagorska	5.6	3.5	4.3	8.8	6.0	5.9	6.4	9.9	6.3
Sisacko-Moslavacka	4.7	4.0	7.6	8.3	9.9	9.2	9.7	6.4	7.5
Karlovacka	7.0	6.7	5.7	5.5	6.9	6.6	8.1	11.1	7.2
Varaždinska	3.5	2.1	8.6	7.4	7.3	8.2	8.5	8.4	6.7
Koprivnicko-Križevacka	4.6	4.7	5.3	3.9	5.4	7.0	4.4	4.7	5.0
Bjelovarsko-Bilogorska	4.6	5.0	4.8	5.5	9.7	4.3	7.5	7.4	6.1
Primorsko-Goranska	6.2	4.4	6.9	6.8	7.9	8.1	9.1	9.8	7.4
Licko-Senjska	4.0	4.3	4.3	6.7	6.9	9.7	6.6	6.3	6.1
Viroviticko-Podravska	3.8	2.9	4.9	4.8	4.5	4.4	4.9	4.7	4.4
Požeško-Slavonska	4.7	6.5	7.8	6.3	6.7	5.7	6.3	6.8	6.4
Brodsko-Posavska	7.3	8.5	8.8	8.4	8.0	6.3	6.8	7.8	7.7
Zadarska	8.3	8.1	8.3	9.5	9.0	6.7	10.7	8.7	8.7
Osjecko-Baranjska	5.5	5.9	6.4	9.7	9.2	7.5	7.7	9.3	7.6
Šibensko-Kninska	4.3	7.6	7.5	8.4	7.9	5.7	7.2	12.2	7.6
Vukovarsko-Srijemska	9.4	8.1	9.5	13.6	17.2	10.0	9.7	11.2	11.1
Splitsko-Dalmatinska	6.9	6.3	8.4	8.4	8.2	7.3	8.2	11.0	8.1
Istarska	7.2	7.3	9.0	6.8	8.8	7.7	10.3	8.9	8.2
Dubrovacko-Neretvanska	4.2	5.6	6.5	9.2	9.3	6.1	8.1	10.1	7.4
Medimurska	7.4	5.8	5.6	7.9	7.0	5.5	7.7	10.6	7.2
City of Zagreb	5.9	6.1	7.9	6.9	6.1	6.0	5.7	7.6	6.5
average	5.9	5.9	7.5	7.5	7.4	6.8	7.3	8.7	

