AccessLab

Regional Labour Market Adjustments in the Accession Candidate Countries

Workpackage No. 5

Ruta Aidis (UCL)
Kate Bishop (UCL)
Sjef Ederveen (CPB)
Jan Fidrmuc (ZEI)
Jana P. Fidrmuc (Erasmus University)
Janos Köllö (EI)
Tomasz Mickiewicz (UCL)
Almos Telegdy (CEU)
Laura Thissen (CPB)

Wage and Employment Decisions of Enterprises in Downsized Industries

October, 04

The European Union

Fifth Framework Programme

AccessLab

Regional Labour Market Adjustments in the Accession Candidate Countries

Workpackage No. 5

Wage and Employment Decisions of Enterprises in Downsized Industries

Deliverable No. 11 to 13

Ruta Aidis (UCL)
Kate Bishop (UCL)
Sjef Ederveen (CPB)
Jan Fidrmuc (ZEI)
Jana P. Fidrmuc (Erasmus University)
Janos Köllö (EI)
Tomasz Mickiewicz (UCL)
Almos Telegdy (CEU)
Laura Thissen (CPB)

Assistance: Maria Thalhammer, Andrea Hartmann, Andrea Grabmayer

Project Partners:

WIFO - Austrian Institute of Economic Research (Lead)
CPB - Netherlands Bureau for Economic Policy Analysis
DIW - German Institute for Economic Research
EI - Hungarian Academy of Sciences - Institute of Economics
SITE - Stockholm Institute of Transition Economics
UCL/SSEES - University College London - School of Slavonic and East European Studies
ZEI - Centre for European Integration Studies
ZEW - Centre for European Economic Research

AccessLab

The 5th framework programme research project ACCESSLAB researches the capability of candidate countries' regions to deal with asymmetric shocks. Its goal is to provide analysts and policy makers with research results relevant to the process of enlargement. The project takes a broad and comparative view of labour market adjustments to address these issues. It examines the topic from both a macroeconomic and microeconomic viewpoint. It considers different adjustment mechanisms in depth and compares results with the European Union. It draws on a) the experiences in transition countries in the last decade, b) the experience of German integration and c) the experiences of border regions to gain insights on the likely regional labour market effects of accession of the candidate countries.

Web Page: http://accesslab.wifo.ac.at/

e-mail: huber@wifo.ac.at

CONTENTS

Which entrepreneurs expect to expand their businesses? Evidence from survey data in Lithuania.

Ruta Aidis and Tomasz Mickiewicz

DELIVERABLE 13: Accession-Related Structural Adjustment to Regional Shocks in Manufacturing Sectors of Leading Candidate Countries

Wage Bargaining, Privatisation, Ability to Pay and Outside Options: Evidence from Hungary

Janos Köllö and Thomasz Mickiewicz

Wage Determination: Privatised, New Private and State Owned Companies. Empirical Evidence from Panel Data,

Kate Bishop and Tomasz Mickiewic

Inherited Labour Hoarding, Insiders and Employment Growth. Panel Data Results: Poland, 1996-2002.

Tomasz Mickiewicz, Kate Bishop and and Chris Gerry

Wage and Employment Decisions of Enterprises in Downsized Industries: Summary and Policy Implications

Tomasz Mickiewicz and Peter Huber

Introduction

Socialist firms differed in many ways from firms in developed market economies. In particular, they did not face the risk of bankruptcy even if losses were high (see: Svejnar, 1999) and were also providing many social services, substituting for the role played by state agencies in market economies. Given these differences and the rapid transformation from planned to market oriented economies in many of the candidate countries and new member states of the European Union it should not come as a surprise that a substantial literature has developed, which is concerned with the reaction of firms employment and wages to changes in output (see: Svejnar (1999) for a recent survey). The central themes in this literature is to determine whether there still are any differences in the behaviour of firms in transition and to what degree these differences in firm behaviour impact on labour market outcomes.

The general findings of this literature (see the literature summary provided in work package 1 of the AccessLab project) are that:

while the elasticity of employment with respect to sales was either insignificant or low before the transition period, it increased during transition

the elasticity of employment with respect to the own wages of the firms has increased in the transition period,

wages became more responsive to sales in the candidate countries.

Thus the evidence suggests that firm behaviour quickly adapted to the new situation after transition. In reviewing the literature and comparing the results to studies on mature market economies Svejnar (1999) concludes that "firms in all CEE economies started adjusting employment to output changes and the estimated elasticities rapidly rose to levels that are by and large comparable to those estimated in western economies".

The literature, however, also finds substantial heterogeneity among firms. Since restructuring incentives may be influenced by both the market situation of firms and ownership, a number of researchers have differentiated between firms with growing or falling sales. In particular the results of this research suggest that:

- Both firms with increasing as well as decreasing sales started to adjust employment during transition, but firms with falling sales started adjustment already before transition.

- That ownership type and legal form have ambiguous effects on labour demand elasticities which may be caused by the fact that most of the evidence is based on data from the early transition period and small number of cross sections, which do not allow to capture the full impact of ownership changes. In addition, employment changes were net effects of two adjustment processes with opposite signs, in operation at the same time: (i) policy to shed labour - to eliminate initial labour hoarding, (ii) increased demand for labour following possible increase in sales accompanied by increased labour productivity. Indeed, more recent results suggest that in the later stage of transition the difference between ownership sectors may be more pronounced.

Contents of this Report

This report of the AccessLab report presents a wide range of contributions focusing on these potential differences in enterprise behaviour and on the impact of labour market institutions in the new member states and the candidate countries. We, however, extend on this literature by providing detailed analyses on a) the impact of incentive structure for managers created in the candidate countries and new member states, and by b) focusing in some detail on the regional determinants of firm growth and firm wage policies in these countries. This report thus brings together a total of nine studies were delivered. Seven of them focus on large industrial firms, which is a main theme. However, we also included a study on small and medium size enterprises, which enables us to draw some additional comparative conclusions. In addition one study takes a broad cross country view and complements the micro focus with more general macro level lessons on the impact of labour market institutions on employment and unemployment in the new EU member states. The central themes of these studies circulate around the topic of the regional and firm level determinants of enterprise restructuring in new member states and candidate countries, and the reasons for different national outcomes with respect to regional labour market outcomes.

In particular in the contributions to Deliverable 11 of the project Ederveen and Thissen (in Chapter 1) focus on the influence of labour market institutions (including employment protection), from a broad comparative perspective, by using well corroborated models of the impact of institutions on labour market outcomes for the EU and determining the position of the candidate countries and new member states in these models, while Fidrmuc and Fidrmuc (in chapter 2) as well as Fidrmuc (in Chapter 3) focus on the role of managerial change and the company code in Slovakia and the Czech Republic on the potential for motivating mangers to restructure companies.

Deliverable 12 by contrast focuses directly on the labour market restructuring in these countries, determining the role of firm characteristics such as ownership, size and location in such restructuring activities as well as human capital of managers and owners. Particular emphasis is given to the role of location and market potentials in shaping enterprise level employment and wage changes, to the role of management skills and finally to the effect of

company size in furthering employment and wage changes. Telegdy (in chapter 4) focuses the case of Romania and considers, inter alia, the link between employment dynamics and the impact of the distance from the Western border (i.e. with Hungary), which may be seen as a measure of distance from the key market. Fidrmuc and Fidrmuc (chapter 5) considers the role and interrelationship of quality of managers and their incentive structure in determining enterprise restructuring while Aidis and Mickiewicz (chapter 6) investigate why some business owners of SMEs intend to expand their firms, while others do not, looking in particular at the role of owner's human capital and perceived impediments to business activity such as corruption, in determining expansion plans.

Finally, in deliverable 13 we focus directly on the responsiveness of wages and employment decisions of firms to the regional labour market conditions and alternative wages of workers. Furthermore, although other regional characteristics are often considered only as control variables, they do deliver important insights on the role of infrastructure and market potential in shaping regional labour market experiences. In particular Mickiewicz and Köllö (in chapter 7) focus on the elasticity of wages with respect to regional unemployment in Hungary. They offer some refinements of previous results suggesting relatively high elasticities (e.g. Grosfeld and Nivet 1999). Firstly, the study relies on regional unemployment rates with smaller measurement errors, obtained by weighting the corresponding local unemployment rates by shares of employment of a given firm in individual establishments (in large firms, employment is typically spread across several location, which are not necessary in the same region as the company registered office). Secondly, parallel to Dobbelaere (2004), they use regional unemployment data not only directly, but also as a component of a simple composite measure of reservation wage, which is closer to the theoretical model specification, combining regional unemployment level, unemployment benefits and outside wages.

Mickiewicz, Gerry and Bishop (in chapter 8) by contrast focus on the employment decision of large firms in Poland and argue that employment functions found in empirical literature may be misspecified, and the assumptions that regional wages, commonly used in applied work, are good proxies for outside options may be misleading. Furthermore they include regional measures of the quality of infrastructure based on Duffy and Walsh (2001) in their regression and thus provide evidence of the role of infrastructure on firm level employment decision. Finally, Mickiewicz and Bishop (chapter 9) complement the study by Mickiewicz and Köllö (chapter 7) by also focusing on wage determination. In addition they provide results for different ownership types and focusing on the role of rent sharing in Poland.

Results

The central findings of this work package are:

The regional economic structures in the new EU member states which have been shown to be characterised by an imbalance caused by the dominant position of the capital cities (a characteristics inherited from the centralisation of the administrative, political and economic structures before transition) are also reflected in enterprise level adjustment processes. Some evidence that location in capital city has positive effect on employment growth in particular for SMEs is provided by Aidis and Mickiewicz (chapter 6). This is consistent with the general pattern of regional heterogeneity and with capital cities playing a role of outliers with high growth rates in the economic development of the new EU member states, due to the political, economic and administrative centralisation inherited from the command economy system and also consistent with earlier findings (see also: Mickiewicz and Bell, 2000).

The vicinity to a high demand potential plays an important role in firm level employment growth in candidate countries and member states. This conclusion is reached in a number of contributions to this work package (see Telegdy – chapter 5, Mickiewicz, Gerry and Bishop – chapter 8). In particular for smaller economies, links to foreign markets, (i.e. exporting) play an important role supporting employment creation (see Aidis and Mickiewicz – chapter 6). Further results which point in this direction comes from including distance to European Centres. In particular, for Romania (see Telegdy-chapter 4) the link between employment dynamics and the impact of the distance from the Western border (i.e. with Hungary), which may be seen as a measure of distance from the key market is highly significant. Furthermore, closeness to the Western markets implies higher responsiveness of employment to wages and there is evidence that regional growth is directly correlated to the employment behaviour of firms: better regional performance implies more employment growth on firm level, regardless of own characteristics.

The quality of regional infrastructure is an important determinant of enterprise level employment growth. Regional measures of the quality of infrastructure were found to be significant determinants of firm level employment growth in the contribution by Mickiewicz, Gerry and Bishop in chapter 8. Firms in regions with better infrastructure create more employment at least in Poland.

While large firms are mainly downsizing, the employment creation comes from small and medium size companies, predominantly (see Mickiewicz, Gerry and Bishop - chapter 8). However, when the results are based on representative samples, the smallest category of enterprises (i.e. micro enterprises, below 10 employees) are not growing. Most of expected growth in employment comes from firms between 10-250 of employees (see Aidis and Mickiewicz – Chapter 6).

Furthermore, as found in Mickiewicz Gerry and Bishop (chapter 8) companies operating in several locations across the country ('nationwide') outperform firms, which operations are concentrated in one particular region. Those are companies, which operate as large nationwide capital groups. They contribute more to total employment creation than firms which have operations clustered in one particular regional location. Generally, a wider range of production locations thus increases the company's growth potential.

The mechanisms of the link between the regional variables and wage and employment on the firm level is complex, due to non-linearity, asymmetries and interactive effects. Therefore, the results on the link between the regional variables are sensitive to the choice of measures and measurement errors.

Firm reaction to regional labour market conditions seems to be relatively high but varies substantially among firm types. Again this finding seems to be highly robust across the countries analysed and is found in Mickiewicz, Garry and Bishop- chapter 8, Mickiewicz and Köllö – chapter 7 as well as Telegdy - chapter 4. In particular wage dynamics in the state firms are highly sensitive to regional unemployment, unlike the private sector firms. This result is consistent with findings for the earlier transition period, in the literature. This sharp contrast in the unemployment elasticity of wages between the ownership sectors indicates that wage curve effects may have been evolving over time in countries, which undergo ownership transformations. In particular we may expect the unemployment elasticity of wages to decrease as a result of the privatisation process. In addition, it was found that it is the change in local unemployment, not the level of unemployment, which affects wage behaviour more significantly. In particular, where local unemployment is growing, the wages are becoming more sensitive to the sales/employee measure. The tentative interpretation is that the bargaining power of workers is affected by the changes in outside option.

Firm level wages are also influenced by regional wages. We find significant and positive regional wage coefficients in wage regressions. However, it is argued that this variable may be capturing some unobserved characteristics of the regional economies associated with firm growth.

1. The institutional environment and corporate control characteristics of enterprises are important determinants of the restructuring efforts of firms and thus have a direct impact on regional labour market conditions, and on wage and employment dynamics of industrial firms. State firms behave differently than privatised and *de novo.* In addition, the characteristics of managers affect performance of large companies in the new EU member states. This is found in the various contributions of Fidrmuc and Fidrmuc (chapters 2, 3 and 5) for the Czech Republic and Slovakia. In particular their contribution in chapter 5 suggests that the appointment of new managers has important effect on firm performance. The results suggest that it is not the ownership change and a new set of incentives alone that affect the pattern of adjustment in industrial companies, but a

complementarity of these with the new managers endowed with human capital, which matter for firm results.

2. Also, the quality of the institutional environment matters: corruption, both on the level of national administration and on the level of regional administration is detrimental to employment growth. The conclusion of this study is that while some reforms of the labour market institutions in the new EU member states may do not offer a complete explanation of high unemployment in these countries (see: Ederveen and Thissen – chapter 1), three more factors affecting subsequent unemployment growth are important there: (1) the delay in industrial restructuring (like in both Poland and Slovakia), (2) increase in labour force (esp. Poland) and (3) poor governance at the local level (see: Aidis and Mickiewicz – chapter 6). The first theme is consistent with the finding of micro studies of this work package: both ownership reform and managerial change affect restructuring and result in J-curve effects on employment. On the other hand, postponing restructuring results in a slow but steady reduction of employment.Moreover, corruption, not only on the national level, but also, in the regional administration is a strong factor affecting employment growth in the entrepreneurial sector.

Policy Conclusions

In terms of policy conclusions thus this work package suggests that:

- Institutional reforms alone may be insufficient to combat high unemployment in many of the new member states and candidate countries. While clearly the combat of corruption, improvement of governance, and reducing barriers to labour market flexibility are important aspects of a policy package to combat high unemployment in these countries, comparisons across the EU suggest that institutional differences alone cannot explain the higher unemployment in candidate countries and new member states. Aside from institutions, improvements in the human capital structure, increased efforts at implementing life long learning, regional strategies to increase local job creation seem to be equally important in reducing high unemployment rates in these countries. Thus a wider strategy for reducing unemployment in candidate countries and member states will be needed.
- Firm level job creation depends mainly on internal firm organisation (size, ownership status and multi- vs. single plant firms), human capital endownment of managers, on access to market potential and on surrounding infrastructure. While infrastructure is the only variable that can be influenced easily by policy, the results of the work package suggest that its role in determining firm level growth is dwarfed by market potential considerations. This has a number of implications for policy. First, it suggests that focusing on infrastructure development alone is too narrow a focus for a policy to increase regional employment growth in particular in the most backward regions of the new member states and the candidate countries. Second, the results together with our

previous results on mobility suggest a rather bleak outlook for these most backward regions. With firms investing and growing more strongly in regions with high market potential and workers unwilling to move to locations offering higher wages and better employment prospects, it seems unlikely that regional disparities in unemployment and wages will be equilibrated rapidly through capital or labour mobility. Any strategy addressing the problems of high unemployment regions in these countries should thus take into consideration that these problems are long term problems and will take a long term policy perspective to be solved. At the same time any policy focusing on strengthening regional growth poles will have to take into consideration, that spill over effects to structurally weaker regions are probably going to be minimal and will also take substantial time to materialise.

- Issues of corporate governance are important also from a labour market perspective. Our evidence suggests that the incentive structure of managers has a direct impact on firm level employment behaviour. Thus good corporate governance also improves employment prospects. Our results, however, also suggest that with the completion of the privatisation processes, the focus of technical assistance oriented on firms performance and employment growth should switch to skills enhancement, since it seems to be primarily the complementarity of skills and management incentives that have the largest impact to improve corporate governance.
- Since small and medium sized enterprises are important contributors to employment growth, policies to foster the development of SME's may add substantially to alleviating unemployment problems. In particular in depressed regions this could activate endogenous development potentials.

References

Brown, J., Ashenfelter, O., Testing the Efficiency of Employment Contract, Journal of Political Economy, 94, 40-87, 1986.

Dobbelaere, S., Ownership, Firm Size and Rent Sharing in Bulgaria, Labour Economics, 11, 2004, pp. 165-189.

Duffy, F., P. Walsh, Individual Pay and Outside Options: Evidence from the Polish Labour Force Survey, Discussion Paper, 295, IZA, 2001.

Grosfeld, I., and Nivet, J., Insider Power and Wage Setting in Transition: Evidence from the Panel of Large Polish Firms, 1988-94, European Economic Review, 43, 1999, pp 1137-1147.

Mickiewicz, T., Bell, J., Unemployment in Transition. Restructuring and Labour Markets in Central Europe, Amsterdam: Harwood Academic Publishers, 2000.

Svejnar, J., Labour Market in the Transitional Central and East European Economies, in Ashenfelter, Orley and David Card, Handbook of Labour economics, Volume 3, Elsevier Science, 1999, pp. 2810 – 2857.

Can labour market institutions explain unemployment rates in new EU member states?[a]

Sjef Ederveen[b] and Laura Thissen[c]

Abstract

Rigid labour markets are often held responsible for poor European employment performance. As of May 1st, the European Union has been joined by ten new member states. This study poses the question whether labour market institutions can explain unemployment rates in these new member states. In five out of ten new member states, unemployment rates lie above average unemployment in the fifteen old members of the European Union (EU-15). We find that labour market institutions in the acceding countries are less rigid then in the EU-15. Moreover, labour market institutions explain only a minor part of unemployment in the new EU member states. This does not mean that these countries have no labour market problems. Just as in the EU-15, a great deal of heterogeneity exists between the acceding countries. In some of them, labour market reforms could prove a key issue in improving employment performance. The main worry is poor labour market performance in Poland and the Slovak Republic, where unemployment has risen to almost 20%. Labour market institutions can not explain this development. We conclude that the main reasons for this growth are (i) postponed restructuring in combination with tight monetary policy; (ii) poor governance; and (iii) an increasing labour force.

Key words: labour market institutions, social security, wage bargaining, unemployment, transition economies, EU accession countries

[a] This research was supported under the European Commissions 5th Framework programme in the ACCESSLAB project.

[b] Ederveen: CPB Netherlands Bureau for Economic Policy Analysis. E-mail: Ederveen@cpb.nl

[c] Thissen: CPB Netherlands Bureau for Economic Policy Analysis. E-mail: Thissen@cpb.nl

1 Introduction

In May 2004, eight Central or East European countries and two Southern European islands have joined the fifteen members of the European Union (EU-15).[1] Under the centrally planned systems most of these countries were subject to, their labour market institutions were rigid: employees enjoyed a high degree of employment protection legislation and pay systems were fairly rigid (Nesporova 2002). Last April, the European Commission (EC) published her Recommendations on the update of the Broad Guidelines of the Economic Policies of the Member States and the Community for 2003-2005. In the recommendations per country, the EC makes remarkably little distinction between countries with high and with low unemployment, even though differences are large: Hungary has an unemployment rate of 6%, whereas unemployment in Poland reaches almost 20%. The Commission advises the new member states to lower their tax wedge, remove disincentives in the benefit system, and increase spending on active labour market policies, in other words: reform their labour market institutions in order to address poor labour market performance.

This report aims at answering the question whether or not labour market institutions can explain the large differences in unemployment rates in the new member states. Can unemployment in new member states be explained by rigidity of their labour markets or are other factors behind high unemployment rates in some of them?

The Commission's advice is consistent with the general economic view, based on research with OECD-countries, suggesting that labour market institutions determine the rigidity of a labour market (Nickell et al, 2001). Since flexible labour markets are better equipped to respond to changes in labour supply and demand, unemployment rates are lower in flexible labour markets. Unemployment in the new member states is perceived to be high. Combining this with their history of rigid labour markets, it is reasonable to expect a similar relationship between rigid labour markets and poor labour market performance holds for the new member states as well. If so, a solution is easily found: the new member states with high unemployment rates need to reform their labour market institutions and unemployment will decline as a result.

The EU-15 are known to have more rigid labour markets than the United States. Are labour markets in the new member states more rigid than those in the EU-15? After transition to a market economy set in in post-Communist countries, the social security system has been revised drastically, labour market regulation has been moderated, and all countries have moved away from the centralised bargaining system. After all these reforms, where do the new member states position themselves in the rigidity ranking now? And, if labour market institutions do not

[1] In this report, the fifteen countries already member of the European Union are referred to as EU-15, whereas the ten countries joining are referred to as 'new member states', 'acceding countries' or ACC-10.

provide an answer, what does cause unemployment to be almost 20% in Poland and the Slovak Republic?

Chapter 2 gives an introduction of the ten new member states, addressing labour market performance in these countries. Chapter 3 states theoretical relationships between labour market institutions and unemployment. Chapter 4 describes labour market institutions in the new member states and goes into the rigidity of their labour markets. Chapter 5 empirically examines the impact of labour market institutions on performance. Chapters 6 suggests other causes of unemployment and chapter 7 concludes.

2 New member states: an introduction

In May 2004, the European Union has been joined by eight Central or East European Countries (Poland, Hungary, the Czech Republic, the Slovak Republic, Slovenia, and the Baltic States) and two Southern European islands (Malta and Greek Cyprus). In 2007, Romania and Bulgaria will probably join. Even though most of the new member states share a history as centrally planned economies, large differences in unemployment have evolved over the past fifteen years. Before focussing on labour market institutions, we first provide a concise overview on the social and economic situation in these countries nowadays, and the differences among them.

2.1 Population

The total population of the new member states equals one-fifth of the total population of the EU-15. This means that 16% of the total population of the enlarged Union lives in a Central or East European country (see Figure 2.1). By far the largest country joining is Poland, with 38 million inhabitants. About 10 million Hungarians and 10 million Czechs have joined (Table 2.1). GDP as a percentage of total GDP in the EU-25 is far from proportional to the part the population takes up: only 5% of total GDP can be attributed to new member states.

Figure 2.1 Population as a percentage of the total population of EU-25, 2001 (left), and GDP as a percentage of total GDP in EU-25, 2002

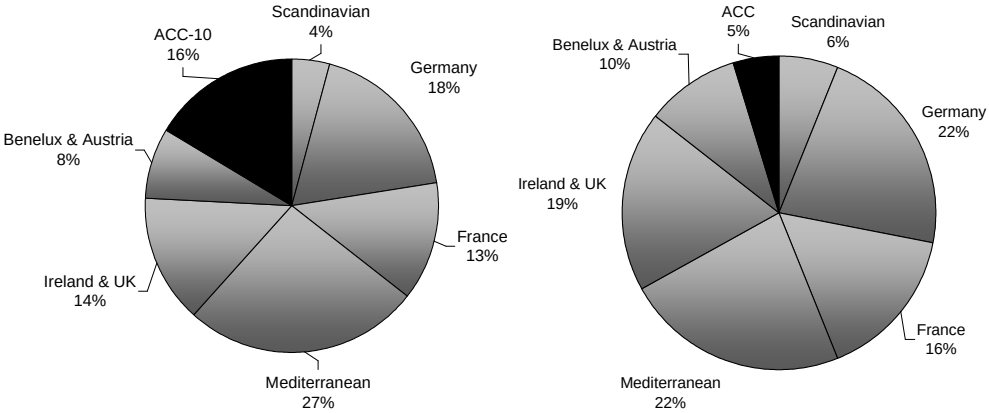


Table 2.1 Population in the new member states, 2001, in millions

Poland	38.2	Lithuania	3.5
Hungary	10.2	Latvia	2.4
Czech Republic	10.2	Cyprus	0.8
Slovak Republic	5.4	Malta	0.4
Slovenia	2.0	Bulgaria	7.9
Estonia	1.4	Romania	21.9

Source: Eurostat.

2.2 Productivity and wages

At the beginning of transition, labour markets in the acceding countries were characterised by full employment. Unemployment did not exist. Overstaffing and labour hoarding were common and gave rise to low productivity, and thus low wages. Figure 2.2 gives an overall impression of economic activity per person employed in 1995 and 2001, in relation to the EU-15 average. GDP is given in Purchasing Power Parities. Although productivity has been rising between 1995 and 2001 in the acceding countries, the average GDP-level in 2001 only reaches half the EU-15 average level. The United States exceeds the EU-15 average level. It should be noted that GDP per person employed does not distinguish between full-time and part-time employment.[2] Since the number of people working part-time is higher in the EU-15 than in the

Transition to a market economy

Economically, the main goals for the post-Communist countries were internal liberalisation (price reform, macroeconomic stabilisation, privatisation) and external liberalisation (removal of non-tariff barriers, removal of state monopoly over foreign trade). The countries adopted different reform packages in order to transform their economies. Poland's 'big bang strategy' involving simultaneously removing price controls, selling state enterprises to private investors and reforming government finance towards western models, was implemented rather smoothly. An advantage was the already existing private sector, consisting mainly of small private agricultural firms: just before the fall of Communism, already one third of the labour force was employed in the private sector. One of the main problems still remaining is the need to restructure the large agricultural sector.

Hungary, on the other hand, took a more gradual approach since the country had already taken some price liberalisation measurements during the mid-1980s and continued to implement these, together with privatising large state-owned enterprises and reforming state finance. In the beginning of the 1990s the Hungarian government was forced to stop the reforms due to economic depression but it resumed the thread in 1995. The private sector is growing slowly and mainly due to newly created firms rather than privatisation of state-owned companies.

Just after the fall of Communism, Czechoslovakia split up into the democratic Czech Republic and the Slovak Federal Republic. Both started immediately with price and trade liberalisation and privatisation of state enterprises, selling or dividing state property among the population by vouchers during 1992-1994. Slovakia experienced more difficulties than the Czech Republic in transforming into a market economy. The loss of Eastern markets hit Slovakia hard because of the structure of its industry. In the Czech Republic, the drastic privatisation increased the private sector from practically zero to an estimated three quarters of output in 1996. However, the state still has a majority or holds a stake in a number of large enterprises and banks.

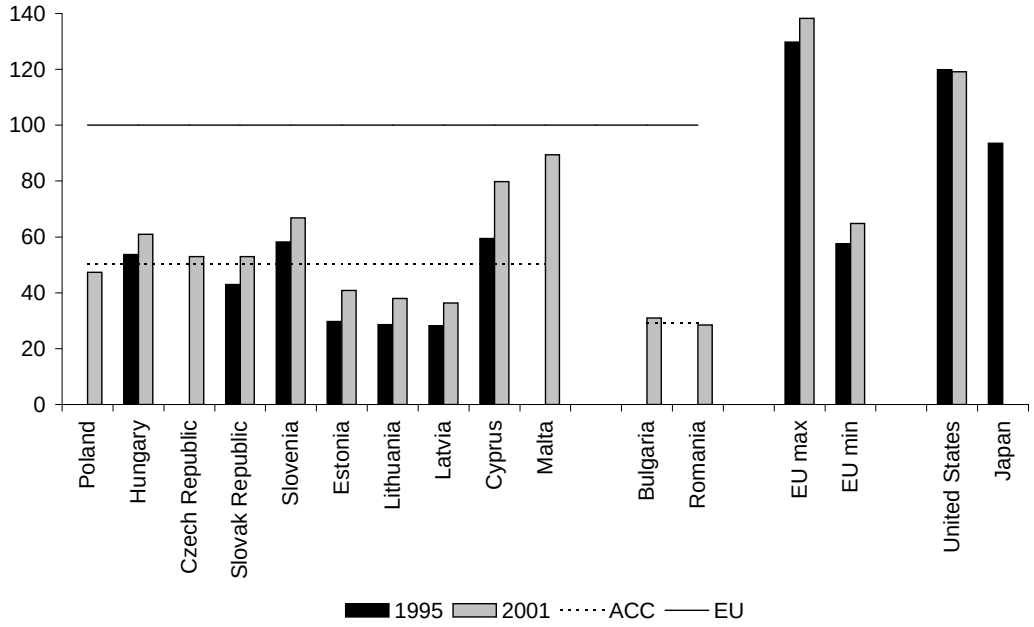
As the most prosperous part of former Yugoslavia, Slovenia already maintained economic relations with the EU. Moreover, the degree of centralisation was lower than elsewhere in central Europe. At the end of the 1980s the economic drawbacks of the Communist system became visible: high inflation, declining wages, and increasing debt. However, there were restrictions on property rights and the use of capital, there was excessive emphasis on heavy industry, large companies played a dominant role, and a substantial share of trade was directed towards Communist countries.

Estonia was the first Baltic state to have a functioning market economy with a fully privatised public sector and a privatised foreign trade system. Latvia and Lithuania still have a rather large agricultural sector in need of restructuring.

[2] GDP per hour worked takes this difference into account but is only available for the Slovak and Czech Republic.

new member states, the differences in GDP per hour worked will probably show an even larger gap between member states and acceding countries[3].

Figure 2.2 GDP in Purchasing Power Parities (PPP) per person employed relative to EU-15 (EU-15=100)



Source: Eurostat. Averages in figures are weighted on basis of population (OECD 2001) unless stated differently.
EU max = Luxembourg for both years depicted. EU min = Portugal for both years depicted.

The former Communist countries were left with low wages and low wage differentials, partly due to the central way in which these wages were set. The key aspect of the stabilisation policies was the introduction of an income tax. However, the direct consequence of this tax was a sharp fall in real (consumer) wages in 1993, equal to around 80% of their 1989 level in the Czech Republic and 71% in Poland. After 1993, real wages slowly recovered except in Bulgaria and Romania. In most countries, wages lagged behind productivity, though a slow recovery took place in the mid 1990's. Slovenia and Estonia are exceptions: in these countries, productivity lagged behind real wages during the 1990's (Nesporova 2002).

Wages differ per sector. In for instance Poland, wages in public enterprises have remained above those in private firms, except in education and financial services. Figure 2.3 gives an idea of the wages in industry and services[4] in euros per year. As we will see in Figure 2.6 on page 10, 86% of employed people work in these sectors. The (gross) values given in the figure give

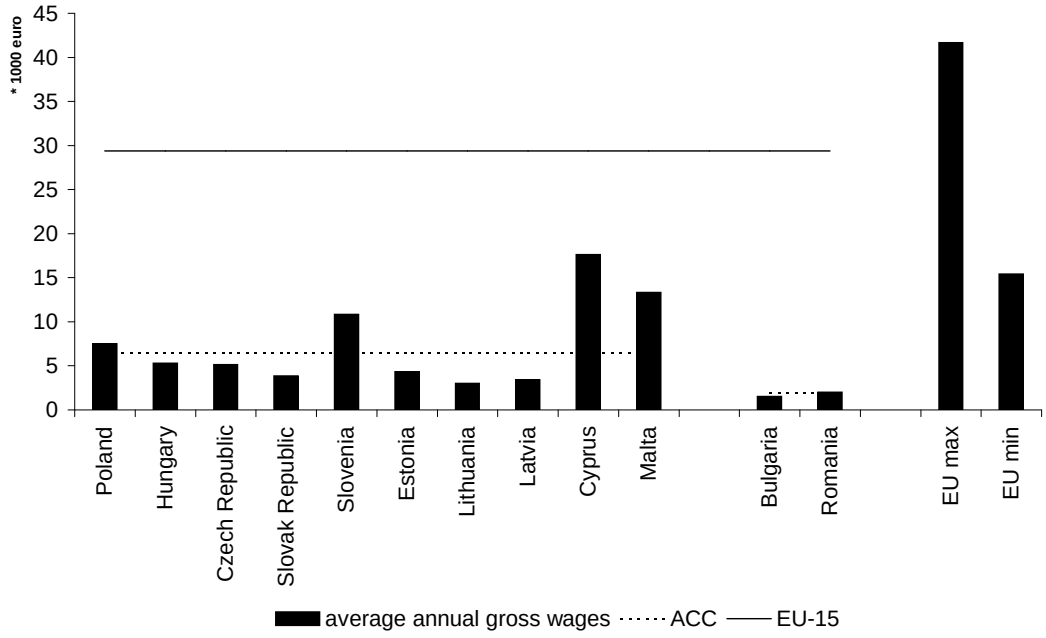
[3] In the EU-15, on average 13.8% of total employment is part-time. In Hungary, the Czech Republic and Slovakia this percentage ranges from 1.9-3.2%. Poland's part-time employment approaches the EU-15 average with 11.6% (OECD 2002b, data for 2000).

[4] Eurostat provided the data in Figures 2.3 and 2.6 on page 17. Eurostat distinguishes three economic sectors: agriculture, industry, and services. Since the first of these sectors includes fishing, but not mining and quarrying, the three sectors here are called "agriculture, industry and services" instead of "primary, secondary and tertiary sectors" (Eurostat 2002).

an idea how low wages still are compared to wages in the EU-15. However, the amounts are not given in Purchasing Power Parities which would reduce the gap. As far as detailed data for 2000 are available, earnings are generally lowest in hotels and restaurants. Among the member states, Portugal has the lowest level (8555 euro); of the acceding countries, Bulgaria scores lowest (908 euro per year). In contrast, in most countries financial intermediation has the highest earnings, the top figures among the member states being recorded in the United Kingdom (57646 euro) and for the acceding countries in Malta (22032 euro) (Eurostat 2003).

To further illustrate the differences between EU-15 and ACC-10 wages, the average weighted minimum wage in the EU-15 is 962 euro per month, which would add up to 11-12 thousand euro per year. This is higher than the average annual wage in all new member states, except Cyprus and Malta. However, differences in purchasing power are not taken into account here.

Figure 2.3 Average annual wages in industry and services, 2001



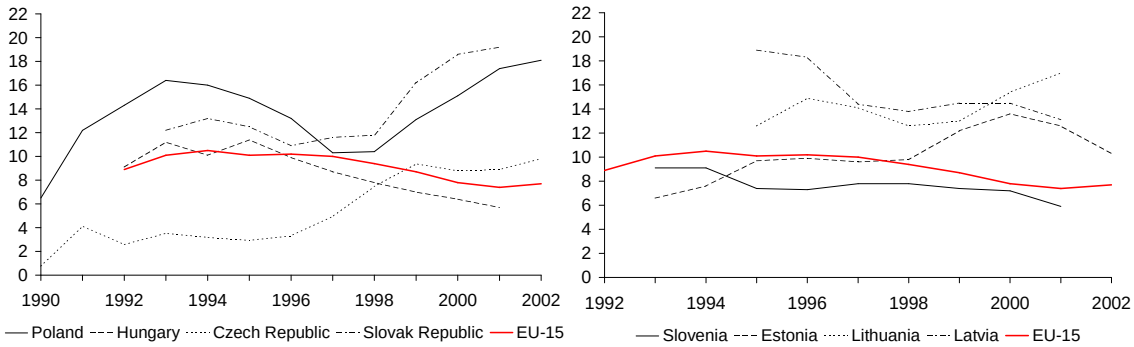
Source: Eurostat 2003. No data available for Ireland, Italy, Austria. EU-15 average is based on available data and taken from Eurostat (2001). ACC-average based on own calculations. Lithuania 1999. EU max = Denmark. EU min = Greece.

2.3 (Un)employment

When economies opened to world markets through the introduction of economic measures that also allowed rapid price liberalisation, combined with strict macroeconomic stabilisation policy, the result was a steeper than expected decline in the economic performance of these countries. Domestic demand fell sharply, first for consumer goods and services and then for investment goods. Subsidies for enterprises were cut and productivity had to increase in order to compete with imported products. This led to a sharp increase in registered unemployment rates in the

beginning of the 1990s. After converging, a second upward trend in Poland, Slovakia, Lithuania, Bulgaria, but this time also in the Czech Republic and Estonia, began around 1998 (Figure 2.4). Since then, rates have diverged: countries performing worst (Poland, Slovak Republic, Lithuania and Bulgaria) expose further increasing rates while others show stable rates around 7%[5] (Nesporova 2002). Whereas unemployment increased in Poland and the Slovak Republic, it decreased in Hungary and the Czech Republic.

Figure 2.4 Unemployment rates 1990-2002



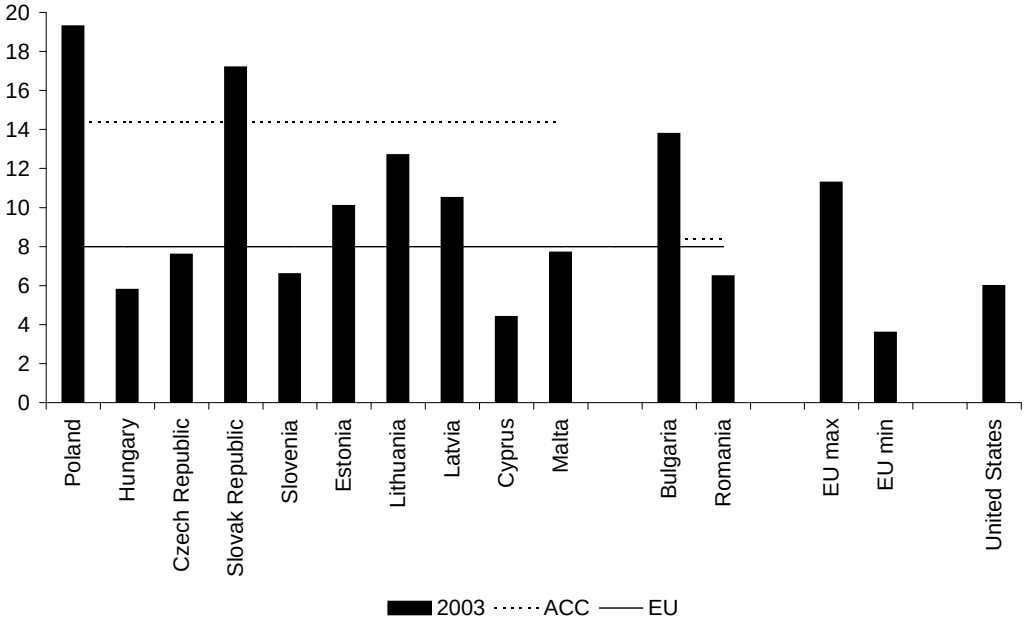
Source: Labour Force Survey/European Training Foundation/UNECE. Data for Poland are end of year figures.

The average unemployment rate in ACC-10 in 2003 is higher than the average unemployment rate in the EU-15: 14.4 versus 8.0%, respectively (Figure 2.5, top figure). According to recent research, 78% of the acceding countries' population lives in regions with unemployment rates in excess of 10%, whereas the corresponding figure in member states' regions is 34% (Gacs & Huber 2003). However, the rate is mainly high because of rising unemployment in Poland and the Slovak Republic in recent years. Leaving Poland and Slovakia aside, average unemployment drops below the EU-15 average, to 7.8%. In 5 out of 10 countries, unemployment is below the EU-15 average.

The changes in unemployment are not reflected by the same changes in employment as becomes clear when comparing the graphs in Figure 2.5 below. Employment in Poland is lowest of all countries, at a rate of 51.5, implying half of the population is not employed. The failure of employment in Poland to increase during past periods of high growth, the concentration of unemployment among certain groups and persistently high regional unemployment rates, point to the increasingly structural nature of unemployment in Poland (OECD 2001).
Hungary, the country with the lowest unemployment rates also has a low employment rate.

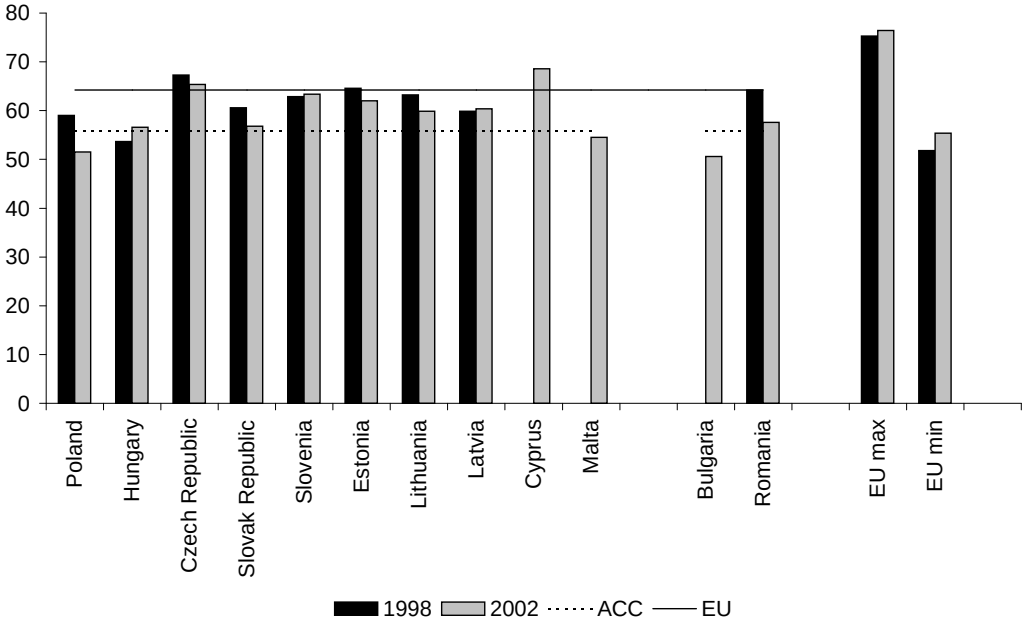
[5] Particular groups were worse off, such as elderly, almost retired employees, young employees, members of ethnic minorities such as the Roma, and women. Unemployment rates are still higher for females than for males, except in Hungary, Bulgaria, and Romania.

Figure 2.5 Unemployment rates, 2003, and employment rates, 1998 and 2002 (below)



Source: Eurostat. EU max = Spain. EU min = Luxembourg.

Unemployment rates represent unemployed persons as a percentage of the labour force. Unemployed persons comprise persons aged 15 to 74 who were: a. without work during the reference week, b. currently available for work, i.e. were available for paid employment or self-employment before the end of the two weeks following the reference week; c. actively seeking work, i.e. had taken specific steps in the four weeks period ending with the reference week to seek paid employment or self-employment or who found a job to start later, i.e. within a period of at most three months.



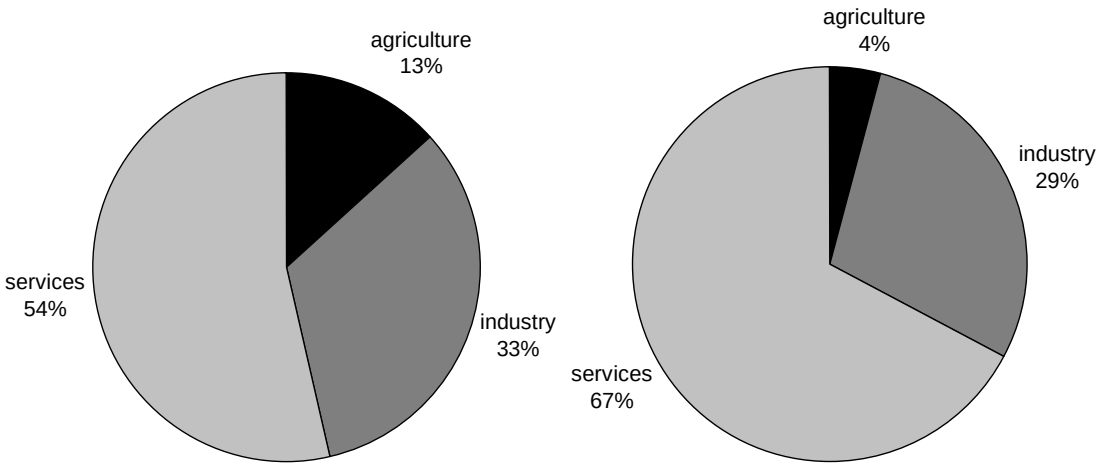
Source: Eurostat. EU max = Denmark. EU min = Italy. Averages are based on data for 2002.

The employment rate is calculated by dividing the number of persons aged 15 to 64 in employment by the total population of the same age group. The survey covers the entire population living in private households and excludes those in collective households such as boarding houses, halls of residence and hospitals. Employed population consists of those persons who during the reference week did any work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent.

Loss of employment in the formal sector caused the informal sector to grow in the acceding countries, especially in the first years of transition. Economic recovery and progress in legislative reform in Central Europe have been accompanied by some reduction in informal sector activity. A reason for expansion in the informal sector is tax evasion, facilitated by legislative changes lagging behind economic developments and by poor law enforcement. A second factor is the large decline in incomes experienced by a major share of the population in connection with the transition crisis and rising unemployment (Nesporova 2002). When employment in the informal sector is taken into account, unemployment rates are presumably lower than the registered rates.

Before transition, the defence, oil and gas extraction industries were the major providers of employment in the industrial sector, whereas the services sector was underdeveloped. Large state-owned enterprises dominated all sectors. The private sector was virtually non-existent or played a minor role, as was the case in Hungary and Bulgaria. Poland was the one exception: agriculture was based on small private family farms (Nesporova 1999). In 2001, services rather than industry is the dominant employment sector in the acceding countries, as is the case in the EU-15 (Figure 2.6). The agricultural sector is substantially larger in the acceding countries, mainly due to Poland. Were Poland left out, the share of agriculture would decline to 8%. The large agricultural sector in need of restructuring bodes ill for future unemployment in Poland and the Baltic States Lithuania and Latvia.

Figure 2.6 Employment by sector in acceding countries (left) and in EU member states, 2001

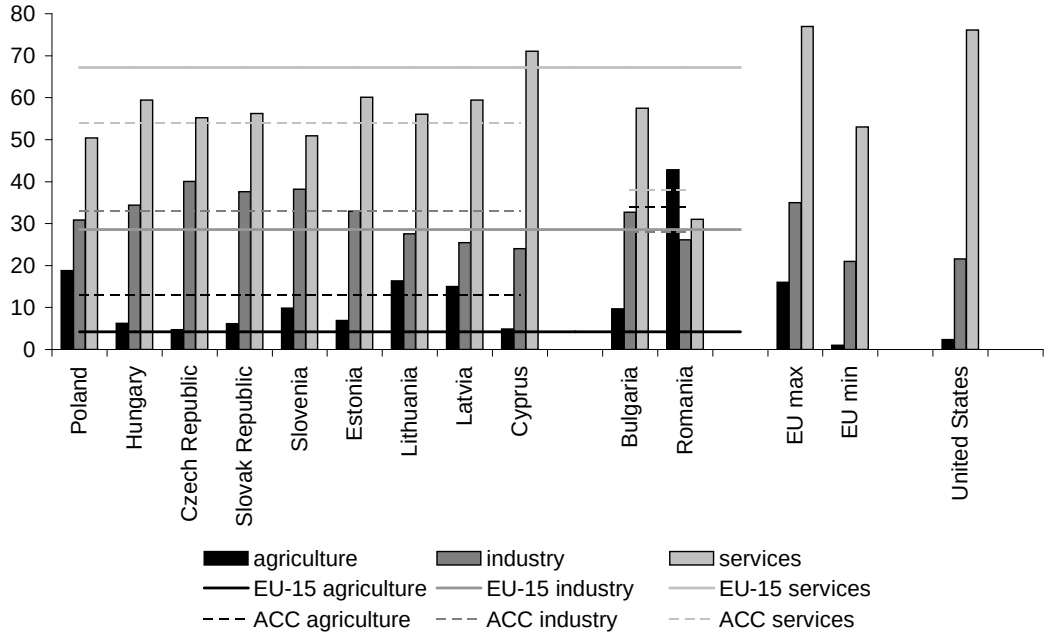


Source: Eurostat (see footnote 4 for definitions on the sectors).
Percentages are weighted averages for 2001. No data are available for Malta. Second wave countries are not included.