Job destruction	1994	1995	1996	1997	1998	1999	2000	2001	average
Zagrebacka	-9.6	-10.7	-10.2	-11.3	-9.4	-10.5	-12.8	-6.8	-10.1
Krapinsko-Zagorska	-6.5	-7.6	-11.2	-13.7	-8.4	-7.6	-8.8	-6.6	-8.8
Sisacko-Moslavacka	-8.2	-8.4	-7.8	-23.0	-11.0	-8.7	-6.4	-15.6	-11.1
Karlovacka	-5.9	-7.4	-12.1	-11.0	-10.6	-13.5	-12.3	-9.0	-10.2
Varaždinska	-10.2	-10.8	-12.2	-7.5	-6.1	-10.6	-7.1	-6.7	-8.9
Koprivnicko-Križevacka	-4.5	-18.6	-6.6	-9.7	-9.4	-7.5	-7.7	-7.5	-8.9
Bjelovarsko-Bilogorska	-10.0	-9.5	-16.4	-12.2	-7.6	-11.5	-8.6	-10.1	-10.8
Primorsko-Goranska	-9.6	-11.9	-12.5	-9.1	-10.6	-10.4	-6.9	-6.6	-9.7
Licko-Senjska	-9.7	-9.2	-9.3	-8.7	-13.5	-15.8	-6.9	-5.5	-9.8
Viroviticko-Podravska	-12.6	-7.8	-7.6	-6.7	-7.7	-7.8	-17.5	-9.2	-9.6
Požeško-Slavonska	-4.4	-12.7	-6.7	-9.0	-7.8	-13.2	-7.3	-5.6	-8.3
Brodsko-Posavska	-10.2	-10.2	-11.8	-10.0	-7.2	-11.9	-12.3	-8.0	-10.2
Zadarska	-13.5	-8.3	-10.5	-12.7	-6.9	-9.6	-6.8	-10.8	-9.9
Osjecko-Baranjska	-9.6	-11.0	-20.1	-11.8	-7.3	-9.9	-11.3	-9.2	-11.3
Šibensko-Kninska	-7.5	-6.3	-10.7	-14.0	-11.6	-9.1	-6.9	-7.3	-9.2
Vukovarsko-Srijemska	-8.7	-17.0	-13.7	-10.5	-9.9	-16.4	-9.8	-6.9	-11.6
Splitsko-Dalmatinska	-9.3	-11.9	-12.6	-12.8	-10.2	-9.3	-7.5	-7.7	-10.2
Istarska	-13.8	-11.8	-11.0	-8.9	-8.0	-8.9	-10.1	-7.7	-10.0
Dubrovacko-Neretvanska	-8.9	-12.3	-12.7	-12.3	-12.2	-11.9	-11.7	-10.4	-11.6
Medimurska	-5.7	-11.3	-12.8	-5.8	-6.2	-7.8	-6.3	-4.9	-7.6
City of Zagreb	-8.1	-6.2	-7.1	-8.3	-7.2	-7.8	-5.6	-7.0	-7.2
average	-8.8	-9.2	-10.2	-9.9	-8.3	-9.3	-7.7	-7.6	

Job flows – by ownership type

Job creation	1994	1995	1996	1997	1998	1999	2000	2001	average
Government owned									
Communal etc.	1.3	1.7	2.9	2.9	1.7	1.9	1.6	1.2	1.9
In privatization	3.3	1.3	2.5	4.0	3.5	5.0	3.0	3.5	3.3
Privatization not started	3.0	1.7	4.0	3.6	5.7	3.7	1.8	3.1	3.3
Mixed - majority st.	1.4	1.3	2.7	2.0	3.2	2.3	2.4	5.4	2.6
Privately owned									
De novo	31.4	23.5	23.8	20.0	17.8	14.9	14.3	16.7	20.3
Privatized	2.8	2.3	2.8	2.4	2.7	2.6	4.1	4.3	3.0
Cooperative	2.1	1.5	1.8	3.8	7.9	3.5	4.1	3.9	3.6
Mixed – majority pr.	2.5	2.5	2.5	3.9	3.4	2.6	5.3	3.9	3.3
Average	5.9	5.9	7.5	7.5	7.4	6.8	7.3	8.7	

Job destruction	1994	1995	1996	1997	1998	1999	2000	2001	average
Government owned									
Communal etc.	-4.7	-1.6	-1.3	-3.9	-2.9	-2.7	-1.6	-2.7	-2.7
In privatization	-9.5	-10.3	-12.8	-9.5	-12.1	-10.7	-21.4	-6.7	-11.6
Privatization not started	-6.4	-13.5	-5.3	-8.3	-7.6	-8.7	-7.3	-3.6	-7.6
Mixed - majority st.	-10.4	-12.4	-13.6	-16.6	-9.6	-8.0	-6.6	-10.3	-10.9
Privately owned									
De novo	-9.2	-11.5	-12.2	-9.7	-10.3	-12.1	-10.4	-8.4	-10.5
Privatized	-9.8	-10.1	-9.8	-10.8	-8.8	-9.9	-8.6	-8.0	-9.5
Cooperative	-9.5	-8.8	-15.4	-13.0	-15.9	-12.7	-13.0	-10.9	-12.4
Mixed – majority pr.	-9.2	-8.7	-14.0	-10.1	-8.1	-9.1	-6.0	-9.6	-9.4
Average	-8.8	-9.2	-10.2	-9.9	-8.3	-9.3	-7.7	-7.6	

Employment structure	1994	1995	1996	1997	1998	1999	2000	2001	
Government owned									
Communal etc.	17.0	17.6	17.6	17.6	18.0	14.5	17.2	15.4	
In privatization	8.4	4.1	2.9	2.7	2.2	1.7	1.6	1.4	
Privatization not started	3.2	2.5	1.8	1.4	1.6	1.9	1.5	3.3	
Mixed - majority st.	21.6	19.7	17.5	14.3	12.1	11.7	11.0	7.3	
Privately owned									
De novo	13.0	18.3	22.8	26.9	30.9	35.0	36.2	39.6	
Privatized	20.8	20.9	20.7	19.5	19.0	19.1	18.1	17.5	
Cooperative	1.6	0.9	0.7	0.6	0.6	0.5	0.5	0.4	
Mixed – majority pr.	14.4	16.0	16.0	17.0	15.6	15.6	14.0	15.0	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Job flows – by firm size

Job creation	1994	1995	1996	1997	1998	1999	2000	2001	average
1-10	36.8	28.4	26.6	20.7	19.0	17.6	13.5	15.2	22.2
11-20	25.5	19.8	19.9	18.5	17.1	13.5	14.1	15.9	18.0
21-50	15.0	12.2	14.8	15.0	15.3	10.0	12.1	14.0	13.5
51-200	5.4	4.0	5.4	6.7	6.1	6.3	7.9	9.7	6.4
201-500	3.3	2.3	2.4	2.8	4.3	2.5	4.9	6.0	3.6
501-	1.0	1.3	2.5	2.4	1.7	1.8	2.7	3.3	2.1
average	5.9	5.9	7.5	7.5	7.4	6.8	7.3	8.7	

Job destruction	1994	1995	1996	1997	1998	1999	2000	2001	average
1-10	-9.9	-11.7	-12.6	-11.5	-11.6	-13.2	-11.7	-10.8	-11.6
11-20	-12.4	-11.9	-13.3	-11.2	-10.6	-14.0	-12.0	-8.9	-11.8
21-50	-12.8	-14.0	-15.8	-10.7	-11.9	-15.3	-11.2	-11.0	-12.8
51-200	-12.0	-12.1	-12.2	-10.7	-9.2	-10.3	-9.8	-8.4	-10.6
201-500	-9.0	-10.5	-9.4	-10.9	-8.6	-7.8	-5.5	-6.0	-8.5
501-	-6.8	-6.2	-7.9	-8.3	-5.1	-4.9	-3.9	-5.2	-6.0
average	-8.8	-9.2	-10.2	-9.9	-8.3	-9.3	-7.7	-7.6	

Employment structure	1994	1995	1996	1997	1998	1999	2000	2001
1-10	6.9	9.9	12.6	14.0	14.8	16.1	16.1	16.1
11-20	2.4	3.2	4.1	4.8	5.3	6.0	6.2	6.7
21-50	4.5	5.5	6.4	7.3	8.3	8.9	8.8	9.3
51-200	17.0	17.2	17.3	18.3	18.9	20.3	19.3	19.1
201-500	20.7	19.9	18.5	17.0	16.5	16.6	14.7	15.0
501-	48.5	44.4	41.1	38.6	36.2	32.1	34.9	33.9
	100	100	100	100	100	100	100	100