Figure 2.7 shows the shares per country. Indeed, the share of employment in agriculture still is large in Poland, Lithuania and Latvia, although it has been declining over the past ten years in all countries except in Romania. In Poland and the two Baltic States Lithuania and Latvia one

out of six employed people still works in the agricultural sector. In Romania, 43 percent of the labour force works in the agricultural sector.

Figure 2.7 Employment per sector (as a percentage of total employment), 2001



Source: UNECE. No data for Malta. EU max = Greece, Portugal & Luxembourg for agriculture, industry and services, respectively. EU min = United Kingdom, Netherlands/Luxembourg and Portugal for agriculture, industry and services, respectively.

2.4 Conclusions

- In the EU-25, 16% of the population will be living in a Central or East-European country, together producing only 5% of total GDP;
- Productivity in the ten new member states has been rising but on average, only reaches 50% of EU-15 level in 2001. As a result, wages are low;
- Unemployment in the new member states converged to about ten percent in 1996. Since 1998, rates have been diverging again: unemployment is high in Poland and the Slovak Republic, but lower than EU-15 average in five out of ten new member states. Excluding Poland and the Slovak Republic, unemployment is 7.8% in the new member states, which is just below the average in the EU-15 (8.0%);
- Poland, Lithuania and Latvia have a high share of agriculture. Since this sector is in need of restructuring, this bodes ill for future unemployment. Employment in the industrial sector is larger and in the service sector lower.

In the next sections, we focus on the theoretical relationships between labour market institutions and labour market performance in the new member states.

3 Theoretical impact of labour market institutions on unemployment

Labour market institutions are often held responsible for poor European labour market performance. In this section, we describe the main mechanisms through which institutions can influence the working of the labour market. Furthermore, we discuss empirical evidence and assess the effects of labour market institutions in the acceding countries.

A convenient starting point for thinking about the effects of labour market institutions on wages and unemployment is provided by a model of wage bargaining. In such a model, wages are bargained over by employers and employees. In the bargaining process, employers try to keep wages low to maximise their profits, whereas employees try to maximise their real net wage. Both sides have full knowledge with respect to the relevant labour market institutions and they use this in trying to obtain an optimal outcome of the bargaining process.

In this document, we will not derive a fully specified mathematical model relating labour market institutions to wages and unemployment. One reason for this is that there is no single best model, and different models lead to different predictions. Another reason is that we don't want to loose the reader in a long mathematical exposition, whereas it suffices for our purpose to sketch the main mechanisms through which labour market institutions affect unemployment. To give some flavour of how these relations could formally be modelled, we briefly sketch the main features of the so-called right-to-manage framework in the box. The interested reader is referred to Nickell, Layard and Jackman (1991) and Pissarides (1990), who describe a number of models that relate institutions to unemployment in more detail.
In the following, we focus on the labour market institutions that are generally acknowledged to have important impacts on labour market performance. These are taxes and social security, the role of unions, active labour market policies, employment protection legislation and minimum wages. In the next chapters, we will describe the main features of these institutions in the new member states of the European Union, compare that to the EU-15 and empirically link it to unemployment. Here, we restrict ourselves to the theoretical impact.

Social security

It almost goes without saying that higher unemployment benefits may increase unemployment. The reason is that higher benefits raise the fallback position of the worker, that is the expected income if negotiations break down. As a consequence, the bargaining position of the employee improves, wage demands will be higher and so will unemployment. In a model, as for example in the right-to-manage framework described in the box, this effect is explicitly taken into account in the specification of the reservation wage $\hat{W}$.

Wage formation in the right-to-manage model

In the right-to-manage framework, wages are determined by negotiations between trade unions and employers' associations. The outcome of the negotiations can be described by the following Nash bargaining optimisation:

$$\underset{w}{Max}\,\Omega = \Pi^{\alpha} U^{1-\alpha}$$

where *Π* and *U* represent the interests of the employers' organisation and the trade unions, respectively. The parameter *α* represents the relative bargaining power of the employers' organisation. In particular, if *α* = 1, bargaining is completely dominated by the employers, whereas *α* = 0 indicates complete domination by the union. Negotiating partners maximise the bargaining outcome with respect to the contractual wage rate *W*. Employment is determined unilaterally by labour demand of employers.

The employer aims to maximise profits *Π*, i.e.

$$\Pi = PY - WL$$

where *P* and *Y* denote the price and the volume of value added and *L* stands for employment. According to this equation, lower wages are in the interest of firms since they increase profits.

The utility-function of the trade union reads as follows:

$$U = L^{\eta}\left[W(1-t_a) - \hat{W}\right]^{1-\eta}$$

Hence, trade unions care about both wage incomes and employment among their members. The parameter *η* represents the value that unions attach to employment, relative to wages. If *η* = 1, unions do not care about the wage level, whereas *η* = 0 indicates that they are only interested in the wage rate. In all other cases, trade unions face a dilemma between wages and employment. On the one hand, unions act in the best interest of its members and aim at setting wages high. On the other hand, they take into account that higher wages have a negative impact on the demand for labour by employers. The utility that trade unions derive from higher wages is defined relative to the so-called fallback position for workers, or reservation wage $\hat{W}$. This reservation wage is the expected income for a worker in case the wage negotiations break down and the worker loses his job.

Optimising the Nash bargain with respect to the wage rate and the relationship between labour demand and wages, we arrive at the following expression for wages:

$$W = \frac{\chi_1 \hat{W}/(1-t_m) + \chi_2 PY/L}{\chi_1 \dfrac{1-t_a}{1-t_m} + \chi_2}$$

where $\chi_1 = \alpha + \eta(1-\alpha)/(1+\varepsilon^{-1})$; $\chi_2 = (1-\alpha)(1-\eta)$; ε the price elasticity of demand.

This expression shows that wages are determined as a weighted average of the reservation wage and labour productivity with the weights depending on the parameters of the bargaining process. It further reveals that real wages increase if the relative bargaining power of the trade unions increases (i.e. lower *α*) or if trade unions care more about wages relative to employment (i.e. lower *η*). Moreover, a higher replacement rate, i.e. an increase in unemployment benefits *B* relative to wages, raises wage demands via the reservation wage $\hat{W}$. Apart from these institutional parameters, real wages are negatively related to the unemployment rate according to the wage curve.

The importance of this effect is determined by the level of the benefits relative to the wage level. This ratio is measured by the replacement rate. So, according to the theory, the higher the replacement rate, the higher unemployment.

Another important feature of the social security system is the duration of unemployment benefits. The longer the duration of the eligibility for unemployment benefits, the stronger the effect of the replacement rate on unemployment will be. Empirical evidence suggests that long term benefits generate long term unemployment (see e.g. Nickell and Layard, 1999).

A third related aspect of the unemployment benefit is the strictness of eligibility. In the model in the box, it is simply assumed that workers are eligible for benefits when they become unemployed. In practice, this is often not the case. We will come back to this when describing the institutions in the new member states. Available empirical research shows that the severity of the benefit system may be an important determinant of unemployment duration (see e.g. Abbring et al. (1999) and the Danish Ministry of Finance (1999)).

Active Labour Market Policy

Active labour market policy can take various forms. It involves both the creation of jobs for certain groups of unemployed people in the public sector and it includes wage cost subsidies for specific forms of employment in the private sector. Regardless of the specific form, active labour market policy in itself will have a positive effect on employment. However, it has to be paid for as well. One also has to be careful in assessing the effects of job creation in the public sector, as it leads to a reduction in employment in the private sector because vacancies there become more difficult to fill. Dahlberg and Forslund (1999), for example, reach the conclusion for Sweden that the ultimate net employment effect of the active labour market policy is 35% of the number of jobs created. For the Netherlands, Jongen et al. (2003) find a net employment effect of between 31% and 48% of the number of jobs created in the public sector.

One way of modelling active labour market policies is by assuming that unemployed get a subsidy when they find work and that taxes are raised by the same amount to pay for this subsidy. Getting a subsidy is yet only one of the many programmes active labour market policies cover. The wide variety of programmes and the various effects that might be important, make it hard to model it in one model. Some schemes have been modelled by Pissarides (1990) in the context of the matching process. Quite apart from their effect on matching efficiency, active labour market policies may affect the productivity of job seekers. This is the aim of labour market training as well as of various work experience programmes. Calmfors et al. (2002) provide a summary of the theoretical discussion on the expected effects and draw some lessons from the Swedish experience.

Taxes

In addition to the social security benefits system, taxes also play a role in the redistribution of income. If taxes are progressive, then people with a high income will pay proportionately more tax than people with a low income. As a consequence, wage demands are moderated because they are less valuable, leading to lower unemployment. In the right-to-manage framework in the box, this effect can be seen through the way the marginal tax rate t_m and the average tax rate t_a enter the model. However, a probably more important effect of fiscal progression is that it has negative consequences for labour supply. It reduces the incentives for people to work harder because free time becomes more attractive than consumption. Both empirical work of Newell and Symons (1993) and simulation results for the Netherlands (Graafland et al., 2001) conclude that higher progression in the end leads to less employment.

Next to the progressiveness of the system, also the tax wedge itself is an important determinant of wages and unemployment. Intuitively, a higher tax wedge raises the relative attractiveness of working in the informal sector. These activities are not taxed because they simply are not subject to taxation, such as household production, or because taxes are evaded (black market activities). In the bargaining model, this implies a better fallback position, thereby strengthening the bargaining position of the union in the formal sector. Phelps (1994) and Pissarides (1996) model these effects formally. Furthermore, just as with progressive taxes, a higher tax wedge can discourage labour supply and result in less employment.

The role of unions

In a bargaining model, an important determinant of real wages (and unemployment) is the relative bargaining power of the employee or trade union relative to the employer('s association). The bargaining position of trade unions depends first of all on the number of people that unions represent. The higher is union density, the better is the relative bargaining position of the trade unions.

The institutional level at which negotiations take place is another factor that influences the outcome of the bargaining process. We can distinguish between three levels of wage bargaining: firm- or plant-level (decentralised bargaining), industry-level (bargaining at the intermediate level) and countrywide level (centralised bargaining). In many countries, also informal networks and intensive contacts between social partners coordinate the behaviour of trade unions and employers' associations. Examples are the leading role of a limited number of key wage settlements in Germany, and the active role of powerful employer networks in Japan (Soskice, 1990). Therefore, not only the formal degree of centralisation matters, but also the degree of informal consensus seeking between bargaining partners. This is generally called the level of coordination. For highly centralised bargaining systems, the degree of coordination and

centralisation are likely to coincide. More decentralised systems may, however, exhibit higher degrees of coordination than the formal level of centralisation suggests.

There exist different views on how these different levels of wage bargaining affect the labour market. First, the neoliberal school argues that the more decentralised and the less coordinated the bargaining process, the less bargaining power trade unions can exert. Second, the corporatist school argues that centralised or coordinated bargaining results in the lowest real wage demands, because centralised wage setters are more aware of the negative externalities associated with high wages. The third view combines both arguments into a hump-shaped relationship with the highest real wages at the intermediate industry-level, while wage levels are lower at both the decentralised and the centralised level (Calmfors and Driffill, 1988). The arguments underlying the hump-shaped hypothesis are based on a closed economy. In an open economy, consumption prices are also affected by imports while producer prices are determined on international markets. It has therefore been argued that real wage levels are more or less independent of the bargaining structure in open economies (Danthine and Hunt, 1994).

Employment Protection Legislation

We now turn to the theoretical effects of job security regulations and laws concerning the use of fixed contracts. Strict dismissal protection makes it more difficult and more expensive for businesses to lay off staff. This reduces the number of dismissals and can thus lead to a fall in unemployment. Furthermore, it encourages employers and employees to invest in company-specific knowledge and skills. On the other hand, it also makes employers more cautious in taking on new staff, and this makes it more difficult for the unemployed to find work. By lengthening the average duration of unemployment it may exacerbate the depreciation of knowledge and skills on the part of jobseekers. Dismissal protection is therefore attractive for those who have a job, but unfavourable for job seekers. This will tend to reduce short term unemployment and raise long term unemployment. The ultimate effect on total unemployment is however ambiguous (Mortensen and Pissarides, 1999).

There are different ways of including employment protection into a model of wage bargaining. An example is provided by Belot (2003), who models the effects of firing costs by assuming that each period a certain proportion of the workers is fired and that firms incur a fixed cost per fired worker. She shows that fewer dismissals, associated with stricter employment protection, weaken the bargaining position of the unions and therefore pull the wage down. Another possible extension allows for a severance pay. Suppose for instance that when firms want to fire one of their employees, they have to pay him a severance pay. Utility of employees improves with the transferred amount, but the firms' profits will be accordingly lower. If we assume that severance pay is higher when employment protection is stricter, we can conclude from the model that employment protection legislation has two opposite effects: on the one hand, wage

demands will be higher, because the fall-back position of employees improves as they earn a premium when they get fired. On the other hand, employers incur higher costs and therefore are not prepared to pay the same wage as in the case without employment protection legislation. The model does not provide a decisive answer about the ultimate effect on real wages.

Empirical research into the effect of employment protection on the labour market also fails to reveal any uniform effects. Boeri and Jimeno-Serrano (2003) discuss eleven studies, only three of which report a significant negative impact on employment and two a significant positive impact on unemployment. Most of the studies reach non-significant or ambiguous conclusions. Employment protection does appear relevant for the dynamics of the labour market: according to virtually all available empirical studies it leads to fewer dismissals and lower recruitment. Although the level of unemployment does not appear to change significantly on balance, employment protection does lead to a significant increase in the length of unemployment, and thus widens the gap between those in work and the unemployed.

Minimum wages

The theoretical effects of minimum wages on employment are well established. According to standard economic theory, a minimum wage leads to a reduction in employment. Employers find it too expensive to continue employing low-skilled workers at a wage which is higher than their productivity. This may explain why unemployment among the low-skilled is higher than among skilled workers. Despite this theoretical prediction, empirical literature from the United States suggests that the minimum wage has little effect on employment levels. Time series analyses show that an increase in the minimum wage of 10% leads on average to a fall in employment among teenagers of 1-3%, i.e. a fall in total employment of between 0.1% and 0.3% (Brown et al., 1982). Cross-sectional studies show even smaller effects (Card and Krueger, 1995).

The fact that American empirical research finds that changing the minimum wage has virtually no effect on employment may be related to its low level there: even if the minimum wage were increased by several percentage points, it would still be low. The same applies to the United Kingdom: Dickens and Manning (2002) conclude that the impact of the minimum wage is limited because it has been set at a level such that only 6-7% of workers are directly affected. It may therefore be that the minimum wage has a greater effect in continental Europe. Empirical estimates for the Netherlands by Van Opstal (1990) do indeed suggest greater employment effects in the 1980s. A study of Kertesi and Köllö (2003) discusses the effects of the recent increase of the minimum wage in Hungary in 2001 by no less than 57%. Their conclusions unambiguously point at a loss of employment opportunities. The effect was strongest in small firms. All in all, if minimum wages are set at such a level that a significant portion of the labour force is affected, they seem to lead to higher unemployment.

4 Rigidity of labour market institutions in the new EU member states

The combination of labour market institutions determines the rigidity of labour markets. The EU-15 countries are known to have more rigid labour markets than the United States. This is thought to be a reason behind lower labour market performance. This section addresses labour market institutions in the new member states in order to give an indication where they can be ranked in terms of rigidity. The first part of this chapter focuses on social security systems, the second part will address the process of wage formation in the acceding countries during the last fifteen years, and the third part examines regulation of the labour market in terms of minimum wages and employment protection legislation.

4.1 Social Security

This section will go deeper into the social security systems in the new member states:

- Level of replacement rates, eligibility for unemployment benefit and duration of the benefit;
- Tax wedge;
- Expenditure on active labour market policies.

4.1.1 Replacement rates

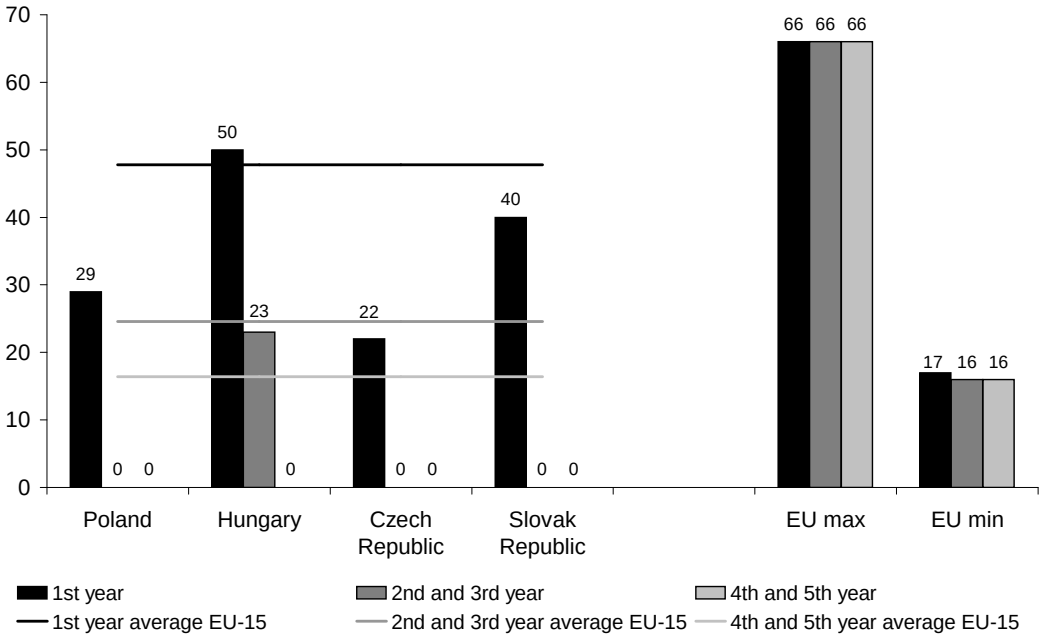
At the outset of transition there was no unemployment. The emergence of high rates of unemployment was not generally regarded by policy makers as a serious threat and most of the new East-European governments introduced fairly generous unemployment benefits (both in terms of eligibility, levels and duration). However, in the beginning of the 1990s unemployment rose sharply and so did the claims on benefits. Many countries reacted after 1991 by making eligibility rules more restrictive, shortening the duration of entitlement and cutting unemployment benefits (Scarpetta et al, 1994).

Replacement rates give an indication of the level of benefits the unemployed receives relative to average wages of the employed. Obviously, the tightening of the unemployment benefit system in the beginning of the 1990's resulted in declining replacement rates.

The OECD provides gross replacement rates for the earnings level of an Average Production Worker (APW). These data are currently only available for Poland, Hungary, Czech Republic and Slovakia. Figure 4.1 gives the replacement rate for the first five years of unemployment. Whereas the replacement rates in the first year of unemployment are comparable to those in EU-members like Ireland and Greece, in the years that follow replacement rates in the new member states drop drastically: only in Hungary does the unemployed receive benefit after

being unemployed for more than one year. In comparison, replacement rates in the EU-15 are 25% and 16% in the 2nd-3rd, and 4th-5th year of unemployment, respectively. The replacement rates reach a maximum of 50% in the first year, and an overall average of 4% over five years and four countries. These levels make it rather unlikely that unemployment benefit per se would discourage benefit recipients from taking up a job.

Figure 4.1 Gross replacement rates for APW over a five-year period, 1999



Source: OECD database on unemployment benefit entitlements and gross replacement rates (OECD 2002a).
Averaged over OECD family categories: single, with dependent spouse, with spouse in work. Replacement rates are average unemployment benefits as a percentage of Average Production Worker Wage level.
EU max = Denmark. EU min = United Kingdom.

The increase in unemployment did not only give rise to a decline in replacement rates, eligibility for unemployment benefits became stricter and the period of time receiving benefit was reduced. In Table 4.1, features of the unemployment benefit systems are summarised.

In most new member states, people registered as being unemployed receive an unemployment benefit if they have worked from up to 12 months. In Bulgaria, Latvia and Cyprus these periods are shorter; in Slovakia and Lithuania people are required to have an employment history dating back at least 24 months. More recent laws tend to require longer periods of previous employment (avoiding claims after for instance seasonal employment). This is longer than in the EU-15: In Greece and the Netherlands, only half a year suffices, and in Spain, benefit conditions require only 12 months employment in 6 years.

Table 4.1 Main characteristics of the unemployment benefit system

	Replacement rate	Eligibility/required employment history	Benefit as % of previous earning	Duration of benefit
	average benefit as % of APW, 1st year		for single person	
	%	months	%	months
Poland	29	12 in 18	no relation (work history)	6-18 (living area)
Hungary	50	12 in 48	65	3-12 (work history)
Czech Republic	22	12 in 36	50 first 3 months, 40 next 3 months	6
Slovak Republic	40	24 in 36	50 first 3 months, 45 thereafter	6-9 (contribution length)
Slovenia	-	12 in 18	70 first 3 months, 60 thereafter	3-24 (contribution length, age)
Estonia	-	12 in 24	no relation	6-12 (contribution length)
Latvia	-	9 in 12	50-65 1-3 months, 30-49 (3-9)	9
Lithuania	-	24 in 36	no relation (reason job loss, insurance)	6
Cyprus	-	6	60	-
Malta	-	-	no relation (work history)	
Bulgaria	-	9 in last 15	60	4-12 (work history)
Romania	-	12 in last 24	50-55 (contribution length)	6 (work history)
Denmark	73	12 in 36	90	60
The Netherlands	89	6 in 9 (flat rate)	no relation (70%MW)	6
		48 in 60	70	6-60
Germany	70	12 in 36	60	12
Greece	44	about 6 in 14	40	12
United Kingdom	49	24	no relation	6

Sources:
Column 1: OECD 1999
Column 2: Burger (OECD 2002a for CZ, PL; IMF 2001 for LV; EC 2001a-b, 2002a-b, 2003a for BG, CY, EE, LT, RO; GVG 2003 for EE, HU, MT, SK; Min. of Labour for SI).
Column 3: Burger (id); UNECE 2003 for LT, RO.
Column 4: Burger (id) & UNECE 2003 (ISSA); Cazes 2002 for HU.
Data for member states OECD 2002, Column 2 and 3 of The Netherlands: www.socialezekerheid.nl.

The initial benefit is about half of previous earnings. This rate remains fixed in some countries and gradually declines in others. In Poland, Lithuania and Malta there is no relation between the amount received and previous earnings. However, in Poland and Malta, the length of the employment history determines the height of the (flat) rate.

In Hungary, Slovenia, Slovakia, Estonia, Bulgaria and Romania, duration depends on the length of employment history and/or the period during which contributions to the unemployment benefit fund were made. Other factors can be age (Slovenia), reason for job loss (Lithuania) or unemployment rate in the area in which the claimant lives (Poland). People with a limited employment record receive benefits for only 3-4 months in Hungary, Slovenia and Bulgaria.

The payment rate (column 3) can be up to 90% within the EU-15 (Denmark, Finland), but the lowest rates (40% in Greece, and 60-65% in France & Portugal) are comparable to rates in new EU member states. Liberal countries have flat rates. Duration is clearly longer in the EU-15: Belgium has unlimited duration while in Italy and the UK, unemployment benefits are granted for 6 months. Again, we see major variations within both categories of countries. Benefit systems in Greece and Portugal (not shown), but also in Germany and the UK, resemble those in the acceding countries most.

Elderly people who lose their job are eligible for early-retirement schemes in most acceding countries, depending on age, employment history, and reason for job loss. Poland introduced this possibility by law in 1981, a year in which the Polish economy suffered a major decline. Since the mid-1960's, disability pensions had been the main form of retiring before reaching the pensionable age. Early retirement became the main instrument to ward off unemployment among employees with long work records, for instance in state enterprises (Golinowska 1993). The level of payment is higher than unemployment benefit: 120-160% of the basic benefit. By mid-2000, 12% of the registered unemployed received early-retirement payments (EC 2001d). The Slovak Republic and Malta have no early retirement system. In some countries, like the Czech Republic, disability benefits provide a more generous alternative than social allowance, particularly for older workers, and are therefore used as an alternative to early retirement, as in Malta (Burger 2003).

Table 4.2 Unemployment rate and the share of unemployed receiving benefits

2002Q2	Unemployment rate	Share of unemployed receiving benefits
Poland	17.4	19.0
Hungary	8.1	33.5
Czech Republic	8.7	33.8
Slovakia	17.6	17.1
Slovenia	11.3	24.3
Estonia	7.0	49.6
Lithuania	10.7	10.7
Latvia	7.9	44.3
Bulgaria	17.2	20.2
Romania	9.6	23.3

Source: UNECE 2002Q2.

On average, eligibility is stricter (the employment history must be longer), duration is shorter, and replacement rates are lower in the new member states. Strict eligibility and short duration led to high percentages of unemployed not entitled to unemployment benefits (Table 4.2). Comparing the second and third column in Table 4.2 (unemployment rate and share receiving benefits, respectively), an interesting observation can be made: countries with high unemployment levels (Poland, Slovakia, Bulgaria) have low coverage compared to countries where unemployment is lower (Hungary, Czech Republic, Estonia, Latvia) (UNECE 2003). The share of unemployed receiving benefits is low: about half of total unemployment lasts longer than 12 months, which would give a share of about 50% of unemployed receiving benefits. Previous employment length conditions are stricter in Poland and the Slovak Republic than in Hungary and the Czech Republic, which could account for a lower share receiving benefits. Multiplying both columns results in values around 3% (except in Lithuania), indicating an equal percentage of the labour force receives unemployment benefit in each country. Note that, as for other social safety benefits, means-tested social assistance schemes exist in all acceding countries.[6]

4.1.2 Active labour market policy

Besides passive labour market policies (unemployment benefits, social assistance), governments can also choose to adopt a package of active labour market policies. These include for instance temporary job programmes (especially practised in the public sector in Poland, Czech Republic, Slovenia, Latvia and Lithuania, Bulgaria), recruitment subsidies (popular in

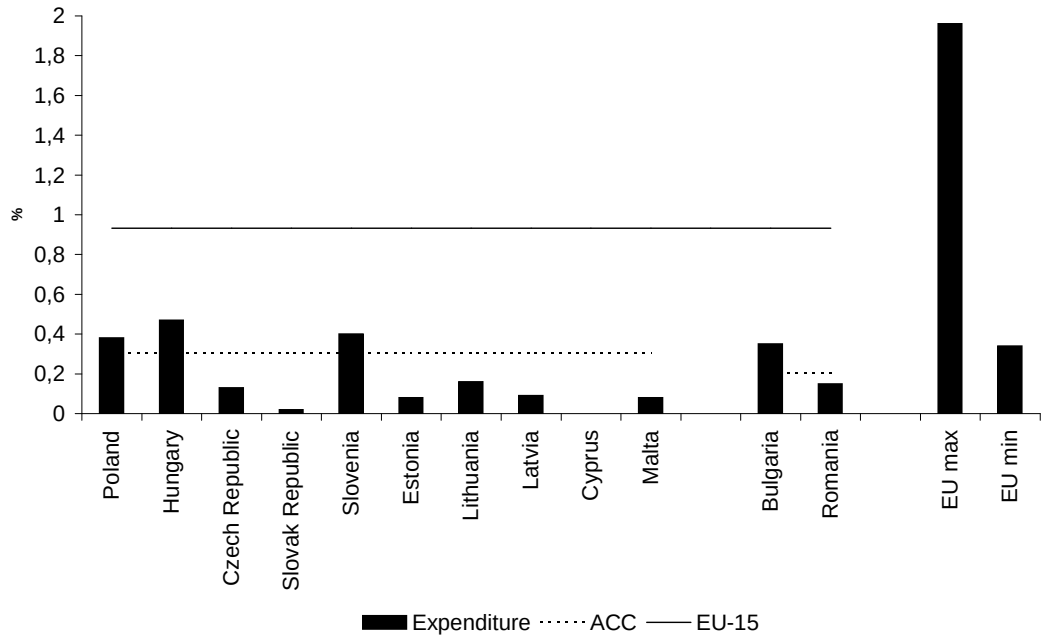
[6] Besides cash payments, social assistance can be composed of health insurance and free access to social services (Poland, Lithuania) or heating allowance in winter (Romania, Lithuania). Beneficiaries are mainly persons who are no longer entitled to unemployment benefit or were never eligible (for instance due to lack of an employment history or voluntary leave). Where the amount of unemployment benefit is lower than the subsistence minimum, as can be the case in Slovakia and Estonia where the benefit is calculated on a household basis, an individual is entitled to seek social assistance.

Poland, Hungary, Slovenia, Latvia, Bulgaria) and (re)training. (Re)training is adopted in most countries (but hardly in Bulgaria and the Slovak Republic). As in the EU-15, a shift from passive to active labour market can be observed during recent years. However, expenditure on active labour market policies is still rather low compared to what is spent by the EU-15. Only Hungary exceeds the level of spending in Greece, the EU-member spending least (Figure 4.2).

As for effectiveness, it has been found that active labour market policies reduce the length of unemployment in the Czech Republic. In Poland it was found that the employment rate for people who had had training was higher. In Latvia, the number of people finding a job after participating in a programme rose from 25% in 1997 to over 50% in 2000. Temporary job schemes in Bulgaria on the other hand seemed to function more as income support than as activation measure (EBRD 2000).

Even though reported results point to positive effects of active labour market policies on employment, spending on such programs is low. Increasing spending may enable a faster return of unemployed people to the labour market. Shorter unemployment duration by guided re-entering of the unemployed into the labour market will affect labour market dynamics positively.

Figure 4.2 Expenditure on active labour market policies as percentage of GDP, 2000



Source: OECD (1998) for EU & CZ, PL, SR. Others: EC 2001a-d, 2002a-b, 2003a. SL: 1998. EE, MT: 1999. BG, RO: 2001. EU max = SE. EU min = GR.

4.1.3 Tax wedge

Part of employees' motivation to work comes from the consumption they can finance out of the income they earn. Income taxes and the employees' social security contributions reduce the return to working and therefore influence the decision to (re-)enter the labour market or choose for leisure or unpaid employment (e.g. childcare). Payroll taxes, such as employer's social security contributions, raise the costs of employing labour over the wage paid. Higher wages increase unemployment (OECD 1994).

Table 4.3 shows the tax wedge, defined as employees' and employers' social security contributions and personal income tax less transfer payments as percentage of gross labour costs. Although high taxes on labour are often perceived as one of the causes for high unemployment in for instance Poland (EC 2004), the wedge in the new member states is not higher than the average wedge in the EU-15. Hungary is the only country with a tax wedge above the EU-15 average. The high tax wedge in Hungary could form an obstacle for entrants to the labour market. This may be an explanation for the low employment rate in this country. A high tax wedge makes working in the informal sector more attractive. Moreover, high taxes on labour can be detrimental to job creation.

Table 4.3 Tax wedge, 1999

Poland	42.9
Hungary	52.6
Czech Republic	43.0
Slovak Republic	42.0
Slovenia	41.0
Estonia	40.0
Lithuania	39.7
Latvia	41.7
Cyprus	16.5
Malta	16.4
EU min (Ireland)	25.8
EU max (Belgium)	55.6
EU-15 weighted average	43.2

Source: OECD (PL, HU, CZ, SK and BE, IRE)/Eurostat (other countries, for low-earners). Tax wedge is employees' and employers' social security contributions and personal income tax less transfer payments as percentage of gross labour costs.

4.2 Wage formation

As discussed in the previous chapter, wage bargaining structures affect employment. Beside the level at which bargaining takes place, three other factors influencing bargaining power will be discussed in the following paragraphs:

- Union density, coverage, and coordination

4.2.1 Unions: density, coverage, and coordination

In most EU-15 countries, unions still play a major role in the process of wage bargaining. Union density may be low in some countries (Germany, France, Spain), union coverage (i.e. the number of workers, unionised or not, who have their pay and working conditions determined by collective agreements in the enterprise sector) remains high. Collective agreements cover over 70% of the labour force in all countries except the UK, and reach well over covering 90% in some countries (Finland, Germany, France, and Austria). The UK is also the country with the lowest level of coordination whereas in other countries, informal consensus seeking between bargaining partners is quite common. In Germany, the wage rate is set in one industry before bargaining officially starts, and this rate is usually followed by other sectors.

A high level of coordination is likely to coincide with highly centralised bargaining systems, whereas decentralised systems may exhibit higher degrees of coordination than expected. The latter can be observed within the EU-15: during the past years, a decentralising trend towards bargaining at the industry level has taken place whilst coordination remains to be on a high level, and has even been increasing (except in Sweden and the UK).

The new member states present a more homogeneous picture of unionisation, centralisation and coordination (Table 4.4). Also in these countries density has declined, but more importantly for bargaining power, union coverage is about the same as in the EU-15. In Slovenia, membership of the bargaining organisation is compulsory, implying complete coverage (EC 2003b). Significant differences have emerged between the public and the private sectors, with much lower unionisation of workers in the latter. Workers in medium-sized and small firms are rarely unionised (Nesporova 2002). Although coverage is about as high as in the EU-15, bargaining power of the union depends heavily on coordination ability (informal consultation between unions and employers' organisation and/or at the inter-industrial level) which is now actually rather low in most of the acceding countries. In Estonia, the level of coordination between employers is very low: only one (voluntary) employers' association exists, covering 200,000 out of 640,000 employees. Declining bargaining power can also be low due to other factors: in Poland, the existence of many small unions erodes the union's power: next to two large unions, about 300 nationwide unions and 24,000 local unions exist (World Bank 2002b).

Table 4.4 Union bargaining power: density, coverage, and coordination

	Density	Coverage	Coordination
Poland	34	70-100	1.5
Hungary	60	70-100	1.5
Czech Republic	43	26-69	1
Slovak Republic	62	70-100	2
Slovenia	60	70-100	3
Estonia	36	26-69	1.5
Sweden[7]	91	89	2
Germany	26	92	3
France	10	95	2
Italy	39	82	3
United Kingdom	34	47	1
United States	16	18	-

Source: EU member states: OECD 1997, 1994; New member states: Cazes 2002 & Riboud 2002, late 1990s.
Coordination is given in indices ranging from 1 (low coordination) to 3 (high coordination).

4.2.2 Collective wage bargaining

Before the transition commenced, the state controlled the wage bargaining process. Most people were employed by large state-owned industrial companies. Wages did not reflect productivity or performance. After transition, all Central- and East-European countries started to move away from the centralised bargaining system and efforts were made to develop a collective bargaining system at the firm level. In practice, although basic guidelines are sometimes established through tripartite negotiations with the government, most wage bargaining takes place at the industry or the firm level, and in the private sector employers set wages. Next to collective bargaining focussing on guidelines on working conditions (Poland, Slovak Republic, Estonia), the government does play a major role setting minimum wages in some countries. In Poland, unions can exert influence on wage policy in the public sector.

Slovenia and Hungary are the main exceptions as far as centralisation is concerned. In Hungary, centralised collective bargaining has never been important. Wage deregulation already began before transition, and during the privatisation period most private sector wages became freely negotiable at the industry and firm level. Some form of collective bargaining is still binding only in the public sector, which is regulated through a strict wage tariff system. In Slovenia, bargaining does take place on the centralised level. Consultations occur first at the national level, resulting in a collective agreement for the private sector that establishes base wages and adjustment factors for 26 industries and 9 education levels and a collective agreement for the non-market sector. Both agreements constitute the basis for all other contracts, therefore limiting wage variation across industries and firms. Multi-level bargaining takes place only in Slovenia, and to a lesser extent in Hungary and Latvia (EC 2003b).

[7] Until 1995, a national law stated compulsory membership of a trade union in Sweden.

Overall, two developments can be observed: a widening gap between sectors and a widening gap between state-owned and private (mostly small) firms. Unions mostly exert influence in large not yet privatised firms. Workers in new firms in the expanding service sector on the other hand are rarely represented by a union. The emergence of small private firms (outside agriculture, 90% of Polish newly created firms have less than 5 employees) weakens trade union power in Poland. Collective agreements can be adopted only when a union is present. Therefore, wages in the private sector tend to be lower than those in the public sector, although foreign firms form an exception to this rule (World Bank 2002b). Although coverage is high, coordination still lags behind in the new member states, resulting in lower bargaining power than in the EU-15.

4.3 Labour market regulation

Collective centralised bargaining results in the setting of a minimum wage and working conditions in some acceding countries. The minimum wage is one of the regulations the government can enforce in order to ensure a minimum standard of living. Furthermore, the government can regulate the labour market by enforcing laws regarding protection of employees' health and safety in their working environment and protection against sudden dismissal. This section will look into

- The level of the minimum wage
- The degree of employment protection in the acceding countries.

4.3.1 Minimum wage

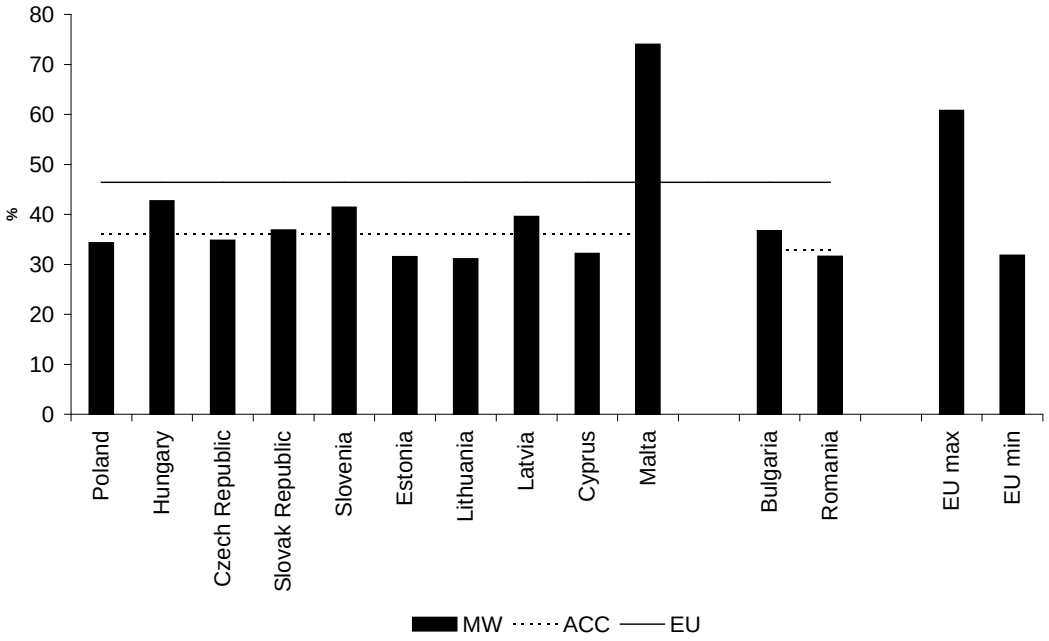
The level of the minimum wage relative to the average wage and unemployment benefit determines its effect on (un)employment. If the minimum wage and the unemployment benefit are very low compared to average wage levels, its effect on unemployment is expected to be small. A recent paper on Hungary's policy of doubling the minimum wage between 2001 and 2002 finds that employment was reduced in the small firm sector (Kertesi & Köllö 2003).

Figure 4.3 provides an overview of the level of minimum wages in the new member states relative to the average wage level. All countries have a legally binding minimum wage, although in Cyprus, only for specific professions[8]. The variation in ratios of minimum to average wage is about the same in EU-15 and ACC-10: Malta has the highest ratio, even by far exceeding the EU-15 country with the highest ratio, France. The minimum wage was introduced at the start of the transition at ratios to average wage similar to those in the member states of the European Union (45-50%). Slovenia only introduced a minimum wage in 1995. As nominal wages remained unchanged in spite of inflation, the ratios fell. Until the mid-1990's,

[8] In Cyprus, only clerks, salespersons, nurses, and school and kindergarten staff are entitled to minimum wage.

the increase in real wages remained below the growth of productivity, except in Slovenia and Estonia, where real wage growth had outpaced productivity growth in the beginning of the decade. The level of minimum wages has been adjusted numerously in many countries during the 1990s: Poland increased its minimum wage significantly in 1993, Hungary doubled it and

Figure 4.3 Minimum wage as percentage of average wage, 2002



Source: UNECE 2002, CY: Ministry of Labour and Social Insurance (minimum wage only valid for clerks, salespersons, nurses, school-assistants, kindergarten attendants, no minimum wage for other occupations).
MT: JAP 2001 (relative to average net wages). EU max = France; EU min = Spain

Romania more than tripled it in the beginning of this century. Still, the number of people receiving the minimum wage is low in most countries: 3-5%. This could be related to the low level of the minimum wage, in most countries, well below the subsistence minimum (Nesporova 2002). It is therefore unlikely that the minimum wage has a negative effect on unemployment in these countries.

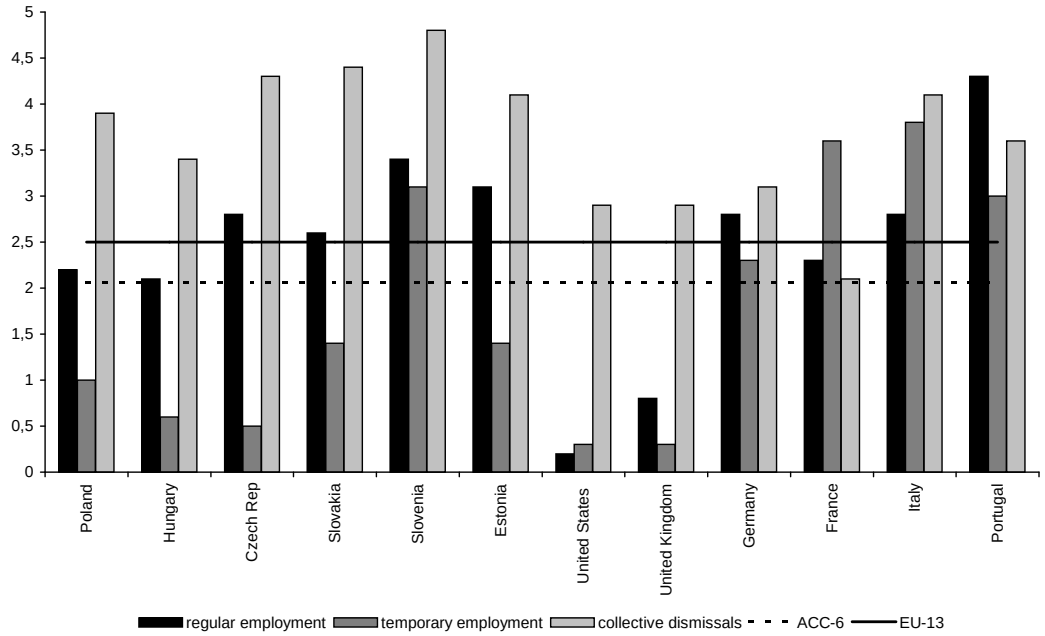
Malta forms an exception: the gap between the minimum wage and unemployment benefit is relatively small: € 8 per week for a household with three children. This is one of the elements of the social security system Malta aims to reform.

4.3.2 Employment Protection Legislation (EPL)

Before transition, employees in the centrally planned economies of the acceding countries enjoyed a fairly high degree of employment protection. Over the 1990's, the need for rapid structural adjustment of the transition economies after the introduction of economic and social reforms resulted in substantial moderation of EPL, partly enabled by weakening of trade union power. The objective was to facilitate workforce adjustment for firms in order to make

enterprises more flexible and competitive. During the 1990's, legislation on employment protection has been revised several times, resulting in re-tightening of employment protection in some countries and its further moderation in others (Cazes 2002).

Figure 4.4 Strictness of employment protection legislation on scale 0-6 (most strict), late 1990's



Source: World Bank 2002a & Riboud 2002. Employment protection legislation is given for three categories: legislation concerning regular employment, temporary employment, and collective dismissals. The averages are taken from an index averaging the three categories.

Figure 4.4 shows employment protection legislation concerning regular employment, temporary employment and collective dismissals. It turns out in particular collective dismissals are difficult to achieve in the new member states. With respect to regular employment, Hungary and Poland enforce the least strict laws. In Hungary, a written statement to the employee suffices for dismissal. In both countries, job redundancy or unsatisfactory performance suffices for dismissal, the notice period is short and severance pay small. The Czech Republic and Hungary have least employment protection regarding temporary employment (renewal and maximum duration of contract). Hungary does have high employment protection when collective dismissals are concerned; in Slovenia employees are least protected when large groups of people are fired at the same time (Riboud et al, 2002; Nesporova et al, 2003).

Labour markets known to be flexible (UK, US, Ireland) have less strict employment protection than the new member states.[9] Southern European countries have the most strict employment protection laws, protecting their employees at about the same level as in Slovenia, the country

[9] Boeri (2002) suggests that employment protection is an alternative form of insurance against labour market risks. He shows a trade-off between employment protection (particularly relevant in Mediterranean countries) and social security (mainly relevant in corporatist and social-democratic countries).

scoring highest among the new member states shown. Denmark, Switzerland and the UK have the least strict legislation on employment protection. Hungary has least restrictive laws, but still considerably stricter than in the US.

4.4 Conclusions

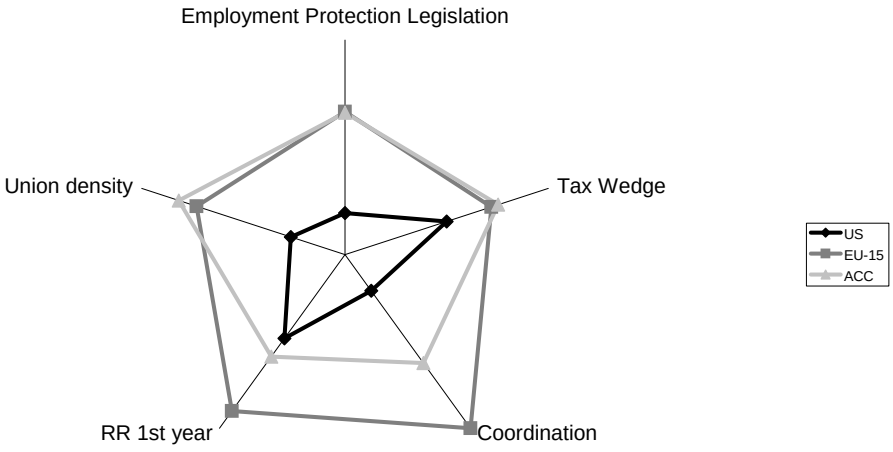
Labour markets in the new member states seem to be less rigid than in the EU-15:

- Replacement rates are lower and duration is shorter: after one year of unemployment no unemployment benefit is issued anymore in most countries;
- In the wage-setting process, coordination is lower in the new member states. In general, bargaining takes place at the firm level;
- Employment protection legislation is less strict: only collective dismissal legislation is stricter in the new member states than in most EU-15 countries;
- Minimum wages as a percentage of average wages are lower in the new member states.

Only expenditure on active labour market policies is considerably lower than in the EU-15. The tax wedge is high only in Hungary, but about the same in the other three countries.

Figure 4.5, representing the rigidity of labour markets in the new member states compared to the EU-15 labour markets and the US labour market, confirms our analysis.

Figure 4.5 Flexibility of labour markets



Source: see this chapter. RR 1st year = replacement rate in the first year of receiving unemployment benefit. ACC represents non-weighted averages over the six major new member states. For tax wedge and RR, only the four largest new member states are included.

In short, labour market institutions in the new member states do on average not differ that much anymore from the institutions in the old member states. If anything, they should be considered more flexible. Thus, labour market institutions imply less rigid labour markets in new member states than in the EU-15. This suggests that labour market performance should not lag behind in the new member states.

The next section will examine the effects of labour market institutions on unemployment empirically.

5 The quantitative effect of labour market institutions on unemployment

Quantifying the relationship between unemployment and labour market institutions has been the topic of several studies. In their overview Nickell and Layard (1999) conclude that the main institutions influencing unemployment are unions and social security systems. In order to reduce unemployment governments should encourage product market competition to eliminate the negative effect of unions, and governments should link reforms of unemployment benefit systems to active labour market policies in order to move people from welfare to work. The overview is based on a number of cross-country studies that we will discuss in more detail below.