Job flows – by economic activities

Job creation	1996	1997	1998	1999	2000	2001
01 - Agriculture, hunting and related service activities	4.3	3.8	5.6	6.2	3.7	7.4
02 - Forestry, logging and related service activities	0.3	0.3	0.4	2.5	8.7	0.1
05 - Fishing, aquaculture and service activities incidental to fishing	12.4	6.6	6.1	9.5	9.4	13.5
10 - Mining of coal and lignite; extraction of peat	0.0	0.0	0.0	0.0	0.0	
11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction		15.4	0.0	0.0	0.1	3.6
13 - Mining of metal ores		0.0	27.1	0.0	0.0	0.0
14 - Other mining and quarrying	10.9	9.3	6.2	12.1	6.6	10.5
15 - Manufacture of food products and beverages	3.1	4.5	5.3	3.2	4.3	5.2
16 - Manufacture of tobacco products	1.5	1.6	0.0	0.0	3.8	2.7
17 - Manufacture of textiles	2.7	6.2	4.6	1.9	4.5	6.6
18 - Manufacture of wearing apparel; dressing and dyeing of fur	3.7	3.9	3.4	3.9	6.2	6.5
19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	3.9	5.7	2.5	7.7	4.8	6.1
20 - Manufacture of wood and of products of wood and cork, except furniture	7.8	7.6	10.0	8.0	8.7	7.5
21 - Manufacture of paper and paper products	1.8	1.7	2.6	6.5	2.3	2.8
22 - Publishing, printing and reproduction of recorded media	9.4	5.7	6.4	5.7	4.2	8.6
23 - Manufacture of coke, refined petroleum products and nuclear fuel	0.0	0.0	0.0	3.1	1.3	0.0
24 - Manufacture of chemicals and chemical products	2.2	0.6	0.8	1.2	1.1	1.2
25 - Manufacture of rubber and plastics products	6.0	7.4	11.8	7.3	7.0	12.4
26 - Manufacture of other non-metallic mineral products	3.1	3.9	3.2	4.5	4.4	5.3
27 - Manufacture of basic metals	1.9	2.2	9.4	1.3	4.0	5.1
28 - Manufacture of fabricated metal products, except machinery and equipment	8.5	9.4	8.7	5.7	9.2	11.3
29 - Manufacture of machinery and equipment n.e.c.	5.6	4.4	3.4	4.7	5.0	6.3
30 - Manufacture of office, accounting and computing machinery	23.0	22.0	26.4	31.7	34.7	7.0
31 - Manufacture of electrical machinery and apparatus n.e.c.	2.3	4.9	2.9	3.2	6.2	6.7
32 - Manufacture of radio, television and communication equipment and apparatus	3.3	2.7	3.6	4.5	3.2	12.6
33 - Manufacture of medical, precision and optical instruments, watches and clocks	5.7	7.7	4.3	5.2	4.8	7.3
34 - Manufacture of motor vehicles, trailers and semi-trailers	3.9	2.3	7.5	0.8	1.5	28.7
35 - Manufacture of other transport equipment	2.7	2.8	5.0	7.2	6.0	9.9
36 - Manufacture of furniture; manufacturing n.e.c.	4.2	3.8	3.9	5.4	11.1	5.1
37 - Recycling	5.7	3.9	11.1	10.6	4.2	11.0
40 - Electricity, gas, steam and hot water supply	3.5	2.6	1.3	0.7	0.9	0.4
41 - Collection, purification and distribution of water	6.1	4.4	3.8	2.6	1.6	2.1
45 - Construction	13.9	10.7	10.1	7.4	7.0	10.7

50 - Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	12.5	14.3	14.7	12.8	12.2	13.2
51 - Wholesale trade and commission trade, except of motor vehicles and motorcycles	21.6	19.0	18.0	15.6	15.5	17.7
52 - Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	9.6	10.2	9.2	10.0	12.4	14.9
55 - Hotels and restaurants	6.3	6.0	6.9	3.8	9.7	8.5
60 - Land transport; transport via pipelines	3.3	4.5	2.7	2.2	1.9	2.7
61 - Water transport	0.8	2.4	1.1	0.8	1.5	1.8
62 - Air transport	12.0	20.1	4.7	3.3	2.5	10.4
63 - Supporting and auxiliary transport activities; activities of travel agencies	7.4	6.2	4.6	5.0	5.4	7.7
64 - Post and telecommunications	4.5	4.9	3.4	119.6	1.7	2.0
65 - Financial intermediation, except insurance and pension funding	16.9	33.7	22.2	27.9	9.3	14.2
66 - Insurance and pension funding, except compulsory social security		200.0	0.0	66.7	0.0	44.4
67 - Activities auxiliary to financial intermediation	24.5	17.5	15.7	15.7	13.7	12.9
70 - Real estate activities	3.7	6.9	9.6	8.9	7.3	7.8
71 - Renting of machinery and equipment without operator and of personal and household goods	17.1	17.2	37.5	17.4	19.5	20.0
72 - Computer and related activities	18.5	16.6	13.7	12.6	10.5	11.7
73 - Research and development	5.8	2.8	4.2	2.6	12.9	3.6
74 - Other business activities	15.1	16.2	16.1	12.3	10.1	12.9
80 - Education	12.0	12.8	13.5	10.1	13.4	11.2
85 - Health and social work	8.3	9.2	15.4	7.0	8.5	10.8
90 - Sewage and refuse disposal, sanitation and similar activities	3.4	5.2	3.0	4.9	2.9	6.2
91 - Activities of membership organizations n.e.c.	10.6	4.2	1.5	11.8	17.6	6.1
92 - Recreational, cultural and sporting activities	11.8	7.6	7.5	7.1	7.2	8.2
93 - Other service activities	5.4	6.0	6.5	5.3	7.2	12.1

Job destruction	1996	1997	1998	1999	2000	2001
01 - Agriculture, hunting and related service activities	-23.2	-13.9	-7.1	-12.2	-16.2	-7.5
02 - Forestry, logging and related service activities	-1.4	-9.0	-1.4	-0.7	-0.5	-6.3
05 - Fishing, aquaculture and service activities incidental to fishing	-13.8	-10.1	-12.3	-11.1	-10.6	-7.9
10 - Mining of coal and lignite; extraction of peat	-12.2	-10.1	-33.1	-134.6	-200.0	
11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction		0.0	-3.8	-3.6	-9.3	0.0
13 - Mining of metal ores		-45.5	0.0	-43.6	-9.8	0.0
14 - Other mining and quarrying	-3.2	-5.5	-3.4	-4.2	-5.2	-3.6
15 - Manufacture of food products and beverages	-8.3	-8.0	-5.8	-8.0	-4.4	-4.7
16 - Manufacture of tobacco products	-4.4	-6.5	-15.0	-24.2	-11.4	-1.1
17 - Manufacture of textiles	-12.2	-22.7	-7.9	-8.9	-8.8	-16.7