5.1 Overview of existing studies

Econometric analyses of the impact of institutions can be divided in two different types. First, there are studies that focus on 'shocks' and their interaction with institutions that are assumed to be constant over time. The best example of this line of work is probably Blanchard and Wolfers (2000). They conclude on the basis of a panel of institutions and shocks for 20 OECD nations since 1960, that the interaction between shocks and institutions is crucial to explaining both the rise in European unemployment and the differences between countries. The shocks they consider consist of TFP growth, the real interest rate, the change in inflation and labour demand shifts. These variables drive unemployment, so that, for example, the fact that annual TFP growth is considerably higher in the 1960s than in the 1990s in most countries is an important reason why unemployment is typically higher in the latter period. The effects of the labour market institutions that they estimate confirm the theoretical predictions described in chapter three: the effect of an adverse shock on unemployment is increased by higher replacement rates, longer benefit duration, a higher tax wedge, less ALMP, more union density and coverage, and less coordination. Also, more employment protection is found to strengthen the effect of adverse shocks. The basic Blanchard and Wolfers model is extended in a number of papers, e.g. Bertola et al. (2001) and Lopez-Garcia (2003).

A second type of econometric studies relies on changing institutions to explain unemployment patterns. Here, a subdivision can be made of studies that use averages over institutions for different periods to explain the long-term unemployment trends and studies that use annual data to explain actual unemployment. A good example of the latter is provided by Nickell et al. (2002). They include shocks in money supply, labour demand, total factor productivity and prices and interest rates to explain the short-run deviations of unemployment from its equilibrium level as determined by the institutional structure. Their model is capable of explaining more than half of the individual country changes in unemployment. Their results are

in accordance with theoretical predictions: higher replacement rates, longer benefit duration, a higher employment tax rate, more union density and less coordination significantly increase unemployment. Stricter employment protection also seems to raise unemployment.
The other type of studies that relates changing institutions to unemployment is static in the sense that it does not aim at explaining the exact annual level of unemployment, but rather the underlying structural trend. This kind of studies therefore does not rely on the measurement of shocks. Belot and Van Ours (2004) provide a notable example of this line of reasoning. They provide econometric estimates of the impact of labour market institutions on unemployment on the basis of a panel of seventeen OECD countries for the period 1960-1999. The only variable they include to account for deviations from the natural non-accelerating level is the change in inflation. Their basic regression results, without allowing for fixed effects, show a significant effect of the replacement rate, taxes, employment protection, union density and centralisation on unemployment. All variables, except employment protection legislation, have the expected sign. However, in contrast with the results from Blanchard and Wolfers (2000) and Nickell et al. (2002), Belot and Van Ours find that stricter employment protection legislation lowers unemployment. This does not necessarily oppose theoretical predictions, as theory is ambiguous about the direction of the effect. When country and time period fixed effects are introduced, most institutions do not significantly influence unemployment anymore. Belot and Van Ours argue that it is the effect of the complete institutional framework that matters. To investigate this hypothesis, they extend their analysis to allow for interactions between institutions. These interactions indeed significantly affect the unemployment rate. This happens at the expense of the direct effects of some of the institutions considered.

Two broad lessons can be drawn from the existing body of empirical work on the impact of institutions on unemployment: (i) institutions matter and a substantial part of the fluctuation in unemployment can be explained by changes in the institutional structure; (ii) theoretical predictions about the way institutions influence unemployment are confirmed by the econometric results. These empirical studies invariantly use a selection of about twenty highly developed OECD countries. It is not at all sure that the explanatory power of labour market institutions for unemployment is the same for countries in a different phase of development. In the next section, we try to extend the existing empirical work to understand whether labour market institutions can explain the variation in unemployment figures of the acceding countries.

5.2 Empirical results for the new member states

We use the recent study of Belot and Van Ours (2004) as a basis for our analysis. This is a convenient starting point for at least two reasons. First, it uses data for the period 1960-1999, whereas most other empirical studies use a sample till 1995. For our purpose, using these recent years in the empirical analysis is essential, as unemployment in the acceding countries only

stabilised at around 1995. At that time, markets had adapted somewhat to the new circumstances. Second, Belot and Van Ours assess the structural impact of the institutional framework on unemployment, rather than the interaction of shocks and institutions or the explanation of actual unemployment. This fits nicely with the objective of our study: we want to understand whether unemployment in the acceding countries can be explained by the way labour market institutions are built.

Belot and Van Ours kindly provided us with the data they used. These include the tax wedge, replacement rate, employment protection, union density and centralisation as well as data for unemployment and employment for seventeen OECD-countries[10]. We were able to extend the sample with the four largest new member states (Poland, the Czech Republic, Hungary and the Slovak Republic)[11]. In order to include these countries, we use different indicators for both the tax wedge and for employment protection legislation. In addition, following the discussion in the previous chapters, we constructed series for the replacement rate in the first year and the duration of unemployment benefits, for statutory minimum wages (as percentage of average wages) and for Active Labour Market Policy (normalised on the percent unemployment rate). A detailed description of sources and computations can be found in the Data Appendix at the end of this document.

Results

Table 5.1 presents the results of our regressions for the unbalanced panel of 21 countries. The empirical results are based on five year averages; the maximum number of observations is therefore 8 five-years periods (covering the period 1960-1999) times 21 countries = 168 observations. However, as we have only data for the last five-year period for the four accession countries, it is reduced to 140. All the regressions include dummies for the time periods included to account for cyclical variation. Furthermore, following Nickell (1999) and Belot and Van Ours (2004), we include the change in inflation in our regressions in a modest attempt to control for some of the deviations from the structural unemployment rate.

The first column in Table 5.1 shows the estimation results of our benchmark specification.[12] The results imply that the unemployment rate is positively influenced by taxes and by benefit duration. Surprisingly, the first year replacement rate has a negative impact. Stricter employment protection and more coordination also significantly lower unemployment.

[10] These are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, United Kingdom and United States of America.

[11] Including other acceding countries severely restricts the number of labour market institutions we could include in the regressions.

[12] We have also experimented with interactions between institutions. In contrast to Belot and Van Ours (2004), these interaction terms turned out insignificant in our regressions and we therefore decided not to show these here.

Table 5.1 Regression results explaining the unemployment rate in 21 countries

	(1)	(2)	(3)
Tax Wedge	0.142**	0.194**	0.039
Replacement Rate first year	-0.024*	0.011	0.074**
Benefit Duration	0.014**	0.006	-0.013
Employment Protection Legislation	-0.027**	-0.017	-0.000
Union Density	0.019	0.039**	0.099**
Coordination	-0.012**	-0.011*	-0.011**
ALMP		-0.133**	-0.136**
Minimum Wage			0.144**
Change in Inflation	-0.503**	-0.652*	-0.537
Adjusted R2	0.57	0.48	0.63
Total number of observations	140	72	44
Period	1960-1999	1980-1999	1980-1999
Time dummies?	Yes	Yes	Yes

** indicates 5% significance-levels, * 10%. Significance is based on White heteroskedasticity consistent standard errors.

Below, we discuss the interpretation of the coefficients in more detail. The tax wedge has a major effect on unemployment: A 1%-point higher tax wedge raises unemployment by 0.14%. Regarding the unemployment benefit system, instead of using one summary variable, we try to disentangle the effects of the level of benefits and the duration of entitlement. According to our estimations the first-year replacement rate has an unorthodox negative albeit small effect on unemployment, whereas a higher duration of entitlement does significantly increase unemployment. We would expect both variables to exert upward pressure on unemployment, as has been found by Nickell et al. (2002). A possible explanation is that the tax wedge and the replacement rate are correlated. Nickell et al. (2002) do not include the latter variable.

Theory is ambiguous about the effects of employment protection legislation on unemployment. Our results imply that stricter employment protection significantly lowers unemployment. This supports the findings of Belot and Van Ours, but contradicts the results of a number of other studies. An implication is that a rigid labour market is not necessarily bad for employment. As the EPL-variable ranges from zero to one, the maximum effect of stricter regulations is 2.7%.

Turning to wage formation, we included union density and coordination as independent variables. The bargaining power of trade unions improves with more members, so we expect higher union density to lead to higher wage demands at the expense of higher unemployment. The estimated coefficient is indeed positive, albeit small and statistically not significant. Coordination of wage bargaining leads to lower unemployment: under fully coordinated bargaining unemployment is 2% lower than under fully uncoordinated bargaining. Our results thus support the corporatist view of wage bargaining. This result is in line with most other empirical studies.

Finally, the change in inflation appears significantly negative in the regressions. This is in accordance with theoretical predictions.

Two elements of the discussion of labour market institutions in previous sections are still missing in the regressions presented so far. These are active labour market policies and minimum wages. Data on both variables are only available from the 1980s onward, so when including these we have to drop half of the observations. The second column in Table 5.1 shows the regression results when we extend the analysis of the first column with expenditure on active labour market policies, measured as the amount per unemployed. The regressions are run for the period 1980-1999 and include 72 observations. The results show that active labour market policies significantly affect unemployment: when more money is targeted on unemployed in the form of one of the various programmes covered under the heading ALMP, unemployment decreases. This extension does have some effects on the other estimated coefficients. The impact of the replacement rate now turns positive, as expected, although the effect is not significant. The estimated impact of both benefit duration and employment protection also loose significance, but keep the expected sign. In contrast, the estimated impact of union density becomes significant: a 10% increase in union membership raises unemployment by 0.4%.

Including minimum wages poses some more problems. In a number of countries no statutory minimum wage exists, but industry- or occupation-specific minimums are set by legislation or collective bargaining agreements. It is possible to include the summary estimates constructed by Dolado et al. (1996) for these countries, as has been done in some other empirical studies (e.g. Neumark and Wascher, 2003). We don't follow this practice here, because (i) this series has not been updated and (ii) the Dolado-series does not use the same denominator as the OECD-series. In the present study we restrict our empirical analysis to the countries for which statutory minimum wages exist[13]. The results are presented in the last column of Table 5.1 and use 44 observations from the period 1980-1999. In line with theoretical predictions, minimum wages (measured as a percentage of median wages) significantly raise unemployment. The estimated coefficient implies that increasing the minimum wage relative to the median wage by 1%, results in 1.4% more unemployment. This addition has also implications for some of the other estimated coefficients. Most striking is that the tax wedge is no longer significant, but that the estimated effect of the replacement rate becomes highly significant and much larger than in the other regression results. This may be due to the fact that replacement rates and tax wedges are highly correlated. It may therefore be hard to disentangle both effects. The coefficient on union density is also influenced by adding the minimum wage variable to the regression: it becomes much more important than in the earlier results.

[13] These are Australia, Belgium, Canada, France, Ireland, Japan, the Netherlands, New Zealand, United Kingdom, United Statesof America, Poland, Hungary, the Czech Republic and the Slovak Republic.

In conclusion, the empirical results seem to provide support for the theoretical predictions on the influence of labour market institutions on unemployment. The effects are however sensitive to the specification of the regression, the sample period used and the countries considered. These results therefore should not be interpreted as exact estimates of the effects of labour market institutions on unemployment, but they provide an idea of the importance of different factors.

5.3 Implications for unemployment in the new member states

To what extent does the design of labour market institutions in the new member states provide an explanation for the level of unemployment rates in these countries? This is the central question of this paper. In the previous chapter we have seen that labour market institutions are in general no more rigid in the new member states than in the EU-15. However, a lot of heterogeneity exists between the acceding countries. In this section we use our empirical results to assess whether this heterogeneity can explain the huge variation in unemployment rates for the four acceding countries that we included in the regressions. As our exact estimation results in the previous section were quite sensitive to the specification of the regression equation and did not explain more than 60% of the variation, we do not expect to be able to fully explain these differences in unemployment rates. However, our results are in line with theoretical predictions and with other empirical work. So, if labour market institutions are the major determinant of unemployment in the new member states, the regression results should certainly explain a substantial part of the variation.

Table 5.2 Implied unemployment rates in the new member states

	Actual UR ('95-'99)	Implied UR (1)	Implied UR (2)	Implied UR (3)	Actual ER('95-'99)
Poland	11.5%	10.7%	12.1%	11.2%	58.4%
Hungary	8.5%	11.1%	13.0%	12.4%	53.0%
Czech Republic	7.5%	10.1%	11.1%	8.0%	69.1%
Slovak Republic	13.7%	8.1%	10.3%	11.5%	59.5%

The first column of Table 5.2 shows the average unemployment rates over the period 1995-1999 in these countries: it ranges from 7.5% in the Czech Republic to no less than 13.7% in the Slovak Republic. The next columns confront these values with the unemployment rates that are implied by the results of the regression in Table 5.1. The second column shows the results of our computations when we apply the estimated coefficients from the first regression (covering 1960-1999 without ALMP and minimum wages) to the labour market institutions in the acceding countries.

In contrast to reality, the implied unemployment rate turns out to be lowest for the Slovak Republic. There are two reasons for this result: the tax wedge is a bit lower in the Slovak

Republic than in the other acceding countries and wage formation is relatively coordinated. According to the regression results, both aspects have a downward effect on unemployment. The big difference with actual unemployment seems to suggest that other factors besides labour market institutions also play a role in the Slovak Republic.

The highest implied unemployment rate is found for Hungary. This also seems completely at odds with the data: the official unemployment figure for Hungary is quite low. At first sight, it thus seems that these results sketch an overly pessimistic picture of the Hungarian case. A more detailed inquiry into the Hungarian figures reveals that the modest unemployment rate is accompanied by extremely low employment. The last column of Table 5.2 shows the employment rates for the acceding countries. Average employment over the period 1995-1999 was only 53%, lower than in any other country considered. From these data it seems that much hidden unemployment exists in Hungary. The declining unemployment rates in the 1990s were not matched by increasing employment levels. Unemployed people do not register anymore since Hungary toughened the unemployment benefit eligibility criteria, or they have found a job in the underground economy. In any case, labour market institutions might be more of a burden than actual unemployment figures seem to suggest. Especially the tax wedge is extremely high at 51.5%.

The third column shows the implied results from the second regression, where we included expenditure on active labour market policies. The implied unemployment rates increase in all new member states, reflecting the relatively low spending on ALMP. The order between the four acceding countries does not change: the implication of labour market institutions alone would be that unemployment in the Slovak Republic is lower than in the three other countries.

In the fourth column we use the results of the final regression (with minimum wages) for our computations. This has a major impact on the results. Implied unemployment is now lowest in the Czech Republic, in accordance with reality. The reason behind this result is twofold. First, minimum wages are low in the Czech Republic. Second, in the regression result replacement rates have gained importance at the expense of the tax wedge. Because the replacement rate is very low in the Czech Republic, this implies a lower unemployment of only 8.0%. In fact, this is close to the actual figure of 7.5% over the period 1995-1999.

The implications for Hungary remain as before: implied unemployment is high. As explained before, we think that this reflects the actual situation on the labour market. Reducing the tax wedge and the replacement rate, and re-evaluating the recent minimum wage increase, would probably be important steps toward a better functioning labour market in Hungary.

Implied unemployment for the Slovak Republic increases considerably to 11.5%. This is still well below actual unemployment. Furthermore, as described in chapter 2, unemployment has further increased in recent years to 19% in 2002. Data on labour market institutions alone are not capable of explaining this development.

This holds even more strongly for Poland. Although there is only a modest difference between implied and actual unemployment, institutions fail to explain the enormous increase in unemployment in recent years. Unemployment in Poland rose from 11% in 1997 to almost 20% in 2002. Clearly, other factors play a role in explaining this disastrous development. In the next chapter we investigate possible explanations for the Slovak Republic and Poland.

From the results in this section we can conclude that labour market institutions can only account partially for the performance of the labour market. Clearly, other factors are important as well. In the next chapter we will list some other potential reasons behind the recent rise in unemployment rates in Poland and the Slovak Republic.

6 Other causes of unemployment

Our descriptive assessment of labour market institutions suggests unemployment should not be higher in the new member states than in the EU-15. Our empirical results draw the same conclusion: labour market institutions explain only a minor part of unemployment in the new member states, let alone the diverging trend since 1998. Since then, unemployment has been rising in Poland and the Slovak Republic, whereas in Hungary and the Czech Republic, unemployment remained stable. These developments suggest that other factors are responsible for unemployment.

This chapter aims at giving some explanations for the increase in unemployment in Poland and Slovakia. Luckily, these countries are exceptions: none of the other new member states faces comparably high unemployment rates. Lithuania comes nearest with 12.7%.

Other institutional factors

The difference in foreign direct investment (FDI) the acceding countries attracted during 1990-2000, was large: Hungary and the Czech Republic received more than twice the per capita amount Poland and the Slovak Republic received. FDI increases the number of jobs created temporarily. Lower FDI can therefore affect unemployment in an indirect manner. One of the factors determining the level of FDI attracted is a country's political and economic stability (Nesporova 2002). FDI is not the only factor that is negatively influenced by weak governance. A recent report on the Slovakian business environment states that the business community perceives the weak legal environment as a major problem (PAS 2002). Complaints concern the instability and ambiguity of legislation, poor and slow enforcement of law, including for the registration of enterprises, and corruption. According to public perception surveys, corrupt practices are widespread at the interface of the public and private sectors. Small-scale entrepreneurs suffer from inadequate protection of property rights. Smaller businesses are more vulnerable to the infringement of their property rights and to exploitation by unscrupulous officials and organised crime. Moreover, the administrative barriers to business creation and entry are still unnecessary high. Illicit payments reportedly take place to quicken the registration process. After 2002, the new government announced reforms making the taxation and regulatory frameworks more supportive of new enterprise creation and business development. They stated it was necessary to enhance 'cultural' changes in law- and rule-enforcement so as to make the formal regulatory framework fully reliable (OECD 2004).

Table 6.1 shows three World Bank Governance Indicators related to the legal, political, and business environment in the four largest new member states: *Government effectiveness*, *Regulatory quality*, and *Rule of law*.

Government effectiveness measures the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. *Regulatory*

quality is more focused on the policies themselves. It includes measures of the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well as perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development. In *Rule of law* several indicators are included which measure the extent to which agents have confidence in and abide by the rules of society. These include perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. *Rule of law* measures the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions, and importantly, the extent to which property rights are protected (Kaufmann 2003).

Poland and especially the Slovak Republic score lower than Hungary and the Czech Republic on all indicators. Slovakia scores lower than all other new member states on all indicators, except Poland on *Regulatory quality*. Particularly *Government effectiveness* and *Rule of law* are low in Slovakia, implying lack of credibility of the government, low quality of civil servants and public service provision, and poor judiciary power.
Poland scores lowest on *Regulatory quality*, implying market-unfriendly policies and excessive regulation in business development, measures detrimental to job creation.

Table 6.1 Governance Indicators, 2002

	Government effectiveness	Regulatory quality	Rule of law
Poland	0.61	0.67	0.65
Hungary	0.78	1.21	0.90
Czech Republic	0.70	1.12	0.74
Slovak Republic	0.40	0.76	0.40

Source: Kaufmann et al (World Bank) 2003. The indicators range from -2.5 (low) to 2.5.

Introducing the *Rule of law* into our regressions in the previous chapter gives us an indication how this indicator affects unemployment. A drawback of these data is that they are only available from 1996. In our regressions, we use the average *Rule of law* score for 1996-1999 to proxy for the quality of these institutions over the whole period considered. We expect that countries with a less well developed institutional framework show higher unemployment rates. The estimated coefficient indeed supports our prior expectations: a higher score on *Rule of law* has a dampening effect on unemployment. The results with respect to the other variables are hardly affected by the introduction of this indicator.

Postponed structural reforms and strict monetary policy

The Governance Indicators shown above have improved in recent years in both Poland and the Slovak Republic. They can therefore not explain the marked increases in unemployment rates in Poland and the Slovak Republic in recent years. These increases can be partly attributed to

(postponed) restructuring. Below, we'll explore this and other causes for unemployment rises in Poland and the Slovak Republic.

At the outset of transition, Poland was fast in liberalisation of prices, currency devaluation and macroeconomic austerity measures, but slow in privatisation and structural reforms of certain sectors (agriculture, coal mining, steel). This created structural problems. A tight monetary policy and acceleration of structural changes were enforced after 1998 to tackle economic imbalances. The coincidence of a strict monetary policy and major social reforms with many initial problems resulted in escalating unemployment (Nesporova 2002).

Also in 1998, following elections which put an end to a period of dirigisme and international isolation, the Slovak Republic commenced with key liberalisation reforms resulting in growing inflows of FDI and large-scale industrial restructuring. Restructuring caused a significant improvement of trend productivity growth. However, the growth process was not able to redirect those losing their jobs in transition restructurings into productive use, reflecting both insufficient demand for and weak effective supply of labour in the lower segment of the market. Unemployment increased, mainly among low-skilled workers. Indeed, Slovakia has the highest unemployment rate for the low-skilled: 39% in 2001 (OECD 2004).

In both countries, at the same time restructuring commenced, inflation rose.
Poland reduced its inflation rate with 10%: from 12% in 1998 to 2% in 2002. Structural reforms in combination with tight monetary policy may have been a cause of the 10%-increase in Polish unemployment in the same period: from 10 to 20%.

In the Slovak Republic, disinflation objectives were pursued without an excessive tightening of monetary conditions.[14] During 1998-2002, inflation declined by almost 4%, to 3%. In the same period, unemployment rose with about 6%, to 17%.

It is generally known a trade-off between inflation and unemployment rates exists. Mankiw estimates the *sacrifice ratio* (the trade-off between GDP and inflation) on 5%, implying a 1% decline in inflation costs 5% GDP. Together with Okun's law, stating that 1% unemployment coincides with a 3% loss in GDP (Hall en Taylor) this implies that reducing inflation by 1 percentage point requires about 1.67 percentage points of cyclical unemployment. Although the trade-offs above seem to be less distinct, they may play a role in explaining increasing unemployment rates. Especially in Poland, where restructuring was implemented at a time monetary policy was tightened, this trade-off may provide an explanation for rising unemployment.

[14] Disinflation has been helped by currency appreciation and international price moderation, but the key to successful disinflation thus far has been the ability of the Central Bank to contain second-round effects of administered price hikes through active policies.

Notably, restructuring implies shifting of employees between sectors. The people losing their jobs as a consequence, might not be suitable for vacant jobs, for instance because they are low-skilled. As a result, they stay unemployed.

The Polish agricultural sector still employs as much as 19% of the labour force. Other countries have been faster in restructuring their agricultural sectors: in Hungary, the Czech Republic and the Slovak Republic, only about 6% of the labour force is employed in the agricultural sector. Agriculture in Poland probably is to some extent a refuge sector: poor job opportunities and low unemployment benefits trigger people to make a living cultivating kitchen gardens or small family holdings. The professional status of the persons employed confirms the idea of a refuge sector: over 90% of the people employed in this sector are family workers or self-employed without employees (Eurostat 2002). Poland faces increasing future unemployment when reforming this rather large sector will force its employees to shift to other sectors. Restructuring already caused approximately 200 thousand people to lose their jobs during 1998-2000. Finding a new job in a different sector is not easy: in the same period, 200 thousand jobs were lost in the service sector and about 440 thousands jobs in the industrial sector (especially in mining and manufacturing). Privatisation deals, particularly in Poland, included temporary bans on mass redundancies. The expiry of such privatisation clauses after 1998 was one reason for the rapidly increasing unemployment in this country (Nesporova 2002). Since restructuring of loss-making state sectors (steel, defence, railways) is an ongoing process, major job loss is caused in these sectors, specifically hitting unskilled and low-skilled workers. Moving these employees from these old to new sectors (for instance services) is difficult in the current institutional and regulatory environment remaining detrimental to job creation (OECD 2001, EIRO 2003).

Table 6.2 Share of employment in agriculture over time

	Share of employment in agriculture 1994	Share of employment in agriculture 2002
Poland	23.8	19.3
Hungary	9.0	6.3
Czech Republic	6.9	4.8
Slovak Republic	10.2	6.2

Source: OECD.

To estimate the role of a large agricultural sector in labour market performance, we introduced this indicator in our regression. Our conjecture is that a country with relatively much agricultural activity compared to the size of this sector in neighbouring countries is assumed to be in the process of transforming and catching up. A higher share of agriculture therefore goes hand in hand with a higher unemployment rate. Our hypothesis is confirmed: a higher share of

agriculture raises unemployment. In particular, 1%-point extra employment in agriculture causes an extra 0.1%-point unemployment. The results with respect to the other variables are hardly affected by the introduction of this indicator.

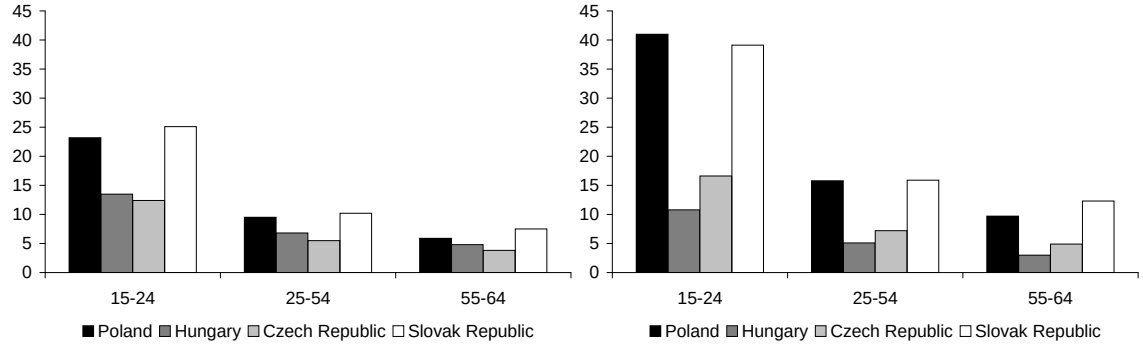
The Slovak Republic has another sector to worry about: Slovakia's share of general government employment is one of the highest within post-transitional OECD-countries (21%)[15]. There is an obvious need for a smaller and more effective government. Restructuring of the general government will probably cause more unemployment.

Moreover, unemployment among low-skilled is high. In other OECD countries many low-skilled workers are successfully employed in private services, as salaried employees or self-employed, while these types of activities remain underdeveloped in Slovakia. Slovakia's inability to generate jobs for marginal workers has not improved in the recent period. Almost a quarter million low-skilled jobs requiring no more than primary or incomplete secondary schooling disappeared during 1994-2002, and their share in total employment plummeted from 20 to 8% (OECD 2004).

Increasing labour force: youth unemployment

Finally, demographic changes contributed to increasing unemployment. During 1987-2002, the population in both Poland and the Slovak Republic has been growing modestly (with 2.5 and 2.9%, respectively), whereas population has been declining in Hungary and Czech Republic (with 4.4 and 1.5%, respectively). Demographic changes affect labour supply: during 1998-2000, the Polish labour force increased significantly due to large groups of young school-leavers entering the labour market. This is in line with Figure 6.1 below, showing the major increase in youth unemployment in Poland and the Slovak Republic in 2001 compared to 1998.

Figure 6.1 Unemployment per age group, 1998 (left) and 2001



Source: OECD Unemployment Outlook 2002, Statistical Annex

[15] The share of government does well exceed Germany (11%), Ireland (12%), United States (15%), Spain (14.5%), Italy (16%), Portugal (18%), Belgium (18%), but lies under the share in Scandinavian countries (30%) and France (23%).

In addition to the high youth unemployment rate in Slovakia, the proportion of 15-19 year olds who are neither in the education nor in the labour force is also highest in OECD, at 25%(OECD 2004)

Most reasons for high unemployment growth during the past years in Poland and the Slovak Republic are of a temporary nature. This suggests high unemployment is cyclical. Ongoing restructuring in combination with tight monetary policy, and educational or sectoral mismatch between labour demand and labour supply caused unemployment rates to increase fast. Weak governance is not behind rising unemployment but could continue to depress the labour market situation at length.

Although temporary, some causes of unemployment mentioned in this chapter (e.g. job loss and shifting of employees to other sectors due to restructuring, and an increasing labour force) could get a permanent character if no new jobs are created and these people stay unemployed for a considerable length of time. Low-skilled and youth unemployment could turn out to be a permanent problem in Slovakia unless education is promoted, whereas Poland faces increasing unemployment when the agricultural sector is reformed and already faces high youth unemployment.

7 Conclusions

The enlargement of the European Union with ten new member states presents a large change. Some fifteen years ago, most of the new member states were still led by a Communist government. Workers enjoyed a high degree of employment protection and pay systems were fairly rigid. Many people in the EU-15 therefore worried about the possible consequences of the new situation. Were labour markets in the EU-15 often blamed for their inflexibility acting as an impediment to economic development, the rigid systems in the former Communist countries would certainly be no better, so the story went. High unemployment in Poland supports this idea. The envisaged rigidity of the Central- and East-European labour markets therefore seems to justify fears for labour market problems in the enlarged European Union.

However, much has happened in the new member states in the past decade. Since the beginning of the transition, the social security system has been revised drastically: replacement rates are now comparable to those within the EU-15, but benefit duration is markedly shorter in acceding countries. Employment protection was liberalised and minimum wages were introduced. The collective agreements, as bargained over at the decentralised industry or firm level, now cover the majority of employees in the new member states. Only expenditure on active labour market policies still remains low. In short, labour market institutions in the new member states do on average not differ that much anymore from the institutions in the old member states. If anything, they should be considered more flexible.

Common knowledge suggests that unemployment in the new member states is much higher than in the EU-15. However, five out of the ten accession countries show unemployment rates below the weighted average in the European Union member states.

This does not mean that there are no labour market problems in the new member states. Just as in the EU-15, a great deal of heterogeneity exists between the acceding countries. In some of them, labour market reforms could prove a key issue in improving employment performance. The most notable example is Hungary, where a high tax wedge poses severe problems.

The main worry with respect to labour market performance is presented by Poland and the Slovak Republic, representing more than half of the population in the new member states. Unemployment rates have dramatically risen in these two countries in recent years, reaching levels of almost 20%. Our research clearly shows that labour market institutions are not capable of explaining this development. Other factors must be behind these rising unemployment rates.

Three factors seem to play a key role in explaining recent unemployment growth in Poland and the Slovak Republic. The most important factor appears to be postponed structural reforms.

Both countries went through key liberalisation reforms in recent years, while tightening monetary policy at the same time. This has put an upward pressure on unemployment. A second factor is the weak quality of rule of law in both countries. As a consequence, they attracted less FDI than other acceding countries. Third, demographic changes played a role.
Most reasons for high unemployment growth during the past years in Poland and the Slovak Republic are of a temporary nature. This suggests high unemployment is cyclical. However, some of them (e.g. job loss and shifting of employees to other sectors due to restructuring, and an increasing labour force) could get a permanent character if no new jobs are created and unemployed people stay unemployed for a considerable length of time.

Do labour market institutions cause high unemployment in the new member states? Our answer is no. The new member states with the highest unemployment rates do not feature overly rigid labour markets. The reasons behind their malfunctioning labour markets are related to other factors. Labour market institutions in the new member states are comparable to those in the EU-15 and can only account for a small part of the problems in Poland and the Slovak Republic. However, just as in the EU-15, labour market reforms may be needed in a number of accession countries in order to further improve economic performance.

References

Abbring, J. H., G. J. Van Den Berg, and J. C. Van Ours, 1999, The Effect of Unemployment Insurance Sanctions on the Transition Rate from Unemployment to Employment, Tinbergen Institute, University of Amsterdam.

Belot, M., 2003, *Labor market institutions in OECD countries: Origins and consequences*, Thesis, Tilburg University.

Belot, M. and J. van Ours, 2004, Does the Recent Success of Some OECD Countries in Lowering their Unemployment Rates Lie in the Clever Design of their Labour Market Reform?, Oxford Economic Papers, forthcoming.

Bertola, G., F.D. Blau, and L.M. Kahn, 2001, Comparative Analysis of Labor Market Outcomes: Lessons for the United States from International Long–Run Evidence. In: A. Krueger and R. Solow (eds.), *The Roaring Nineties: Can Full Employment be Sustained?*, Russell Sage Foundation: New York.

Betcherman, G., 1999, Structural Unemployment: How Important are Labor Market Policies and Institutions, Draft Paper, World Bank.

Blanchard, O. and J. Wolfers, 2000, The role of shocks and institutions in the rise of European unemployment: the aggregate evidence, *The Economic Journal* (Conference Papers), 110, C1-C33.

Boeri, T., 2002, Social Policy: one for all? Presented at the CPB-ENEPRI conference 'Policy competition and the welfare state', November 30, 2002, The Hague.

Boeri, T. and J.F. Jimeno-Serrano, 2003, The effects of employment protection: learning from variable enforcement, CEPR Discussion Paper no. 3926.

Brown C., C. Gilroy, and A. Kohen, 1982, The effect of the minimum wage on employment and unemployment, *Journal of Economic Literature* 20, pp. 487-528.

Burger, C., 2003, Labour markets, labour market policies and challenges in the candidate countries. European Commission Working Document. In: *Structural reforms in the candidate countries and the European Union*. Austrian Ministry for Economic Affairs and Labour, Economic Policy Center, Vienna (2003).

Calmfors, L. and J. Driffill, 1988, Bargaining structure, corporatism and macroeconomic performance, *Economic Policy*, 6, 13-61.

Calmfors, L., A. Forslund, and M. Hemström, 2002, Does active labour market policy work? Lessons from the Swedish experiences, CESifo Working Paper 675.

Card, D. and A. Krueger, 1995, Time series minimum-wage studies: a meta analysis, *American Economic Review* 85, pp. 238-243.

Cazes, S., 2002, Do labour market institutions matter in transition economies?
An analysis of labour market flexibility in the late nineties. International Labour Organization, Geneva.

CPB Netherlands Bureau for Economic Policy Analysis/ Social and Cultural Planning Office of the Netherlands, 2003, *Social Europe, European Outlook 1*, Annex to '*State of the European Union 2004'*, The Hague.

Dahlberg, M. and A. Forslund, 1999, Direkta undanträngingereffecter av arbetsmarknad-politiska åtgärder, IFAU Working Paper no. 99.6.

Danish Ministry of Finance, 1999, *The Danish Economy: Medium Term Economic Survey*, Ministry of Finance: Copenhagen.

Danthine, J. P. and J. Hunt, 1994, Wage bargaining structure, employment and economic integration, *Economic Journal*, 104 (424), 528-541.

Dolado, J., F. Kramarz, S. Machin, A. Manning, D. Margolis, and C.Teulings (1996): The Economic Impact of Minimum Wages in Europe. Economic Policy, Vol. 23, pp. 319-70.

The European Bank for Reconstruction and Development (EBRD), 2000, Transition Report 2000: Employment, skills and transition. London.

European Commission, 2001a, Joint Assessment of Employment Priorities in Cyprus, europa.eu.int/comm/employment_social/employment_analysis/ japs/cyprus_en.pdf

European Commission, 2001b, Joint Assessment of Employment Priorities in Estonia, europa.eu.int/comm/employment_social/employment_analysis/ japs/estonia_en.pdf

European Commission, 2001c, Joint Assessment of Employment Priorities in Malta, europa.eu.int/comm/employment_social/employment_analysis/ japs/malta_en.pdf

European Commission, 2001d, Joint Assessment of the Employment Policy Priorities of Poland, http://europa.eu.int/comm/employment_social/intcoop/news/poland.pdf

European Commission, 2002a, Joint Assessment of Employment Priorities in Bulgaria, europa.eu.int/comm/employment_social/intcoop/ news/prioritiesbulgaria_en.htm

European Commission, 2002b, Joint Assessment of Employment Priorities in Romania, europa.eu.int/comm/employment_social/employment_analysis/ japs/romania_en.pdf

European Commission, 2003a, Joint Assessment of Employment Priorities in Latvia, http://europa.eu.int/comm/employment_social/intcoop/news/latvia.pdf

European Commission, 2003b, Employment in Europe. Recent Trends and Prospects. Directorate-General for Employment and Social Affairs. Brussels.

European Commission, 2004, COMMISSION RECOMMENDATION on the 2004 update of the Broad Guidelines of the Economic Policies of the Member States and the Community (for the 2003-2005 period), Brussels.

European Industrial Relations Observatory (EIRO), European Foundation for the improvement of Living and Working Conditions, 2003, Poland: Unemployment in 2002 examined, European Union, Dublin. http://www.eiro.eurofound.eu.int/2003/07/feature/pl0307107f.html

Eurostat, 2002, Employment and labour market in Central European Countries 1/2002.

Eurostat, 2003, Annual Gross Earnings Results from Member States, Acceding and Candidate Countries, and Switzerland. Statistics in focus, Population and Social Conditions, Theme 3–25/2003, by Anne Paternoster, November 2003.

Gacs, V. and P. Huber, 2003, Regional Labour Market Problems in the Candidate Countries: A Descriptive Analysis. In: *Adjustment Capability of Regional Labour Markets*, Workpackage No. 2., ACCESSLAB 5th Framework Project, Vienna: WIFO.

Golinowska, S., 1993, Ageing and the labour market in Poland and Eastern Europe. In: *Labour Markets in an Ageing Europe*. Articles based on CEPR conference held in Munich in April 1992. Eds. Paul Johnson, Klaus F. Zimmermann. Cambridge University Press, UK.

Golinowska, S., 1997, Public social expenditures in Central and Eastern Europe. Mimeo.

Gesellschaft für Versicherungswissenschaft- und Gestaltung (GVG), 2002, Country Reports, commissioned by the European Commission.

Gesellschaft für Versicherungswissenschaft- und Gestaltung (GVG), 2003, Study on the social protection systems in the 13 applicant countries, commissioned by the European Commission, draft version, November 2003.

Graafland, J., R. de Mooij, A. Nibbelink, and A. Nieuwenhuis, 2001, *MIMICing tax policies and the labour market*, Amsterdam: Elsevier.

Hagemejer, K., 1999, The Transformation of Social Security in Central and Eastern Europe, in: Katharina Müller, Andreas Ryll and Hans-Jürgen Wagener (eds): *Transformation of social security: Pensions in Central-Eastern Europe*, Physica, Heidelberg, pp. 31-58.

International Labour Organisation, 1997, World Labour Report, 1997-98. Geneva.

International Monetary Fund, 2001, Labour markets in hard-peg accession countries: The Baltics and Bulgaria. IMF Country Report no. 01/100.

Jongen, E., E. van Gameren, and J. Graafland, 2003, Exploring the macroeconomic impact of subsidized employment, *De Economist* 151 (1), pp. 81-118.

Kaufmann, D., A. Kraay, and M. Mastruzzi, 2003, Governance Matters III: Governance Indicators for 1996-2002, World Bank Policy Research Department Working Paper.

Kertesi, G. and J. Köllö, 2003, Challenging 'low equilibria'- Hungary's experiment of doubling the minimum wage 2001-2002, ACCESSLAB 5th Framework Project, coordinated by WIFO, Vienna.

Layard, R., S. Nickell, and R. Jackman, 1991, Unemployment: Macroeconomic Performance and the Labor Market, Oxford: Oxford University Press.

Lopez-Garcia, P., 2003, Labour Market Performance and Start-up Costs: OECD Evidence, CESifo Working Paper Series No. 849.

Mortensen, D. and C. Pissarides, 1999, New developments in models of search in the labor market. In: Ashenfelter, O. and D. Card, '*Handbook of Labor Economics*', Amsterdam, North-Holland, 2567-2627.

Nesporova, A., 1999, Employment and Labour Market Policies in Transition Economies International Labour Organization, Employment and Labour Market Policies Branch, Geneva.

Nesporova, A., 2002, Why unemployment remains so high in Central and Eastern Europe. International Labour Organization, Employment and Labour Market Policies Branch, Geneva.

Nesporova, A. and S. Cazes, 2003, Employment Protection Legislation (EPL) and its effects on Labour Market Performance, High-Level Tripartite Conference on Social Dialogue, Malta, Valetta, 28 February - 1 March 2003. International Labour Organisation, Employment and Labour Market Policies Branch, Geneva.

Newell, A. and J. Symons, 1993, Macroeconomic consequences of taxation in the '80s, London School of Economics Centre for Economic Performance Discussion Paper 121.

Nickell, S.J. and R. Layard, 1999, Labor market institutions and economic performance. In: Ashenfelter, O. and Card, D., *Handbook of Labor Economics*, Amsterdam, North-Holland, 3029-84.

Nickell, S. J., L. Nunziata, W.Ochel, and G. Quintini, 2001, The Beveridge Curve, Unemployment and Wages in the OECD from the 1960s to the 1990s, in: P. Aghion, R. Frydman, J. Stiglitz and M. Woodford (eds.), *Knowledge, Information, and Expectations in Modern Macroeconomics: Essays in Honor of E. S. Phelps*, Princeton University Press: Princeton.

Nickell, S., 2003, A Picture of European Unemployment: Success and Failure, LSE Centre of Economic Performance Discussion Paper 577, July 2003.

Nicoletti, G., S. Scarpetta, and O. Boylaud, 2000, Summary indicators of product market regulation with an extension to employment protection legislation. OECD Economics Department Working Papers no. 226.

OECD, 1994, The OECD Jobs Study. Paris.

OECD, 1997, Employment Outlook, Chapter 3: Economic Performance and the Structure of Collective Bargaining, Paris.

OECD, 1999, Employment Outlook, Chapter 2: Employment Protection and Labour Market Performance, Paris.

OECD, 2001, Economic Survey Poland 2000-2001. Paris.

OECD, 2002a, Benefits and wages, OECD Indicators. Paris.

OECD, 2002b, Employment Outlook, Statistical Annex. Paris.

OECD, 2002c, Economic Survey Poland 2002 (Policy Brief). Paris.

OECD, 2003, Employment Outlook, Statistical Annex. Paris

OECD, 2004, Economic Survey of the Slovak Republic. Paris.

Opstal, R. van, 1990, Minimumloon en werkgelegenheid: een empirisch analyse op micro-data uit 1979 en 1985, CPB Research Memorandum no. 69.

PAS, 2002, Business Environment Report: Slovak Republic 2002, PAS Business Alliance of Slovakia, Bratislava.

Pissarides, C., 1990, *Equilibrium Unemployment Theory*, Basil Blackwell: Oxford.

Riboud, M., C. Sánchez-Páramo, and C. Silva-Jáuregui, 2002, Does Eurosclerosis Matter? Institutional Reform and Labor Market Performance in Central and Eastern European Countries in the 1990s.The World Bank, Social Protection Unit, Human Development Network, Social Protection Discussion Paper Series 0202.

Scarpetta, S. and A. Reutersward, 1994, Unemployment benefit systems and active labour market policies in central and eastern Europe: an overview, in *OECD: Unemployment in Transition Countries: Transient or Persistent?* Paris.

Soskice, D., 1990, Wage determination: the changing role of institutions in advanced industrialized countries, *Oxford Review of Economic Policy*, 6(4), 36-61.

United Nations Economic Commission for Europe, 2003, Economic Survey of Europe 2003 No. 2, by the Economic Analysis Department, Geneva.

World Bank, 2001, Poland's labor market – the challenge of job creation, World Bank Country Study.

World Bank, 2002a, Slovak Republic: Living Standards, Employment and Labour Market Study.

World Bank, 2002b, Labour Policy Dilemmas Preceding EU Enlargement, Labour Markets of the Accession Countries: Fit to Join? In *Transition Newsletter*, July-August-September 2002.

Data Appendix

The regressions in chapter 5 use data for a sample of 21 countries over the period 1960-1999. This appendix describes the data and the sources from which they were obtained in more detail.

Countries

We include 21 countries in our regressions. These are the four largest new member states (Poland, the Czech Republic, Hungary and the Slovak Republic) and the 17 countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, United Kingdom and United States of America) that Belot and Van Ours (2004) include in their regressions. Henceforth we will refer to Belot and Van Ours (2004) as BvO.

Unemployment rate

The unemployment rate is taken from the OECD for the years 1960-2000. We use the standardised unemployment rate as obtained from the Main Economic Indicators (MEI).

Tax wedge

For 1960-1979 we rely on the tax rate series constructed by BvO. This tax rate is calculated as the sum of the employment tax rate and the direct tax rate. A more detailed description of their calculations can be found in the data appendix accompanying their publication.

Because we were unable to extend this series to the new member states, we decided to use a different indicator for the period 1979-2000. For this period we use the tax wedge as obtained from the OECD. The series we use refers to a single average production worker and can be found in table 3/6 in the annex to the OECD-publication 'Taxing Wages 2000-2001'. The total tax wedge is defined there as 'Employees' and employers' social security contributions and personal income tax less transfer payments as percentage of gross labour costs'.

Replacement rate first year

The OECD has collected systematic data on the unemployment benefit replacement ratio for three different family types (single, with dependent spouse, with spouse at work) in three different duration categories (1st year, 2nd and 3rd years, 4th and 5th years) from 1961 to 2001 (every other year). From this, we calculated a summary measure for the replacement rate in the first year by taking a simple average over the first year replacement rates for the three family types. The replacement rate used by BvO is computed by taking the mean for all nine categories.

Unemployment benefit duration

We follow Nickell (2003) in calculating a measure of the unemployment benefit duration. He starts from the OECD data described in the previous paragraph and computes the indicator by normalising the level of benefit in the later years of the spell on the benefit in the first year of the spell. The exact formula reads as follows: [0.6 (2nd and 3rd year replacement ratio) + 0.4 (4th and 5th year replacement ratio)] ÷ (1st year replacement ratio).

Employment Protection Legislation

For the 17 countries for which BvO have data available, we use the index they constructed. This series measures the strictness of employment regulation with respect to open-ended contracts, fixed-term contracts and temporary work agencies. See BvO for further details.
For the four new member states we use data constructed by Nicoletti et al. (2000). We normalised these to the same range as the series from BvO.

Union density

We got the union density series from BvO. The original source is the OECD Labour Market Statistics.

Centralization

Index (1-3) characterizing the degree of centralization of the bargaining system, with higher numbers indicating more centralization: 1: firm level, 2: industry level and 3: national level. Source: BvO.

Coordination

Index (1-3) characterizing the degree of coordination of the bargaining system, with 3 the most coordinated. Source: BvO.

Active Labour Market Policies

Expenditure on Active Labour Market Policies as a percentage of GDP is obtained from the OECD Labour Market Statistics. Following Nickell et al. (2002), we normalised the series by dividing it by the unemployment rate.

Statutory minimum wage (as percentage of the average wage)

Source: OECD Labour Market Statistics.

Change in inflation

To measure the change in inflation we start from the consumer price index (CPI) as obtained from the series ‘CPI all items’ from the OECD. This is an index series, with the value for 1995 normalised at 100. For the four new member states this series is available from 1995 at the

latest. For the other 17 countries, this series is available from 1960, with the exception of Denmark, for which the series start at 1968. For Denmark we therefore use a different series, the consumer price index from the Luxembourg Income Studies, for the first two five-year periods. We obtained this series from BvO, who use it for all countries for the whole sample period.

Inflation in year *t* is calculated as: $INF_t = (CPI_t - CPI_{t-1}) / CPI_{t-1}$.

Finally, the change in inflation in year *t* is defined as: $CHI_t = INF_t - INF_{t-1}$.

Fire the Manager to Improve Performance? Managerial Turnover and Incentives after Privatization in the Czech Republic[∇]

Jana P. Fidrmuc[*]

Jan Fidrmuc[**]

March 2004

Abstract:

This paper analyzes the effect of the introduction of managerial incentives and new human capital on enterprise performance after privatization in the Czech Republic. We find weak evidence for the presence of managerial incentives: only in 1997, three to four years after privatization, poor performance significantly increases the probability of managerial change. Nevertheless, replacing the managing director in a newly privatized firm improves subsequent performance. This indicates that the privatized firms operate below potential under the incumbent management. We show that the institutional framework matters as well: managerial turnover improves performance only if the management is closely interconnected with the board of directors and thus holds effective executive authority.

Keywords: Privatization, Managerial Change, Incentives, Restructuring, Corporate Governance.
JEL Classification Numbers: G32, G34, J40, P31

[∇] Jan Fidrmuc's financial support from the European Comissions 5th framework programme in the AccessLab project is gratefully acknowledged. Jana Fidrmuc's research was undertaken with support from the European Union's Phare ACE Program 1997. The content of the paper is the sole responsibility of the authors and it in no way represents the views of the Commission or its services. We wish to thank Wendy Carlin, Stijn Claessens, Laszlo Halpern, Peter Huber, Abe de Jong, Rez Kabir, Luc Renneboog, Gerard Roland, Peter Roosenboom, Grzegorz Trojanowski, Paul Walsh, and participants to a seminar at CentER, the CEPR/WDI Transition Economics Conference in Moscow, and the CEPR Transition Economics Workshop for Young Academics in Portoroz, Slovenia for helpful comments.

[*] Department of Financial Management and ERIM, Erasmus University Rotterdam, Bur. Oudlaan 50, P.O.Box 1738, 3000 DR Rotterdam, Netherlands. E-mail: j.fidrmuc@fbk.eur.nl; Phone: +31-10-408-2319; Fax: +31-13-408-9017.

[**] ECARES, Université Libre de Bruxelles; ZEI, University of Bonn; CEPR, London; and WDI, University of Michigan. Contact information: ECARES, Université Libre de Bruxelles, 50 Avenue F.D. Roosevelt, CP 114, 1050 Brussels, Belgium. Email: JFidrmuc@ulb.ac.be. Phone: +32-2-650-4462, Fax: +32-2-650-3369.

1 Introduction

In large corporations, ownership and management are usually separated: the managers control the firms' affairs on behalf of the owners but without their direct and immediate supervision. This separation of ownership and control leads to the well-known *principal-agent* problem (Jensen and Meckling, 1976), which requires an effective system of corporate governance to be resolved (Shleifer and Vishny, 1997). The separation between ownership and control took on an additional dimension in the former socialist command economies where owners were literally non-existent. Instead, managers of state-owned enterprises (SOEs from now on) were supervised by government officials who, in effect, were more concerned about plan fulfillment and redistribution of rents than about profitability and efficiency. Even in market economies, however, politicians often use public enterprises to pursue political goals (Shleifer and Vishny, 1994). Privatization reinstates profit maximization as the primary objective of enterprise activities and thus remedies the inefficiencies of public ownership (Shleifer, 1998). As firm performance depends on both managers' skills and their effort (Laffont and Tirole, 1986), efficiency improvements after privatization can accrue through implementation of incentives compatible with profit maximization or through appointment of new and better managers.

The process of large-scale privatization in transition countries provides a unique opportunity to study the relationship between the transfer of ownership on the one hand and changes in incentives and in the quality of managerial human capital on the other hand. Several earlier studies focus on the impact of introduction of private ownership on managerial incentives and managerial replacement both in developed and transition economies.[1] These studies reach a common conclusion that the relationship between past firm performance and managerial tenure is stronger under private ownership, that the frequency of managerial replacements increases after privatization and that new human capital improves firm performance. However, the transition evidence also suggests that only changing managerial incentives does not suffice, it is the change of management (introduction of new human capital) that leads to restructuring and improved performance in the privatized firms. The identity of new owners matters as well. Frydman et al. (2002)

[1] See, for example, Cragg and Dyck (1999) for the U.K., De Alessi (1974) for the U.S., Groves et al. (1995) for a Chinese setting, Barberis et al. (1996) for small Russian shops, Frydman et al. (2002) for firms

point out that privatization to insiders leads to managerial entrenchment and, thus, to resistance to changes at the top managerial positions. Therefore, privatization alone is not a guarantee of improved managerial incentives and performance.

Our analysis further extends the empirical evidence on the effect of privatization on managerial incentives and managerial turnover during the transition. We focus on three main issues. First, we document the activities of the new private owners concerning managerial replacements. High managerial turnover immediately after the transfer of ownership indicates (at least indirectly) that the new private owners get actively involved in the governance of their firms and search for managers with human capital that better matches the needs of their firms.

Second, we investigate whether the new owners introduce new managerial incentives. In particular, we test whether the probability of managerial change is affected by the firms' past performance. With proper incentives in place, managers of poorly performing firms are at a greater risk of dismissal (Hermalin and Weisbach, 2003).[2] Yet, the relationship between performance and the probability of managerial turnover is likely to depend also on the ownership and control characteristics of firms. We conjecture that concentrated owners, because they typically actively monitor their firms and/or directly participate in running the firms' affairs, have better access to inside information concerning firm value and abilities of the management (Fidrmuc et al., 2003). Therefore, poor past performance should play a more important role in revealing low competence of managers in firms without concentrated shareholders. Moreover, shareholders with relatively low control and cash flow rights are usually not highly motivated to exert effort and push through changes unless firm performance is very poor (Franks et al., 2001).

Third, we evaluate the effect of managerial changes on the subsequent enterprise efficiency. If the new managers' human capital better matches the firms' productive assets, their appointment should lead to higher productivity and efficiency. Also, as Groves et al. (1995) argue, a significant improvement in firm performance after the change of management indicates that the firm has been operating below its potential prior to the change. Therefore, ex-post improvement constitutes indirect evidence of ex-ante poor managerial performance. A novel feature of our analysis is that we explicitly account for

---

in four Central-European economies, Claessens and Djankov (1999a, 2000) for privatized Czech companies, and Warzynski (2003) for a sample of Ukrainian firms.

[2] We use several performance measures: labor productivity, gross profit per employee and return on fixed assets.

the differences in internal-control structures in the privatized firms. Specifically, Czech corporate law places ultimate executive responsibility in the hands of the board of directors rather than the general managing director (managing director or MD from now on). The managing director, however, may be a member of the board and thereby have a relatively strong position. Thus, the effectiveness of the change of the managing director may depend on the relation between the board of directors and the top management. Therefore, we distinguish between strong management (whereby the managing director sits on the board) and weak management (the top manager is not a board member and, thus, does not hold executive authority). We also consider changes of the managing director alongside changes at the post of the chairman of the board of directors and evaluate the relative importance of these two key persons.

Our analysis is based on a data set of 917 non-financial privatized firms spanning a six-year period following the voucher privatization: from 1993 to 1998. By combining cross-sectional and panel analysis, our research extends the previous work on this topic, in particular that of Claessens and Djankov (1999) who analyze the relationship between managerial change and firm performance in the Czech Republic only in a cross-sectional setting. Two main findings emerge. First, we show that the relation between prior performance and change of the managing director in the newly privatized firms is not significant when considering the entire post-privatization period. However, performance becomes a significant determinant of top managerial changes in 1997, some 3-4 years after the privatization, especially for firms with concentrated but not majority control and/or firms with ownership stakes by other corporations and financial institutions (other than banks or investment privatization funds). It seems that these types of investors are more likely to introduce managerial incentives. Second, the analysis confirms that top managerial changes boost (total factor) productivity, suggesting that the new managers indeed perform better than the old ones. This also confirms that privatized firms tend to operate below potential under their old (pre-privatization) management. Importantly however, the institutional framework matters: productivity only improves significantly if the managing director is closely linked with the board of directors and thus is directly responsible for business affairs of the company. Furthermore, in firms where the top management and the board of directors overlap, replacements of the chairman of the board also lead to improvements in productivity. Moreover, this effect appears to dominate that of managerial turnover.

The rest of the paper proceeds as follows. The next section briefly describes findings and conclusions of the existing literature regarding privatization and its effects on the introduction of new incentives and better managers. Section 3 gives an overview of the voucher privatization program and discusses the corporate-governance patterns prevailing in the Czech Republic and their consequences for our analysis. Section 4 introduces the data. Sections 5 and 6 present the results of our empirical analysis. The last section summarizes the results and presents our conclusions.

2 Privatization, managerial change and incentives

The main goal of this paper is to analyze the impact of privatization on introduction of new managers and incentives. Over the past 20 years, governments increasingly chose to relinquish control over public enterprises with the goal of improving performance and increasing competitiveness of these companies. After its debut in the UK in the early 1980s, privatization spread to France, Italy, Spain and other market economies. During the 1990s, this trend received a further impetus as formerly socialist countries initiated large-scale privatization programs. Many empirical studies (see Megginson and Netter, 2001, for a review) show that privatization is indeed highly successful in delivering performance and efficiency improvements. Cragg and Dyck (1999) investigate the sources of these improvements and find that privatization leads to higher managerial turnover and better incentives.

The introduction of managerial incentives and accountability entails the standard principal-agent relationship. An adverse selection problem may arise as the manager (agent) possesses relevant information that is not known to the owner (principal), for example, the manager's abilities or the firm's potential productivity. In addition, moral hazard may also be present since the manager takes actions that affect the firm's productivity and that cannot be directly observed by the principal. The principal, then, cannot distinguish between the various alternative reasons for the firm's poor performance: inherently low productivity of the firm, incompetence of the manager, managerial decisions that pursue goals other than productivity, or pure bad luck (Groves et al., 1995). From the theoretical perspective, it is not immediately obvious why private owners would be more effective than the state at resolving these standard agency problems. Nevertheless, two sets of theoretical papers provide a rationale for the link

between ownership and incentives. Their arguments are based on changes in owners' objectives versus changes in owners' monitoring intensity (Cragg and Dyck, 1999).

The first theoretical argument maintains that state ownership is, in general, inefficient as politicians often use the public enterprises to pursue political goals that are not in line with profit maximization and efficiency improvements (Shleifer and Vishny, 1994, Shapiro and Willing, 1995). Possible political benefits include, for example, excess employment and wages, production of goods desired by politicians rather than by consumers, and location of production facilities in politically desirable rather than economically attractive regions. Privatization of state owned enterprises isolates the firms from these inefficient 'political' goals and replaces them with profit maximization that leads to innovation and efficiency improvements (Shleifer, 1998).

Second, property rights theories (Alchian, 1977, and Demsetz, 1988) highlight the self-interest of private shareholders who are residual claimants to firm profits. To get maximum return on their investment, they monitor the managers, keep them accountable and link their tenure to firm performance. Public officials, in contrast, do not have any personal gain from monitoring managers or designing proper managerial incentives. Therefore, the property rights theories predict privatization to enhance incentives tied to firm performance (Cragg and Dyck, 1999).

The prospect of privatization by itself can motivate incumbent managers to engage in costly restructuring (Aghion et al., 1994, and Roland and Sekkat, 2000). The model by Roland and Sekkat (2000) shows that managers of the SOEs may restructure because they expect to benefit from the subsequent privatization and/or because they attempt to improve performance in order to signal to the new prospective owners their competence and thus retain their positions after privatization. Thus, the prospect of privatization together with the managerial career concerns motivate the incumbent managers in the SOEs to restructure even before the actual change of ownership. Empirical evidence supports this prediction (Carlin et al., 1995).

Many empirical studies provide evidence that managerial incentives – in the form of strong relationship between poor past performance and the probability of managerial change – work in established private firms (Weisbach, 1988, and Warner et al., 1988, Denis and Denis, 1995).[3] However, incentives are weaker in public firms (Cragg and Dyck, 1999). Moreover, Cragg and Dyck (1999) show that privatized firms in the UK

increased the frequency of managerial replacements and also introduced stronger incentives.

For the transition countries, the introduction and enforcement of appropriate incentives for managers is even more important because it substitutes the role of other disciplinary and motivational tools that are not yet functioning properly in the transition period (Roland, 2000).[4] The evidence on managerial incentives is, however, week and inconclusive (Barberis et al., 1996, Claessens and Djankov, 1999). This may be a consequence of the lack and low quality of data or the fact that most studies only cover short post-privatization periods.[5] Cragg and Dyck (1999) find evidence of presence of managerial incentives only 4 years after the privatization in their U.K. sample. It is possible that introduction of proper incentives takes time. An extended study over a longer post-privatization period may reveal existence of stronger incentives also in the transition context.

The corporate governance literature suggests that the strength of incentives depends on how privatization affects ownership concentration, the ease of transfer of ownership, the entrenchment of managers, and the level of executive freedom granted to the management. Therefore, it is important to consider ownership patterns prevailing in the privatized companies and analyze the existence of managerial incentives under different ownership structures.[6] Concentrated owners typically actively monitor the firm and are better informed about the firm value and abilities of the management than small dispersed shareholders (Fidrmuc et al., 2003). Their superior information may enable them to recognize an incapable manager even before the firm performance starts to deteriorate. Furthermore, shareholders with relatively low control and cash-flow rights are not much motivated to exert effort and push through changes unless firm performance is very poor (Franks et al., 2001). Therefore, we expect the link between past performance and turnover to be the strongest in firms without concentrated blockholders or in firms with owners who do not engage in costly monitoring (institutional investors, for example). For the firms with concentrated blockholders (especially individuals or other companies), we expect the

---

[3] For review of empirical papers see Hermalin and Weisbach (2003) and John and Senbet (1998).

[4] In functioning market economies, competition in product market, managerial labor market, and capital market (either through takeovers or bank supervision) may substitute the role of incentives.

[5] Barberis et al. (1996) analyze data on 452 Russian shops (both state owned and privatized) over the period 1992-93. As their sample only includes retail shops, the change of ownership and management often coincides. Cleassens and Djankov (1999) analyze only remuneration as positive motivational tool.

[6] The Czech privatization program favored outside ownership and, thus, avoided the problem of managerial entrenchment often associated with inside ownership.

link to be weaker. Note that this conjecture relates to the impact of performance on managerial turnover but not to the frequency of turnover; as the latter can be similar across all firms.

Managerial change, in general, constitutes evidence of efficient but costly monitoring by the board of a private firm and should, therefore, be beneficial for the firm value (Warzynski, 2003). The empirical evidence concerning the introduction of new managerial human capital strongly supports this conjecture across many countries and economic settings. In the US, top managerial changes in established publicly traded companies do result in better financial performance after the change (Denis and Denis, 1995). UK experience with privatized firms is also consistent with this pattern (Cragg and Dyck, 1999). Moreover, the evidence on the favorable impact of new human capital in transition and developing countries is also very strong (Frydman et al., 2002, Djankov and Murrell, 2002, and La Porta and Lopez-de-Silanes, 1999). In transition, new human capital seems to be more important than incentives (Barberis et al., 1996, Claessens and Djankov, 1999). This is perhaps not surprising as skills and qualifications that were important in a command economy are not necessarily useful in a market economy. The selection of top managers under the communist regime often reflected political considerations as much as, or more than, managerial skills. The new owners are likely to appoint managers who possess skills more appropriate for the market economy in general and their individual firm in particular. As the managerial labor market and capital market are not yet sufficiently developed, the success of privatization may be strongly linked to the ability of the new owners to introduce managers with ‘western’ skills (Dyck, 1997).

So, is it incentives or new human capital that matter? In fact, it is possible that new people and better incentives are strongly complementary in improving performance in that neither would be effective by itself (McMillan, 1997, Fidrmuc and Fidrmuc, 2004). On the one hand, some incompetent incumbent managers may be unable to respond to new incentives. Good managers, on the other hand, might not work hard enough under badly structured incentives. Therefore, our analysis considers both the impact of improved incentives and of new human capital.

3 Privatization and corporate-governance regulation in the Czech Republic

The Czech government opted for a rapid reform program that introduced the three essential steps, price liberalization, stabilization and privatization, relatively quickly (Sachs, 1993). In fact, the voucher privatization introduced new private owners already in 1993, after the first wave, and in 1994, after the second wave.[7] Despite fears that the voucher privatization would result in highly dispersed ownership, the immediate post-privatization ownership structure was quite concentrated. Only around 29 percent of all firms involved in the first wave had more than 50 percent of their shares in the hands of small dispersed shareholders.[8] Investment privatization funds (IPFs) were the most frequent blockholders. They held on average as much as 25 and 31 percent of shares immediately after the first and second wave, respectively.[9] At the same time, inside ownership was very low: on average, managing directors held only 2.5 percent of shares, with only 1.8 (8.2) percent of managers holding 20 (10) percent or more. Also the ownership stakes by other non-IPF outsider blockholders were very low: foreign investors acquired on average only 2.1 percent and domestic direct investors 0.7 percent (Claessens and Djankov, 1999). Thus, in general, the IPFs played a vital role in pursuing restructuring and managerial turnover, especially in the first years after the transfer of ownership. Frequent ownership transactions over the years (sometimes referred to as the third wave of privatization) have resulted in higher concentration of ownership in hands of individuals and of other domestic and foreign firms who challenge the vital role of the IPFs. These ownership changes may be important also for managerial incentives and managerial turnover.

In order to study the impact of managerial incentives and of new human capital on performance during the post-privatization period, it is important to be familiar with the specifics of the prevailing corporate governance patterns. The law restricts the design of internal-control structures in companies and thus has an important impact on the corporate

[7] For more details about the whole privatization process see Fidrmuc et al. (2002). On voucher privatization in particular see Claessens and Djankov (2000) and Dlouhy and Mladek (1994).

[8] Ownership structure of firms privatized in the second wave had a similar pattern.

[9] Investment privatization funds arose as collective investment intermediaries in the voucher privatization program. The voucher-privatization participants had the option to 'invest' (a part of) their vouchers into various IPFs, which then used the vouchers to acquire shares of privatized companies. 429 and 353 IPFs took part in the first and second wave, respectively.

governance patterns in place. In particular, the legal framework stipulates the conditions of appointment, responsibilities, and accountability of the executive bodies, including the managing director.

The principal piece of legislation regulating the internal-control structures in the Czech Republic is the Commercial Code. Limited-liability public companies are obliged to have a two-tier internal-control structure consisting of a board of directors (henceforth BoD) and a supervisory board (SB). The BoD is the highest executive body, responsible for all business affairs of the company. In particular, the Code stipulates that, unless regulated otherwise by the articles of association, the BoD members (and not the management) have the legal authority to sign contracts on behalf of the company. In general, members of the BoD are appointed by the general meeting of the company's shareholders. However, the articles of association may also stipulate that members of the BoD are appointed by the SB instead. The chairman of the BoD is elected by the BoD members themselves in both cases. In turn, the SB is responsible for overseeing and monitoring of the actions of the BoD. Members of the SB must be appointed by the general meeting of shareholders.[10] The Code does not directly regulate the role of the management.

In practice, different types of internal-control arrangements are common in Czech companies. This variety of internal-control arrangements (relative division of control/power between SB, BoD, and management) is due to different preferences among the important individual constituencies involved: the state (represented by the Fund of National Property – FNM), IPFs, other types of owners, and the management (Brzica, 1996). In general, two main types prevail, with each stipulating different roles for the BoD, the SB and the management, and the relationship among them. In the first type, depicted in Figure 1, the management is relatively powerful because its members also sit on the BoD (although the positions of the managing director and the BoD chairman are not necessarily taken up by the same person). The SB is elected by the general meeting of shareholders and it in turn appoints the BoD members. Thus, shareholders have their representatives on the SB, which oversees and monitors the BoD. All members of the SB are non-executive outsiders. In turn, the BoD coincides with the management team and is the executive body of the company. We refer to this type as 'internal-control structure with strong management' It should be noted, however, that this terminology does not refer to the

[10] Except for companies with more than 50 employees, in which case one third of the SB is appointed by the employees.

power of the managing director towards other members of the board of directors or the supervisory board. It rather reflects the fact that the top managers are close to the ultimate decision making of their firms.

The second type (Figure 2) is used when the shareholders want to have tighter control over the firm. In that case, both the BoD and SB are appointed directly by the general assembly of shareholders. Shareholders' involvement in business affairs is considerable because they have their non-executive representatives on the BoD. In contrast, the management team (which is not a part of the BoD) is relatively weak with limited responsibilities. The SB does not appoint members of the BoD as in the previous case. Its role is limited to monitoring the activities of the BoD and of the management. This type of internal-control arrangement usually prevails in firms with several IPF as owners. Representatives of stronger IPFs are appointed members of the BoD and effectively control the firm while smaller IPFs are represented in the SB. We denote this arrangement as 'internal-control structure with week management' since the board of directors' approval of all important business decisions limits the independence and responsibility of the top managers.

Figures 1 and 2 about here

In short, the following points are important for our analysis. First, the Code assigns executive power and responsibility to the BoD. Second, the members of the top management may or may not sit on the BoD. Third, even when the top management and the BoD overlap, the managing director is not always the chairman of the BoD. Hence, analyzing the impact of top managerial turnover on firm performance, one must control for these specifics of the internal-control patterns in place. In fact, our analysis would be incomplete if we only considered replacements of the managing director, as the key responsibility for business affairs of the firm lie within the BoD. Previous research on corporate governance issues in the Czech Republic (Claessens and Djankov, 1999, 2000) neglects this important feature. To the best of our knowledge, our paper is the first one to explicitly account for institutional aspects of corporate governance issues in transition economies.

4 Data

Our analysis is carried out with a panel of 917 Czech non-financial firms privatized during the two waves of voucher privatization.[11] The data span the period from 1993 to 1998. The basic criterion for a firm to be included in our analysis was availability of information on its sales, fixed assets, number of employees and costs for at least 3 years. This criterion results in an unbalanced panel containing a total of 4920 firm-year observations. The data set contains also a host of non-financial information about the firms. Importantly, we are able to identify the firm's managing director and,, the date he or she assumed this position. In addition, the data also contain information on the structure of ownership, listing all owners who hold more than 10 percent of total equity. However, the ownership structure is only available starting with 1996 as only then it became obligatory by law to disclose this information.

Unfortunately, some information that would be desirable for our analysis is not contained in the data. In particular, we have no information on the managing director's professional qualifications (education, experience and employment history within and outside the firm) or the specific circumstances of the managing director's departure. Therefore, while we can observe turnover of managing directors, we do not know whether the previous managing director was dismissed or whether left for other reasons (such as health problems, retirement or death). Yet, as the descriptive statistics discussed in greater detail below show, changes within the top management and the BoD are so frequent (ranging between 10 and 24 percent per year for the managing director and between 24 and 37 percent for the chairman of the BoD) that health and demographics could only account for a small fraction of them.[12]

Table 1 presents basic descriptive statistics that give flavor of what is going on in our sample companies after their privatization. The data indicate that sales, fixed assets and labor productivity rose slightly from 1994 until 1998, whereas profitability (measured by return on fixed assets) declined from 1994 until 1996 and then increased again.[13] The number of employees was falling till 1997 and only stabilized in 1998. The fact that the

[11] The data were purchased from Aspekt Kilcullen s.r.o. (http://www.aspekt.cz/).

[12] It is also not very probable that these high replacement rates were a consequence of low turnover in the pre-privatization period. In fact, Claessens and Djankov (1999a) report that at least 50 percent of voucher-privatized firms in their sample replaced their managing director already in the pre-privatization period.

[13] Total sales and fixed assets are constant prices of 1993.

average enterprise increased its sales and improved profitability while reducing the number of employees by approximately 10 percent indicates an ongoing restructuring effort. Comparing means and medians for most of the variables in Panel A reveals that there are several large firms in the data set. Furthermore, as new firms enter the data set in the wake of the second wave of voucher privatization, the average and median firm sizes fall considerably, indicating that the first wave was more strongly dominated by large enterprises.

Table 1 comes about here.

We are primarily interested in the pattern of managerial turnover after the privatization. Compared to the available estimates of 7.8 percent - 9.3 percent for U.S. firms (Claessens and Djankov, 2000) and 11.8 percent for the U.K. (Cragg and Dyck, 1999), the managing director turnover in the Czech Republic is high: 16 percent per year. Altogether, 56.5 percent (518 out of 917) of firms replaced their managing director at least once during the 5-6 years since the privatization.[14] In most cases (345 firms), the managing director was replaced only once, in 132 firms twice and in 41 firms three or more times. While generally high, these figures are not far from the ordinary considering the context in which these managerial changes take place. Similarly high managerial turnover is reported for newly privatized firms in the U.K. (15.4 percent per year according to Cragg and Dyck, 1999) and for East German privatized companies (around 20 percent per year, see Dyck, 1997). As Panel B of Table 1 shows, the frequency of the managing director change displays an increasing trend.[15] It is relatively low (11 percent) immediately following the privatization, but increases to 24 percent in the forth post-privatization year. This indicates that the new private owners needed some time to consolidate control, before they started to exercise control effectively. On average, the first change of the managing director took place in the forth year after the transfer of ownership in firms that replaced their managing director at least once. Comparing the managing director turnover to the turnover of the chairman of the BoD, the latter is replaced much more frequently and in more firms.

Panel C of Table 1 looks at the incidence of the two internal-control arrangements discussed in the preceding section. Most Czech firms employ the first alternative: the internal-control structure with strong management. In more than a third of all firms, the

[14] The period 1993-98 represents 6 and 5 years in the post-privatization period for the firms privatized in the first and second wave of voucher privatization, respectively. Ownership rights were transferred in April 1993 and June 1994 for the first and second wave, respectively.

managing director served also as the chairman of the BoD. In nearly two thirds, he was either the chairman or a deputy chairman of the BoD and in more than two thirds he had a seat on the BoD. Nevertheless, when comparing managing director versus chairman of the BoD changes, we find that only in 100 cases, both the managing director and the chairman of the BoD were changed at the same time.

Table 2 looks at the ownership structure by identifying the largest shareholders in 1996. Even though the IPFs were the most frequent owners of the privatized companies immediately after the voucher privatization, the data suggest that it was no longer the case in 1996. Apparently, considerable secondary ownership transfers took place since the voucher privatization.[16] By 1996, domestic firms were the most frequent type of the largest shareholder (35 percent of firms), followed by the IPFs (20 percent) and the government (15 percent). Also concentration of control increased. The largest shareholder (except for the IPFs) owns, on average, more than one third of total equity. Foreign firms in particular tend to acquire concentrated stakes, holding on average 60 percent of equity. The low average stakes held by IPFs in part reflect legal restrictions. Investment funds are prohibited to own more than 20 percent of any company. If several funds set up by the same legal entity hold stakes in one firm (as was often the case), their joint stake is to be at most 40 percent. To circumvent this regulation, many IPFs transformed into holding companies[17]. This is documented also by our data since some of the funds own blocking or majority stakes, even though less frequently than other types of owners.

Table 2 comes about here.

5 Managerial incentives

As documented in the previous section, around 57 percent of the firms in our sample changed their managing director at least once during the five/six years after the privatization. Thus, the new private owners seem to be quite active in replacing their top managers. In this section, we relate these replacements to past firm performance so as to investigate the strength of managerial incentives introduced by the new private owners. Finding a negative link between firm performance and managerial turnover would indicate

[15] Note that we are interested only in post-privatization managerial changes.

[16] Already during the voucher privatization, it was expected that large ownership changes would take place in the years to come. This process was often referred to as the third wave of privatization, or re-privatization.

that the new owners tend to change managers who fail to deliver satisfactory results. The presence of such negative incentives should help motivate the managers to improve performance .

An alternative and *a priori* equally plausible hypothesis, however, is that the new private owners replace the incumbent managers regardless of past performance so as to assume control over the firm and put in place management that best corresponds to the firm's needs. In this case, one would expect to find little correlation between firm performance and managerial turnover. An insignificant relationship between firm performance and managerial turnover may, however, also arise as a consequence of managerial entrenchment. In particular, high managerial control over a firm may shield the managers from dismissal and generally restrict the owners' ability to exert influence on their firms. Thus, managerial entrenchment could, potentially, lead to low turnover at the top positions and weak performance-turnover relationship. However, this does not seem to be the case in the Czech voucher-privatized firms because, first, managerial replacements are very frequent and, second, cases where managers hold larger stakes in their firms are infrequent (Claessens and Djankov, 1999). Moreover, Brzica (1996) documents that the new owners (mostly IPFs) are indeed exercising their ownership rights and are actively involved in monitoring of their firms. Thus, the power of top managers seems to be limited.

To test for the presence of managerial incentives, we estimate the following relationship:

$$DMD_{it} = \alpha_i + \beta_1 Perf_{it-1} + \beta_2 Size_{it-1} + \varepsilon_{it} \qquad (1)$$

where DMD_{it} is a binary variable taking value of one if the managing director of firm *i* was replaced in year *t*, $Perf_{it-1}$ is the firm's performance in the previous year, $Size_{it-1}$ is a measure of firm size in the previous year, α_i is the firm specific constant, and ε_{it} is the error term. Performance and size are both industry-adjusted.[18] We use three measures of performance: labor productivity, gross profit margin per employee, and return on fixed assets. Size is measured, alternatively, by total fixed assets or number of employees and is

[17] Because of this, we retain such transformed IPFs in the IPF category.

[18] For industry adjustment, we divide the corresponding variable by the industry average in the given year. Relative firm performance within its industry seems to be an important performance benchmark (Groves et al., 1994, Warzynski, 2003).

included to account for the possibility that large firms have a higher frequency of managerial turnover.

The results estimated by logit panel regressions with random effects are reported in Table 3. Panel A with results obtained over the entire sample shows only limited evidence indicating a relationship between past performance and managerial turnover. The effect of labor productivity in Model 1 and of return on fixed assets in Model 3 is insignificant. The coefficient obtained for profit per employee in Model 2 does have the correct sign and is significant at the 10 percent level. Thus, these results suggest that managerial incentives are still weak in the Czech privatized companies.

However, it is also possible that the new owners use performance metrics other than accounting earnings and labor productivity immediately after the privatization and rely on the accounting metrics only later, as documented by Cragg and Dyck (1999) for a set of U.K. privatized firms. Moreover, it is also plausible (as suggested already above) that different types of shareholders put in place different managerial incentives. Below, we explore these two hypotheses.

Table 3 comes about here.

Panel B of Table 3 replicates Models 1-3 with data only for 1997 so as to investigate the presence of negative incentives some time after the privatization.[19] Note also that 1997 was the year with the highest frequency of managerial turnover. The results in Panel B differ substantially from those in Panel A. All three performance measures now appear to have a negative impact on managerial turnover, with gross profit per employee and labor productivity significant at the 5 and 10 percent level, respectively. The results for analogous regressions with managerial change in other years, however, show insignificant coefficients for all performance variables.[20] Thus, while it appears that for the most part the new private owners replace the managing directors regardless of their performance, in 1997, the year during which the frequency of managerial turnover reached its peak, past financial performance is an important determinant of managers' tenures. It is possible that the new owners need time to take control of and get acquainted with their firms and therefore start to implement negative incentives with a lag of several years after

[19] This also facilitates comparison with results that incorporate ownership information that are discussed bellow.

[20] These results are not reported here but are available upon request.

privatization. If so, performance may become an important factor underlying managerial turnover in the Czech Republic only a few years after the privatization.

Next, we explore whether different types of owners behave differently when it comes to turnover of the managing director. We conjecture that only blockholders with significant control who are involved in active monitoring have a direct access to inside information concerning firm value and competence of the management. Therefore, owners who cannot closely monitor the firm's activities are more likely to rely on performance as a signal about the managing director's competence. We categorize the enterprises according to the type of the largest owner. In doing so, we consider also the size of the stake held by the largest stakeholder. We distinguish between *blockholders* (defined as those holding at least 33.4 percent of equity) and *majority owners* (those with more than a 50 percent stake). These two thresholds are chosen so as to account for the relative control power of the largest stakeholder. Obviously, a blockholder who is in possession of more than 50 percent of outstanding equity is in almost complete control of the enterprise. As the Commercial Code requires a two-third majority to implement certain important corporate decisions, owning more than a third of total equity also implies considerable influence (and therefore such a stake is often denoted as a blocking stake).

Within these two size categories, we further distinguish six different types of stakeholders: investment privatization funds (IPFs), banks, other financial institutions, individuals, corporations, and the national property fund (NPF). The empirical literature analyzing ownership and control effects of different types of owners usually distinguishes ownership by individuals, corporations and financial institutions (see, for example, Holderness and Sheehan, 1988). We augment these basic groups by adding the NPF, as the state ownership is still important in the Czech Republic. Further, we partition financial institutions into the IPFs, banks, and the remaining financial institutions. As ownership data is available only since 1996, we only investigate the effect of performance and ownership structure in 1996 on managerial turnover in 1997. This is the year with the highest frequency of managerial changes and, as reported above, the only year during which the relationship between performance and managerial turnover is found to be negative.

To examine the effect of ownership on the probability of managerial change, we augment the basic regression model depicted in equation (1) by adding dummies for the presence of a blockholder or a majority owner, along with interaction terms between these

dummies and performance. These results are reported in Panel A of Table 4. In Panel B, we further augment the regression by adding interaction terms between performance and dummies capturing the specific type of ownership, for both blockholders and majority owners. This specification allows us to test whether different types of owners put different weight on past performance when deciding whether to dismiss the managing director. We relate managerial turnover to two measures of performance: labor productivity and gross profit per employee as these are the two performance measures that yielded significant results before (see Panel B of Table 3). To make interpretation of interaction terms easier, we report the combined performance effect and the joint significance for each ownership type at the bottom of the panels.

Table 4 comes about here.

The results are generally in line with expectations. In Panel A, we see that firms with a largest owner holding between 33 and 50 percent of total equity (a blockholder) tend to display a strong negative relationship between performance and the frequency of managerial change. The relationship is jointly significant at the 1 percent level when measuring performance with labor productivity and at the 5 percent with profit per employee. No such relationship obtains for firms with a majority owner, however. Note that the simple coefficient for performance is insignificant (when performance is measured by labor productivity) or only marginally significant (for profit per employee), indicating that firms with dispersed ownership, i.e. with no owner holding more than 33 percent, also do not have strong negative incentives in place. Hence, it is mainly blockholders who rely on negative incentives. Majority owners, in contrast, are typically able to exercise close control over the firm and therefore are in a better position to be directly involved in running the firm's affairs. Small shareholders, finally, may not have enough power to implement and enforce negative incentives.

Panel B allows a closer look at the impact of the various types of ownership.[21] On the one hand, we observe little difference across the various types of majority owners. In fact, all coefficients obtained for interaction terms between performance and the various categories of majority owners are positive, thus countering the negative effect of performance on the probability of managerial turnover. The joint effect is always

[21] The combined effect of performance and interaction terms (performance * ownership type) and their joint significance is reported at the bottom of Panel B. Because of space constraints and insignificance of the coefficients for majority owners, only the results for blockholders are reported.

insignificant. Hence, the data again confirm that majority owners do not rely on negative incentives as a means of protecting their interests. On the other hand, ownership types matter for firms with blockholders. The presence of banks and IPFs does not strengthen negative incentives. The evidence is mixed for individuals and the government (represented in privatized firms by the NPF): the interaction effects are jointly significant when performance is measured by labor productivity but not when it is measured by profit per employee. Finally, firms that have corporate owners or financial institutions (other than banks or IPFs) as blockholders show strong evidence of the presence of negative incentives, regardless of the measure of performance. Hence, different types of blockholders do behave differently: corporations and financial institutions (other than banks and IPFs) put in place strong negative incentives to safeguard their interests, whereas banks and IPFs (and to some extent also individuals and the state) appear to assume the role of passive investors even when they hold a relatively large stake.

In summary, the evidence on managerial incentives in privatized Czech companies is mixed. The panel results covering the period from 1993 to 1998 (in Table 3) do not support any relationship between managing-director change and prior firm performance. The results for 1997, the year when managerial changes were the most frequent, however, indicate that poor past performance (productivity and profitability) do have significant effect on the change of the managing director. The results are especially strong for firms without a majority owner but with at least one owner with a blocking stake (i.e. between 33 and 50 percent of equity). When accounting for different types of ownership, this pattern is strongest when the block is held by a corporate owner or a financial institution other than a bank or an IPF and it is weakest for banks and IPFs.

6 Quality of new human capital

In the previous section, we analyze the relationship between prior performance and managerial turnover in a cross-sectional setting, focusing on emergence of incentive structures that owners can use to ensure that managers' actions are in line with their interests. Putting in place negative incentives, however, is only one of the options available to the new private owners. Another important change that they can implement is to bring in new human capital (Laffont and Tirole, 1986, and McAfee and McMillan, 1987). Empirical evidence suggests that new human capital is indeed very important for performance improvements in transition countries (Djankov and Murrell, 2002).

Moreover, Groves et al. (1995) argue that significant improvement in firm performance after the managerial change may reveal the existence of unfulfilled potential of the firm prior to the change of management. In other words, ex post improvement is potential evidence on ex ante poor managerial performance. This is even more so in the formerly socialist economies undergoing transition where most firms immediately after the privatization are inefficient and poorly performing. As the average firm is thus a poorly performing one and regression analysis considers deviations from the mean, it is no wonder that we do not find that firms that replace their managers perform below average. After privatization, the new private owners may take advantage of their access to superior information on performance of the incumbent managers and replace them when there is a potential for improvement. The improved performance after the managerial change is thus evidence of low efficiency before the change.

We analyze this hypothesis in a production function framework of the following form:

$$\log Y_{it} = \alpha_i + \beta_1 \log K_{it} + \beta_2 \log L_{it} + \beta_3 DMD_{it} + \varepsilon_{it} \qquad (2)$$

where Y_{it} stands for the total sales of firm i in year t, K_{it} is the firm's capital (fixed assets), L_{it} is the number of employees, α_i is the firm-specific intercept and ε_{it} is the error term. Sales, capital and the number of employees are all industry adjusted (divided by the industry mean of the variable in the respective year[22]) to account for industry-specific factors and are all in natural logarithms.

The variable of interest is DMD_{it} – change of the managing director. In the production function framework, β_3 measures the effect of the managing-director change on the total factor productivity. We define DMD_{it} as a dummy variable taking value of one following the change of the firm's managing director. More specifically, the dummy is set to one in the year when the change occurred if the change took place before the end of June of that year, otherwise, the dummy is set to one only in the subsequent year. Then, the dummy remains set to one henceforth.[23] That is, we assume that the change of the managing director translates into a permanent shock to productivity rather than a temporary one. A positive coefficient estimate of β_3 thus would imply that managerial turnover causes a permanent improvement of firm's total factor productivity and a permanent decrease for a negative coefficient. We only consider the first post-privatization replacement of the

[22] Groves et al. (1995) also follow this procedure.
[23] Note that the dummy is defined differently here compared to the previous section.

managing director, as it is the first change that is most likely directly caused by the transfer of ownership to and assumption of control by the new owners. While subsequent managerial turnover may also affect total factor productivity, the first post-privatization change is likely to have the strongest impact.

As emphasized in Section 4, the institutional framework – in particular the nature of internal-control structures in place – is likely to affect the relationship between managerial turnover and productivity. Therefore, besides equation (2), we estimate also an augmented production function with additional controls: a dummy measuring change of the board-of-directors (BoD) chairman and interaction terms between the two turnover dummies and a dummy distinguishing the two forms of internal-control structure. The augmented production function then takes the following form:

$$\begin{aligned} \log Y_{it} &= \alpha_i + \beta_1 \log K_{it} + \beta_2 \log L_{it} + \beta_3 DMD_{it} + \beta_4 DCBD_{it} \\ &+ \beta_5 DMD_{it} * STRONG_i + \beta_6 DCBD_{it} * STRONG_i + \varepsilon_{it} \end{aligned} \qquad (3)$$

where $STRONG_i$ stands for a dummy variable equal to one if the managing director is strong, that is he/she is simultaneously the chairman or deputy chairman of the BoD. We use this variable as a proxy for the first type of internal-control arrangements of firms depicted in Figure 1.[24] $DCBD_{it}$ is a dummy variable indicating change of the chairman of the board and is defined analogously to DMD_{it}. Table 5 presents regression results based on Equations (2) and (3), estimated with firm-specific fixed effects and year dummies.[25]

Table 5 comes about here.

Model 11 includes only the dummy for the change of the managing director. In Model 12, in contrast, the MD-change dummy is interacted by the dummy for strong management, so that it only counts managerial replacements when the managing director has a strong position in the firm. The results for Models 11 and 12 show that managing-director change leads to better subsequent performance but the effect is statistically significant only when the managing director is strong. Thus, a new managing director is associated with a positive shift in total factor productivity. However, the institutional framework is important – replacing a manager who does not hold real executive power, does not affect firm performance significantly. In contrast, replacing a *strong* managing

[24] Defining the *strong MD* as one who is simultaneously a member of the BoD (i.e. not necessarily chairman or deputy chairman) leads to almost identical results, though the significance of the interaction term is slightly lower.

[25] The Hausman test indicates that fixed effects are appropriate in these models.

director raises total factor productivity on average by 5.5 percent (note that because of the way how the MD change dummy is constructed, this is the average *permanent* gain realized over all subsequent years).

Model 13 again introduces the interaction term between managing-director change and the internal-control structure in the firm, this time alongside the MD-change dummy. Hence, the coefficient estimated for the MD-change dummy indicates the effect of managerial turnover in firms without a strong manager, whereas the coefficient for the interaction term captures the additional effect of replacing a strong managing director. Again, MD change does not deliver significant increase in total factor productivity unless the managing director enjoys a relatively strong position and has legal authority over the firm's affairs. The total effect of replacing a strong managing director (sum of the coefficients for the MD change and the interaction term) is again more than 5 percent. In short, introduction of a new manger who enjoys a powerful position within the firm is associated with a positive shift in total factor productivity. [26]

Panel B of Table 5 presents results obtained with various permutations of the augmented production function depicted in Equation (3). Model 14 reports results of a regression that only considers changes at the post of the chairman of the BoD. The results are analogous to those for the managing-director change. Replacing the BoD chairman increases (total-factor) productivity only when top management and the board of directors are closely interconnected. The measured impact on productivity is slightly lower now, on average 4.3 percent. In contrast, replacing a BoD chairman who holds executive powers but does not actively participate in day-to-day management of the firm's affairs has little effect (the coefficient is in fact negative, although it is not significant).

Model 15 reports results of a regression that considers changes at both posts, MD as well as BoD chairman (note that even when the MD is simultaneously also the BoD chairman, a change at one post does not necessarily stipulate a change at the other).[27] The results show that only replacements of the BoD chairman when management is strong have significant effect on total factor productivity. This finding is confirmed also by the regression reported as Model 16 that only counts changes at the posts of managing director and BoD chairman with strong management. This is in line with the logic of the legal

[26] It should be noted, however, that the choice of particular internal-control arrangement could be a consequence of power division between shareholders. Thus, one should ideally control also for ownership structure. Unfortunately, we have ownership data starting only in 1996.

framework – executive authority rests with the board of directors, not the management. Replacing the BoD chairman shifts productivity again by approximately 4 percent in Models 15 and 16.

At this point, it is important to highlight again that the dummies for MD and CBD changes we have used throughout our analysis measure only the effect of the first change. In order to check for consistency of our results we re-estimated all models using dummies that measure the last change at both posts but the results remain basically unchanged.

In summary, our results in this section suggest that changes of the managing director and the chairman of the board of directors improve enterprise productivity but only when the management is relatively strong and is closely linked with the board. As it is the board of directors and not top management that holds actual executive authority, this result is not surprising. In contrast, replacing either the managing director or the BoD chairman does not improve productivity when the management is relatively weak and separate from the board.

7 Conclusions

In this paper, we analyze the introduction of new managers and new incentives directly after the privatization in the Czech Republic. The analysis is carried out with a panel of 917 Czech corporations privatized by the voucher method, with the data spanning the period from 1993 to 1998, that is, the first 6 years after their privatization. We consider two ways how the new owners affect corporate governance and performance of their newly acquired firms. First, they can implement new incentive mechanisms that induce the managers to safeguard the owners' interests or face dismissal. Second, the owners can take a more active approach and replace managers in order to improve the match between the firm's productive assets and the manager's human capital.

We analyze the incentive mechanisms by relating managerial turnover to past performance: if the new owners implement negative incentives, performance should be negatively correlated with the probability of replacement. The evidence is mixed, however. We find that across the entire data set, past firm performance does not significantly affect the probability of the managing-director change. Nevertheless, performance turns out significant as a predictor of managerial changes in 1997, some 3-4 years after the

[27] In fact, only in 10 percent of all changes of the managing director, the same person was also dismissed

privatization. During that year, the negative relationship between performance and managerial turnover is the strongest in firms without a majority owner but where at least one owner holds a blocking stake (between 33 and 50 percent of equity) and especially when that blockholder is a corporate owner or a financial institution (other than a bank or IPF). Hence, owners differ considerably with respect to the degree of their engagement in the enterprise. On the one hand, small owners and some blockholders (in particular banks and IPFs) do not assert much influence over their enterprise's affairs, either because the size of their stake does not grant them much say, or because they hold the stake primarily as a financial investment. On the other hand, majority owners are able to be directly involved in running the firm's affairs and therefore need not rely on performance incentives. Majority owners are also likely to have access to better information than small investors and therefore can determine whether below-average performance is due to the managers' lack of competence or external factors.

However, the new owners may replace managers also when the firm operates below its potential even though a priori the firm's relative performance does not appear poor compared to other firms in the same industry. To allow for this possibility, we compare productivity before and after managerial change. We find that managing-director change indeed delivers a positive shift in productivity. Thus, the new private owners act on their superior information regarding the unfulfilled potential for efficiency improvement of their firms and are able to appoint managers whose human capital better matches the firm's productive assets. Furthermore, we find that the institutional framework is important as well: the positive effect of the managing-director change is significant only when the managing director has a relatively strong position within the firm and is closely linked with the board of directors (which is ultimately responsible for all business affairs of the company). Similarly, change of the chairman of the board improves productivity only when the board and management are closely linked. In contrast, replacement of the managing director or chairman of the board does not improve productivity when the management is relatively weak and is not part of the board. In fact, the change of the chairman of the board of directors seems to be more important than the change of the managing director. This is not surprising, as it is the board and not the management that holds actual executive authority.

---

from the post of CBD.

Hence, our results suggest that privatization is not a sufficient condition for improved performance and restructuring. New private owners do not always implement incentives that induce the managers to increase efficiency and profitability, either because ownership is too dispersed or the owners perceive their stakes as speculative investment, without actively participating in running the firms' affairs. However, our analysis shows that when owners do take charge of their newly acquired companies and install new management, improvements in performance follow. Finally, the institutional context is important as well: new managers only make a difference when they do hold executive authority over the firm. Our analysis, in general, suggests somewhat weak incentives. They get stronger only some time after the transfer of ownership. It is possible that this result is a consequence of strong complementarity between new managers and incentives – incentives may effectively work only with new mangers. This issue, however, remains to be addressed by further research.

References

Aghion, Philippe, Olivier Blanchard, and Robin Burgess, 1994, 'The Behaviour of State Firms in Eastern Europe, Pre-Privatisation,' European Economic Review 38, 1327-1349.

Alchian, A. A., 1977, 'Economic forces at work,' Liberty Press, Indianapolis.

Barberis, Nicholas, Maxim Boycko, Andrei Shleifer and Natalia Tsukanova, 1996, 'How Does Privatization Work? Evidence from the Russian Shops,' Journal of Political Economy 104 (4), 764-790.

Brzica, Danes, 1996, 'The Role of Investment Companies and Investment-Fund Managers in Exercising Ownership Rights,' Russian and East European Finance and Trade 32 (4), 47-73.

Carlin, Wendy, John v. Reenen, and Toby Wolfe, 1995, 'Enterprise Restructuring in Early Transition: the Case Study Evidence from Central and Eastern Europe,' Economics of Transition, vol. 3, 427-458.

Claessens, Stijn, and Simeon Djankov, 1999, 'Enterprise Performance and Management Turnover in the Czech Republic,' European Economic Review 43, 1115-1124.

Claessens, Stijn, and Simeon Djankov, 2000, 'Manager Incentives and Turnover of Managers: Evidence from the Czech Republic,' in E. Rosenbaum, F. Bönker, and H. J. Wagener (eds.), Privatization, Corporate Governance and the Emergence of Markets, Macmillan Press Ltd, UK, 171-188.

Cragg, Michael Ian and I.J. Alexander Dyck, 1999. 'Management Control and Privatization in the United Kingdom,' RAND Journal of Economics 30 (3), 475-497.

De Alessi, L., 1974, 'Managerial Tenure Under Private and Government Ownership in the Electric Power Industry,' Journal of Political Economy 82, 645-653.

Demsetz, Harold, 1988, 'Ownership, Control and the Firms: The Organization of Economic Activity,' Vol.1, Basil Blackwell, New York.

Denis, David J., and Diane K. Denis, 1995, 'Performance Changes Following Top Management Dismissals,' Journal of Finance 50 (4), 1029-1057.

Djankov, Simeon, and Peter Murrell, 2002, 'Enterprise Restructuring in Transition: A Quantitative Survey,' Journal of Economic Literature 40, 739-792.

Dlouhy, Vladimir, and Jan Mladek, 1994, 'Privatization and Corporate Control in the Czech Republic,' Economic Policy: A European Forum 19, 155-170.

Dyck, I.J. Alexander, 1997, 'Privatization in Eastern Germany: Management Selection and Economic Transition,' American Economic Review 87 (4), 565-597.

Fidrmuc, Jan, Jarko Fidrmuc and Julius Horvath, 2002, 'Visegrad Economies: Growth Experience and Prospects,' Global Development Network: Global Research Project, mimeo, available at http://www.cerge.cuni.cz/pdf/gdn/grp_final_visegrad.pdf.

Fidrmuc, Jana P. and Jan Fidrmuc, 2004, 'Can You Teach Old Dogs New Tricks? On Complementarity of Human Capital and Incentives,' mimeo, Erasmus University Rotterdam.

Fidrmuc, Jana P., Marc Goergen and Luc Renneboog, 2003, 'Directors' Share Dealings and Corporate Control,' mimeo, Tilburg University.

Franks, Julian, Colin Mayer, and Luc Renneboog, 2001, 'Who Disciplines Management in Poorly performing Companies?' Journal of Financial Intermediation 10, 209-248.