Industry						
18 - Manufacture of wearing apparel; dressing and dyeing of fur	-13.0	-14.8	-10.2	-5.9	-8.5	-5.9
19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	-7.8	-10.3	-10.1	-8.1	-11.1	-16.3
20 - Manufacture of wood and of products of wood and cork, except furniture;	-11.3	-10.5	-7.7	-10.8	-9.2	-10.3
21 - Manufacture of paper and paper products	-12.1	-20.9	-7.3	-7.3	-3.8	-2.9
22 - Publishing, printing and reproduction of recorded media	-7.8	-8.0	-11.7	-10.3	-9.6	-6.4
23 - Manufacture of coke, refined petroleum products and nuclear fuel	-2.1	-20.5	-6.0	0.0	0.0	-1.3
24 - Manufacture of chemicals and chemical products	-4.6	-7.8	-7.7	-5.2	-8.0	-9.8
25 - Manufacture of rubber and plastics products	-9.3	-12.6	-7.3	-9.2	-9.1	-9.3
26 - Manufacture of other non-metallic mineral products	-12.1	-7.7	-10.2	-8.0	-7.9	-5.4
27 - Manufacture of basic metals	-10.5	-38.4	-8.2	-7.7	-8.2	-12.3
28 - Manufacture of fabricated metal products, except machinery and equipment	-12.7	-11.4	-10.7	-14.4	-11.4	-6.4
29 - Manufacture of machinery and equipment n.e.c.	-15.4	-11.0	-9.8	-8.9	-7.4	-10.2
30 - Manufacture of office, accounting and computing machinery	-7.1	-7.3	-7.8	-7.8	-3.9	-44.9
31 - Manufacture of electrical machinery and apparatus n.e.c.	-10.9	-12.6	-10.3	-11.3	-3.0	-4.8
32 - Manufacture of radio, television and communication equipment and apparatus	-6.8	-7.9	-15.2	-20.2	-10.8	-9.1
33 - Manufacture of medical, precision and optical instruments, watches and clocks	-9.9	-11.5	-13.0	-10.7	-10.0	-3.9
34 - Manufacture of motor vehicles, trailers and semi-trailers	-6.5	-2.8	-12.8	-8.4	-32.1	-7.6
35 - Manufacture of other transport equipment	-7.5	-8.8	-3.3	-4.2	-6.1	-3.0
36 - Manufacture of furniture; manufacturing n.e.c.	-14.8	-7.6	-10.3	-10.9	-13.3	-9.7
37 - Recycling	-16.2	-14.7	-6.0	-8.1	-6.3	-4.1
40 - Electricity, gas, steam and hot water supply	-0.3	-0.3	-0.6	-0.6	-0.1	-1.4
41 - Collection, purification and distribution of water	-1.2	-0.8	-2.4	-1.1	-2.5	-1.9
45 - Construction	-13.2	-10.3	-8.6	-12.9	-12.2	-13.0
50 - Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	-12.4	-17.4	-11.3	-11.5	-9.9	-7.7
51 - Wholesale trade and commission trade, except of motor vehicles and motorcycles	-14.3	-11.3	-10.8	-11.5	-9.9	-9.1
52 - Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	-16.1	-11.7	-10.6	-12.0	-9.6	-11.9
55 - Hotels and restaurants	-11.3	-10.2	-10.1	-12.5	-6.0	-6.1
60 - Land transport; transport via pipelines	-2.7	-3.2	-7.0	-7.0	-5.2	-5.0
61 - Water transport	-2.6	-2.7	-4.8	-7.4	-5.0	-6.6
62 - Air transport	0.0	-0.1	-0.2	-0.3	-0.4	-0.4
63 - Supporting and auxiliary transport activities; activities of travel agencies	-6.4	-7.0	-11.9	-8.0	-5.8	-4.5
64 - Post and telecommunications	0.0	0.0	-0.0	-0.5	-0.0	-1.3
65 - Financial intermediation, except insurance and pension funding	-6.8	-7.8	-12.7	-24.0	-21.3	-13.6
66 - Insurance and pension funding, except compulsory social security		0.0	0.0	0.0	-54.5	-22.2
67 - Activities auxiliary to financial intermediation	-9.6	-8.1	-7.9	-9.8	-12.0	-8.2
70 - Real estate activities	-3.1	-1.7	-4.1	-2.5	-3.6	-12.2

71 - Renting of machinery and equipment without operator and of personal and household goods	-13.6	-22.6	-8.6	-8.2	-7.7	-12.5
72 - Computer and related activities	-10.8	-7.0	-9.6	-10.0	-8.2	-7.9
73 - Research and development	-8.7	-5.6	-4.8	-7.0	-6.0	-4.8
74 - Other business activities	-11.1	-8.7	-11.8	-12.2	-9.1	-7.5
80 - Education	-5.9	-4.6	-7.5	-11.9	-8.7	-10.6
85 - Health and social work	-6.1	-3.1	-9.4	-11.7	-4.3	-7.2
90 - Sewage and refuse disposal, sanitation and similar activities	-0.9	-2.4	-2.0	-3.5	-1.9	-1.1
91 - Activities of membership organizations n.e.c.	-5.3	-1.4	-4.5	-2.9	-5.9	-1.5
92 - Recreational, cultural and sporting activities	-5.4	-3.9	-3.4	-4.4	-2.2	-2.5
93 - Other service activities	-6.8	-6.3	-6.9	-6.7	-6.4	-8.8