Frydman, Roman, Marek Hessel, and Andrzej Rapaczynski, 2002, 'Why Ownership Matters?: Entrepreneurship and the Restructuring of Enterprises in Central Europe,' in Fox, M. and M. Heller (eds.), Corporate Governance Lessons from Transition Economy Reforms, Princeton University Press.

Groves, Theodore, Yongmiao Hong, John McMillan and Barry Naughton, 1994, 'Autonomy and Incentives in Chinese State Enterprises,' Quarterly Journal of Economics 109, 183-209.

Groves, Theodore, Yongmiao Hong, John McMillan and Barry Naughton, 1995, 'China's Evolving Managerial Labor Market,' Journal of Political Economy 103 (4), 873-891.

Hermalin, Benjamin E. and Michael S. Weisbach, 2003, 'Board of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature,' FRBNY Economic Policy Review, 7-26.

Holderness, Clifford G., and Dennis Sheehan, 1988, 'The Role of Majority Shareholders in Publicly Held Corporations,' Journal of Financial Economics 20, 317-346.

Jensen, Michael, and William Meckling, 1976, 'Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure,' Journal of Financial Economics 3, 305-360.

John, Kose, and Lemma W. Senbet, 1998, "Corporate Governance and Board Effectiveness,' Journal of Banking and Finance 22, 371-403.

Laffont, Jean-Jaques and Jean Tirole, 1986, 'Using cost observation to regulate Firms,' Journal of Political Economy 94, 614-641.

La Porta, Rafael and Florencio Lopez-De-Silanes, 1999, 'The Benefits of privatization: Evidence from Mexico,' Quarterly Journal of Economics 114 (4), 1193-1224.

McAfee, R. Preston and John McMillan, 1987, 'Competition for Agency Contracts,' RAND Journal of Economics 18 (Summer), 296-307.

McMillan, John, 1997, 'Markets in Transition,' in David M. Kreps and Kenneth F. Wallis (eds.), Advances in Economics and Econometrics: Theory and Implications, Cambridge University Press, Cambridge, 210-239.

Megginson, William L. and Jeffrey M. Netter, 2001, 'From State to Market: A Survey of Empirical Studies on Privatization,' Journal of Economic Literature 39 (2), 321-389.

Roland, Gerard, 2000, 'Transition and Economics: Politics, Markets, and Firms,' The MIT Press, Cambridge, Massachusetts.

Roland, Gerard, and Khalid Sekkat, 2000, 'Managerial Career Concerns, Privatization and Restructuring in Transition Economies,' European Economic Review 44, 1857-1872.

Sachs, Jeffrey D., 1993, 'Poland's Jump to a Market Economy,' The MIT Press, Cambridge, Massachusetts.

Shapiro, Carl and Robert D. Willing, 1995, 'Economic Rationales for the Scope of Privatization,' in E.E. Bailey and J.R. Pack (eds.): The Political Economy of Privatization and Deregulation, Elgar, Aldershot, UK.

Shleifer, Andrei, 1998, 'State versus Private Ownership,' Journal of Economic Perspectives 12 (4), 133-150.

Shleifer, Andrei, and Robert W. Vishny, 1994, 'Politicians and Firms,' Quarterly Journal of Economics 109, 995-1025.

Shleifer, Andrei, and Robert W. Vishny, 1997, 'A Survey of Corporate Governance,' Journal of Finance 52, 737-783.

Warner, Jerold B., Ross L. Watts, and Karen H. Wruck, 1988, 'Stock Prices and Top Management Changes,' Journal of Financial Economics 20, 461-492.

Warzynski, Frederic, 2003, 'Managerial Change, Competition, and Privatization in Ukraine,' Journal of Comparative Economics 31, 297-314.

Weisbach, Michael S., 1988, 'Outside Directors and CEO Turnover,' Journal of Financial Economics 20, 431-460.

TABLE 1: DESCRIPTIVE STATISTICS

PANEL A		1993	1994	1995	1996	1997	1998
Number of firms		509	882	896	899	887	847
Total sales:	mean	1035	720	741	737	767	793
	median	308	200	211	207	208	196
	st. dev.	2945	2322	2337	2334	2387	2496
Costs of goods sold:	mean	734	557	633	662	740	786
	median	218	145	171	175	187	187
	st. dev.	1711	1595	1802	1809	2057	2262
Gross profit margin:	mean	302	214	217	219	255	284
	median	81	53	54	55	69	67
	st. dev.	1478	1101	1139	1183	1211	1342
Fixed assets:	mean	848	573	589	625	650	703
	median	217	116	118	114	103	102
	st. dev.	4326	3628	4039	4556	4921	5437
Number of employees:	mean	1253	830	796	766	739	743
	median	568	311	306	300	290	290
	st. dev.	3012	2058	1953	1952	1885	1850
Labor productivity:	mean	946	953	1063	1165	1368	1428
	median	498	537	607	665	761	774
	st. dev.	1432	1180	1215	1562	2658	2823
Return of fixed assets:	mean	0.55	0.57	0.54	0.46	0.57	0.64
	median	0.44	0.43	0.42	0.42	0.47	0.47
	st. dev.	0.67	0.68	1.14	2.36	1.81	1.23

TABLE 1: DESCRIPTIVE STATISTICS (CONTINUED)

PANEL B						
	1993	1994	1995	1996	1997	1998
Frequency of MD change[1]	9%	8% [3]	10%	16%	24%	18%
Frequency of CBD change[1]	27%	28%	37%	35%	29%	24%
Number of firms with MD (CBD) change per year:[2]						
	1993	1994	1995	1996	1997	1998
first MD change	6	77	71	89	174	73
last MD change	3	39	43	69	190	146
first CBD change	32	184	188	256	94	61
last CBD change	9	50	101	223	200	228
Percentage of firms with MD change in n^{th} year after privatization						
year	1	2	3	4	5	6
percentage of firms	11%	18%	18%	24%	23%	6%

PANEL C	Total	MD is BoD chairman	MD is BoD chairman or vicechair.	MD is BoD member
Number of firms	917	383	590	699

Notes: For each year in Panel A, the mean, median, and standard deviation are reported in given order. Sales, costs of goods sold, gross profit margin, and fixed assets are in CZK millions and in constant prices of 1993. *Gross profit margin* is defined as difference between total sales and costs of goods sold. *Labor productivity* is the total sales over the number of employees. *Return of assets* is defined as the gross profit margin over the fixed assets. Only changes of MDs and CBDs after voucher privatization (i.e. after April 1993 and October 1994 for the firms included in the 1st and 2nd wave, respectively) were considered. CBD stands for chairman of the board of directors.

[1] All changes of MD (CBD) per firm considered.

[2] Change of MD (CBD) is attributed to the following cal. year if it occurred during the 2nd half of the year.

[3] Partitioned for firms in the 1st and 2nd wave, the frequency is 11% and 3%, respectively.

TABLE 2: TYPE OFTHE LARGEST OWNER

Type of the Largest Shareholder:	No. of firms	Percentage of firms	Avg. Ownership Share[1]	Blockholder (>33.4%)[2]	Majority owner (>50%)[2]
Investment Privatization Fund	169	19.58%	26.25%	33	7
Domestic bank	14	1.62%	43.46%	9	4
Foreign bank	14	1.62%	40.26%	9	4
Domestic corporation	303	35.11%	45.73%	225	124
Foreign corporation	57	6.60%	60.23%	52	40
Individual	89	10.31%	34.24%	42	14
National Property Fund	126	14.60%	46.51%	85	49
Institutional investor (not IPF)	79	9.15%	36.14%	43	15
Foreign institutional investor	12	1.39%	52.41%	8	7

Notes:
[1] Percentage of shares held by the largest shareholder.
[2] Number of firms having a blockholder (holding at least 33.4% of shares) or a majority owner (holding more than 50% of shares), respectively.

TABLE 3: THE INCENTIVE EFFECT

	labor productivity			*gross prof. per empl.*			*return on fixed assets*		
Panel A: Panel Estimates (94-98)	**Model 1**			**Model 2**			**Model 3**		
	coef.	s.e.	sign	coef.	s.e.	sign	coef.	s.e.	sign
Constant	-1.340	0.084	***	-1.304	0.082	***	-1.252	0.087	***
Performance (lagged)	0.008	0.026		-0.031	0.019	*	-0.048	0.042	
Size (lagged)	0.037	0.012	***	0.042	0.012	***	0.049	0.014	***
Random effects	Yes			Yes			Yes		
Year dumies	Yes			Yes			Yes		
# of observations	4109			4109			3697		
# of firms	923			923			915		
χ^2	93.89	***		96.41	***		78.46	***	
Panel B: simple logit for 1997	**Model 4**			**Model 5**			**Model 6**		
	coef.	s.e.	sign	coef.	s.e.	sign	coef.	s.e.	sign
Constant	-0.700	0.225	***	-0.700	0.210	***	-0.975	0.121	***
Performance (lagged)	-0.400	0.214	*	-0.392	0.179	**	-0.147	0.121	
Size (lagged)	0.130	0.070	*	0.093	0.065		0.105	0.082	
# of firms	812			814			813		
χ^2	5.24	*		5.62	*		3.08		

Notes: Estimated with logit regressions. The dependent variable is a binary variable equal to one if the managing director was changed in the respective year. All variables are industry adjusted. *Labor productivity* is defined as the total sales over the total number of employees. *Gross profit per employee* is defined as the total sales less the costs over the total number of employees. *Return on fixed assets* is the total sales less the total costs over the fixed assets. *Size* (in log) stands for the fixed assets in all models except in Models 3 and 6 where it stands for the number of employees.
* denotes significance at the 10% level.
** denotes significance at the 5% level.
*** denotes significance at the 1% level.

TABLE 4: INCENTIVES AND OWNERSHIP STRUCTURE (1997)

	labor productivity			*gross prof. per employee*		
Panel A:	**Model 7**			**Model 8**		
	coef.	s.e.	sign.	coef.	s.e.	sign.
Constant	-0.843	0.341	**	-0.751	0.303	*
Performance (lagged)	-0.340	0.372		-0.453	0.281	*
Size (lagged)	0.139	0.074	*	0.074	0.070	
Blockholder (33-50%)	0.798	0.495	*	0.354	0.464	
Majority owner (>50%)	0.108	0.478		-0.304	0.450	
*Interaction terms: performance*ownership type*						
performance * blockholder (33-50%)	-0.974	0.579	*	-0.271	0.460	
performance * majority owner	0.162	0.483		0.503	0.405	
Number of observations	769			765		
χ^2	11.51	*		7.69		
Test of joint significance:	coef.	χ^2	sign.	coef.	χ^2	sign.
blockholder (33-50%)	-1.315	8.39	***	-0.724	3.93	**
majority owner	0.302	0.29		0.577	0.03	
Panel B	**Model 9**			**Model 10**		
	coef.	s.e.	sign.	coef.	s.e.	sign.
Constant	-0.825	0.342	**	-0.734	0.304	**
Performance (lagged)	-0.353	0.373		-0.462	0.282	*
Size (lagged)	0.150	0.075	**	0.085	0.072	
blockholder (33-50%)	0.797	0.509		0.314	0.481	
majority owner	-0.769	0.527		-0.271	0.463	
*Interaction terms: perf*ow*						
performance *IPF (33-50%)	-0.627	0.735		0.344	0.560	
performance *IPF (majority)	2.109	1.138	*	0.666	0.702	
performance *bank (33-50%)	0.649	1.389		0.776	0.927	
performance *bank (majority)	0.717	0.858		1.003	0.714	
performance *corporation (33-50%)	-0.830	0.627		-0.376	0.501	
performance *corporation (majority)	0.140	0.521		0.390	0.435	
performance *individual (33-50%)	-0.849	0.821		0.134	0.670	
performance *individual (majority)	0.367	0.685		0.899	0.579	
performance *NPF (33-50%)	-1.188	0.722	*	-0.270	0.647	
performance *NPF (majority)	0.037	0.526		0.375	0.584	
performance *fin. inst. (33-50%)	-2.858	1.043	***	-1.527	0.887	*
performance *fin. inst. (majority)	0.699	0.658		0.604	0.597	
Number of observations	769			765		
χ^2	25.22	*		17.05		
Test of joint significance:	coef.	χ^2	sign.	coef.	χ^2	sign.
Blockholder (33-50%)						
IPF	-0.979	2.32		-0.118	0.06	
Bank	0.296	0.05		0.313	0.13	
Corporation	-1.183	5.31	**	-0.838	4.08	**
Individual	-1.202	2.69	*	-0.329	0.30	
NPF	-1.540	5.99	**	-0.733	1.56	
fin. inst.	-3.211	10.80	***	-1.990	5.62	**

Notes: Estimated by logit regressions. The dependent variable is a binary variable equal to one if MD changed in 1997. Ownership information, firm performance, and size pertain to 1996. All other variables are defined as in Table 3. The null hypothesis in the *test of joint significance* is *performance + (performance * ownership type) = 0*. *, **, and *** denotes significance at the 10, 5, and 1 percent level; respectively.

TABLE 5: IMPACT OF MD/CBD TURNOVER ON PRODUCTIVITY, 1993-98

Panel A	**Model 11**			**Model 12**			**Model 13**		
	coef.	s.e.	sign	coef.	s.e.	sign	coef.	s.e.	sign
Capital (fixed assets)	0.351	0.017	***	0.349	0.017	***	0.349	0.017	***
Labor (# employees)	0.534	0.030	***	0.534	0.030	***	0.533	0.030	***
Change of MD Dummy	0.023	0.020					-0.020	0.028	
Change of MD * strong MD				0.055	0.024	**	0.072	0.033	**
Fixed effects	Yes			Yes			Yes		
Year Dummies	Yes			Yes			Yes		
R^2	0.73			0.73			0.73		
Panel B	**Model 14**			**Model 15**			**Model 16**		
	coef.	s.e.	sign	coef.	s.e.	sign	coef.	s.e.	sign
Capital (fixed assets)	0.348	0.017	***	0.347	0.017	***	0.349	0.017	***
Labor (# employees)	0.530	0.030	***	0.531	0.030	***	0.532	0.030	***
Change of MD Dummy				0.003	0.030				
Change of MD * strong MD				0.031	0.038		0.039	0.025	
Change of CBD	-0.040	0.025		-0.035	0.027				
Change of CBD * Strong MD	0.083	0.027	***	0.071	0.031	**	0.043	0.022	**
Fixed effects	Yes			Yes			Yes		
Year Dummies	Yes			Yes			Yes		
R^2	0.73			0.73			0.73		

Notes: Estimated by OLS, fixed effects included in both regressions. Standard deviations are in parentheses. Number of observations is 4920. The dependent variable is the total sales. Sales, capital and labor are industry adjusted and in logs, sales and capital are in constant prices of 1993. *CBD* stands for chairman of the Board of Directors. The dummy for *MD (CBD) change* equals one in the year of the first post-privatization change and in all subsequent years. *Strong MD* dummy is equal one in firms where the managing director is also the chairman or deputy chairman of the BoD.

FIGURE 1: INTERNAL-CONTROL STRUCTURE: STRONG MANAGEMENT

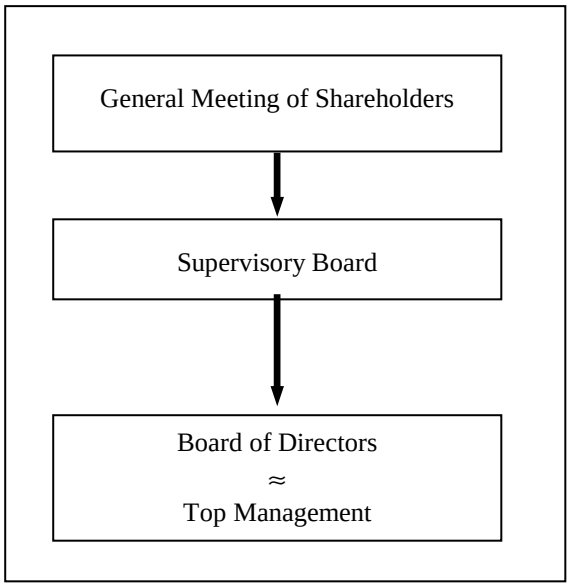
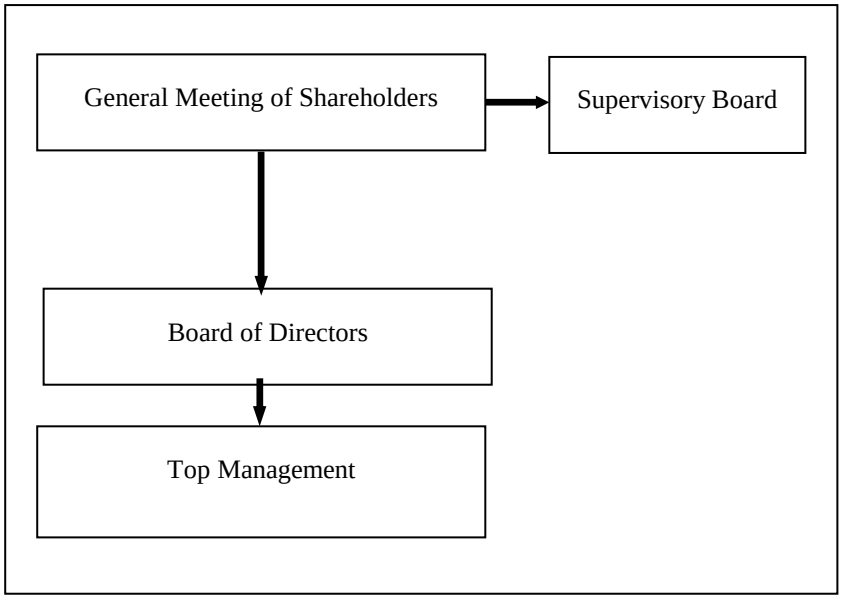


FIGURE 2: INTERNAL-CONTROL STRUCTURE: WEAK MANAGEMENT



The Effect of Ownership Structures on Managerial Disciplinary Mechanisms after Privatization in Slovakia

Jana P. Fidrmuc*

Department of Financial Management

Erasmus University Rotterdam

Abstract:

In established market economies, firm performance has typically a strong effect on the CEO's tenure in the firm, which suggests effectiveness of the internal governance structures. This paper analyzes CEO turnover and its sensitivity to poor firm performance after privatization in a transition country. Using data over 1995-98 on state-owned enterprises privatized in the large-scale privatization in Slovakia, the analysis shows that poor profitability is indeed associated with higher CEO turnover suggesting that the transfer of ownership from state to private hands had enhancing effect on the effectiveness of the internal monitoring efforts. In contrast, a market performance measure does not perform such a disciplining role. The second important finding is that concentration and nature of ownership as well as changes of major blockholders have also important impact on both CEO turnover and its sensitivity to poor firm performance.

Keywords: Corporate Governance, Management Turnover, Privatization

JEL Classification Numbers: G30, G34, J40

* Department of Financial Management and ERIM, Erasmus University Rotterdam, Bur. Oudlaan 50, P.O.Box 1738, 3000 DR Rotterdam, Netherlands. E-mail: j.fidrmuc@fbk.eur.nl; Phone: +31-10-408-2319; Fax: +31-13-408-9017.

1 Introduction

"Few of the tasks which good corporate governance consist of, like strategy development or control, are visible to non-insiders to the corporation. Minutes of board or committee meetings or the outcome of shareholder-management meetings are not disclosed. Hence, one of the few occasions to study corporate control actions (or the lack of them) is poor performance or a financial crisis." (Renneboog, 2000, p.1962)

This paper analyzes poor firm performance and its association with changes at the top executive levels after large-scale privatization in Slovakia and, thus, assesses the effectiveness of internal governance systems of the privatized firms. Several recent studies show that, for established market economies, top management turnover is sensitive to poor past performance (both stock return and accounting profitability) and that internal governance systems are effective in monitoring and disciplining poorly performing managers. This paper investigates the question of whether internal governance of state-owned firms improves after their privatization. In some sense, the large-scale privatization in the transition countries of Central and Eastern Europe brought about a natural experiment. With privatization effecting a significant fraction of the national economy and with companies in very bad shape requiring immense restructuring and reorganization, this privatization experiment tests whether private ownership indeed leads to the bottom line of better governance of firms. The situation is even more interesting due to the weak rule of law and lack of its enforcement leading to large potential gains from looting and tunneling. Thus, the new private owners face an interesting dilemma: they choose between (i) costly monitoring and supervision with the prospect of high potential gains due to restructuring and new viable businesses and (ii) looting and redirecting the company resources for private benefits. This analysis shows quite optimistic results that privatization in Slovakia resulted in quite viable and functioning internal governance that disciplines poorly performing management. And, thus, the results suggest that the incentives for monitoring are higher relative to the potential for looting and tunneling.

In addition, the second contribution of the paper is the analysis of the impact of ownership structure on the internal monitoring efforts. The somewhat traditional hypotheses of the effect of concentration and nature of ownership get a new dimension in the turbulent setting of a transition economy. The quest for immense restructuring and weak law enforcement make the analysis more interesting because, on the one hand, ownership concentration may be of higher importance and, on the other hand, different types of owners may function differently in this environment. Moreover, as the large-scale privatization in Czechoslovakia was often widely criticized that the immediate post-

privatization owners were not suitable for the difficult and indisputable quest of restructuring, this paper investigates the lively post-privatization market for share blocks and its association with poor firms performance and improved effectiveness of internal monitoring and governance.

The conclusions of this second part of the analysis are threefold. First, ownership concentration seems to be important for the probability of the top management turnover. However, the results indicate that for the sensitivity of management turnover to poor firm performance, contest of control between the major and the remaining blockholders is more important. Too much power in the hands of the major blockholder results in significant but unfocussed monitoring in the sense that management turnover is high but is not concentrated in the poorly performing firms. Higher concentration of the remaining blocks is associated with both high average management turnover and high sensitivity of turnover to poor past performance. Second, the analysis suggests that post-privatization block transfers are quite effective governance tools as they are followed by increased management turnover and management turnover is then significantly more sensitive to performance. Third, also nature of ownership affects the effectiveness of the internal monitoring efforts. The findings suggest that insider block ownership partially insulates top executives from internal monitoring efforts. This is because insider ownership significantly decreases the average management turnover and, importantly, also the sensitivity of management turnover to firm performance. The results also suggest that management turnover in state-dominated firms is strongly politically motivated. Outside ownership (especially by other firms, individuals unrelated to management and Investment Privatization Funds), in turn, is the most focused and significant concerning effectiveness of the monitoring efforts.

The remainder of the paper is organized as follows. The next section discuses the existing theoretical and empirical literature and derives the hypotheses. Section 3 briefly describes the privatization process in Slovakia and introduces the data. Section 4 presents the results and Section 5 concludes.

2 Existing literature and hypotheses building

This section investigates the relation between top management turnover and past firm performance. As this paper analyzes the effectiveness of the internal governance systems in Slovak firms after they were privatized, a special attention is paid to the effect of privatization on the sensitivity of the CEO turnover to past firm performance. Moreover, the following sections discus how ownership concentration, contest of control between major and minor shareholders, nature of ownership, and market in large share stakes affect the CEO-turnover/performance relationship.

2.1 Basic hypothesis

Successful governance systems should penalize managers of poorly performing firms (Coffee, 1999). Therefore, analysis of top executive turnover and of the sensitivity of top management turnover to firm performance can help to assess the effectiveness of internal corporate governance systems. A vast body of empirical literature confirms that top executive turnover is indeed sensitive to poor performance and that internal corporate governance systems are quite effective in disciplining poorly performing managers. This is so in established publicly traded firms across different market economies.[1] Nevertheless, governance systems of state-owned enterprises seem to be less effective compared to private firms as managers of state-owned firms are not fired when performing poorly (see, for example, Cragg and Dyck, 1999, for evidence on UK publicly owned firms). Moreover, Cragg and Dyck (1999) show that the sensitivity of top management turnover to firm performance significantly increases following privatization, thus, indicating that the internal governance systems function better under the private ownership. Theoretical models assign this relatively poor governance of state ownership to the lack of high-powered incentives and proper monitoring of managers (Vickers and Yarrow, 1988, and Demsetz, 1988). Private shareholders who are residual claimants to firm profits, in contrast, monitor the managers, keep them accountable and link their tenure to firm performance. An alternative explanation (Shleifer and Vishny, 1994, Shapiro and Willing, 1995) maintains that politicians' use of the public enterprises to pursue political goals results in excessive employment, poor choices of product and location, lack of investment and ill-defined incentives for managers. Moreover, several empirical papers document (for review see Megginson and Netter, 2001) that firm performance increases after privatization.

Privatization was expected to improve firm performance and introduce sound internal corporate governance systems also in transition countries in Central and Eastern Europe. Under socialism, managers were appointed according to political loyalty and their ability to meet the plan, not necessarily according to their ability to efficient production levels and profitability. Incentives were generally ill-specified. The transition reforms were introduced to change the economic environment, to bring in forces for profit maximization and effort extraction. Several empirical papers investigate the effect of privatization in transition on subsequent firm performance.[2] In general, they show that privatization per se is not enough to secure improved performance.

[1] Starting with the US, see Warner et al. (1988) and Weisbach (1988); on UK see Franks et al. (2001), on Germany Kaplan (1994b) and Franks and Mayer (2001), on Belgium Renneboog (2000), on the Netherlands Danisevska et al. (2003) and on Japan Kaplan (1994a).

[2] See, for example, Frydman et al. (1999), Estrin and Wright (1999) and Djankov and Murrell (2002).

Privatization to insiders leads to managerial entrenchment and, therefore, privatization alone is not a guarantee of improved governance and performance.

Even though top management replacements are found to increase future firm performance (Barberis et al., 1996, Claessens and Djankov, 1999), the empirical evidence on the sensitivity of top management turnover to past firm performance in the transition context is somewhat limited and inconclusive. Warzynski (2003) shows that the management-change/firm performance relationship is stronger in privatized than in state-owned firms in Ukraine. Also, Firth et al. (2002) show that low profitability is a strong predictor of managerial turnover in Chinese listed firms. In contrast, Fidrmuc and Fidrmuc (2004) document that the relationship is insignificant for the privatized Czech firms. Thus, it is interesting to see whether privatization in Slovakia resulted in properly functioning internal governance systems that discipline poorly performing managers. The basic hypothesis to be tested in this paper is the following.

Hypothesis 1: *For privatized companies, CEO turnover is negatively related to performance.*

2.2 Ownership concentration and contest of control

In this section, I derive testable hypotheses that concern the ownership-concentration effect on this relationship. Ownership concentration of the privatized Slovak companies is high and is comparable to other continental European economies (see Section 3.2). The large concentrated owners may play an important role in the governance of their firms and may have important effect on the CEO-turnover/performance relationship.

There is extensive literature on the role of concentrated ownership and its association with firm value. Large blockholders procure benefits but are also costly. They may be beneficial for firm value as they help to mitigate the free-rider problems of corporate control associated with dispersed ownership (Shleifer and Vishny, 1986) and monitor the management (Maug, 1998, and Admati et al., 1994). On the cost side, Bebchuk (1999) suggests that in countries with high concentration of ownership, private benefits tend to be large. These theoretical predictions may affect the basic hypothesis. If concentrated ownership mitigates the free-rider problems and provides better monitoring, one can expect higher sensitivity between managerial change and past firm performance in firms with more concentrated owners. If large blockholders withhold excessive private benefits, then the reverse will hold.

Both monitoring by concentrated blockholders (the benefits) and high private benefits to large blockholders (the costs) may be very important in a transition economy. On the monitoring side, the inherited inefficiencies of the former state-owned enterprises call for deep restructuring that

requires high managerial effort and skills. Therefore, monitoring by private owners is of high value. On the cost side, as underdeveloped legal environment and poor law enforcement provide scope for looting and tunneling, the private benefits to major blockholders may be enormous. Thus, the trade-off between benefits and costs of concentrated ownership in this setting is a very interesting issue that can only be resolved in an empirical test. Nevertheless, my null hypothesis favors the monitoring effect and postulates that ownership concentration has a positive effect on the effectiveness of the internal governance systems.[3]

Empirical evidence on the effect of ownership concentration so far is mixed. Moreover, comparisons should account for institutional differences across different countries that result in different prevailing ownership and control patterns, especially between the US and UK versus continental Europe. For the US, Denis et al. (1997) show that the probability of top executive turnover and the sensitivity of turnover to performance are higher when firms have outside blockholders than when they are widely held. In contrast, Franks et al. (2001) reject such a hypothesis for the UK. The results are also mixed for the more concentrated continental economies. Renneboog (2000), for Belgium, shows that top managerial turnover is positively associated with ownership concentration. However, the sensitivity of turnover to performance is higher only for certain ownership types. In Italy, as Volpin (2002) shows, large blockholders with at least 50-percent cash-flow rights enhance the sensitivity of turnover to performance. In contrast, the concentration hypothesis is not supported by Franks and Mayer (2001) for Germany, nor by Danisevska et al. (2003) for the Netherlands.[4]

Hypothesis 2: *High ownership concentration is positively associated with CEO turnover. Moreover, ownership concentration has strengthening effect on the sensitivity of CEO turnover to performance.*

The above hypothesis considers total concentration of ownership. However, Bloch and Hege (2001) show that control power is determined not just by ownership concentration, but also by the

[3] Due to lack of information on ultimate control (voting pacts and pyramidal structures), which is not required to be disclosed in Slovakia, I concentrate on direct voting and cash-flow rights. Still, cash-flow rights play a very important motivational tool: the higher the fraction of cash-flow rights to a blockholder, the higher his incentive to monitor the management. Private benefits extraction is, however, more probable when control benefits are high and cash-flow rights are low. This is less probable in situations where direct cash-flow rights are highly concentrated, as in the case of Slovakia. Panel A of Table 2 reports that the average major blockholder holds as much as 44 percent of shares. Moreover, as cash-flow rights are usually smaller than ultimate control rights, finding support for my hypothesis is less probable.

[4] The effect of insider versus outsider ownership is discussed in the next section.

contestability of the major blockholder's position. Their model shows that the presence of multiple blockholders creates competition of control and, thus, reduces the capacity to extract private benefits. Also Gomes and Novaes (2001) and Bennedsen and Wolfenzon (2000) suggest that the presence of multiple shareholders imposes limits on the extraction of private benefits. This suggests that executive turnover may be more sensitive to performance if the major blockholder does not have absolute control over the company and is monitored by a significant minority blockholder or a group of minority blockholders. Volpin (2002) partially supports this hypothesis by showing that executive turnover is more sensitive to performance in the presence of voting syndicates (explicit agreements to vote together) between major and minor shareholders.

Hypothesis 3: *Ownership concentration of both the major blockholder and minor blockholders is positively associated with CEO turnover. Contest of control between the major blockholder and the minor blockholders has strengthening effect on the sensitivity of CEO turnover to performance.*

2.3 Market for share stakes

The above two hypotheses discus the effect of ownership concentration on CEO change and its sensitivity to performance. Now, I consider changes in shareholdings. The theoretical model of Burkart et al. (1997) proposes that equity ownership confers state contingent control. In the states of world with poor firm performance, shareholders grab control and closely monitor their firms, whereas in the states of world with adequate performance, shareholders choose not to monitor and leave managers in control because monitoring is then too costly. This may mean that when performance is poor, shareholders without a distinct interest in monitoring sell their stakes, while those with strong monitoring abilities step in and enforce control (Renneboog, 2000). If the changes in shareholdings are associated with poor performance and more monitoring, then there should be higher CEO turnover in poorly performing firms with changes in ownership. The empirical evidence mostly supports this notion. Renneboog (2000) shows for Belgium that increase of stake or acquisition of a new stake by industrial companies or families is associated with an increase in executive board turnover and the sensitivity of turnover to performance. Similarly, Barclay and Holderness (1991) for the US and Franks et al. (2001) for the UK and Volpin (2002) for Italy find increase in management turnover following block trades. However, only Volpin (2002) finds increased sensitivity of management turnover to performance following block trades. Moreover, Franks and Mayer (2001) do not find any significant relationship between management turnover (and performance) and sales of share stakes for Germany.

Since Slovak firms typically have a strong major blockholder, a change of the major blockholder is a simple proxy for changed external governance forces and should be associated with changes at the top managerial positions, especially in poorly performing firms. Moreover, the voucher privatization in Slovakia resulted in ownership structures with shareholders that were criticized for not being suitable for the necessary quest of restructuring (especially the Investment Privatization Funds). The market for large share stakes has been substantial since the privatization. Therefore, changes in shareholdings are expected to bring in new owners that are willing and able to force firm restructuring. Thus, I propose that major blockholder changes are associated with stronger internal governance mechanisms and increase in CEO turnover.

Hypothesis 4: *CEO turnover and its sensitivity to performance are higher following changes of the major blockholder.*

2.4 Nature of ownership

The incentives to monitor and correct managerial failure depend not only on the concentration of ownership but also on its nature (type of blockholder). The distinction between different blockholders is important because some may be passive in the face of poor performance while others are active (Franks and Mayer, 2001, Franks et al., 2001). Different classes of owners may value control differently as they have different abilities to extract control rents (Barclay and Holderness, 1991), different incentives to monitor their firms (Maug, 1998, Admati et al., 1994) or have different knowledge about the business environment and industry (Franks et al., 2001). Moreover, it seems to be essential to distinguish between inside versus outside ownership as insiders may use control to entrench themselves against the interest of the other shareholders. Denis et al., (1997) for the US and Volpin (2002) for Italy show that the probability of top executive turnover and its sensitivity to performance is negatively correlated with the ownership stake by officers/executives.

Hypothesis 5: *CEO turnover and its sensitivity to performance depend on the nature of ownership. Due to entrenchment, insider ownership is associated with lower sensitivity of CEO turnover to performance compared to outside ownership.*

Most empirical studies tend to distinguish between three categories of outside blockholders: corporations, institutional investors, and individuals or families unrelated to the management. Institutional shareholders are often regarded as passive and industrial companies and individuals/families as active. Corporate investors may have more knowledge about the industry than other investors and individuals may have more incentive to intervene as principals rather than

agents (Franks et al., 2001). In general, the empirical evidence is not very supportive of this hypothesis. Usually, empirical papers across different countries find little difference in nature of ownership.[5] Nevertheless, Renneboog (2000) finds some evidence that higher concentration of control by industrial companies and families is associated with higher management turnover and industrial companies increase the probability of top management change when stock returns are low. Also, Denis et al. (1997) for the US and Kang and Shivdasani (1995) for Japan show that the presence of outsiders strengthens the performance-turnover relationship. Nevertheless the familiarity of industrial companies with the industry specificities and individuals' incentives to intervene as principals rather than agents may play a somewhat stronger role in the transition period in Slovakia studied in this paper.

Hypothesis 6: *Outside ownership by industrial companies and individuals unrelated to the management is associated with the highest CEO turnover and also the highest sensitivity of CEO turnover to performance.*

In Slovakia with ongoing privatization, state is still an important blockholder. The empirical evidence for Italy (Volpin, 2002) shows that state ownership increases management turnover but does not affect the turnover/performance sensitivity. In Ukraine, state-owned firms (as opposed to privatized firms) have more management chages, however, the state-owned firms show significantly lower sensitivity of turnover to performance (Warzynski, 2003). This indicates political motivation (as opposed to efficiency) of the management turnover in state-owned firms.

Hypothesis 7: *State ownership is associated with high CEO turnover but low sensitivity of CEO turnover to performance.*

3 Data

This section describes the data set. First, however, I describe the privatization program in Slovakia as it has important implications on the players involved in corporate governance structures of the privatized firms and on the business environment in which the firms operate.

[5] See Franks et al. (2001) for the UK, Volpin (2002) for Italy, Danisevska et al. (2003) for the Netherlands, Franks and Mayer (2001) for Germany.

3.1 Privatization in Slovakia

Privatization was initiated in the early 1990s while Slovakia was still a part of the former Czechoslovakia. The privatization program rested on three pillars - restitution of assets to their original owners, small-scale privatization (predominantly shops and restaurants) and large-scale privatization - and utilized a combination of standard and non-standard methods. After the break-up of Czechoslovakia, large-scale privatization evolved in different directions in the two successor countries. Slovakia abandoned voucher privatization in favor of noncompetitive direct sales.

Restitution, a non-standard method, was to 'make up for the wrong-doings of the previous regime with regard to the unlawful and/or immoral nationalization and confiscation of private property'.[6] The property was to be returned in kind, or by providing financial compensation (in cases when the original property no longer existed). Small-scale privatization, which started as early as December 1990, facilitated the privatization of small premises such as shops, restaurants, service outlets, small workshops, and occasionally, small production enterprises. Public auction, a standard competitive method, was the only method used to privatize around 9 thousand small businesses with proceeds of some SKK 14 billion.[7]

Medium-sized and large enterprises were privatized within the large-scale privatization. This program involved most of the property being privatized (in terms of value), though the number of privatized units is comparable to small-scale privatization. Large-scale privatization allowed for a broad spectrum of standard as well as non-standard methods. Czechoslovakia became famous for its voucher privatization, the dominant non-standard method. Another non-standard method involved free transfer of property to municipalities or to the original owners within restitution. Nonetheless, a relatively large amount of property was transferred using standard methods: auctions, public tenders or direct sales.

The large-scale privatization was divided into two waves. The split of Czechoslovakia in January 1993 caused that only the first wave of large-scale privatization (and of voucher privatization) was implemented still within Czechoslovakia. The program continued fairly smoothly in the Czech part of the former federation with the second wave of voucher privatization executed during 1993-94. In contrast, in Slovakia, the process turned out to be quite complicated with some dramatic turns and setbacks that closely followed political developments and changes of government. The second wave, implemented after the break-up, was associated with a lack of

[6] This is the official government's line of reasoning.

[7] For more information see Fidrmuc et al. (2002).

transparency, abolition of the voucher method, and privatization deals benefiting close supporters of the leading political party.[8] Noncompetitive direct sales to a predetermined buyer (often at a very low price) was by far the most frequently used method, accounting for 83% of the property that was privatized, compared to only 9% using other standard and more transparent and competitive methods (Fidrmuc et al., 2002). Overall, the privatization process became extremely politicized and corrupt.

Still, around 78 percent of property in the first wave was privatized using vouchers. Voucher privatization was intended as a fast, efficient and morally just method of introducing private ownership into the economy. The basic idea of this unprecedented privatization method was to provide the population with virtual investment capital, and, at the same time, compensate them for the wrongdoings of communism. Every citizen above the age of 18 was eligible to obtain the *voucher book* for a small administrative fee and bid his vouchers for shares of firms in offer. Moreover, he had an option to entrust his/her shares to Investment Privatization Funds (IPFs, a special type of mutual funds that were a byproduct of the voucher privatization) that then exchanged the vouchers for shares. IPFs were entrusted to invest 70.5% of the investment points in Slovakia. The IPFs were regarded as neither the optimal nor final owners because of their lack of access to finance for restructuring and inadequate expertise (Carlin and Aghion, 1996). Therefore additional reshuffling of ownership was said to be desirable (Coffee, 1996). The next section documents that this was indeed the case.

3.2 Sample

The data were purchased from RM System Slovakia. The sample consists of 740 non-financial former state-owned enterprises privatized in Slovakia via the large-scale program for which accounting, ownership and board-of-directors composition data were available over 1993-98. The basic descriptive statistics for the data covering the period from 1993 until 1998 are presented in Table 1. For the average firm in our sample, the total book value of assets amounts to SKK 817 million (approximately 20 million Euro). This indicates that the sample represents the biggest firms in Slovakia. Over the studied period, the sample firms do not grow in size – their total assets remain relatively stable.

Profitability of the firms seems to be somewhat poor. The average net profit/loss per is SKK –4.5 million per firm. The yearly averages show that the net company result deteriorates over time from a profit of SKK 9.3 million in 1993 to a loss of SKK –38.1 million in 1998. On average, the

[8] For a detailed description of the second wave, see Olsson (1999).

firms are in red over the period since 1996 till 1998. The median net profit/loss is more stable and closer to zero. Nevertheless, it is also negative over 1995-98 indicating that more than a half of the firms finished in red. A similar trend is documented by the relative performance measures – return on assets (ROA) and operational return on assets.[9] Again, the average ROA deteriorates dramatically (from1.8 percent in 1993 to –2.8 percent in 1998) even though the median firm keeps a quite stable return around 1 percent of total assets. Operational ROA is even lower. The average values are negative over the whole sample period and drop from –2.4 percent in 1993 to –9.3 percent in 1998. The median values show a similar trend.

Table 1 about here.

Even though all these companies are traded at least on the RM System (the over the counter market), their shares are not very liquid. On average, only 23% of shares outstanding per year change their owners. Nevertheless, I use share prices as a performance indicator that reflects the market value of the firms (at least to the atomistic shareholders). The stock price dynamics are somewhat strange. The average (and median) stock price peaks in 1996 and it almost doubles in magnitude compared to 1993. The stock prices increased despite the steady decline in profits and returns on assets. The price-earnings ratio (the average as well as the standard deviation) surged in 1996-97 and then suddenly dropped dramatically in 1998. The median price-earnings ratio also drops from 0.08 percent of profit in 1997 to 0.04 percent in 1998. Market-to-book ratio, another market value measure, increases over the studied period with a slight decline at 1998.

Data concerning top management turnover are available only over the period from 1996 until 1998. Unfortunately, the data set does not provide information on the reasons for the CEO's departure. Therefore, while I can observe changes of the chief executive director, I do not know whether the previous director was dismissed or whether he/she left for other reasons (such as health problems, retirement or death). Yet, as the descriptive statistics discussed in greater detail below show, changes within the top management are so frequent that health and demographics could only account for a small fraction of them.[10] Moreover, including management change that is not forced should only weaken the results. So, in case the results suggest a significant association between past

[9] Return on assets (operational return on assets) is defined as final profit/loss (operational profit/loss) over total book value of assets.

[10] It is also not very probable that these high replacement rates were a consequence of low turnover in the pre-privatization period. In fact, Claessens and Djankov (1999) report that at least 50 percent of voucher-privatized firms in their sample replaced their managing director already in the pre-privatization period.

performance and CEO turnover, a conclusion for presence of effective internal governance should be on the safe side.

The last entry in Table 1 shows the frequency of changes at the post of the CEO (usually denoted as the general director). Compared to the available estimates of 10 percent - 12 percent for U.S. firms (Kaplan, 1994a) and 12 percent for the U.K. (Cragg and Dyck, 1999), the average CEO turnover of 19 percent is quite substantial. It ranges from 25 percent in 1996 to 15 percent in 1998. Similarly high managerial turnover is reported for newly privatized firms in the U.K. (15.4 percent per year according to Cragg and Dyck, 1999) and for East German privatized companies (around 20 percent per year, Dyck, 1997).

Table 2 provides basic information concerning ownership structure of the sample firms. The data set gives information concerning direct ownership stakes that represent five and more percent of a given share issue. Some adjustments were necessary as some companies have more than one share issue outstanding. Panel A shows that ownership is, in general, very concentrated. The major blockholder owns on average as much as 44 percent of outstanding ordinary shares. Moreover, around 25 percent of the major blockholders control more than 50 percent of their firms' shares. The second largest owner holds on average 18 percent of the shares. All blockholders with stakes of at least five percent control on average 70 percent of firms. The trend suggests still increasing concentration of ownership.

Table 2 about here.

In Panel B, I distinguish six types of the major blockholder: government, IPFs, industrial companies, individuals unrelated to management, insiders and financial institutions (e.g. pension funds, regular mutual funds, and foreign investment companies). In 1995, industrial companies were the most common major blockholders (40 percent), while state was still quite prevailing (22 percent), followed by IPFs (17 percent), individuals (8 percent), financial institutions (7 percent) and insiders (6 percent). Distribution among the ownership types changes over time. Three trends are prevailing. First, state ownership declines, which is not surprising given the ongoing privatization activities over the studied period. In 1998, only 2 percent of firms in our sample have the government as the major blockholder. Second, ownership by IPFs declines dramatically in 1996. Since then, IPFs are the major boolckholder in only 3 percent of firms. At the same time, ownership by (other) financial institutions increases in the same year. This reflects the fact that many IPFs were formally transformed into regular investment companies in order to overcome stricter regulation of IPFs. Third, industrial companies and insiders become the most frequent major blockholders (69 and 12 percent, respectively). This is probably a result of ownership

reconciliations after the voucher privatization and also a result of changes in the government policy concerning privatization that favored direct sales.

The second part of Panel B in Table 2 shows the size of the major ownership blocks by type of owner. The government has the most concentrated major blocks with the average not falling below 50 percent. Industrial companies also like to concentrate control: their average major stake increases from 24 percent in 1995 to 54 percent in 1998. Note that industrial companies are also the most frequent major blockholder. Individuals unrelated to management and insiders hold on average 33 and 28 percent of shares, respectively, and their ownership stakes do not change much over time. Financial institutions hold quite large blocks and the size of their block increases from 28 percent in 1995 to 40 percent in 1998. When IPFs are the major blockholder, their stake is the smallest. This reflects the regulation. Each group of IPFs founded by the same parent company cannot hold more than 40 percent of shares in the same firm.

Panel C of Table 2 shows the statistics for all reported direct blocks (above 5 percent). Over time, ownership of the firms is changing very dramatically. This indicates that privatization did not result in an optimal control structure and, over time, new investors have emerged who may be more suited owners for the former state-owned firms in need of restructuring. Industrial companies turn to be the most common blockholders. They are present in 59 percent of firms in 1995. In 1998, they do not own at least 5 percent in only 15 percent of firms. Moreover, their stakes are large: on average they own as much as 51 percent of shares. Individuals unrelated to management and insiders also increase their presence as important blockholders in the privatized firms. Individuals unrelated to management are present in 9 percent of firms in 1995 and in 18 percent of firms in 1998. The size of their blocks increases slightly from 28 to 30 percent. Comparing Panel C to Panel B, one sees that even though individuals unrelated to management are not very often the major blockholders, they are frequently present in the firms as minority blockholders. Insiders increase their presence form 13 percent of firms in 1995 to 16 percent of firms in 1998. Their conditional combined stake increases from 33 percent in 1995 to as much as 45 percent in 1998. The importance of IPFs decreases: in 1995, they are still present in 52 percent of firms, whereas in 1998, it is only 19 percent. Their average block size also decreases. With an average block of only 15 percent, they are the ownership type with the smallest blocks in 1998. Financial institutions slightly increase their participation and size of the blocks. On average, they own 23 percent of shares in 22 percent of firms. Government decreases its share stakes. In 1995, the state still holds a significant stake of 47 percent in 40 percent of firms. This falls to 41 percent in 8 percent of firms in 1998.

Thus, privatization leads to lower state involvement. However, when the state stays involved, the share block is very large to ensure control.

4 Results

4.1 CEO turnover and past firm performance

The first hypothesis examines the relationship between CEO turnover and past firm performance. Significant negative relationship between the probability of CEO change and past firm performance would point toward the effectiveness of the internal corporate governance systems by showing that the top managers of the privatized Slovak firms are disciplined for poor firm performance by termination of their contracts. To provide some intuition for the relationship, Panel A of Table 3 tabulates the frequency of CEO turnover across quartiles of four performance measures: return on assets (ROA), operational ROA, stock return, and market-to-book ratio. The results indicate strong negative correlation between the frequency of managerial change and the two profitability measures (ROA and operational ROA). For ROA, the probability that a manager is replaced increases from 16 percent to 25.8 percent as a firm moves from the best (fourth) to the worst (first) quartile. The difference of 9.8 percent is statistically significant at the one-percent level. Moreover, its economic significance is also noteworthy, especially when compared to regular yearly turnover statistics in established firms in Western economies (10 – 12 percent in the US and 11.8 in the UK).[11] Operational ROA provides similar results: the difference in the CEO-change frequency in the first versus the forth quartile is 11.3 percent and is also significant at the one-percent level. Thus, the results provide confirmation of Hypothesis 1 by showing that the managers of firms in the worst performing quartile have the highest probability of being replaced and this probability decreases with each profitability quartile.

In contrast, stock return and market-to-book ratio (the two market valuation measures) are not correlated with CEO turnover. One explanation may be that the stock based performance measures reflect firm value for atomistic shareholders which may differ from firm value for large blockholders. As it is the large blockholders rather than dispersed atomistic shareholders who have influence on the decision to replace the top management, it is possible that stock market valuation is not an important metric when evaluating managerial qualities. Volpin (2002) who also finds weaker results for stock returns relative to accounting measures of firm performance in Italy argues that

[11] Kaplan (1994a) and Cragg and Dyck (1999), respectively.

stock returns may not be an ideal performance measure for his sample of Italian firms as many stocks suffer lack of liquidity and infrequent trades.

Table 3 about here.

As a next step, I estimate the relationship in a regression setting while controlling for ownership concentration, firm size, industry affiliation and individual firm and time effects. Firm performance is lagged and measured alternatively using ROA and stock return. Panel B of Table 3 shows the regression results and confirms the main findings of the univariate analysis. Model 1 shows that top management turnover is strongly associated with poor profitability. The coefficient for ROA is negative and significant at the one-percent level. This suggests that the new private owners associate firm profitability with managerial qualities and tend to penalize more the managers in firms with inferior profitability. In contrast, the coefficient in Model 2 for stock return is not significant. This indicates (as the univariate results) that stock market performance is not important when deciding about top management replacements. Results for operational ROA and market-to-book ratio are reported in Table A1 in Appendix and confirm these conclusions.

Table 3, Panel B provides interesting results also for the control variables. First, the size effect is positive and significant at fife-percent level showing that larger firms have more CEO changes. More interestingly, however, ownership concentration (measured as total stake of all reported blocks) is positively correlated with CEO turnover in both Model 1 and 2. Replacing the total stake to blockholders with Herfindhal index for ownership concentration earns the same results.[12] Thus, firms with higher concentration of control have higher CEO turnover which partially confirms Hypothesis 2. In Models 3 and 4, I replace the total-stake-to-blockholders variable by two variables. The first variable measures the size of the major block, whereas the second variable captures the size of a combined stake of all remaining blocks. This exercise reveals that both the variables are significantly positively associated with CEO turnover (though the coefficient for the remaining blocks of shares is smaller and significant only at the ten-percent level). So, it is not only the size of the major block of shares, but also presence of the remaining ownership blocks that have enhancing effect on CEO turnover. This indicates that contest of control among blockholders may be important for effective governance of firms and partially confirms Hypothesis 3.

4.2 Concentration of control and CEO turnover

The results in Table 3 show that ownership concentration is associated with higher CEO turnover. This may indicate that owners with higher ownership stakes are more involved in

[12] These results are not reported but are available upon request.

monitoring and have better knowledge about their firms' activities. Table 4 takes this idea further by testing whether concentration of control influences also the sensitivity of CEO turnover to past firm performance (the second part of Hypothesis 2).

Panel A of Table 4 provides results of the univariate analysis.[13] It shows CEO-change frequency across ROA quartiles and across different concentration measures. As seen above in Table 3, CEO turnover is the highest in the lowest ROA quartile and then gradually decreases with the lowest value in the best performing ROA quartile. Now, I am interested whether this relationship changes as concentration of control increases. Therefore, in the first part of Panel A (Table 4), I add quartiles of total concentration (total stake to all blockholders) as another dimension to the ROA quartiles. Thus, the first part of Panel A cross tabulates average values of CEO-change frequency simultaneously across ROA quartiles and quartiles of total concentration of control. The results show that the CEO-change frequency increases as total concentration of control increases from the lowest to the highest quartile (second column). The difference in CEO-change frequency between the lowest and the highest concentration quartile is 8.8 percent and is significant at the one-percent level. This is in line with the regression results in Table 3 where the coefficient for total concentration is positive and significant. Moreover, two general patterns are present in the quartile matrix. First, the CEO-change frequency increases as one moves from the lower to the higher concentration-of-control quartiles and this is so in all columns (ROA quartiles). It shows that firms with higher concentration of control have higher CEO turnover and this is regardless of their profitability. More interesting, however, is the second pattern indicating that the CEO-change frequency decreases from the lowest to the highest ROA quartile and this relationship seems to be stronger as concentration of control increases. The last column of Panel A (Table 4) documents this pattern: the difference in CEO-change frequency between the lowest versus the highest ROA quartile is equal to 8.9 percent (significant at the ten-percent level) in the first concentration-of-control quartile and increases to 13.5 percent (significant at the fife-percent level) in the highest concentration-of-control quartile. In short, the first part of Panel A shows that the relationship between CEO turnover and past firm performance gets stronger as total concentration of control increases and tends to confirm Hypothesis 2.

Table 4 about here.

The rest of Panel A (Table 4) explores the importance of concentration of the major block versus the remaining blocks for the sensitivity of CEO turnover to past firm performance and, thus,

[13] In Table 5, I report only results for ROA. Results for operational ROA are very similar to the results reported in Table 5. Stock return and book-to-market ratio do not provide any interesting patterns.

tests Hypothesis 3. The second part of Panel A investigates the effect of concentration of the major block of shares. It tabulates average CEO-change frequencies for a matrix of ROA quartiles versus low/high concentration of the major share block. It clearly shows that the concentration of control effect is not due to the concentration of the major block. The two groups of low versus high major-block concentration show similar CEO-change frequencies: 18.2 versus 19.8 percent, respectively. The difference of 1.6 percent is not statistically significant.[14] Moreover, CEO turnover is more sensitive to past firm performance when the major blockholder is less concentrated. In this group, CEO-change frequency decreases from 27.7 percent in the first ROA quartile to 13.7 percent in the forth quartile. The difference of 14 percent is statistically significant at the one-percent level. In the high major-block concentration group, the difference in CEO-change frequency between the first and the forth ROA quartile is only 5.3 percent and is not statistically significant. Still, it is important to note that in the high major-block concentration group, CEO turnover is high across all ROA quartiles and that ROA of the two groups is very similar.

The third part of Panel A (Table 4) repeats the exercise for the concentration of the remaining blockholders. It shows that higher concentration of the remaining blocks increases the CEO-change frequency and also the sensitivity of the relationship between CEO turnover and past firm performance. Low concentration of the remaining blocks is associated with lower average ROA and lower CEO turnover. Moreover, the difference between CEO-change frequency in the first ROA quartile versus the forth quartile is only 6.7 percent (significant at the ten-percent level) with low concentration of the remaining blocks, whereas it is 13.4 percent (significant at the one-percent level) with high concentration of the remaining blocks.

The last part of Panel A (Table 4) combines the effect of the major-block concentration with the concentration of the remaining blocks. I form four groups as combinations of major-block versus remaining-blocks concentration: low (major-block concentration) – low (remaining-blocks concentration), low – high, high – low and high – high. CEO turnover is the lowest (only 12.3 percent) in the first group with low concentration of both the major block and of the remaining blocks. ROA is also very low in this group. CEO turnover in the other three groups is significantly higher (relative to the first group) and very similar in magnitude (around 20 percent). Even though these three groups do not differ in the average CEO-changes frequency, the sensitivity of CEO turnover to ROA is the strongest in the group with low major-block concentration and high remaining-blocks concentration, thus, when contest of control is the strongest. This is in line with

[14] The median value of size of the major block is 36.8 percent.

results reported above (for major-block and remaining-blocks concentration separately) and points toward the confirmation of Hypothesis 3.

Panel B of Table 4 confirms the univariate results in a multivariate regression setting. It reports only results for ROA, corresponding results for operational ROA, stock return and book-to-market ratio are shown in Table A1 in Appendix. The basic regression model is adjusted such that ROA is replaced by a set of interaction terms of ROA with concentration of control dummies. The interaction terms, then, measure the CEO-turnover/profitability relationship for different levels of control concentration. In Model 5, ROA is interacted with four dummy variables that represent the four total-concentration quartiles (based on total stake to all blockholders). The 'plain' coefficient for total concentration is positive and highly significant, confirming robustness of the results from Table 3 that higher total concentration is associated with higher CEO turnover. All the interaction terms are negative and three of them are significant at the fife-percent level. The highest is the coefficient in the highest concentration quartile. However, the second part of Hypothesis 2 postulating that the disciplining role of CEO turnover is stronger as concentration of control increases is not fully confirmed as the coefficients do not increase with the quartiles dummies and their differences are not statistically significant.

Models 6 to 8 test Hypothesis 3 concerning the importance of contest of control among blockholders (the relative importance of the major versus the remaining blocks of shares). Model 6 shows the effect of the major-block concentration and confirms the univariate analysis that the CEO-turnover/performance relationship is stronger for firms with smaller major blockholders. The coefficient for the first interaction term is negative, relatively large and significant at the one-percent level. The second interaction term (high major-block concentration) is negative but not significant. Moreover, the difference between the two interaction terms is statistically significant on the ten-percent level. Thus, this again indicates that contest of control may be quite important for the CEO-turnover/performance relationship and also generally for the effectiveness of the internal governance systems. However, one should again note that the CEO-change frequency is very high across all firms with high major-block concentration diminishing the negative essence of this finding. The results of Model 7 also tend to point to the positive effect of the contest of control among blockholders. It shows that higher concentration of the remaining blocks strengthens somewhat the sensitivity of CEO turnover to past firm performance (profitability) as the higher-concentration interaction term is more negative. The difference of 1.1 of the two coefficients is, however, not statistically significant.

Model 8 combines the partitioning of the two previous models into four interaction terms and confirms that the sensitivity of CEO turnover to past firm performance is the strongest when the major blockholder's control is contested by other blockholders. The two of the four interaction terms that are statistically significant (and have the expected sign) are those with smaller major blockholders. Moreover, the CEO-turnover/profitability sensitivity is the strongest when the remaining blockholders are more concentrated and, thus, are able to contest the control of the major blockholder. These results provide strong support for Hypothesis 3. Note also that the overall CEO turnover and the average ROA is very high for this group of firms (see Panel A of Table 3). The coefficient of the first interaction term in Model 8 (low major-block concentration and low remaining-blocks concentration) is also significant, at the ten-percent level. However, the overall CEO turnover and also the average ROA in this group are very low showing less effective governance of these firms. The last two interaction terms with above-median major block are negative but not statistically significant indicating that too much power in hands of the major blockhoder may not be so beneficial for the effectiveness of the internal governance structures. However, the overall CEO turnover is very high in these two groups regardless of profitability and they perform with relatively high ROA. Thus, even though the results do not show that CEO turnover is sensitive to bad performance when the concentration of the major block is high, I cannot conclude that the owners do not care about results of their firms and do not monitor.

Table A2 in Appendix replicates Model 8 with the other performance measures: operational ROA, stock return and book-to-market ratio. Model A5 with operational ROA essentially replicates the results for ROA reported above. Contest of control in firms with low major-block concentration and high concentration of the remaining blocks seems to deliver the highest sensitivity of CEO turnover to past firm performance. Models A6 and A7 confirm that the market-based measures are not associated with CEO turnover.

4.3 Market for share stakes

Table 5 provides results that test Hypothesis 4 postulating that CEO turnover and its sensitivity to past firm performance is higher following changes of the major blockholder. Panel A of Table 5 provides the univariate results. It shows the average CEO-turnover frequencies across ROA quartiles for two groups of firms: firms with versus without change of the major blockholder. The results show strong differences between the two groups of firms. The average CEO-change frequency is 27.2 versus 14.4 percent for firms with versus without major-blockhodler change over the previous year, respectively. The difference of 12.9 percent is significant at the one-percent level.

Importantly, the sensitivity of CEO turnover to ROA is considerably stronger following changes of the major blockholder. In the year following the major blockholder change, CEO turnover is as high as 35.9 percent in the worst ROA compared to 20.4 percent in the best ROA quartile. The difference of 15.5 percent is significant at the one-percent level. In contrast, for firms without a major-blockholder change, the average CEO turnover is 19.7 versus 13.2 percent in the worst versus the best ROA quartile, respectively. The difference of 6.6 percent is significant at the ten-percent level. In short, the CEO turnover is both higher and more sensitive to past performance when the major blockholder changed over the previous year confirming Hypothesis 4. The regression results in Panel B of Table 5 confirm this conclusion. The coefficient for the major-blockholder-change dummy is positive and significant at the one-percent level showing that CEO turnover increases significantly immediately following the major blockholder change. Also, the sensitivity of CEO turnover to ROA is higher (more than doubled) after the change. These results indicate quite convincingly that major-block transfers are associated with increased monitoring and frequent changes in top management, which are more likely in poorly performing firms. This shows that changes of control in form of friendly transfers of major blocks of shares are very effective governance mechanisms and that these post-privatization block transfers bring about owners that are more suitable for restructuring of their firms.

Table 5 about here.

4.4 Nature of ownership

Table 6 reports results that test Hypotheses 5 to 7 concerning nature of ownership. Panel A shows again the average CEO-change frequency across ROA quartiles, now for six different owner types. The first part distinguishes the major blockholder type, the second part takes into account all blockholders. The results show that the nature of ownership is an important determinant of CEO turnover and its sensitivity to past firm performance. First, both parts of Panel A strongly support Hypothesis 5 on entrenchment of insiders. With insider ownership, CEO turnover is the lowest (around 9 percent) and, moreover, it increases as ROA increases. The average CEO-change frequency is just 4.1 percent in the worst ROA quartile. This strongly points to entrenchment of insiders, especially, when performing poorly. Second, Hypothesis 6 is also partially supported. Outside major blockholders are associated with higher CEO turnover relative to insiders with individuals unrelated to management having CEO turnover three times as high as insiders. Sensitivity of CEO turnover to performance seems to be the highest when an IPF is the major blockholder with remarkable 40- and zero-percent turnover in the worst and best ROA quartile,

respectively. Still, major blocks by industrial companies are also associated with significant (at the one-percent level) sensitivity of CEO turnover to ROA. Third, Hypothesis 7 is confirmed. As CEO turnover is very high for major state ownership and CEO turnover is not sensitive to performance, the results indicate that CEO turnover under major state ownership is politically motivated.

Table 6 about here.

The regression results in Panel B of Table 6 lead to similar conclusions. Model 10 maps the effect of the major blockholder type, Model 11 accounts for all blockholders. The basic model is augmented by a set of dummy variables measuring differences in CEO turnover for different owner types (insider ownership is the reference category) and a set of interaction terms of the dummy variables with ROA measuring the differences in sensitivity of CEO turnover to performance. All the dummy variables are positive indicating that CEO turnover of the reference category – major insider ownership – is the lowest.[15] Individuals unrelated to management have the highest coefficient that is significant at the one-percent level. The financial institution dummy is also significant, at the ten-percent level. Sensitivity of CEO turnover to performance is the highest for IPFs (though the coefficient is significant only at the ten-percent level). This is reflection of the fact indicated in Panel A that CEO turnover is very high in poorly performing firms with major IPF ownership and non-existent in well-performing firms. Industrial companies also turn to have negative and highly significant interaction term. The interaction terms for state ownership, individuals unrelated to management, insiders and financial institutions are not significant. In summary, the regression results support Hypothesis 5 as CEO turnover is the lowest when insiders are the major blockholders and, at the same time, it is not sensitive to performance. Also Hypothesis 6 is (at least partially) supported for industrial companies where CEO turnover is strongly and significantly associated with poor performance. In contrast, ownership by individuals unrelated to management is somewhat weak in this respect even though CEO turnover is then, on average, relatively high. Surprisingly, institutional owners – IPFs and financial institutions perform relatively well. The former show high sensitivity of CEO turnover to performance and the latter high average CEO turnover. This is in contrast with findings of other studies for established market economies that usually document low involvement of institutional investors in monitoring. These findings for Slovakia are perhaps a reflection of the generally bad situation in the firms that shows strong need for restructuring and monitoring. Finally, the results show support also for Hypothesis 6: CEO turnover in state dominated firms is high and is not sensitive to performance. Results of Model 11

[15] All firms in the sample have at least one blockholder holding at least 5 percent of shares outstanding.

accounting for all blockholders and their types (as opposed to the major blockholder type in Model 10) are somewhat weaker. Models A8 to A10 in Appendix replicate Model 10 using the other three performance measures. Model A8 with operational ROA shows results that are very similar to Model 10. Models A9 and A10 confirms again that the stock-market based measures are not associated with CEO turnover.

5 Conclusions

In this paper, I address the question whether top managers in large privatized Slovak companies are kept responsible and accountable for performance of firms under their control. Such an analysis explores the effectiveness of internal governance systems of firms after they were privatized. Table 7 provides a summary of the hypothesis and of the main findings. The basic result is encouraging: CEO turnover is sensitive to performance (at least to accounting profitability) documenting that privatization has lead to improved internal governance of firms. Moreover, the results of the paper show that ownership structure and its changes matter for the CEO turnover as well as its sensitivity to poor past performance. The main conclusions are threefold. First, concentration of control seems to increase CEO turnover. However, further analysis shows that contest of control among the blockholders may be a more important determinant of the CEO-turnover sensitivity to performance. In particular, my results show that the sensitivity of CEO turnover to performance is the highest when the major blockholder is smaller and is contested by concentrated remaining blocks of shares. This is, I believe, a very interesting result. Second, market for share stakes turns to be very important for both average level of CEO turnover as well as its sensitivity to past performance. This suggests that the active post-privatization market for share blocks is quite effective in delivering blockholders that are actively involved in monitoring of their firms. Finally, nature of ownership is also important. Insider ownership hinders CEO turnover and results in managerial entrenchment. Outside ownership, especially ownership by other firms, is associated with high sensitivity of CEO turnover to poor past performance. Surprisingly, also ownership by IPFs shows high sensitivity of CEO turnover to performance. Lastly, state ownership is associated with high turnover but low sensitivity of CEO turnover to performance indicating political motivation of the top managerial changes.

In general, the findings of this analysis seem to be somewhat stronger compared to other studies analyzing established market economies. This may indicate that control and governance structures and their changes have more of an effect in a setting with higher net rewards for monitoring and

active involvement of shareholders. Despite of fears that major shareholders would engage in looting and tunneling, these results suggest that the shareholders involve in monitoring.

References

Admati, Anat R., Pleiderer, Paul, and Zechner, Josef, 1994, 'Large Shareholder Activism, Risk Sharing, and Financial Market Equilibrium,' Journal of Political Economy 102 (6), 1097-1130.

Barberis, Nicholas, Maxim Boycko, Andrei Shleifer and Natalia Tsukanova, 1996, 'How Does Privatization Work? Evidence from the Russian Shops,' Journal of Political Economy 104 (4), 764-790.

Barclay, Michael J. and Clifford G. Holderness, 1991, 'Negotiated Block Trades and Corporate Control,' Journal of Finance 46, 861-878.

Bebchuk, Lucian Arye, 1999, 'A Rent-Protection Theory of Corporate Ownership and Control,' NBER Working Paper No. W7203.

Bennedsen, Morten, and Daniel Wolfenzon, 2000, 'The Balance of Power in Closely Held Corporations,' Journal of Financial Economics 58, 113-139.

Bloch, Francis, and Ulrich Hege, 2001, 'Multiple Shareholders and Control Contests,' mimeo, HEC School of Management.

Burkart, Mike, Denis Gromb and Fausto Panunzi, 1997, 'Large Shareholders, Monitoring and the Value of the Firm,' Quarterly Journal of Economics 112 (3), 693-728.

Carlin, Wendy, and Philippe Aghion, 1996, 'Restructurour reing Outcomes and the Evolution of Ownership Patterns in Central and Eastern Europe,' Economics of Transition 4 (2), 371-388.

Claessens, Stijn, and Simeon Djankov, 1999, 'Enterprise Performance and Management Turnover in the Czech Republic,' European Economic Review 43, 1115-1124.

Coffee, John C., 1996, 'Institutional Investors in Transitional Economies: Lessons from the Czech Republic,' *In*: Frydman, R. et al., ed., Corporate Governance in Central and Russia, Vol. 1, CEU Press, Budapest.

Coffee, John C., 1999, 'The Future as History: The Prospects for Global Convergence in Corporate Governance and Its Implications,' Northwestern University Law Review 93, 641-708.

Cragg, Michael Ian and I.J. Alexander Dyck, 1999. 'Management Control and Privatization in the United Kingdom,' RAND Journal of Economics 30 (3), 475-497.

Danisevska, Petra, Abe de Jong and Miguel Rosellon, 2003, 'Disciplining the Board: The Lessons from Two-tier Boards,' mimeo, Erasmus University Rotterdam.

Demsetz, Harold, 1988, 'Ownership, Control and the Firms: The Organization of Economic Activity,' Vol.1, Basil Blackwell, New York.

Denis, David J., Diane K. Denis and Atulya Sarin, 1997, 'Ownership Structure and Top Executive Turnover,' Journal of Financial Economics 45, 193-221.

Djankov, Simeon, and Peter Murrell, 2002, 'Enterprise Restructuring in Transition: A Quantitative Survey,' Journal of Economic Literature 40, 739-792.

Dyck, I.J. Alexander, 1997, 'Privatization in Eastern Germany: Management Selection and Economic Transition,' American Economic Review 87 (4), 565-597.

Estrin, Saul, and Mike Wright, 1999, 'Corporate Governance in the Former Soviet Union: An Overview,' Journal of Comparative Economics 27, 398-421.

Fidrmuc, Jan, Jarko Fidrmuc and Julius Horvath, 2002, 'Visegrad Economies: Growth Experience and Prospects,' Global Development Network: Global Research Project, mimeo, available at http://www.cerge.cuni.cz/pdf/gdn/grp_final_visegrad.pdf.

Fidrmuc, Jana P., and Jan Fidrmuc, 2004, 'Fire the Manager to Improve Performance? Managerial Turnover and Incentives after Privatization in the Czech Republic,' CEPR Discussion Paper No. 4351.

Firth, Michael, Peter M.Y. Fung and Oliver M. Rui, 2002, 'Firm Performance, Governance Structure, and Top Management Turnover in a Transitional Economy,' available at http://ssrn.com/abstract=337843

Franks, Julian, and Colin Mayer, 2001, 'Ownership and Control of German Corporations,' Review of Financial Studies 14, 943-977.

Franks, Julian, Colin Mayer, and Luc Renneboog, 2001, 'Who Disciplines Management in Poorly performing Companies?' Journal of Financial Intermediation 10, 209-248.

Frydman Roman, Cheryl Gray, Marek Hessel, and Andrzej Rapaczynski, 1999, 'When Does Privatization Work? The Impact of Private Ownership on Corporate Performance in the Transition Economies,' Quarterly Journal of Economics 114 (4), 1153-1191.

Gomes, Armando, and Walter Novaes, 2001, 'Sharing of Control as a Corporate Governance Mechanism,' University of Pennsylvania Law School Research Paper No. 01-12.

Kang, Jun-Koo, and Anil Shivdasani, 1995, 'Firm Performance, Corporate Governance, and Top Executive Turnover in Japan,' Journal of Financial Economics 38, 29-58.

Kaplan, Steven N., 1994a, 'Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States,' Journal of Political Economy 102, 510-546.

Kaplan, Steven N., 1994b, 'Top Executives, Turnover and Firm Performance in Germany,' Journal of Law, Economics and Organization 10, 142-159.

Maug, Ernst, 1998, Large Shareholders as Monitors: Is there a Trade-Off between Liquidity and Control? Journal of Finance 53 (1), 65-98.

Megginson, William L. and Jeffry M. Netter, 2001, 'From State to Market: A Survey of Empirical Studies on Privatization,' Journal of Economic Literature 39, 321-389.

Olsson, Mikael, 1999, 'The Slovak Privatization Process in 1990-1996,' Doctoral dissertation at Uppsala University, Sweden.

Renneboog, Luc, 2000, 'Ownership, Managerial Control and the Governance of Companies Listed on the Brussels Stock Exchange,' Journal of Banking & Finance 24, 1959-1995.

Shapiro, Carl and Robert D. Willing, 1995, 'Economic Rationales for the Scope of Privatization,' in E.E. Bailey and J.R. Pack (eds.): The Political Economy of Privatization and Deregulation, Elgar, Aldershot, UK.

Shleifer, Andrei, and Robert W. Vishny, 1986, 'Large Shareholders and Corporate Control,' Journal of Political Economy 94, 461-488.

Shleifer, Andrei, and Robert W. Vishny, 1994, 'Politicians and Firms,' Quarterly Journal of Economics 109, 995-1025.

Vickers, John, and George Yarrow, 1988, 'Privatization: An Economic Analysis,' MIT Press, Cambridge, MA.

Volpin, Paolo F., 2002, 'Governance with poor investor protection: Evidence from Top Executive Turnover in Italy,' Journal of Financial Economics 64, 61-90.

Warner, Jerold B., Ross L. Watts, and Karen H. Wruck, 1988, 'Stock Prices and Top Management Changes,' Journal of Fiancial Economics 20, 461-492.

Warzynski, Frederic, 2003, 'Managerial Change, Competition, and Privatization in Ukraine,' Journal of Comparative Economics 31, 297-314.

Weisbach, Michael S., 1988, 'Outside Directors and CEO Turnover,' Journal of Financial Economics 20, 431-460.

TABLE 1: SUMMARY STATISTICS

	1993	1994	1995	1996	1997	1998	total
Total assets (SKK million)							
number of observations	467	515	560	611	640	564	3357
mean	832	790	795	781	820	887	817
median	189	171	157	153	149	149	158
st. deviation	4,101	4,164	4,353	4,853	5,583	6,578	5,062
Profit/loss (SKK thousands)							
number of observations	465	506	559	609	639	563	3341
mean	9,291	6,020	7,237	-2,741	-5,442	-38,112	-4,547
median	319	105	-34	-55	-222	-524	-2
st. deviation	279,607	105,876	221,673	166,596	104,897	478,150	258,160
Return on assets							
number of observations	467	509	559	610	637	564	3346
mean	0.018	0.009	0.003	-0.005	-0.024	-0.028	-0.006
median	0.026	0.016	0.013	0.011	0.010	0.011	0.014
st. deviation	0.098	0.085	0.093	0.113	0.245	0.226	0.163
Operational return on assets							
number of observations	465	506	559	609	639	563	3341
mean	-0.024	-0.022	-0.034	-0.047	-0.066	-0.093	-0.049
median	0.003	0.001	0.000	-0.002	-0.003	-0.005	0.000
st. deviation	0.094	0.084	0.091	0.165	0.311	0.391	0.231
Average price (SKK)							
number of observations	473	532	612	666	726	740	3,749
mean	327	323	661	704	719	467	552
median	194	132	137	219	172	126	159
st. deviation	395	455	4,309	4,135	4,100	1,498	3,136
Price-earnings ratio (in percentage points)							
number of observations	366	436	553	610	635	562	3162
mean	0.13	0.03	0.53	1.79	1.90	0.05	0.85
median	0.12	0.09	0.07	0.08	0.08	0.04	0.07
st. deviation	2.31	5.06	11.04	43.05	40.14	7.78	26.78
Market-to-book value							
number of observations	467	513	560	611	640	564	3355
mean	0.482	0.491	0.578	0.654	0.695	0.661	0.601
median	0.455	0.450	0.527	0.584	0.615	0.572	0.535
st. deviation	0.234	0.276	0.297	0.366	0.685	0.481	0.440
CEO change (in percentage points)							
number of observations				538	490	512	1540
mean				25%	17%	15%	19%
median				0	0	0	0
st. deviation				43%	38%	36%	39%

Note: Return on assets is defined as total profit/loss over total assets. *Operational return on assets* is defined as operational profit/loss over total assets. *Price-earnings ratio* is equal to average price per year over operational profit/loss per share. *Market-to-book ratio* is defined as market capitalization plus book value of debt over total assets.

TABLE 2: OWNERSHIP STRUCTURE

	1995	1996	1997	1998	total
PANEL A: SIZE OF OWNERSHIP BLOCKS					
Major share stake					
number of observations	609	660	719	722	2710
mean	41%	43%	46%	48%	44%
st. deviation	26%	25%	26%	26%	26%
median	30%	34%	41%	43%	37%
Second largest share stake					
number of observations	485	541	576	557	2159
mean	17%	18%	19%	19%	18%
st. deviation	10%	10%	9%	9%	9%
median	15%	15%	17%	18%	16%
Total stake to blockholders					
number of observations	609	660	719	722	2710
mean	65%	69%	72%	73%	70%
st. deviation	23%	22%	21%	21%	22%
median	65%	69%	72%	75%	70%
PANEL B: MAJOR BLOCK BY TYPE OF BLOCKHOLDER					
Frequency by type of the major owner[a]					
government	22.0%	7.6%	3.3%	2.1%	8.2%
ipf	17.2%	3.0%	2.6%	2.8%	6.1%
industrial company	40.1%	61.7%	67.5%	69.4%	60.4%
individual	7.9%	7.9%	7.2%	6.1%	7.2%
insider	6.2%	10.3%	11.5%	11.9%	10.1%
financial institution	6.6%	9.5%	7.8%	7.8%	7.9%
Average block by type of owner [b]					
government	61.3%	66.6%	68.0%	54.3%	62.7%
ipf	22.3%	22.6%	24.5%	23.7%	22.7%
industrial company	24.0%	46.7%	51.1%	53.9%	49.5%
individual	35.1%	32.9%	30.9%	31.7%	32.6%
insider	27.7%	28.8%	27.8%	28.4%	28.2%
financial institution	28.3%	31.2%	39.0%	39.7%	34.9%
PANEL C: ALL BLOCKS BY TYPE OF BLOCKHOLDER					
Frequency by type of blockholder present [c]					
government	40.2%	21.7%	11.8%	7.6%	19.5%
ipf	52.4%	33.8%	24.5%	19.0%	31.5%
industrial company	58.6%	75.8%	82.1%	85.0%	76.1%
individual	9.3%	14.0%	16.9%	17.5%	9.6%
insider	12.8%	15.5%	15.2%	16.0%	9.9%
financial institution	17.4%	26.7%	21.3%	21.2%	21.7%
Average block by type of owner [d]					
government	47.2%	45.5%	45.0%	41.5%	45.8%
ipf	26.8%	16.9%	16.8%	15.1%	20.3%
industrial company	36.5%	48.4%	55.3%	58.1%	51.2%
individual	28.4%	31.0%	31.9%	30.1%	30.4%
insider	32.9%	38.7%	41.3%	45.1%	40.4%
financial institution	19.5%	22.8%	25.3%	24.9%	23.4%

Note: Ipf stands for Investment Privatization Fund. *Financial institution* covers banks and investment companies other than IPFs. [a] shows the fraction of firms with the given type as the major blockholder. [b] shows the conditional average

of the size of the major block. [c] shows the faction of firms with given type of owner present among the nine largest (reported) stakes. [d] indicates the total (cumulative) stake to all blockholders of the given type.

TABLE 3: PERFORMANCE AND PROBABILITY OF MANAGERIAL CHANGE

PANEL A: UNIVARIATE ANALYSIS

Performance measure	average performance	CEO change by performance quartiles				difference 1st –4th quartile
		1st quartile	2nd quartile	3rd quartile	4th quartile	
return on assets	0.0106	25.8%	17.6%	16.8%	16.0%	9.8%***
operational return on assets	-0.0217	26.6%	19.2%	15.3%	15.3%	11.3%***
stock return	-4.61%	17.9%	19.4%	17.7%	20.2%	-2.2%
market-to-book ratio	0.6177	18.4%	19.2%	19.6%	18.9%	-0.5%

PANEL B: REGRESSION RESULTS

	return on assets			stock return		
	coef.	st.e.	sign.	coef.	st.e.	sign.
	Model 1			**Model 2**		
constant	-1.704	0.338	***	-1.559	0.337	***
performance measure (lagged)	-2.118	0.539	***	0.035	0.058	
total concentration	0.636	0.213	***	0.626	0.213	***
size (fixed assets)	0.057	0.026	**	0.044	0.026	*
year dummies	yes			yes		
industry dummies	yes			yes		
chi^2	56.56	***		42.89	***	
number of observations	1495			1497		
number of firms	601			601		
	Model 3			**Model 4**		
constant	-1.907	0.347	***	-1.754	0.345	***
performance measure (lagged)	-2.055	0.541	***	0.033	0.077	
major-block concentration	0.775	0.218	***	0.755	0.218	***
remaining-blocks concentration	0.529	0.290	*	0.511	0.289	*
major-blockholder change	0.449	0.082	***	0.450	0.082	***
size (fixed assets)	0.050	0.026	*	0.037	0.026	
year dummies	yes			yes		
industry dummies	yes			yes		
chi^2	83.94	***		71.04	***	
number of observations	1495			1497		
number of firms	601			601		

Note: Panel A shows the average CEO turnover by quartiles of performance. In Panel B, all models are estimated by probit with random effects. The dependent variable is a binary variable equal to one if managing director changed in the given firm-year. *Return on assets* is defined as net income after interest and taxes over total assets. *Operational return on assets* stands for operational profit over total assets. *Stock return* is the return on stock from January till December in year *t-1*. *Market-to-book ratio* is defined as the sum of market capitalization and book value of debt over the book value of total assets. All the performance measures are as of the beginning of the calendar year and are truncated at the fifth percentile. *Total concentration* is measured as the sum of all reported ownership stakes (over 5%). *Major-block concentration* refers to the size of the major block. *Remaining-blocks concentration* is the sum of all reported ownership stakes minus the major stake. *Major-block change* is set to one if the major blockholder changed within (*t-,1 t*) and zero otherwise. *, **, and *** denotes significance at the 10, 5, and 1 percent level, respectively.

TABLE 4: OWNERSHIP-CONCENTRATION EFFECT

PANEL A: UNIVARIATE ANALYSIS

	average ROA	CEO change	CEO change by ROA quartiles				difference 1st –4th quar.
			1st quartile	2nd quartile	3rd quartile	4th quartile	
Total concentration							
1st quartile	0.0055	13.9%	19.5%	13.8%	10.8%	10.5%	8.9%*
2nd quartile	0.0110	18.2%	24.7%	18.3%	12.4%	16.8%	7.9%
3rd quartile	0.0179	21.1%	30.4%	19.3%	17.9%	18.8%	11.6%*
4th quartile	0.0082	22.8%	30.8%	18.5%	25.2%	17.2%	13.5%**
difference 4th – 1st quar.	0.0027	8.8%***					
Concentration of the major block							
low	0.0104	18.2%	27.7%	18.8%	12.8%	13.7%	14.0%***
high	0.0108	19.8%	23.8%	16.7%	20.7%	18.5%	5.3%
difference high – low	0.0005	1.6%					
Concentration of the remaining blocks							
low	0.0076	17.2%	21.4%	14.2%	17.9%	14.8%	6.7%*
high	0.0132	20.6%	30.4%	20.4%	16.1%	17.1%	13.4%***
difference high – low	0.0057	3.4%*					
Combination major-block/remaining-blocks concentration							
low – low	-0.0001	12.3%	17.6%	7.5%	12.8%	8.2%	9.5%
low – high	0.0142	20.4%	33.1%	22.3%	12.9%	15.4%	17.7%***
high – low	0.0107	19.2%	23.4%	16.3%	20.0%	17.2%	6.3%
high – high	0.0112	20.9%	24.6%	17.3%	21.8%	21.3%	3.2%
difference h-h vs. l-l	0.0112	8.7%***					

PANEL B: REGRESSION RESULTS

	coef.	st.e.	sign	coef.	st.e.	sign	coef.	st.e.	sign	coef.	st.e.	sign
	Model 5			**Model 6**			**Model 7**			**Model 8**		
constant	-1.735	0.340	***	-1.680	0.340	***	-1.698	0.339	***	-1.678	0.340	***
total concentration	0.638	0.214	***									
major-block concentration				0.640	0.214	***	0.631	0.214	***	0.636	0.216	***
remaining-blocks concentration				0.655	0.286	**	0.632	0.285	**	0.651	0.288	**
ROA * tot. concentration quar.1	-2.775	1.231	**									
ROA * tot. concentration quar.2	-1.940	0.990	**									
ROA * tot. concentration quar.3	-1.309	0.936										
ROA * tot. concentration quar.4	-3.086	1.226	**									
ROA * major-block conc. low				-3.026	0.757	***						
ROA * major-block conc. high				-1.158	0.771							
ROA * rem.-blocks conc. low							-1.572	0.751	**			
ROA * rem.-blocks conc. high							-2.667	0.758	**			
ROA * mbc low, rbc low										-2.736	1.501	*
ROA * mbc low, rbc high										-3.123	0.874	***
ROA * mbc high, rbc low										-1.144	0.879	
ROA * mbc high, rbc high										-1.211	1.535	
size (fixed assets)	0.059	0.026	**	0.054	0.026	**	0.057	0.026	**	0.054	0.026	**
year dummies	yes			yes			yes			yes		
industry dummies	yes			yes			yes			yes		
chi^2	57.92	***		58.75	***		57.64	***		58.90	***	

Note: Panel A shows the average CEO turnover by quartiles of performance and different measures of ownership concentration. In Panel B, all models are estimated by probit with random effects. Number of observations is 1495,

number of firms 601. The dependent variable is a binary variable equal to one if managing director changed in the given firm-year. and zero otherwise. *ROA, mbc and rbc* stand for return on assets, major-block concentration and remaining-blocks concentration, respectively. All variables are as defined in Table 3. *, **, and *** denotes significance at the 10, 5, and 1 percent level, respectively.

TABLE 5: EFFECT OF THE MAJOR BLOCKHOLDER CHANGE

PANEL A: UNIVARIATE ANALYSIS

	average ROA	CEO change	CEO change by ROA quartiles				difference 1^{st} –4^{th} quar.
			1^{st} quartile	2^{nd} quartile	3^{rd} quartile	4^{th} quartile	
without change	0.0106	14.4%	19.7%	11.7%	13.0%	13.2%	6.6%*
with change within (t-1,t)	0.0106	27.2%	35.9%	28.8%	24.4%	20.4%	15.5%***
difference with – without	-0.0001	12.9%***					

PANEL B: REGRESSION RESULTS

	coef.	st.e.	sign.
	Model 9		
constant	-1.940	0.347	***
major-block concentration	0.781	0.219	***
remaining-blocks concentration	0.556	0.292	*
major blockholder change	0.458	0.082	***
ROA * without major-blockholder change	-1.269	0.696	*
ROA * with major blockholder change	-3.241	0.864	***
size (fixed assets)	0.052	0.026	**
year dummies	yes		
industry dummies	yes		
chi^2	87.48	***	

Note: Panel A shows the average CEO turnover by quartiles of ROA in two groups of firms: firms without a change of the major blockholder versus firms with a change of the major blockholder over the last year. In Panel B, the model are estimated by probit with random effects. Number of observations is 1495, number of firms 601. *ROA* without major blockholder change* is equal to ROA in all cases when no major blockholder change occurred within (*t-1, t*) and is equal to zero otherwise. *ROA* with major blockholder change* is equal to ROA if the major blockholder changed within (*t-1, t*) and is equal to zero otherwise. All other variables are defined as in Table 3. *, **, and *** denotes significance at the 10, 5, and 1 percent level, respectively.

TABLE 6: NATURE OF OWNERSHIP

PANEL A: UNIVARIATE ANALYSIS

	average ROA	CEO change	CEO change by ROA quartiles				difference 1st –4th quar.
			1st quartile	2nd quartile	3rd quartile	4th quartile	
Major blockholder type							
government	0.0012	29.6%	33.3%	20.0%	30.8%	36.4%	-3.0%
ipf	-0.0114	18.2%	40.0%	16.7%	0.0%	0.0%	40.0%**
industrial company	0.0104	18.7%	26.5%	17.9%	15.8%	15.3%	11.2%***
individual	-0.0035	29.0%	32.1%	31.0%	25.0%	25.9%	6.2%
insider	0.0180	9.7%	4.1%	9.3%	13.3%	12.9%	-8.8%*
financial institution	0.0227	25.9%	32.0%	15.4%	30.4%	26.3%	5.7%
Blockholder type							
government	-0.0037	25.6%	31.3%	20.0%	29.3%	20.7%	10.6%
ipf	0.0068	18.6%	25.3%	20.7%	14.3%	14.3%	11.0%*
industrial company	0.0013	19.0%	26.8%	17.7%	16.3%	15.5%	11.3%***
individual	0.0094	22.0%	23.8%	22.7%	20.0%	20.8%	3.0%
insider	0.0184	9.3%	2.6%	11.5%	13.0%	10.4%	-7.9%**
financial institution	0.0137	22.7%	37.3%	19.8%	22.8%	15.2%	22.2%***

PANEL B: REGRESSION RESULTS

	major blockholder			any blockholder		
	coef.	st.e.	sign.	coef.	st.e.	sign.
	Model 10			**Model 11**		
constant	-2.036	0.359	***	-1.952	0.360	***
major-block concentration	0.785	0.230	***	0.900	0.236	***
remaining-blocks concentration	0.521	0.293	*	0.568	0.311	*
major blockholder change	0.437	0.085	***	0.473	0.085	***
owner type (insiders are the reference category)						
government	0.375	0.240		-0.014	0.132	
IPF	0.014	0.348		-0.081	0.097	
industrial company	0.102	0.145		-0.207	0.108	*
individual	0.547	0.186	***	0.191	0.111	*
financial institution	0.330	0.192	*	0.149	0.098	
return on assets by owner type						
ROA * government	0.519	2.672		-0.973	1.644	
ROA * IPF	-7.201	3.979	*	-2.096	1.363	
ROA * industrial company	-2.719	0.716	***	-1.881	0.815	**
ROA * individual	-0.194	1.414		-0.114	1.203	
ROA * insider	-0.496	1.561		-1.027	1.320	
ROA * financial institution	-1.882	1.728		-1.165	1.204	
fixed assets	0.049	0.028	*	0.058	0.028	**
year dummies	yes			yes		
industry dummies	yes			yes		
chi^2	100.70	***		101.46	***	

Note: Panel A shows the average CEO turnover by quartiles of performance and different ownership types. In Panel B, all models are estimated by probit with random effects. Number of observations is 1495, number of firms 601. *Owner type* is a set of dummy variables for a type of the major blockholder in Model 10 and for the presence of a given type of blockholder among the nine major (reported) blockholders in Model 11. Insiders are the reference type. All other variables are defined as in Table 3. *, **, and *** denotes significance at the 10, 5, and 1 percent level, respectively.

TABLE 7: SUMMARY OF FINDINGS

Hypothesis	Expected effect	Result	
		profitability	stock return
H1: past performance is associated with CEO turnover	negative relation	strong effect	no effect
H2: ownership concentration affects CEO turnover	positive	positive	positive
ownership concentration affects CEO-turnover/performance sensitivity	more negative	weak effect	no effect
H3: contest of control affects CEO turnover	positive	positive	positive
contest of control affects CEO-turnover/performance sensitivity	more negative	strong effect	no effect
H4: major-block change affects CEO turnover	positive	positive	positive
major-block change affects CEO-turnover/performance sensitivity	more negative	strong effect	no effect
H5: insider ownership affects CEO turnover	negative	negative	negative
insider ownership affects CEO-turnover/performance sensitivity	less negative	no effect	no effect
H6: outsider ownership affects CEO turnover	positive	positive for individuals and fin. institutions	positive for individuals and fin. institutions
		no effect for industrial companies and IPFs	no effect for industrial companies and IPFs
outsider ownership affects CEO-turnover/performance sensitivity	more negative	negative for industrial companies and IPFs	no effect
		no effect for individuals and fin. institutions	
H7: state ownership affects CEO turnover	positive	weakly positive	positive
state ownership does not affects CEO-turnover/performance sensitivity	no effect	no effect	no effect

APPENDIX

TABLE A1: BASIC HYPOTHESIS: OTHER PERFORMANCE MEASURES

	operational return on assets			market-to-book ratio		
	coef.	st.e.	sign.	coef.	st.e.	sign.
	Model A1			**Model A2**		
constant	-1.832	0.343	***	-1.502	0.337	***
performance measure (lagged)	-2.216	0.580	***	-0.082	0.136	
total concentration	0.630	0.213	***	0.658	0.229	***
size (fixed assets)	0.060	0.026	**	0.042	0.026	*
year dummies	yes			yes		
industry dummies	yes			yes		
chi^2	55.51	***		42.58	***	
number of observations	1495			1498		
number of firms	601			601		
	Model A3			**Model A4**		
constant	-2.034	0.352	***	-1.722	0.346	***
performance measure (lagged)	-2.130	0.584	***	-0.042	0.142	
major-block concentration	0.767	0.219	***	0.776	0.236	***
remaining-blocks concentration	0.531	0.291	*	0.518	0.292	*
major-blockholder change	0.449	0.082	***	0.451	0.082	***
size (fixed assets)	0.053	0.026	**	0.036	0.026	
year dummies	yes			yes		
industry dummies	yes			yes		
chi^2	82.70	***		70.90	***	
number of observations	1495			1498		
number of firms	601			601		

Note: All variables are as defined in Table 3.

TABLE A2: CONTEST OF CONTROL AND NATURE OF OWNERSHIP: OTHER PERFORMANCE MEASURES

	operational ROA			stock return			market-to-book ratio		
	coef.	st.e.	sign.	coef.	st.e.	sign.	coef.	st.e.	sign.
	Model A5			**Model A6**			**Model A7**		
constant	-1.833	0.347	***	-1.610	0.339	***	-1.445	0.390	***
major-block concentration	0.710	0.225	***	0.679	0.216	***	0.750	0.314	**
remaining-blocks concentration	0.578	0.300	*	0.661	0.287	**	0.425	0.374	
perf. * mbc low, rbc low	-2.051	1.454		0.262	0.190		-0.456	0.367	
perf. * mbc low, rbc high	-3.989	0.927	***	-0.135	0.114		0.323	0.242	
perf. * mbc high, rbc low	-1.187	0.959		0.130	0.134		-0.127	0.189	
perf. * mbc high, rbc high	-0.503	1.330		0.396	0.221	*	-0.267	0.214	
fixed assets	0.057	0.026	**	0.046	0.026	*	0.045	0.026	*
year dummies	yes			yes			yes		
industry dummies	yes			yes			yes		
chi^2	61.58	***		49.14	***		49.49	***	
number of observations	1495			1497			1498		
	Model A8			**Model A9**			**Model A10**		
constant	-2.094	0.360	***	-1.845	0.352	***	-1.848	0.493	***
major-block concentration	0.781	0.230	***	0.759	0.228	***	0.798	0.248	***
remaining-blocks concentration	0.535	0.294	*	0.479	0.292	*	0.517	0.298	*
major-blockholder change	0.435	0.085	***	0.440	0.084	***	0.439	0.085	***
major blockholder type									
government	0.376	0.258		0.431	0.238	*	0.053	0.503	
IPF	-0.142	0.392		0.273	0.291		-0.108	0.537	
industrial company	0.030	0.146		0.119	0.143		-0.087	0.309	
individual	0.554	0.195	***	0.572	0.184	***	0.309	0.411	
financial institution	0.265	0.194		0.337	0.188	*	-0.245	0.384	
return on assets by blockholder type									
perf. * government	-0.705	2.759		0.075	0.458		0.207	0.601	
perf. * IPF	-5.846	3.272	*	-0.031	0.416		0.335	0.872	
perf. * industrial company	-2.602	0.747	***	0.066	0.096		-0.091	0.162	
perf. * individual	0.507	1.732		-0.117	0.240		0.044	0.536	
perf. * insider	0.339	2.099		0.155	0.238		-0.495	0.560	
perf. * financial institution	-2.273	1.794		0.013	0.244		0.984	0.587	*
fixed assets	0.050	0.028	*	0.032	0.027		0.030	0.027	
year dummies	yes			yes			yes		
industry dummies	yes			yes			yes		
chi^2	97.91	***		84.63	***		87.72	***	
number of observations	1495			1497			1498		

Note: All variables are as defined in Table 4.

Employment Restructuring of State-Owned, Privatized and New Private Firms. Evidence from Romania[*]

Álmos Telegdy

Central European University
and
Institute of Economics – Hungarian Academy of Sciences

June 2004

Abstract
Using a comprehensive database of over 110,000 Romanian firms, I estimate dynamic labor demand specifications to analyze the behavior of wage and output elasticities along three dimensions. First, I compare them between 1993 and 1999 for initially state-owned firms, finding no clear evidence for a more sensitive employment setting behavior in the latter year: wage elasticity increased in absolute terms from .415 to .586, but output elasticity declined from .523 to .468. Second, I use the 1999 data to analyze the relation between the elasticities and three types of ownership, state-owned, privatized and new private. The data provide some evidence that privatized firms are more sensitive to wage and output demand changes than state-owned firms, especially with respect to the latter: however, the estimated elasticities for de novos are always smaller than the estimates for the privatized firms, and sometimes even smaller than the elasticities for continuously state-owned firms. Third, I test how regional differences affect the employment decision of firms, finding that the wage elasticity of labor varies only for declining firms across regions.

[*] The author thanks John S. Earle and Gábor Kőrösi for useful comments. This research was undertaken with support from the European Community's Fifth Framework Program. The content of the paper is the sole responsibiltiy of the author and it in no way represents the views of the Commission or its services.

1. Introduction

The purpose of this paper is to analyze the effects of economic transition, ownership change, and regional characteristics on the wage and output elasticity of labor. These questions are important in several aspects. The general issue concerns the sensitivity of firms with respect to conditions such as the cost of labor and the demand for the firm's output. In particular, the change of elasticities over time shows how the speed of adjustment of firms changes as the country advances further away from the institutions of planned economy. In this case, outside changes may include effects of stronger competition, or hardening budget constraints of the state-owned firms, either because of increasing financial discipline or as a consequence of privatization. The relationship between employment behavior and ownership forms reveals how different are the reactions of various types of owners on changes of labor costs and demand constraints. Also, empirically supported statements can be made about one very important component of the costs and benefits of the ownership changes of the firms. On the one hand, are privatized or new private (de novo) firms more responsive to outside conditions, than continuously state owned companies, and thus more efficient in this respect, than the state owned firms? On the other hand, what are the immediate social costs of the transition: how many workers loose their jobs, as a consequence of privatization? Needless to say, this questions have an important message to policymakers. If the costs of ownership change are not as large as expected, then the government should be more willing to diminish the share of state ownership in the economy.

Previous research suggests that the amount of labor employed, determined in the socialist system by the state bureaucracy, instead of the management of the firm, became more sensitive to outside conditions, as the country advanced in transition.[1] However, evidence is scarce on the relation between the employment behavior of firms and the change of the ownership structure. Most of the studies measure this relation only by including dummies for types of owners in the labor demand regressions. While this method can measure the effect of owners on the level of employment (or on its change), one cannot draw conclusions on how the input price and output demand constraint sensitivity of the firms changes by ownership.[2]

In this paper I address these questions on the employment behavior of firms in transition. Using a comprehensive database of Romanian firms, I estimate dynamic labor demand regressions for different groups of firms. First, I follow the existing literature and analyze whether the elasticities changed between an earlier and a latter year of transition (1993 and 1999).[3] Second, the question on the relation of the ownership type and labor demand of the firm is addressed. I test this relation for state-owned, privatized and new

[1] For studies on Czechoslovakia, Hungary and Poland see Svejnar (1999).

[2] One exception is the paper written by Konings and Lehmann (2002), who analyze the differences between state-owned, mixed and privatized firms in Russia, and Kőrösi (1998), who did a similar analysis for foreign ownership in Hungary.

[3] Ideally, the earlier date should be from the time of planned economic system, to catch the whole effect of transition, but unfortunately data are not available for an earlier date than 1993.

private firms in 1999. By running separate regressions for these three groups, differences in the wage and output elasticities may be directly tested.

The paper is structured in the following way: in the next section I present the data, the definition of variables and basic descriptive statistics. In section 3 I describe the estimation framework and the hypotheses about the expected signs and relative magnitudes of the elasticities, followed by the empirical results in section 4 and 5. The last section concludes.

2. Description of Data, Construction of Variables and Basic Statistics

2.1 Description of the data[4]

This study is based on two datasets containing balance sheet information of Romanian firms for 1993 and 1999, as well as retrospective information for 1992 and 1998.[5] The 1993 data have information on all old firms, while the 1999 data is supposed to have all Romanian operating firms. The very small firms (with employment equal to one and two) were dropped from the analysis. The reason for dropping the smallest firms was that these units are actually self-employed individuals (with one or two employees), and they may have a substantially different labor demand behavior than larger firms. Since a self-employed cannot downsize the number of employees easily, he or she will either close the firm if the demand for the output declines too much, or keeps working in the contrary case. The changes in the wage level are probably also taken into consideration differently. Either consider that it is worth to run his or her business, or decide that it is better to close down and look for a regular job. However, the decision of shutting down is influenced not only by the wage level and the output demand constraint, but by other, individual characteristics, such as preferences for being one's own boss.[6]

The variables of interest are the level of employment, employment cost and sales, and basic information on the firm, such as its regional location and economic branch. The variables went through basic cleaning (non-positive employment, employment cost and sales set to missing). The Romanian Enterprise Registries were used for completion of missing values in several cases.

The 1993 data contain only old firms. This dataset did not have information on sales, so I added these from the Romanian Enterprise Registries from 1992 and 1993. The firms in the 1993 data are typically large and relatively small in number, as I show in this section below. In total, 5,674 firms had their employment larger than equal to three for 1993 and 1992, and

[4] In this section I present the construction and cleaning of all variables except the ownership classification of firms, which is discussed in the next section.

[5] To overcome problems caused by structural change but allow for dynamics, I use only two year panels, as I discuss in the next section in detail.

[6] The reasons for being a self-employed in transition are discussed by Earle and Sakova (2000).

had complete information on all variables used in the analysis. These are the data for the 1993 study.

Data for 1998-1999 cover the whole population of Romanian firms. In 1999 their number was equal to 410,154. After dropping the very small firms, the total number of firms fell to 147,979. This was done, however, on the basis of a computed employment variable. The data have two variables indicating the level of employment: the average number of employees with employment contract, and the number of workers with temporary contract. Since a large fraction of the firms (over 80 percent in both years) have non-zero employment with temporary contract, it is highly probable that firms used temporary contracts for tax evasion, perhaps for the types of workers which could have this contract without attracting too much attention. Employees with temporary contracts may be different from those with employment contract in their hours worked. One part of the firms may indeed use temporary employment and these workers may work only a small number of hours. This introduces a bias in the estimations, especially because it is likely that agriculture and certain types of services would employ more temporary workforce than industry.[7] Also, those firms which sign temporary contracts with a part of their workforce instead of employment contracts for tax evasion reasons, may also be clustered by the size of the firm, for example. However, I argue, that not taking into account these workers at all would introduce a larger bias in the estimations, since I would leave out from the analysis a number of workers, which is probably not uniformly distributed across firms. Since there is no way of selecting out these effects of temporary employment, I assumed the total employment to be equal to the sum of employees with employment contract and those with temporary contracts.

For 1998, missing information was updated from an earlier balance sheet database. The last cleaning procedure consisted of dropping out those firms from the data which do not have information for 1997 (in an earlier database). This was done in order to avoid the following problem: there may be firms in the data that started to operate only during 1998. This means, that the flow variables are counted for only a fraction of year. The level of employment, however, is given as the average value for the year. When the employment cost per worker is computed, for example, a flow variable for a fraction of year is divided by a stock variable for the year, and the resulting variable will not reflect the real average cost per worker.

The 1999 data had a number of cooperatives. These were dropped out from the study. If we assume that these firms are controlled by insiders they are probably not wage takers. Instead, they the residual earnings among the members of the cooperative. To put it differently, outside- and inside-owned firms have a different objective function which creates difficulties in the comparison of their employment and remuneration behavior.[8]

---

[7] Indeed, the ratio of the number of employees with temporarily contracts to the number of employees with employment contract is very heterogeneous, having a value of 0.75 for industry, 1.0 for agriculture and construction, and 3.8 for services.

[8] See Bonin, Jones and Putterman (1993) for a survey of the literature on producer cooperatives. Pencavel and Craig (1994) tests the different behavior of investor owned firms and producer cooperatives.

After the cleaning procedures, the number of firms with non-missing employment, sales, employment costs and ownership information was 111,581. The analysis presented below was done with the use of these data.

2.2 Construction of variables and basic statistics

In this study I use the following variables: the level of employment, employment cost, output, industrial and regional distribution of the firms and three ownership categories. I defined six regions: Bucharest, the capital of the country, Moldova, the Eastern part, Muntenia, including Dobrogea (South East), Oltenia (South West), Transilvania (the middle of the country) and Crisana-Banat (the Western part).[9] These mostly correspond to the historical regions of the country, and macroeconomic data and other studies show that there considerable differences among them.[10] Firms in this study cover all regions, as Table 1 shows. The comparable samples from 1993 and 1999 have a very similar regional distribution.

Table 2 presents the industrial distribution of firms for the 1993 sample and for two samples from 1999: the old firms, which are comparable with the 1993 sample and the whole 1999 sample. As well as regions, all industrial branches are covered in 1993 and 1999. Old firms decreased their share in industry by 4.5 percent, while the percent of firms in services and agriculture increased by 2.1 and 2.6 percent, respectively. The whole population of firms in 1999 has a much higher share of services (73 percent), which is consistent with the knowledge on the industrial distribution of newly established firms, which operate mostly in the service sector. The reason for it is probably the underdeveloped socialist service sector and the smaller capital requirements compared to industry.

Table 3 and 4 describe the levels of employment, employment cost and sales in 1992 and 1993.[11] The average number of employees was quite high in 1992 – 1993, and it has perceived a remarkable decline even in the one-year period, from 799 to 733. This is a drop of 8 percent, showing a dramatic decrease of the labor force in the old sector. Total real employment cost per employee and sales have only slightly fallen during this short period.[12] The table shows the same figures disaggregated by expanding and declining firms.[13] Interestingly, expanding firms are much larger than declining ones. They have an average

---

[9] The composition of regions by counties is the following: Bucharest: the capital and Ilfov; Moldova: Bacau, Botosani, Galati, Iasi, Neamt, Suceava, Vaslui, Vrancea; Muntenia: Buzau, Braila, Calarasi, Constanta, Dambovita, Giurgiu, Ialomita, Teleorman, Tulcea; Olt: Arges, Dolj, Gorj, Mehedinti, Olt, Valcea; Transilvania: Alba, Bistrita-Nasaud, Brasov, Cluj, Covasna, Harghita, Hunedoara, Maramures, Mures, Salaj, Sibiu; Banat-Crisana: Arad, Bihor, Caras-Severin, Satu-Mare, Timis.

[10] Telegdy (1999) discusses the regional differences in the level and changes of average employment, privatization and foreign investment.

[11] Employment costs include gross wages and employment taxes and social security costs for both pairs of years.

[12] Employment costs and sales are deflated by 2-digit PPIs for industry and by GDP deflator for agriculture, construction and services. They are expressed in 1993 prices.

[13] An expanding firm is defined as having constant or increasing real sales.

employment equal to 1,207, which is more than twice as large as the average for declining firms (549). Even the figures for expanding firms show signs of recession, having 6.2 percent decrease of employment, while declining firms lost on average 9.8 percent of their employment. One important difference, however, between these two gropes of firms is that while employment costs increased for expanding firms, they became smaller for the declining firms. Although very raw, this is some evidence that wages are endogenous: those firms which are able to pay more, the try to attract (or keep) more productive workers, by paying them a higher wage.

Table 4 shows the pattern of the employment, employment cost and sales for 1998 – 1999. The average level of employment decreased from 48 to 41 (14.6 percent). However, expanding firms increased somewhat their employment (by 2 on average) while the declining ones decreased it by 13 on average. The employment cost increased on the margin for the whole sample, but the disaggregation reveals that successful and declining firms behave differently in this respect, too. As well as in 92 – 93, employment costs of expanding firms increased, while they fell for declining firms. Sales are almost constant for whole population, but there is a large variation within it: bad firms' sales declined by approximately 30 percent, while good firms experienced an increase in the sales of about the same fraction.

The last variable I present is not included directly in the regressions, but it is equally important. This is the ownership variable, which serves to identify firms' ownership type. I had information on ownership from several sources: the yearly balance sheet data from 1993 – 1999, and the State Ownership Fund (SOF) Portfolio and Transactions database.[14] Firms from the SOF data have all been state-owned at the beginning of transition, and the data have information on the post-privatization private share of the firms.[15] The balance sheet data have dummies for ownership, indicating the state's share, mixed state-private and totally private ownership. The mixed category is further disaggregated by majority and minority state-ownership. Since I intend to use only two ownership categories for the old firms – state-owned and privatized – these information on the post-privatization ownership structure is enough to classify the firms in these categories, assuming that no renationalization took place.

An old firm is defined as a firm that is classified as state-owned or privatized in any of the balance sheet data, or it exists in the SOF data. If a firm was classified in any of the data as being majority owned by the state, I put it in the state-owned group. A firm is privatized only if it is an old firm and the state has a minority ownership share in it. The remaining firms should be grouped as de-novos. However, there are a large number of sizable firms, which would belong to this group. This size distribution reveals that the lack of longitudinal links among firms in the data biases the ownership dummies in the balance sheet data, and many old firms – or spin offs from old firms – are classified as being always private. To decrease

[14] A thorough description of these data (and a database developed from it) can be found in the appendix.

[15] Since the old firms are put only in two ownership categories (state-owned and privatized), information on the post-privatization ownership structure is enough to classify the firms in these categories, assuming that no renationalization took place.

this problem, I censored the de novo group, assuming that those firms that had their employment above 600 in 1998 are old firms.

The ownership categorization, and the percent expanding and declining firms are shown in Table 5. As expected, an overwhelming majority of firms are de novo (92.5 percent). The state was still a majority owner of a quite large number of firms (3,329, or 40 percent of old firms). The distribution of expanding firms is very uneven across ownership: while 41.5 percent of de novos are expanding, only 29.4 percent of old firms are in this category. Within the old firm category, privatized firms are more likely expand (33.1 percent) relative to state-owned firms, where only 23.8 percent was able to increase the value of sales. This finding shows that there are significant differences across groups of ownership, and the variation of the employment and employment cost by ownership (summarized in Table 6) provide further evidence. Employment varies widely with ownership; the largest firms belong to the continuously state-owned category (400 employees on average), followed by the privatized category (317 employees). De novos are much smaller, their average employment size being only 16.3. This variation was expected, especially the relative smallness of de novos. However, the data revealed the same pattern for unitary employment costs (that is, employment cost over the number of employees). State-owned firms have slightly larger employment costs than privatized ones (Rol 25.1 and 23.7 million, respectively). De novos, on the other hand, have 44 percent of the size of old firms' employment costs.

The analysis of the basic statistics demonstrated that the level and unitary cost of employment, sales and the proportion of declining and expanding firms vary significantly by ownership. Now we turn to investigate the possible differences of demand for labor between an early and a latter year of transition, and the variation by ownership types. In the next section I prepare the grounds for the analysis by presenting the estimation framework, while the estimation results are presented in Section 4 and 5.

3. Estimation framework and hypotheses

Estimation of the output and own-price labor elasticities was done with the use of two dynamic labor demand equations. First, the level of current employment is regressed on its lagged value, the current and lagged value of output, employment cost per worker. This specification corresponds to the cost minimization problem of the firm with a Cobb-Douglas technology under output demand constraint (Nickell, 1986; Bresson, Kramartz and Sevestre, 1992). Industry and regional dummies are also added:

$$\mathrm{Ln}(L_t) = \alpha_0 + \alpha_1(L_{t-1}) + \alpha_2 \ln(Output_t) + \alpha_3 \ln(Output_{t-1}) + \alpha_4 \ln(Empcost_t) +$$

$$\alpha_5 \ln(Empcost_{t-1}) + \mathrm{IND} + \mathrm{REG} + \varepsilon_t,$$

where α_2 is the short-run output, and α_4 the short-run own-price elasticity of labor, since the variables are in logarithmic forms. With the help of the regression coefficients, the "long-term" elasticities can be computed, as the sum of the short-term current and lagged elasticities,

divided by the difference between the regression coefficients of the level of employment (taking the level of employment constant):

$$\text{Long-term elasticity of output} = (\alpha_2 + \alpha_3)/(1- \alpha_1)$$

$$\text{Long-term own-price elasticity} = (\alpha_4 + \alpha_5)/(1- \alpha_1)$$

In the next specification the left-hand side variable is the logarithmic difference of the employment, and it is regressed on the logarithmic difference of wage and output. As well as in the previous specification, industry and regional dummies are added:

$$\text{Ln}(L_t)-\alpha_1(L_{t-1}) = \alpha_0 + \alpha_1\text{ln}(Output_t/Output_{t-1}) + \alpha_2\text{ln}(Empcost_t/Empcost_{t-1})$$

$$+ \text{IND} + \text{REG} + \varepsilon_t.$$

As I discussed in the previous section when I presented the variables, output is measured in real sales, and instead of the wage rate I use cost of employment per worker. The regressions are run for the whole population of firms and the subsamples of different types of ownership.

Instead of using contemporaneous ownership information, I use the lagged values (from 1998). The reason for this is the following. Much of privatization took place towards the end of the decade, and by using contemporaneous ownership structure, many firms privatized during the last year would be classified as privatized. However, restructuring of firms is time consuming, and it is a plausible assumption that privatization took place in the last year could not affect firm behavior. Moreover, most of the ownership information come as an end-of-year value, and thus for some firms – those which changed their ownership toward the end of the year – no time would be left for restructuring, if the contemporaneous values are used. By lagging the ownership variable, the analysis can capture larger effects of ownership on firm restructuring.

The signs of the elasticities can be drawn from the theory. As any own-price elasticity, the coefficient of the employment cost variable is expected to be negative. The coefficient of output, on the contrary, is expected to be positive. If the output of the firm increases, the firm will be more likely to hire more workers.

Theory on transition and on corporate governance allows us to draw hypotheses on the magnitude of the coefficients, although the predictions are not as rigurous as concerning the sign of the coefficients. First, it is expected that as transition unfolds, firms will be forced to take into account outside conditions (such as input prices or demand constraints for their products) increasingly. With the country advancing toward a market economy, price controls – concerning both input and output prices – are lifted, and subsidies decrease. These effects should increase the elasticities in absolute terms, and decrease the coefficient on the lagged level of employment. Indeed, this is shown in a number of studies. Basu, Estrin and Svejnar (1998) show that for the Czech Republic, Hungary, Slovakia and Poland the coefficient of the lagged level of employment decreased in the first 3-4 years of transition, while elasticities with respect to output and wage mostly increased. Kőrösi (1999) analyses the period of 1992 – 97 in Hungary, and finds the same pattern, although the magnitude of the change is smaller.

In another study, the same author analyses an earlier period (1987 - 96) and finds that the large change in the labor demand behavior of firms dates to 1989, when both the output and wage elasticities were high (Kőrösi, 1998).

One disadvantage of our data consists in having information only for 1993 and not for an earlier year, which would allow to take into account the effect of the whole transitional period on the change of elasticities. Because of this deficiency of the data, the change of the elasticities would probably not be very large. By 1993, transition had started for three years that, despite its low speed, probably forced firms to take into consideration outside conditions. The first price liberation took place in November 1990. The new private sector was developing during the first three years, creating competition, which was further strengthened by imports.

Concerning the effects of ownership on the labor demand of firms, the first hypothesis is that state-owned firms would react more sluggishly to price and output changes, than the privatized ones. One obvious reason for this is the presence of soft budget constraints, and there is some evidence, that this was happening in Romania, even in the second part of the decade. Djankov (1999) analyzed a so-called enterprise isolation program, which was aimed to restructure and privatize, or eventually shut down those companies, which had made the largest losses in the Romanian economy. Djankov's analysis shows that during the "isolation," enterprises received more subsidies, than before they were included in this program. Privatization should eliminate these subsidies, and motivate owners to restructure the companies. In line with these ideas, privatized firms should have larger elasticities than state owned firms.

One part of the corporate governance literature in transition emphasizes the difference in the behavior of old firms (those which already existed in socialism, or they span off from an old enterprise) and de-novo firms.[16] One would expect that, ceteris paribus, new firms are more reactive to the changes in the environment. However, several effects may alter this behavior. First, de novos were born as private and thus it is a plausible assumption that they already had an efficient size, which is not the case for old enterprises. This means that old enterprises might shed more labor, than de novos, simply because the overemployment inherited from planned economy. Second, a large part of de novos tends to be small, while this is not true for the old firms. A small firm having only a few employees may react very differently to changes in output or wages. Since labor is not totally divisible, the firm, instead of employing or hiring some of its few employees (which is a large fraction of its employment), and facing the fixed costs linked to this action, may rather react by changing the hours of work for the already existing employees. This would bias the results, since the cost of labor would fall, while the researcher does not observe changes in the number of workers. Of course, not observing the hours may introduce a bias for large firms, too, but this problem can be particularly severe for small firms.

---

[16] Konings (1997) and Bilsen and Konings (1998) analyze job creation and employment growth rate in Bulgaria, Hungary and Romania. They find that the new private sector grows faster than both state-owned and privatized firms. Laki (2001) describes the performance of new private firms for Hungary.

Before finishing the hypotheses concerning the relation of labor demand and ownership, one drawback of the study should be mentioned. A large number of the privatized firms are dominated by insiders, who control the firm through the Employees' Association. These firms may not be wage takers, thus it is hard to compare their employment behavior with investor-owned firms'. One obvious way by which I could overcome this problem is to leave them out from the analysis. However, they consist of a large fraction of the privatized firms and dropping them would greatly reduce the sample of privatized firms.

The estimation of the own-price and output elasticity of employment encounters several difficulties. First, the employment, sales and labor cost variables have measurement error. This is especially severe when the variables are used in a first difference form.[17] Given the size of the data, it is not possible to do a case-by case cleaning. One way of solving this problem is by dropping the cases, which encounter outliers. However, no good decision rule exists, by which one could establish the threshold values of the first difference of the variables, under and above which the firms should be dropped. Not having this decision rule, I run some of the regressions with least absolute deviations (LAD) method, to check whether the results change. These regressions proved that outlier problem is not very serious in this dataset.

Second, the length of the panel should be addressed. The researcher here faces the following trade-off: the longer the panel, the more information on the firms is included in the regressions, but there may be a structural change during the time period. This structural change is highly likely to happen in the volatile years of transition countries in general. In Romania, where inflation was high and volatile, this problem may be of particular importance. Thus, I follow the method used by Basu et al (1998) and Kőrösi (1999), and I use only two-year panels in this analysis. This has the advantage of allowing the usage of dynamic labor demand, and in the same time it diminishes the problem arising from the possibility of structural change.

Third, there may be large differences between gross and net adjustment costs. Net costs take into account only absolute changes of the level of employment, while net costs consider the sum of positive and negative changes (Hamermesh and Pfann, 1996). A firm that hires and fires the same amount of workers, will have zero net adjustment cost, but it will encounter substantial gross costs. Empirical evidence suggests that these costs are asymmetric, hiring costs tend to be larger than layoff costs. This indicates different adjustment costs for expanding and declining firms. If the ownership has an effect on firm performance, expansion and decline are correlated with the ownership type of the firm. To avoid this bias, separate regressions were estimated for the expanding and declining firms. This is also useful for

[17] The outlier problem is not serious in the 1993 data (changes over 90 percent in employment, real sales and real employment costs occur in less than 0.5 percent of firms). In the 1999 data changes over 90 percent of real sales and real employment costs are equal to 1.8 and 1.3 percent, respectively. Changes in employment of this magnitude is only 0.2 percent.

checking the robustness of the results.[18] An expanding firm is defined in the same way as in Tables 3 and 4: if real sales increased or remained constant from one year to another, the firms is expanding, in the contrary case I categorize it as declining. Another variable that can measure expansion is the increase of the level of employment. However, this is the dependent variable in the regressions, and grouping firms on its basis would cause endogenous selection. Sales are also included in the regressions, but only as explanatory variables. Thus, the selection bias will be less severe.

Fourth, one basic question of the paper is how the own-price and output elasticity of labor changes by ownership. However, simply including ownership dummies, as several earlier studies did, would not answer this question, only how the level of employment (or its change, depending on the right-hand side variable) varies with ownership form. The relationship between elasticity and ownership can be considered only if separate regressions are estimated for firms with different types of ownership. This diminishes the number of observations, but shows indeed directly the difference between the elasticities, not purely the effect of ownership on the level of employment, as it happens if ownership dummies are included in the regressions. Because the latter approach has its own virtue, for example, it can provide evidence on labor hoarding, or links between the ownership form of the firms and employment growth, in this paper I estimate both models, showing the relationship between employment and ownership form from two angles.

Next, labor demand elasticities vary with the employment size of the firm. Small firms probably react more often to changes of the wage level by shutting down (or getting established).[19] A very small firm (with only a few employees) cannot really change its employment level in the case of an increase in the wage level, but it will either find other cost-saving methods (changing working hours, for example), or shut down. While I use only two-year panels in this analysis, the effect of birth and death of firms is not taken into account. Not only the relationship between ownership and elasticities can be biased because of correlation between size and ownership forms, but the elasticities of small firms themselves can be downward biased, because I do not take into consideration the birth and death of firms. To decrease this bias, I dropped out from the analysis the very small firms (with 1 or 2 employees), as discussed when I presented the data.[20] Another reason for dropping these firms is that these firms are self-employed individuals, or a self-employed with one employees. Self-employed may have a different employment behavior from larger firms, as discussed in Section 2.

---

[18] This practice is not uncommon in the literature, although the purpose of separating expanding and declining firms is different from resolving the correlation with ownership. Svejnar (1999) lists the studies which separated these two types of firms.

[19] For a discussion of the birth and death of firms see Hamermesh (1993), Chapter 4.

[20] Dropping out only the very small firms does not resolve this problem completely. On the other hand, increasing the threshold under which firms were dropped out, would greatly decrease the sample, and loose many new firms.

The change of elasticity with the size of the firm imposes another difficulty. We know that firm size is correlated with ownership form: old firms are much larger on average, than de novos, and privatized firms tend to be smaller, than those in continuous state ownership. It is possible, that the estimations will not reflect the effect of ownership on elasticity, but the different sensitivity of firms with different employment size. I did not find a good method to take into account this problem, except for restricting the sample to firms of a particular size (where all ownership type are present), and rerun all regressions.

Another problem is the measurement of capital. In the standard model of cost minimization in the presence of adjustment costs, the level of labor depends on the cost of labor relative to capital, not on the cost of labor itself. However, this cost is very hard to measure, especially in a transitional country, where the old capital stock still functioning cannot be correctly evaluated.[21]

Finally, the problem of endogeneity should be addressed. Firms are likely to face an output constraint, and this is more stringent in the transitional context, when output diminished significantly. Also, the wage setting of firms may also be endogenous. The problem was treated by instrumenting output and cost per employee by the average output and cost by a composed group of industry and firm size in some regressions, and by the lagged difference in others. Initially, I intended to disaggregate the data by three- (two-) digit NACE code for 1998 (1993) and three employment-size categories. However, in this case I would have had empty cells, especially when I took into account the ownership categorization. In order to have in each cell at least several firms, I pulled together those 4-digit industry categories where only a few, or no firms existed in an industry-employment size category. Finally, there were 545 groups created for 1999 and 126 for 1993. Instruments for the lagged employment were constructed in the same way for the 1992 data. For 1998, instead of the using same year's averages, the 1997 averages were used as instruments. For the growth equations, the first difference of labor cost and sales were instrumented in the same way as for the levels in the other specification.

To correct the biases included in the regression result due to the difficulties enumerated above (or diminish it at least), he final estimation strategy is the following. Two specifications are used, one using levels and lagged values, the other differences of employment, sales and employment cost per worker. The regressions are estimated separately for each ownership category, in order to see the differences between the sensitivity of firms on prices and output changes, and pulled, with ownership dummies included, to check for possible labor hoarding and see how types of owners affect the employment size of the firm. To take into account the endogeneity of output and employment costs, instrumental variable techniques are used. When I estimate labor demand equations involving the levels of the variables, the long-term elasticities are also reported.

[21] Kőrösi (1999) found that the estimations do not change greatly if instead the relative price of labor with respect to capital the absolute price is used.

4. Estimation Results I: Comparison of 1993 and 1999 Elasticities

Table 7 presents the elasticities of comparable samples (the old firms) from 1993 and 1999. The table shows the estimation results for the whole sample, and for expanding and declining firms separately. The first finding of this analysis is that the elasticities have the signs predicted by the theory, wage elasticities are negative, and the output elasticities positive. This is mostly true for the computed long-term elasticities, too.[22] LAD estimates of the elasticities are smaller than IV estimates, showing that outliers are present in the data, but the results are qualitatively similar. Almost all estimated elasticities are higher in absolute value for the sample of declining firms, than for expanding firms, providing evidence on the higher costs of adjustment for expanding firms. The magnitude of the coefficients is comparable to the findings of other studies, as I discuss below. They show an inelastic demand for labor, except for the long-term elasticity of output, which is very close to one, indicating a more elastic behavior of employment. The regressions also show that the level of past employment has become somewhat less important in the determination of current level: the coefficients are smaller for the 1999 regressions. The wage elasticity of employment supports the hypothesis that firms became more respondent to changes in the wage rate. The own-price elasticity of labor rose in absolute value during the six years period, the difference between the 1993 and 1999 value is 0.171. This is a very robust result, verified also for expanding and declining firms separately. No such clear result can be shown, however, for output elasticities. These decreased by 0.055, when I used the whole sample. The expanding – declining grouping of firms does not clarify this relation, the output elasticity has increased only for the expanding firms. The long-time output elasticities show, that expanding firms are very sensitive to output changes, while declining firms are not.

The second set of estimations (using first differences instead of levels as the dependent variable) underline the results presented in the previous table. As Table 8 shows, the wage elasticity of labor increased in absolute value for all specifications: for the whole sample, by 0.11. For expanding and declining firms it presents the same pattern. Again, the output elasticity behaves contrary to our expectations, and it is smaller in 1999 for each sample.

In international comparison, the Romanian elasticities are in the range of the elasticities estimated for other East European countries. Comparison can be only made with the 1993 data, because few studies were done for later years. The estimated own-price and output elasticities of labor are in inelastic range of the demand, depending on the data, country and econometric method employed (Svejnar, 1999). Kőrösi (1999) finds that for Hungary in 1997 the wage elasticity is -0.86 and the output elasticity 0.52.

In conclusion, the data behave well by estimating the signs of the coefficients according to the theory, and their magnitudes being comparable to findings of other studies. Evidence on the increasing sensitivity of firms between 1993 and 1999 is mixed. Firms lost marginally from their inertia of keeping the employment level. The own-price elasticity of employment increased quite significantly: depending on the specification and type of the regression, the

[22] The exceptions are the positive long-term wage elasticities for the whole sample and declining firms in 1999.

change is between 11.3 – 42.5 percentage points. However, the data seem to reject that the output elasticity of labor increased over time.

One reason for the fuzzy picture of changes between 1993 and 1999 may be the different set of firms used in the two periods, although the type of firms is the same (for both years only old firms are included in the analysis). To check for this, I ran the same regressions for the set of surviving firms (e.g., which exist in both 1993 and 1999). Tables 9 and 10 show, that the results are not different from those obtained before, which again provide evidence on the increasing wage elasticity of labor, but no clear evidence on the higher output elasticity.

5. Estimation Results II: Types of Owners and Demand for Labor

In this section I present the estimation results on the relationship of labor elasticities and ownership types. This regressions are run on the whole sample of 1998 – 1999, which consists of all Romanian enterprises with equal or more than three employees, for which the information was available to run the dynamic labor demand regressions. As discussed in Section 2, the sample of firms is divided among three ownership types: state ownership, privatized firms and new private enterprises. The originality of the analysis consists in the fact that not only the effect of ownership on the level of employment is measured (with the use of ownership dummy variables), but the output and own-price elasticity of labor is estimated for groups of firms with different types of owners. I use lagged ownership variables because much of the privatization took place in the latter years of transition. By using one-year lag of ownership identification, the new owners have time to start restructuring, which may have an effect on the elasticities.

I first use a crude test to measure the relation between ownership and level of employment. In Tables 11 and 12 I added ownership dummies to the specification presented in Section 3. These dummies measure the effect of state ownership, privatization and new private ownership on the levels of employment and its changes. The level of employment varies substantially with ownership. The logarithmic level of employment is smaller by 5.7 percent for privatized firms, and by 13.3 percent for de novos, than for state ownership, as documented by the regression. The change of the level of employment ran on first differences of employment cost and sales and ownership dummies does not give significant differences between state-owned and privatized firms. De novos increase their employment relative to state-owned firms: this dummy variable has a coefficient of 0.159.

The next step in the estimation of the effect of ownership type on the labor demand behavior of firms consists in estimating similar regressions as in the previous section, but on samples defined by the ownership type: state, privatized or new private. The results of the Chow test, computed for all pairs of ownership (state – privatized, state – de novo, privatized

– de novo) show that there are significant structural breaks in the data.[23] The regressions corrected for endogeneity with instrumental variable techniques for these three samples separately, and for the whole population of firms are presented in Table 13.[24] First we discuss the results regarding the whole population.

The own-price and output elasticity of employment is -0.451 and 0.595, showing that the estimated elasticities are inelastic. This is not true for the long-term elasticities, which are both larger than one in absolute value. These results are comparable with the elasticities estimated by other authors in transitional countries. Kőrösi (1999) estimates the output elasticity of Hungarian firms to be 0.52 – 1.01 for the period from 1992 to 1997. His estimated wage elasticities are also higher, having an absolute value between 0.61 – 0.86 for the same period. For a sample of large and medium-sized firms Russian firms, Konings and Lehman (2001) find much smaller elasticities for 1997. The estimated own-wage elasticity is -0.061, and the output elasticity 0.173. For our population, expanding and declining firms behave very similar in terms of wage elasticity, both groups having it slightly below -0.350. The output elasticity, however, varies significantly between these two groups of firms: it is equal to 0.459 for declining firms, and 0.175 for the expanding enterprises. In other words, declining firms have the output elasticity larger by 28.4 percent, than expanding firms. Thus, we have again partial evidence that expanding firms react more sluggishly to output changes, than those firms which probably struggle for their existence.

Besides the elasticities of the whole population, Table 13 provides the ownership – elasticity relations. The first regularity is that privatized firms always have larger output elasticity than state owned firms. On the other hand, the wage elasticity is higher only once for the privatized firms. On the whole population, it is smaller for privatized firms by 2.2 percent, for expanding firms it is almost twice as high as for state-owned enterprises, and for declining firms it is again higher for state-owned firms. Thus, the disaggregation by the increase and decline of sales show, that expanding firms are more sensitive if they are privatized, while the relation is unclear for declining firms. In conclusion, although these estimations provide some evidence that firms increase their sensitivity if they are privatized, the picture is quite unclear. Rather surprisingly, the new private sector is found to be less sensitive to employment cost and output elasticities, than old firms, either state-owned or privatized.

The elasticities estimated from the difference equation, shown in Table 14, show a much clearer picture, at least with respect to the comparison of state-owned and privatized firms. The latter category always has larger elasticities, and the difference is quite large: 7.4 – 29 percent for wage elasticities, and 3.7 – 14.4 for output elasticities. De novos show again that these firms are less sensitive to changes in employment costs, but this result is not as robust as for the other specification. For the expanding firms, this elasticity is higher for de novos than

[23] The values of the test are the following. Regression on levels: 4.12 for state – privatized, 36.43 for state – de novo and 58.25 for privatized – de novo. Regression on first differences: 3.56 for state – privatized, 48.8 for state – de novo and 92.33 for privatized – de novo. The 1-percent significance value of the test is 1.70.

[24] This is verified by the Hausman test, when compare the IV regressions with the OLS.

for state-owned firms. On the other hand, however, the output elasticity of de novos is always higher than the state-owned estimates, and out of the three samples, two times it is higher than the elasticity estimated for privatized firms. Thus, this specification supports more the hypothesis made on the relationship between ownership and labor demand elasticities.

One possible effect which may introduce a bias in the estimation is the very different size distribution of the new private firms and old firms, as I discussed above, when I presented the regression framework used in this paper. To correct for this bias, at least partially, I ran the same set of regressions on a sample of firms constrained to 20 – 150 employees. The results in Tables 15 and 16 do not show, however, significant differences compared with the regressions on the whole population. Both the output and wage elasticity of privatized firms is larger in magnitude, than the corresponding values for state-owned firms, but de novos have a less elastic estimated labor demand than either state or privatized firms.

Another possible source for bias is that perhaps the data include a very heterogeneous group of firms, and this heterogeneity is not distributed equally among the groups of ownership. For example, service firms are very different from industrial firms in terms of their technology used, capital requirements and so on. I ran the same regressions on a sample restricted only to industry. The results, shown in Tables 17 and 18 demonstrate the same pattern as the previous results: contrary to the hypothesis, de novo firms are less sensitive to changes in wages and demand constraint than the old sector.

Still another effect that may include a bias in the estimations is that I do not control for dropouts of firms from, and new firms coming into the sample. This affects the three ownership groups of firms differently, since by the nature of de novos, birth and deaths of firms are more prevalent in this group.

The reason for the smaller wage and output elasticities of employment for the new private sector may be the difference in the constraints these firms face. For example, small firm's growth is many times hampered by lack of finance. This constraint may be especially severe in a transitional economy. Also, there may be different reasons for firm growth, such as better organization of the work or other factors this data do not allow to control for.

6. Estimation Results III: Regional Differences in Labor Demand

The results in this section show the variation of labor demand by regions in Romania. The country is not homogeneous, and the heterogeneity can be shown along several dimensions, such as the economic growth, rate of economic activity, rate of unemployment and so on. Using the regions defined in Section 2, first I test how different the labor demand behavior of firms is that operate in different regions. The regression methods used are similar to those used in the previous sections, but instead of running different regressions for each region, I add regional dummies and regional dummy-wage interactions. This allows testing not only the effect of regions on the labor utilization of firms, but at the same time the regional differences of the wage elasticity of labor. Lagged employment, current wage and output are instrumented by their lagged values.

Table 19 presents these results for the six regions (see Table 1). As in the previous sections, I run the regressions for all firms, and then for expanding and declining firms separately, to allow for different adjustment costs for growing and downsizing. First I added only regional dummies to the dynamic labor demand equations, to test the overall effect of regions on the labor utilization of the firms. The data show that the regions differ in this respect. Firms from Bucharest, the omitted region, tend to be larger than firms from other regions (controlling for previous year's employment, and current and previous year's wages and output, as well as for two-digit industries). Oltenia, Muntenia and Transilvania are rather similar in this respect, firms from these regions having a smaller employment size by 2.2 – 2.9 percent, than firms located in the capital of the country. The most Western region, Banat-Crisana has even smaller firms (by 3.5 percent, than Bucharest), the smallest ones being in Moldova (by 4.4 percent). Each estimated coefficient on regional dummies is statistically highly significant. The estimations on expanding and declining firms separately show that the results are not very robust: most coefficients loose their significance, only Moldova being significantly different from the other regions for expanding, and Muntenia for the declining sample.

Instead of looking at general differences among regions, it is perhaps a more interesting question to ask which are the channels through which these differences take place. First I test how much of these differences arise due to the different wage elasticities of the firms. In the second set of regression beside regional dummies, the wage is interacted with the regional dummies (the excluded category if Bucharest). By this, I disaggregate the average wage elasticity of employment by regions. Table 19 shows that regions do not differ to a great extent in this respect. First, the regional dummies loose their significance (except for Oltenia and Moldova in the declining sample), and the wage elasticities of different regions are not statistically significantly different from the Bucharest. In the whole sample, only Moldova differs from the other regions (the coefficient on the interaction of the Moldova dummy with the wage is -0.074), and the disaggregation of the sample by expanding and declining firms reveal that this difference comes from the declining firms. While in the expanding sample none of the coefficients are significant, the regression run on the declining sample shows, that in two regions (Oltenia and Moldova), firms have smaller wage elasticity in absolute terms, than in the others (by 10.7 and 8.4 percentage points, respectively). Thus, the data provide some support that declining firms' wage elasticity of labor varies by region.

So far we have described what regional differences can be found in the labor demand and wage elasticity of labor. Now we try to establish what regional factors have an effect on the employment decision of firms. The data permit to test two such factors, one being the distance from the country's Western border, the other the employment growth on the 2-digit Nace – county level (presented in Table 20 and 21, respectively). Distance from the Western border is measured as being 1 if the county has a common border with Hungary (Romania's Western neighboring country), 2 if the county has a common border with a county that has a common border with Hungary and so on.[25] Employment growth is measured simply by a

[25] The maximum distance is 7.

dummy, which is 1 if employment growth is positive in a given county-industry pair, zero otherwise.

The distance variable added to the regression does not prove to have any effect on the demand for labor. When this variable is interacted with the wage, however, it shows that firms in declining county – industries are less sensible to wage changes, the further they are from the Western border. The reason for this may be that the closer the Western border is, firms need to behave more competitively, because of a higher level of competition, a larger number of private firms, and perhaps a higher level of import penetration.

I find a positive relation between growing regions and demand for labor, when growth is not interacted with wage. This result is not robust, however, because it disappears when I interact the growth dummy with wage.

7. Conclusions

This paper compared the employment behavior of firms between two points of time in transition, and the effect of ownership on the wage and output elasticities. The signs of the estimates are consistent with the theory of labor demand, and their magnitudes are comparable to findings from other studies, both from transitional countries and mature market economies.

The pattern of changes does confirm the hypotheses only limitedly, however. First, between 1993 and 1999 only the wage elasticity of labor has increased as time passed. The output elasticity increased only for a few samples, and mostly presented a shrinking pattern. The data give significant evidence with respect of the higher sensitivity of privatized firms compared to those, which were kept continuously in state ownership. However, de novos, considered by many studies to be the engine of efficiency increase after the collapse of socialism, react more sluggishly to changes in output and the wage rate in almost all specifications.

Tables

Table 1: Regional Distribution of Firms, 1993 and 1999

Region	1992-1993		Old 1998-1999		All 1998-1999	
	Number of firms	Percent of firms	Number of firms	Percent of firms	Number of firms	Percent of firms
Bucuresti	829	14.6	1090	13.1	18032	16.2
Moldova	957	16.9	1392	16.7	18217	16.3
Muntenia	1307	23.0	2114	25.3	23664	21.2
Oltenia	550	9.7	760	9.1	8713	7.8
Crisana-Banat	705	12.4	1082	13.0	14526	13.0
Transilvania	1326	23.4	1905	22.8	28429	25.5
Total	5674	100.0	8343	100.0	111581	100.0

Source: Balance sheet data, 1993 and 1999.

Table 2: Distribution of Firms by Economic Branch, 1993 and 1999

Industry	1992-1993		Old 1998-1999		All 1998-1999	
	Number of firms	Percent of firms	Number of firms	Percent of firms	Number of firms	Percent of firms
Agriculture, fishing	1112	19.6	1811	21.7	4646	4.2
INDUSTRY, of which	2022	35.6	2591	31.1	20279	18.1
Extraction, energy, water	209	3.7	278	3.3	456	0.4
MANUFACTURING, of which	1813	31.9	2313	27.7	19823	17.7
Food	433	7.6	532	6.4	5142	4.6
Textiles	289	5.1	351	4.2	3048	2.7
Leather, footwear	49	0.9	58	0.7	746	0.7
Wood, paper	53	0.9	141	1.7	3049	2.7
Poligraphy	50	0.9	75	0.9	1047	0.9
Chemistry, plastic, rubber	138	2.4	170	2.0	1475	1.3
Ceramics	127	2.2	153	1.8	698	0.6
Metalurgy	56	1.0	77	0.9	257	0.2
Metallic construction	118	2.1	232	2.8	1633	1.5
Machine building, transport equip.	269	4.7	251	3.0	611	0.6
Electrical and optical equip.	73	1.3	95	1.1	652	0.6
Furniture other unclassified	127	2.2	123	1.5	1219	1.1
Recicling	31	0.6	55	0.7	246	0.2
CONSTRUCTION	468	8.3	677	8.1	5164	4.6
SERVICES, of which	2071	36.5	3264	39.1	81492	73.0
Trade	893	15.7	1298	15.6	57731	51.7
Hotels, catering	154	2.7	332	4.0	6074	5.4
Transportation	502	8.9	646	7.7	3552	3.2
Mail, finance, computers	288	5.1	404	4.8	2335	2.1
Other services	234	4.1	584	7.0	11800	10.6
Total	5673	100.0	8343	100.0	111581	100.0

Source: Balance sheet data, 1993 and 1999.

Table 3: Level of Employment, Employment Cost per Worker and Sales, 1992 – 1993

	Emp.	Emp. cost	Sales	Number of firms
All firms				
1992	799.0	1.27	5396.8	
	(3938.2)	(1.55)	(30915.4)	
1993	733.6	1.20	5046.1	5,674
	(4007.5)	(1.04)	(37320.5)	
Expanding firms				
1992	1287.3	1.08	7202.1	
	(4662.4)	(0.54)	(46024.7)	
1993	1207.2	1.27	10100.0	1,590
	(4288.1)	(0.49)	(66401.2)	
Declining firms				
1992	608.9	1.34	4693.9	
	(3600.1)	(1.79)	(22401.2)	
1993	549.2	1.18	3093.7	4,084
	(3877.7)	(1.18)	(14341.8)	

Source: Balance sheet data 1993.

Notes: Standard deviations in parentheses. Employment cost and sales measured in millions of 1993 Lei, deflated by 2-digit PPI for industry and GDP deflator for agriculture and services.

Table 4: Level of Employment, Employment Cost per Worker and Sales, 1998 – 1999

	Emp	Emp. cost	Sales	Number of firms
All firms				
1998	48.4	11.6	6545.7	
	(1797.1)	(13.3)	(138607.4)	
1999	41.3	11.7	6336.6	111,555
	(801.1)	(15.6)	(117331.8)	
Expanding firms				
1998	40.0	11.3	5997.8	
	(553.7)	(13.3)	(65607.6)	
1999	42.0	12.8	8473.0	45,296
	(528.1)	(17.7)	(86366.0)	
Declining firms				
1998	54.0	11.7	6920.4	
	(2286.4)	(13.2)	(171473.2)	
1999	40.7	10.9	4875.8	66,259
	(943.3)	(14.0)	(134438.5)	

Source: Balance sheet data 1999.
Employment cost and sales measured in millions of 1999 Lei, deflated by 2-digit PPI for industry and GDP deflator for agriculture and services.

Table 5: Main Type of Owner, 1998

Type of ownership	Number of firms	Percent of firms	Percent expanding	Percent declining
OLD, of which	8,343	7.5	29.4	70.6
State	3,329	3.0	23.8	76.2
Privatized	5,014	4.5	33.1	66.8
DE NOVO	103,212	92.5	41.5	58.5
Total	111,555	100.0	40.6	59.4

Source: Balance sheet data 1999.
Notes: Expanding firms are those firms which increased or kept constant their real sales between 1998-1999.

Table 6: Employment Level, Employment Cost and Sales by Type of Owner, 1999

Type of ownership	Emp.	Emp. cost	Number of firms
Old	350.1	24.3	8,343
State	400.2	25.1	3,329
Privatized	316.9	23.7	5,014
De-novo	16.3	10.7	103,212
Total	41.3	11.7	111,555

Source: Balance sheet data 1999.
Note: Employment cost and sales measured in millions of Lei, deflated by 2-digit PPI.

Table 7: Estimated Wage and Output Elasticities, 1993 and 1999, Old Firms

Dependent Variable: LogEmp				
	1993		1999	
	Coeff.	Std. Error	Coeff.	Std. Error
All firms				
Emp_{t-1}	0.936**	0.016	0.937**	0.023
$Wage_t$	-0.415**	0.084	-0.586**	0.091
$Wage_{t-1}$	0.386**	0.071	0.606**	0.085
$Sales_t$	0.523**	0.046	0.468**	0.044
$Sales_{t-1}$	-0.446**	0.046	-0.405**	0.053
LT wage elast.	-0.440		0.324	
LT output elast.	1.201		0.993	
R-sq	0.970		0.941	
N	5,673		8,341	
Expanding firms				
Emp_{t-1}	0.883**	0.029	0.850**	0.053
$Wage_t$	-0.185	0.100	-0.610**	0.102
$Wage_{t-1}$	0.149*	0.074	0.512**	0.083
$Sales_t$	0.256**	0.064	0.216**	0.071
$Sales_{t-1}$	-0.140*	0.067	-0.050	0.066
LT wage elast.	-0.308		-0.654	
LT output elast.	0.995		1.103	
R-sq	0.983		0.956	
N	1,590		2,455	
Declining firms				
Emp_{t-1}	0.905**	0.026	0.889**	0.031
$Wage_t$	-0.330**	0.103	-0.521**	0.100
$Wage_{t-1}$	0.302**	0.103	0.582**	0.099
$Sales_t$	0.695**	0.083	0.507**	0.052
$Sales_{t-1}$	-0.603**	0.080	-0.440**	0.060
LT wage elast.	-0.296		0.548	
LT output elast.	0.964		0.601	
R-sq	0.961		0.940	
N	4,083		5,886	

Source: Balance sheet data 1993 and 1999.

Notes: IV regressions. The sample consists of old firms. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. **= significant at the 1-percent level; * = significant at the 5 percent level.

Table 8: Estimated Wage and Output Elasticities, 1993 and 1999, Old Firms

Dependent Variable: Change of LogEmp				
	1993		1999	
	Coeff.	Std. Error	Coeff.	Std. Error
Change in Wage	-0.587**	0.072	-0.700**	0.094
Change in Sales	0.617**	0.044	0.535**	0.043
R-sq	0.220		0.359	
N	5,673		8,343	
Expanding firms				
Change in Wage	-0.355**	0.089	-0.602**	0.099
Change in Sales	0.293**	0.067	0.034	0.058
R-sq	0.190		0.553	
N	1,590		2,456	
Declining firms				
Change in Wage	-0.459**	0.085	-0.710**	0.104
Change in Sales	0.613**	0.052	0.492**	0.044
R-sq	0.373		0.310	
N	4,083		5,887	

Source: Balance sheet data 1993 and 1999.
Note: 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 9: Estimated Wage and Output Elasticities, 1993 and 1999, Surviving Firms

Dependent Variable: LogEmp				
	1993		1999	
	Coeff.	Std.	Coeff.	Std.
Emp_{t-1}	0.955**	0.018	0.929**	0.037
$Wage_t$	-0.407**	0.097	-0.563**	0.124
$Wage_{t-1}$	0.435**	0.077	0.519**	0.101
$Sales_t$	0.518**	0.054	0.435**	0.057
$Sales_{t-1}$	-0.459**	0.051	-0.339**	0.078
LT wage elast.	0.637		-0.618	
LT output elast.	1.326		1.347	
R-sq	0.967		0.936	

Source: Balance sheet data 1993 and 1999.
Notes: The sample consists of old firms. IV regressions. 5 regional and 19 industry dummies added. Excluded category:

Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 10: Estimated Wage and Output Elasticities, 1993 and 1999, Surviving Firms

Dependent Variable: Change of LogEmp	1993		1999	
	Coeff.	Std. Error	Coeff.	Std. Error
Change in Wage	-0.605**	0.080	-0.511**	0.108
Change in Sales	0.586**	0.049	0.499**	0.058
R-sq	0.295		0.247	

Source: Balance sheet data 1993 and 1999.
Note: Number of firms: 4829 (whole sample), 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 11: Effect of Types of Owners on the Level of Employment, 1999

	Coeff.	Std. Error
Emp. 1998	0.808**	0.003
Wage 1999	-0.244**	0.007
Wage 1998	0.191**	0.006
Sales 1999	0.278**	0.003
Sales 1998	-0.167**	0.003
Privatized	-0.057**	0.009
De novo	-0.133**	0.008
R-sq	0.913	

Source: Balance sheet data 1999.
Note: Number of firms: 111,555. IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 12: Effect of Types of Owners on the Change of Employment, 1999

	Coeff.	Std. Error
Change in Wage	-0.232**	0.007
Change in Sales	0.264**	0.003
Privatized	0.017	0.009
De novo	0.159**	0.007
R-sq	0.262	

Source: Balance sheet data 1999.

Note: Number of firms: 111,555. IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 13: Estimated Wage and Output Elasticities by Type of Owner, 1999

Dependent Variable: LogEmp								
	All firms		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Emp. 1998	0.974**	0.004	0.830**	0.042	0.940**	0.029	1.039**	0.006
Wage 1999	-0.451**	0.027	-0.575**	0.087	-0.553**	0.103	-0.369**	0.026
Wage 1998	0.411**	0.029	0.487**	0.090	0.575**	0.095	0.336**	0.027
Sales 1999	0.595**	0.015	0.404**	0.051	0.470**	0.060	0.482**	0.018
Sales 1998	-0.546**	0.016	-0.268**	0.069	-0.407**	0.067	-0.451**	0.017
LT wage elast.	-1.538		-0.519		0.370		0.856	
LT output elast.	1.885		0.801		1.049		-0.787	
R-sq	0.863		0.954		0.935		0.811	
N	111,555		3,328		5,013		103,212	
Expanding firms								
Emp. 1998	1.009**	0.007	0.921**	0.036	0.813**	0.060	1.096**	0.008
Wage 1999	-0.352**	0.028	-0.340**	0.087	-0.666**	0.097	-0.320**	0.031
Wage 1998	0.281**	0.028	0.338**	0.094	0.535**	0.075	0.277**	0.030
Sales 1999	0.175**	0.022	0.074	0.047	0.252**	0.091	0.165**	0.024
Sales 1998	-0.102**	0.024	0.009	0.042	-0.054	0.090	-0.130**	0.026
LT wage elast.	7.888		-0.016		-0.703		0.437	
LT output elast.	-8.111		1.059		1.057		-0.354	
R-sq	0.891		0.970		0.953		0.842	
N	45,312		792		1,664		42,839	
Declining firms								
Emp. 1998	0.923**	0.005	0.798**	0.052	0.891**	0.041	0.992**	0.008
Wage 1999	-0.355**	0.030	-0.587**	0.094	-0.480**	0.121	-0.309**	0.030
Wage 1998	0.340**	0.032	0.535**	0.104	0.531**	0.122	0.286**	0.032
Sales 1999	0.459**	0.016	0.459**	0.058	0.529**	0.076	0.389**	0.017
Sales 1998	-0.390**	0.015	-0.325**	0.084	-0.464**	0.078	-0.341**	0.015
LT wage elast.	-0.195		-0.256		0.463		-2.736	
LT output elast.	0.896		0.658		0.606		5.612	
R-sq	0.896		0.951		0.931		0.812	
N	66,268		2,537		3,348		60,372	

Source: Balance sheet data 1999.

Note: IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 14: Estimated Wage and Output Elasticities by Type of Owner, 1999

Dependent Variable: Change of LogEmp	All cases		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
All firms								
Change in Wage	-0.353**	0.028	-0.585**	0.079	-0.695**	0.104	-0.373**	0.029
Change in Sales	0.681**	0.014	0.409**	0.055	0.553**	0.054	0.734**	0.014
R-sq	???		0.427		0.364		???	
N	111,555		3,329		5,014		103,213	
Expanding firms								
Change in Wage	-0.486	0.028	-0.351**	0.086	-0.642**	0.096	-0.561**	0.032
Change in Sales	0.224	0.023	-0.027	0.043	0.064	0.078	0.294**	0.025
R-sq	0.008		0.315		0.603		???	
N	45,312		792		1,664		42,839	
Declining firms								
Change in Wage	-0.190**	0.028	-0.628**	0.083	-0.702**	0.122	-0.191**	0.028
Change in Sales	0.384**	0.013	0.424**	0.056	0.525**	0.060	0.429**	0.013
R-sq	0.154		0.465		0.237		0.087	
N	66,268		2,537		3,350		60,372	

Source: Balance sheet data 1999.

Note: IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 15: Estimated Wage and Output Elasticities by Type of Owner, 1999
(Medium-Sized Firms)

Dependent Variable: LogEmp	All cases		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Emp. 1998	0.856**	0.028	0.800**	0.069	0.863**	0.064	0.965**	0.046
Wage 1999	-0.103**	0.047	-0.228**	0.089	-0.314**	0.087	-0.121**	0.047
Wage 1998	0.089*	0.046	0.358**	0.099	0.346**	0.079	0.106*	0.046
Sales 1999	0.305**	0.034	0.237**	0.052	0.321**	0.046	0.258**	0.038
Sales 1998	-0.265**	0.036	-0.237**	0.054	-0.285**	0.046	-0.227**	0.039
LT wage elast.	-0.097		0.648		0.235		-0.438	
LT output elast.	0.276		-0.002		0.262		0.884	
R-sq	0.755		0.767		0.838		0.716	
N	13,388		1,294		1,915		10,179	

Source: Balance sheet data 1999.

Note: IV regressions. Sample restricted to firms with employment between 20-150. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level, * = significant at the 5 percent level

Table 16: Estimated Wage and Output Elasticities by Type of Owner, 1999
(Medium-Sized Firms)

Dependent Variable: Change of LogEmp								
	All cases		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Change in Wage	-0.026	0.049	-0.298**	0.098	-0.304**	0.085	-0.056	0.045
Change in Sales	0.386**	0.039	0.268**	0.061	0.328**	0.048	0.255**	0.041
R-sq	0.166		0.302		0.384		0.228	
N	13,388		1,294		1,915		10,179	

Source: Balance sheet data 1999

Note: IV regressions. Sample restricted to firms with employment between 20-150. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level

Table 17: Estimated Wage and Output Elasticities by Type of Owner, 1999
(Industrial Sample)

Dependent Variable: LogEmp								
	All cases		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Emp. 1998	0.915**	0.011	0.761**	0.083	0.902**	0.050	1.033**	0.016
Wage 1999	-0.400**	0.049	-0.595**	0.135	-0.510**	0.209	-0.311**	0.049
Wage 1998	0.374**	0.046	0.455**	0.124	0.675**	0.135	0.315**	0.047
Sales 1999	0.578**	0.023	0.439**	0.076	0.462**	0.104	0.389**	0.028
Sales 1998	-0.494**	0.025	-0.259**	0.111	-0.385**	0.105	-0.358**	0.027
LT wage elast.	-0.315		-0.586		1.686		-0.137	
LT output elast.	0.993		0.755		0.780		-0.922	
R-sq	0.921		0.955		0.933		0.866	
N	20,270		1,102		1,488		17,679	

Source: Balance sheet data 1999.

Note: IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 18: Estimated Wage and Output Elasticities by Type of Owner, 1999
(Industrial Sample)

Dependent Variable: Change of LogEmp								
	All cases		State		Privatized		De-novo	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Change in Wage	-0.377**	0.048	-0.563**	0.119	-0.679**	0.192	-0.322**	0.050
Change in Sales	0.598**	0.021	0.420**	0.083	0.478**	0.094	0.631**	0.021
R-sq	0.099		0.519		0.375			
N	20,270		1,102		1,488		17,679	

Source: Balance sheet data 1999.

Note: IV regressions. 5 regional and 19 industry dummies added. Excluded category: Moldova, agriculture. Robust standard errors. ** = significant at the 1-percent level.

Table 19: Regional Variation of the Demand for Labor

	All firms		Expanding firms		Declining firms	
Regions						
Muntenia	-0.029**	0.553	-0.000	0.506	-0.036*	0.588
	(0.007)	(0.327)	(0.007)	(0.827)	(0.016)	(0.308)
Oltenia	-0.022**	0.805	-0.004	0.356	-0.022	0.953*
	(0.008)	(0.444)	(0.008)	(1.020)	(0.019)	(0.454)
Moldova	-0.044**	0.635	-0.023**	0.035	-0.039	0.736*
	(0.010)	(0.341)	(0.009)	(0.846)	(0.023)	(0.295)
Transilvania	-0.028**	-0.045	0.001	-0.305	-0.033	0.132
	(0.009)	(0.308)	(0.008)	(0.777)	(0.021)	(0.278)
Banat-Crisana	-0.035**	0.014	-0.003	-0.513	-0.035	0.210
	(0.013)	(0.291)	(0.012)	(0.773)	(0.029)	(0.242)
Wage	-0.258**	-0.225**	-0.263**	-0.263**	-0.246**	-0.199**
	(0.008)	(0.023)	(0.012)	(0.054)	(0.012)	(0.018)
Region-wage int.						
Muntenia		-0.064		-0.056		-0.068
		(0.036)		(0.090)		(0.034)
Oltenia		-0.091		-0.040		-0.107*
		(0.049)		(0.112)		(0.050)
Moldova		-0.074*		-0.006		-0.084*
		(0.037)		(0.092)		(0.033)
Transilvania		0.003		0.034		-0.016
		(0.034)		(0.085)		(0.031)
Banat-Crisana		-0.004		0.056		-0.024
		(0.032)		(0.084)		(0.027)
R-sq	0.894	0.902	0.902	0.903	0.911	0.917

N	107,420	107,420	42,847	42,847	64,573	67,573

Source: Balance sheet data 1999.

Notes: Dynamic labor demand regressions. Lagged employment, wages and output instrumented by the lagged first difference. 2-digit industry dummies added. Excluded region: Bucharest. Expanding (declining) firms defined as having positive of zero (negative) output growth. Robust standard errors (in parentheses). ** = significant at the 1-percent level, * = significant at the 5-percent level.

Table 20: Effect of Distance from the Western Border on the Demand for Labor

	All firms		Expanding firms		Declining firms	
Wage	-0.257**	-0.214**	-0.263**	-0.227**	-0.245**	-0.199**
	(0.008)	(0.024)	(0.012)	(0.065)	(0.011)	(0.024)
Distance	0.003	0.096	0.000	0.075	0.003	0.103*
	(0.002)	(0.049)	(0.001)	(0.130)	(0.003)	(0.047)
Distance-wage int.		-0.010		-0.008		-0.011*
		(0.005)		(0.014)		(0.005)
R-sq	0.905	0.893	0.902	0.903	0.911	0.914
N	107,420	107,420	42,847	42,847	64,573	67,573

Source: Balance sheet data 1999.

Notes: Dynamic labor demand regressions. Lagged employment, wages and output instrumented by the lagged first difference. 2-digit industry dummies added. Excluded region: Bucharest. Expanding (declining) firms defined as having positive of zero (negative) output growth. Robust standard errors (in parentheses). ** = significant at the 1-percent level, * = significant at the 5-percent level.

Table 21: Effect of Employment Growth on the Demand for Labor

	All firms		Expanding firms		Declining firms	
Wage	-0.257**	-0.260**	-0.263**	-0.283**	-0.245**	-0.239**
	(0.008)	(0.010)	(0.012)	(0.022)	(0.011)	(0.013)
Emp. Grow	0.032**	-0.044	0.027**	-0.455	0.028**	0.176
	(0.004)	(0.213)	(0.004)	(0.499)	(0.007)	(0.235)
Emp. Grow. - wage int.		0.008		0.053		-0.017
		(0.024)		(0.055)		(0.027)
R-sq	0.905	0.893	0.902	0.903	0.911	0.914
N	107,420	107,420	42,847	42,847	64,573	67,573

Source: Balance sheet data 1999.

Notes: Dynamic labor demand regressions. Lagged employment, wages and output instrumented by the lagged first difference. 2-digit industry dummies added. Excluded region: Bucharest. Expanding (declining) firms defined as having positive of zero (negative) output growth. Robust standard errors (in parentheses). ** = significant at the 1-percent level, * = significant at the 5-percent level.

Can You Teach Old Dogs New Tricks? On Complementarity of Human Capital and Incentives

Jana P. Fidrmuc*

Jan Fidrmuc**

March 2004

Abstract:

Contract theory suggests that firm performance can be improved by appointing new managers and/or by introducing better incentives. Furthermore, these two changes should be complementary – their effects enforce each other. Using data on privatized firms in the Czech Republic, this paper provides empirical evidence that introduction of new managers and incentives are indeed complementary. Moreover, it shows that ignoring their complementarity may lead to the wrong conclusion that the effect of incentives is weak. Managerial incentives seem to work only after new post-privatization managers are introduced.

Keywords: Contract Theory, Incentives, Managerial Change, Privatization, Restructuring.
JEL Classification Numbers: G34, L29, M51, P31

---

* Department of Financial Management and ERIM, Erasmus University Rotterdam, Bur. Oudlaan 50, P.O.Box 1738, 3000 DR Rotterdam, Netherlands. E-mail: j.fidrmuc@fbk.eur.nl; Phone: +31-10-408-2319; Fax: +31-13-408-9017.

** ECARES, Université Libre de Bruxelles, Avenue Franklin D. Roosevelt 50, CP 114, 1050 Brussels, Belgium, E-mail: JFidrmuc@ulb.ac.be, Phone: +32-2-650-4462, Fax: +32-2-650-3369.

1 Introduction

This paper analyzes two instruments – appointment of new managers and introduction of incentives – that owners can use to improve firm performance. In general, firm performance depends on both manager's ability and his efforts (Laffont and Tirole, 1986). To induce the manager to increase his effort, the owner (the principal) can introduce incentives such as performance-dependent pay/bonuses, promotion/reappointment if performance is good and demotion/dismissal if it is bad. Thus, firm performance reflects both the manager's ability and the nature of incentives in place. However, McAfee and McMillan (1987) argue that these two instruments are in fact complementary so that new managers and better incentives enforce each other. Or in other words, competent managers respond more strongly to incentives than incompetent ones.

The complementarity of human capital and incentives plays an especially important role during the post-communist transition. "Reforms are interlinked. The various incentive mechanisms that constitute a market system can complement or substitute for each other. … [S]tronger incentives and better managers are complementary changes. They might be so complementary that neither change would be effective by itself. Some managers might be so inadequate as to be unable to respond to new incentives, no matter how well designed. Good managers might not work well under badly structured incentives. If so, restructuring is effective only if both changes – new managers and new incentives – are introduced together." (McMillan, 1997, p.210 and 215).

This paper provides empirical evidence on the complementarity of human capital and incentives introduced by new owners after the privatization of state-owned enterprises in a transition country (the Czech Republic). We focus on negative incentives embodied in the relationship between managerial tenure and past firm performance.[1] The complementarity of human capital and incentives is underlined by the fact that managerial incentives work only after the incumbent pre-privatization manager is replaced by a new, more competent manager. In particular, our analysis shows that past performance is not related with the probability of the first

[1] For established private firms in a market economy, poor past performance is shown to increase the probability that a manager is fired (see, for example, Weisbach, 1988, and Warner et al., 1988, Denis and Denis, 1995, for a review of empirical papers see Hermalin and Weisbach, 2003, and John and Senbet, 1998).

post-privatization managerial change. In contrast, however, poor past performance significantly increases the probability of manager's dismissal for the second and subsequent changes of the top manager (in firms where the new private owners had already introduced a new manager). This indicates that the new incentives kick in only after the first post-privatization managerial change.

Our main contribution is that, focusing on complementarity, we provide new evidence that may help to resolve the dispute over the relative roles of human capital and incentives in firm restructuring. As managerial incompetence and lack of motivation constitute the two important sources of inefficiency of state firms in a planned economy, restructuring can be achieved by the introduction of stronger incentives or appointment of more capable managers (McMillan, 1997 and Roland, 2000). But which one is the more effective? So far, empirical evidence on restructuring in transition inclines towards the conclusion that the new human capital is more important than incentives.[2] Often, new managers are associated with better firm performance whereas the evidence for incentives is weak. Our results indicate that these two tools are strongly complementary so that one change does not bring results without the other. Omission of the complementarity feature may lead to the misleading conclusion that better incentives do not work and that new managers are more important.

The theory predicts that complementarity of people and incentives is a general economic phenomenon (McAfee and McMillan, 1987, and Laffont and Tirole, 1986). Therefore, we believe that our results that the new managers and incentives are complements, although obtained in the specific conditions of a transition economy, could be generalized for broad economic conditions. Nevertheless, we would like to note that transition provides a unique experimental setting for our test. In transition, all existing state-owned enterprises experience a simultaneous shock and are, therefore, induced to restructure at the same point in time. They are all generally inefficient, in need of better managers and better incentives, and face the same general economic conditions. This provides us with uniquely suitable empirical setting and simplifies the analysis.

The article proceeds as follows. Section 2 provides the descriptive statistics. Section 3 shows basic univariate results supporting complementarity of incentives and human capital. Even though the full sample results indicate weak incentives in the privatized firms, a more detailed

[2] See, for example, Barberis et al. (1996), Claessens and Djankov (1999), Djankov and Murrell (2002), Warzynski (2003) and Fidrmuc and Fidrmuc (2003).

analysis reveals that after new post-privatization managers are introduced, incentives start to work. In Section 4, regression analysis confirms this result. Section 5 concludes.

2 Data

We base our analysis on a panel of 923 non-financial firms privatized during the two waves of voucher privatization in the Czech Republic.[3] The data span the period from 1993, the year when ownership rights were transferred after the first wave of voucher privatization to 1998. It is important to note that we study the former state owned enterprises from the moment they were privatized and, so, we are able to analyze all changes introduced by the new private owners. We concentrate on voucher-privatized companies, as the voucher privatization constitutes the major privatization program in the Czech Republic with a fraction of around 50 percent of total book value of assets privatized in the large-scale privatization.[4] Moreover, as all voucher-privatized firms were listed on a stock exchange immediately after the privatization, data coverage and reliability for these firms is relatively good.

The basic criterion for a firm to be included in our analysis is that information on its sales, fixed assets, number of employees, and costs of goods sold has to be available for at least 3 years. The data set contains also various non-economic information about the firms. Importantly, we are able to identify the firm's managing director and the date he or she assumed this position.[5] Unfortunately, the data have some limitation too. We have no information on the managing director's professional qualifications (education, experience, and employment history within and outside the firm) or the reasons for the managing director's departure. Therefore, while we can observe changes of the managing director, we do not know whether the previous managing director was dismissed or whether he left for other reasons (such as health problems, retirement or death). Yet, as the descriptive statistics discussed in greater detail below show, changes within the top management are so frequent (ranging between 10 and 25 percent per year) that health and demographics could only account for a small fraction of them.[6] Moreover, including managerial

[3] The data were purchased from Aspekt Kilcullen s.r.o. (http://www.aspekt.cz/).

[4] For more details on the Czech privatization program see Fidrmuc et al. (2002).

[5] In the Czech Republic, the managing director is usually referred to as the general director or general managing director.

[6] It is also not very probable that these high replacement rates were a consequence of low turnover in the pre-privatization period. In fact, Claessens and Djankov (1999) report that at least 50 percent of voucher-privatized firms in their sample replaced their managing director already in the pre-privatization period.

change that is not forced can only weaken our results. So, in case we find a significant association between past performance and the change of the managing director, our conclusion for presence of managerial incentives should be on the safe side.

We are interested in the relationship between past firm performance and the probability of managerial change. Proper managerial incentives should imply that managers of poorly performing firms would be at a greater risk of dismissal. We use two measures of performance: labor productivity (total sales over total number of employees) and gross profit per employee (total sales minus cost of sales over total number of employees). Table 1 shows the summary statistics. To adjust for inflation, values of all the variables (except for number of employees and MD change) are reported in constant prices of 1993. As Panel A shows, the data set includes a couple of outliers that may bias our results. Therefore, we decided to exclude all firm-year observations below the 5^{th} percentile and above the 95^{th} percentile for total sales. At the same time, we exclude observations with zero costs of goods sold. The statistics for the trimmed data set are shown in Panel B of Table 1.[7] The exclusion of observations with very small or very large total sales decreases the total number of observations from 4109 to 3699, number of firms from 923 to 866 and moves the mean values a lot closer to the median values for all variables. Total sales still cover a wide range of values – from CZK 23 million to CZK 3,385 million.

Panel B shows that an average firm produces CZK 424 million of total sales per year (in constant prices of 1993) and uses CZK 320 million for the costs of goods sold. Thus, the average inflation adjusted gross profit per year is CZK 104 million. On average, costs of goods sold constitute three quarters of total sales, leaving 25 percent for the gross profit margin. About 3 percent of the observations have a negative gross profit margin. The two efficiency measures (labor productivity and gross profit per employee) indicate that one employee on average produces CZK 531 thousand of total sales and CZK 151 thousand of gross profit margin per year. Moreover, Panel C of Table 1 shows that labor productivity (in constant prices of 1993) increases from 1993 till 1997. Gross profit per employee reaches a minimal value in 1995 and increases thereafter.

[7] The data we work with in the analysis below is not inflation adjusted as this aspect of the data is taken care of by year-by-year industry adjustment and time dummies. Only the statistics in Table 1 are reported in constant prices so that the summary statistics give a reasonable picture of the development over time. This disparity, however, causes that the value of total sales for the 5^{th} and 95^{th} percentiles in Panel A of Table 1 do not correspond to the minimum and maximum for total sales in Panel B. They do correspond to each other for our non-inflation adjusted data.

Our main focus is the pattern of managerial turnover in the post-privatization period. Compared to available estimates of 7.8 percent - 9.3 percent for established public U.S. firms (Claessens and Djankov, 2000) and 11.8 percent for U.K. firms (Cragg and Dyck, 1999), turnover of the managing director in the Czech Republic seems relatively high. In our sample, the average turnover of the managing director is 16.8 percent per year (the last row in Panel B). Panel C indicates that the turnover is somewhat lower immediately after the transfer of ownership, then it increases with a peak of 25.2 percent in 1997. In total, as much as 52 percent (450 out of 866) of firms replaced their managing director over the 6 years since the privatization. In most cases (313 firms), the managing director was replaced only once, in 137 firms twice or more times. On average, the first change of the managing director took place in the forth year after the transfer of ownership in firms that replaced their managing director at least once. Similarly, high top managerial turnover is reported for U.K. newly privatized firms (15.4 percent, Cragg and Dyck, 1999) and for East German privatized companies (around 20 percent, Dyck, 1997).

3 Univariate results

First, showing univariate results, we provide some intuition for the relationship between past performance and managerial change and indicate that these two changes are complementary. Figure 1 compares average performance (both for labor productivity and gross profit per employee) for two groups of firm-year observations: those without any managing-director change versus observations with a change of the director. The values of the performance variables span over the period of 1993 to 1997. They are year-by-year industry adjusted (dividing by the industry average in the given year) and are lagged by one year relative to the managerial change.

If proper incentives were in place, we would expect to see a negative relationship between managerial change and past firm performance. Poorly performing mangers should be at a greater risk of dismissal. Hence, the average lagged performance for firm-year observations without managerial change should be higher compared to those with a manager change. Figure 1 indicates that this is not the case for labor productivity: the average lagged labor productivity is higher in the years during which managers were replaced. The difference is, however, not statistically significant. For gross profit per employee, the difference is of the expected sign but is not significant either. Thus, this simple test indicates that poor past performance is not associated

with the managing director change. It does not provide evidence for the existence of proper (negative) managerial incentives in the privatized firms.

This lack of evidence for the presence of negative incentives may be due to the complementarity of new managers and incentives. If new managers and incentives are strong complements, they work only if both have been introduced. Thus, in Figures 2 and 3, we partition our sample into five groups. First, we distinguish firms without any change of the managing director until 1998 (when our data ends). This is represented by the first column. Then, for the firms with at least one managerial change, we present average performance figures for the years before the first post-privatization managerial change (second column), the year of the first change (third column), all observations without a change of the managing director that follow after the first change (fourth column) and, finally, years during which the second and following managerial changes took place (fifth column). Again, performance is measured in the year preceding the managerial change.

Figure 2 depicts average values of labor productivity for the five groups. It shows that labor productivity is, on average, the lowest in the first column – the firms that did not experience any managerial change. The first two columns compare (industry adjusted) labor productivity before any change of the managing director takes place in firms where such a change follows in the short future versus firms where it does not occur (within our sample). In the presence of incentives, it is natural to expect that firms that would experience a managerial change in the future should perform worse than the firms where the manager does not change. However, our data do not provide evidence for such a relationship. The firms that never change their managing director underperform those that experience a change. The difference of 8.1 percent is significant at 5-percent level. The managerial incentives in these firms thus seem to be weak.

Now, let's look at the difference in performance between the second and third column that illustrates the performance-turnover relationship for the first change of the managing director. Again, we expect that the average performance in the third column (with managerial change) should be lower than the average performance in the no-change years in the second column. However, the average labor productivity in the third column is in fact higher, although, the difference of 2.4 percent is not statistically significant. Still, this indicates that the manager tends to be changed when firm past performance is relatively better. In contrast, the last two columns in Figure 2 indicate a relationship in the expected direction. The second (and subsequent) change of

the managing director is associated with relatively low labor productivity in the preceding fiscal year. Even though the difference of 9 percent is not statistically significant, this result indicates that after the new post-privatization manager is introduced, proper incentives are starting to work. The new manager thus has a higher probability that he is fired if he performs relatively poorly.

To summarize, the simple analysis provided in Figure 2 (for labor productivity) shows three important facts. First, firms without a managerial change have on average lower labor productivity. Their managers are not fired even though they perform poorly. Second, the first post-privatization managerial change is not associated with lower labor productivity in the previous fiscal year. This shows that the pre-privatization incumbent managers are not punished for their poor performance, they are simply replaced by new managers. In contrast, however, our third result indicates that the new post-privatization managers tend to be punished by replacement in case they perform poorly. These three findings and the results in Figure 1 indicate that managerial incentives seem to work only after the privatized firms introduce new managers. Thus, it seems that new managers and incentives are strong complements.

Figure 3 reports analogous figures for gross profit per employee. The general pattern is similar to that in Figure 2. Firms without a managerial change perform relatively poorly. However, now the difference between the first and the second column is not significant. The difference between the second and the third columns is in the expected direction. It seems that the pre-privatization managers are replaced when they perform poorly. Nonetheless, the difference of 5.9 percent is not significant. However, the difference of 18.5 percent between the last two columns is very large and significant at the 5 percent level. On the whole, Figure 3 again supports the notion that incentives get stronger after new managers are in place in the privatized firms.

4 Regression results

To obtain a more precise insight on the relationship between incentives and human capital in privatized firms, we now turn to regression analysis of the relationship between managerial turnover and performance. We use conditional fixed-effects logit. The dependent variable is a dummy that measures changes of the managing director: it is equal to one if the managing director is changed in the given firm-year and equal to zero otherwise. As we are interested in how past performance can predict probability of the managing-director change, the managerial change dummy is regressed on lagged firm performance. Again, we use two performance

measures: labor productivity and gross profit per employee. Moreover, we control for firm size, variation in time and (random) firm effects.

First, we test for the presence of managerial incentives using the full sample. The results in Panel A of Table 2 confirm the univariate results from Figure 1. Neither labor productivity nor gross profit per employee are significantly correlated with managerial change. It seems that the managing director is replaced regardless of firm performance and managerial change does not appear to have a disciplining role.

To find out whether stronger incentives are in place once the new post-privatization managers are introduced in the firms, the regressions in Panel B of Table 2 are augmented by an interaction term between the performance variable and a dummy distinguishing observations after the first managerial change. Constructed in this way, the interaction variable measures the change in the relationship between performance and the probability of managerial replacement after the first post-privatization change of the managing director. The coefficient obtained for the performance variable alone, consequently, measures the effect of performance on the probability of managerial change until the first post-privatization change. Thus, we divide the total effect of past performance on CEO turnover into two parts: the effect prior to and including the year of the first post-privatization change of the managing director, and the effect afterwards. The notion of complementarity implies that incentives should be strengthened after the appointment of new managers. Thus, we expect the performance effect to be more negative in the second part of the sample.

Panel B of Table 2 suggests that new managers and incentives are indeed strongly complementary. Model 3 documents that labor productivity is positively and significantly (at the 5-percent level) correlated with the probability of managerial replacement for the first post-privatization change of the managing director. The impact of performance thus goes contrary to expectations: managers of poorly performing firms are less likely to be dismissed while those in prospering companies are at a greater risk of replacement. This indicates that CEO turnover does not serve as a disciplining tool. The interaction term, however, is negative, significant at 1-percent level and large. Hence, the performance-turnover relationship changes from positive to negative after the first post-privatization manager is introduced. The overall performance effect after the first change of the managing director (reported in the last row of Panel B) is negative and significant at the 1-percent level. Results for gross profit per employee in Model 4 are almost

identical. So, after the new private owners introduce new managers, managerial incentives seem to get stronger. Again, this finding suggests complementarity between the introduction of the new human capital and incentives in the privatized firms.

In short, our results show that firms that do not change their top managers after privatization perform poorly. Moreover, the results show quite convincingly that managerial incentives – at least the disciplining role of CEO turnover – strengthen following the introduction of new managers. We believe this evidence shows that new human capital and incentives are strongly complementary changes.

5 Conclusions

In this paper, we provide empirical evidence on the phenomenon of complementarity of new managers and incentives. According to the contract theory (for example models by Laffont and Tirole, 1986, and McAfee and McMillan, 1987), firm performance is a function of manager's ability and his effort. Therefore, new managers and new incentives are the two changes that should lead to improved firm performance. An important feature of the two changes, however, is that they work as complements and reinforce each other. The effect of either change is stronger if the other change is introduced simultaneously.

This paper analyzes the relationship between the replacement of the managing director and past firm performance in privatized firms in the Czech Republic. Our data set covers the firms from the moment they were privatized in 1993 (or 1994 for firms in the second wave of privatization) until 1998. We show that the turnover-performance relationship strengthens once the new post-privatization managing director is introduced. Before this change, the relationship between past performance and managerial turnover is positive t indicating weak disciplining role of CEO replacements. After the change, however, past firm performance turns to be negatively and significantly correlated with the probability of managerial change. Moreover, our data show that firms without a change of the managing director over the 6 years after the privatization perform worse than the firms that replaced their managing directors. We interpret these findings as compelling evidence that the appointment of new managers and introduction of incentives are strong complementary changes. Managerial replacements seem not to work as disciplinary tools (negative incentives) before the new manager is introduced. Thereafter, however, the managers who perform poorly are at a higher risk of replacement.

Empirical studies on human capital and incentives in transition tend to conclude that the new human capital is more important than new incentives. Our analysis suggests that the failure of previous studies to find evidence on the impact of new managerial incentives may be a direct consequence of the strong complementarity between the two changes. In particular, we find that incentives do not appear to take effect under the incumbent pre-privatization management and only kick in once the management has been replaced. Thus, taking complementarity of new managers and new incentives into account may lead to different conclusions.

Our findings have also important policy implications for transition countries. We confirm that reforms are interlinked. In the case of firm restructuring, firm owners should be aware that both new human capital and incentives are essential for performance improvements. They should look for new, more able managers, but at the same time introduce sound incentives as either change implemented by itself may lead to very poor results.

References

Barberis, Nicholas, Maxim Boycko, Andrei Shleifer and Natalia Tsukanova, 1996, 'How Does Privatization Work? Evidence from the Russian Shops,' Journal of Political Economy 104 (4), 764-790.

Claessens, Stijn, and Simeon Djankov, 1999, 'Enterprise Performance and Management Turnover in the Czech Republic,' European Economic Review 43, 1115-1124.

Claessens, Stijn, and Simeon Djankov, 2000, 'Manager Incentives and Turnover of Managers: Evidence from the Czech Republic,' in E. Rosenbaum, F. Bönker, and H. J. Wagener (eds.), Privatization, Corporate Governance and the Emergence of Markets, Macmillan Press Ltd, UK, 171-188.

Cragg, Michael Ian and I.J. Alexander Dyck, 1999. 'Management Control and Privatization in the United Kingdom,' RAND Journal of Economics 30 (3), 475-497.

Denis, David J., and Diane K. Denis, 1995, 'Performance Changes Following Top Management Dismissals,' Journal of Finance 50 (4), 1029-1057.

Djankov, Simeon, Murrell, Peter, 2002. Enterprise Restructuring in Transition: A Quantitative Survey. Journal of Economic Literature 40, 739-792.

Dyck, I.J. Alexander, 1997, 'Privatization in Easten Germany: Management Selection and Economic Transition,' American Economic Review 87 (4), 565-597.

Fidrmuc, Jan, Jarko Fidrmuc and Julius Horvath, 2002, 'Visegrad Economies: Growth Experience and Prospects,' Global Development Network: Global Research Project, mimeo, available at http://www.cerge.cuni.cz/pdf/gdn/grp_final_visegrad.pdf.

Fidrmuc, Jana P. and Jan Fidrmuc, 2003, 'Fire the Manager to Improve Performance? Managerial Turnover and Incentives after Privatization in the Czech Republic,' mimeo, Erasmus University Rotterdam.

Hermalin, Benjamin E. and Michael S. Weisbach, 2003, 'Board of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature,' FRBNY Economic Policy Review, 7-26.

John, Kose, and Lemma W. Senbet, 1998, "Corporate Governance and Board Effectiveness,' Journal of Banking and Finance 22, 371-403.

Laffont, Jean-Jaques and Jean Tirole, 1986, 'Using cost observation to regulate Firms,' Journal of Political Economy 94, 614-641.

McAfee, R. Preston and John McMillan, 1987, 'Competition for Agency Contracts,' RAND Journal of Economics 18 (Summer), 296-307.

McMillan, John, 1997, 'Markets in Transition,' in David M. Kreps and Kenneth F. Wallis (eds.), Advances in Economics and Econometrics: Theory and Implications, Cambridge University Press, Cambridge, 210-239.

Roland, Gerard, 2000, 'Transition and Economics: Politics, Markets, and Firms,' The MIT Press, Cambridge, Massachusetts.

Warner, Jerold B., Ross L. Watts, and Karen H. Wruck, 1988, 'Stock Prices and Top Management Changes,' Journal of Financial Economics 20, 461-492.

Warzynski, Frederic, 2003, 'Managerial Change, Competition, and Privatization in Ukraine,' Journal of Comparative Economics 31, 297-314.

Weisbach, Michael S., 1988, 'Outside Directors and CEO Turnover,' Journal of Financial Economics 20, 431-460.

TABLE 1: DESCRIPTIVE STATISTICS

PANEL A (4109 observations)	mean	minimum	5th perc.	median	95th perc.	max
Total sales	808,304	411	26,110	220,694	3,190,962	54,800,000
Costs of goods sold	593,379	0	13,344	155,311	2,548,257	29,500,000
Gross profit margin	212,072	-1,922,689	1,711	52,090	646,722	28,900,000
Number of employees	833	4	71	320	2,593	49,701
Labor productivity	1,021	2	208	559	3,234	63,823
Gross profit per employee	202	-4,148	8	156	573	2,990
Change of the managing director	0.165	0	0	0	1	1

PANEL B (3699 observations)	mean	minimum	5th perc.	median	95th perc.	max
Total sales	423,947	22,925	45,549	216,143	1,629,157	3,384,868
Costs of goods sold	320,371	4,696	26,512	151,372	1,202,408	4,608,437
Gross profit margin	103,575	-1,922,689	4,582	50,641	418,044	1,589,126
Number of employees	622	11	90	320	2,120	24,247
Labor productivity	896	10	231	531	2,721	23,353
Gross profit per employee	186	-4,148	24	151	485	1,982
Change of the managing director	0.168	0	0	0	1	1

PANEL C (3699 observations)		1993	1994	1995	1996	1997	1998
Number of firms		459	815	822	814	759	
Labor productivity:	mean	849	853	884	921	957	
	median	495	502	524	548	579	
	st. dev.	952	936	917	1,206	1,037	
Gross profit per empl.:	mean	181	184	174	177	213	
	median	147	148	148	147	168	
	st. dev.	209	195	245	222	227	
Change of the MD:	mean		10.9%	9.8%	17.3%	25.2%	18.2%
	median		0	0	0	0	0
	st. dev.		31.2%	29.8%	37.8%	43.4%	38.6%

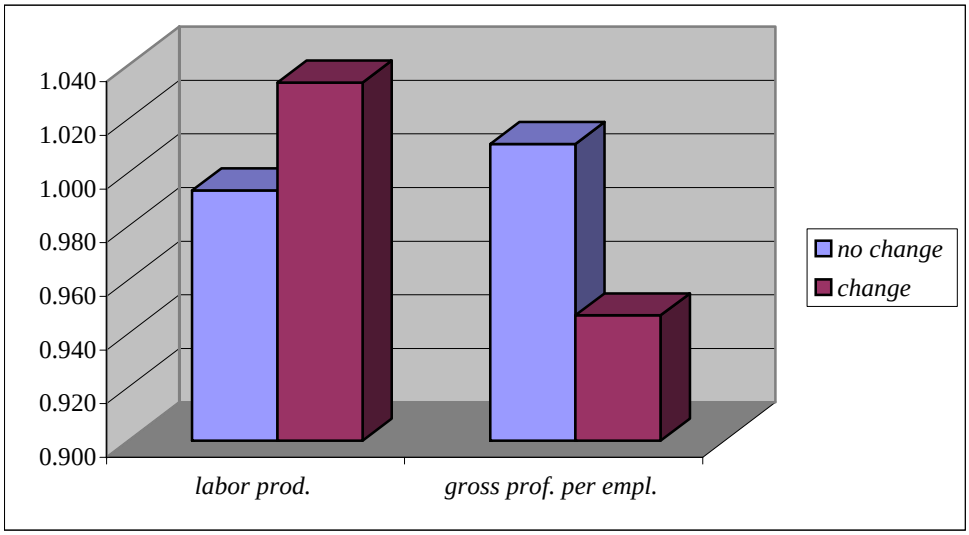
Notes: All variables (except *number of employees* and *change of the managing director*) are in constant prices of 1993. *Labor productivity* is defined as the total sales over the total number of employees. *Gross profit per employee* is defined as the total sales less the costs of goods sold over the total number of employees.

TABLE 2: THE CEO TURNOVER / PAST PERFORMANCE RELATIONSHIP

	labor productivity			*gross prof. per employee*		
Panel A: Pooled regressions	**Model 1**			**Model 2**		
	coef.	s.e.	sign	coef.	s.e.	sign
Performance (lagged)	-0.126	0.141		-0.039	0.057	
Size (lagged)	-0.125	0.149		-0.125	0.150	
Fixed effects	yes			yes		
Year dummies	yes			yes		
# of observations	3699			3699		
# of firms	866			866		
χ^2	94.97	***		94.61	***	
Panel B: First versus subsequent changes	**Model 3**			**Model 4**		
	coef.	s.e.	sign	coef.	s.e.	sign
Performance (lagged)	0.379	0.176	**	0.267	0.103	***
Performance * After the first change	-2.324	0.195	***	-1.321	0.143	***
Size (lagged)	0.041	0.189		-0.021	0.174	
Fixed effects	yes			yes		
Year dummies	yes			yes		
# of observations	3699			3699		
# of firms	866			866		
χ^2	314.87	***		211.88	***	
Test of joint significance:	coef.	χ^2	sign.	coef.	χ^2	sign.
perf. + perf. * after 1st change	-2.703	65.19	***	-1.588	48.06	***

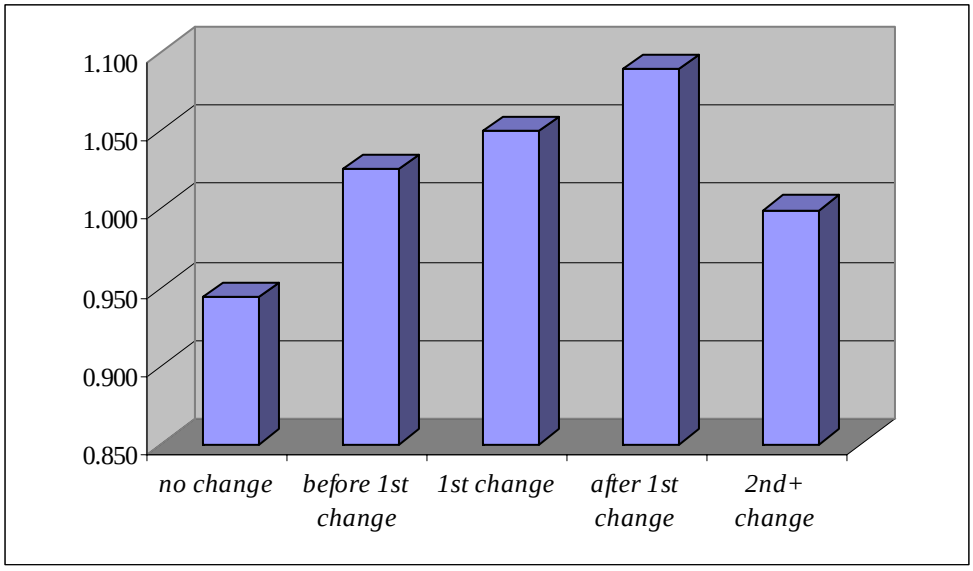
Notes: Estimated with conditional fixed-effects logit. The dependent variable is a binary variable equal to one if the managing director is changed in the respective year. *Labor productivity* is defined as the total sales over the total number of employees. *Gross profit per employee* is defined as the total sales less the costs of goods sold over the total number of employees. *Size* stands for the fixed assets. *After the first change* in Panel B is a dummy variable that is equal to one for all firm-years following the first managing director change in a given firm. The interaction term *Performance * After the first change* measures the additional effect of performance in the firm-years following the first managing-director change. All variables are industry adjusted. The test of joint significance measures the total performance effect in the firms-years following the first managing-director change. *, **, *** denote significance at the 10%, 5% and 1% level, respectively.

FIGURE 1: PAST PERFORMANCE: THE POOLED INCENTIVE EFFECT



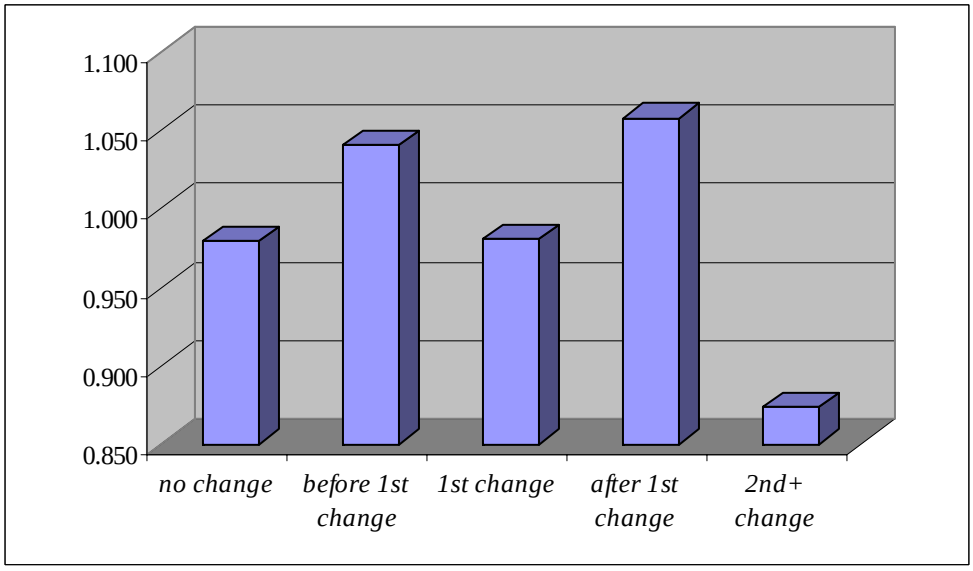
Notes: This figure shows the overall relationship between past performance in firm-years with a managing director change versus firm- years without any MD change over 1994-98 for two performance measures: labor productivity and gross profit margin per employee. Both measures are industry adjusted (divided by industry average in each year). The indicated differences are not statistically significant. The number of observations is 3,082 and 617 for the 'no change' and 'change' groups, respectively.

FIGURE 2: NEW MANAGERS AND INCENTIVES: LABOR PRODUCTIVITY



Notes: This figure shows labor productivity (industry adjusted) for five different groups of firm-year observations. *No change* (1st column) covers all firms (and then years) with no managing director change over 1994-98. It includes 1,684 observations. *Before 1st change* (2nd column with 798 observations) covers all firm-years before the first change of the managing director after the privatization. *1st change* (3rd column with 420 observations) includes all firm-year observations with the first managing director change in the post-privatization period. The last two columns include only firm-year observations following the first change of the managing director. *After 1st change* (4th column with 600 observations) covers all firm-year observations without a MD change that followed after the first change of the MD. *2nd+ change* (the last column, 197 observations) includes the firm-year observations with a MD change that was not the first one after the privatization.

FIGURE 3: NEW MANAGERS AND INCENTIVES: GROSS PROFIT PER EMPLOYEE



Notes: This figure shows gross profit per employee (industry adjusted) for five different groups of firm-year observations. The groups ate as defined in Figure 2.

Which entrepreneurs expect to expand their businesses?
Evidence from survey data in Lithuania.

Ruta Aidis [♠] ***and Tomasz Mickiewicz*** [♣]

[♠] SSEES at University College London, Senate House, Malet St., London WC1E 7HU, U.K.
E-Mail: *R.Aidis@ssees.ucl.ac.uk*

[♣] SSEES at University College London, Senate House, Malet St., London WC1E 7HU, U.K.
E-Mail: *T.Mickiewicz@ssees.ucl.ac.uk*

Abstract

This paper presents an empirical study based on a survey of 399 small and medium size companies in Lithuania. Applying bivariate and ordered probit estimators, we investigate why some business owners intend to expand their firms, while others do not. Our main findings are the following. The characteristics of the owners matter. Those with higher education and 'learning by doing' attributes either through previous job experience or additional entrepreneurial experience are more likely to expand their businesses. In addition, the model implications include that the intentions to expand are correlated with exporting and with size of the enterprise: medium and small size companies are more likely to grow than micro enterprises and self-employed entrepreneurs. We also analyse the link between the main perceptions of constraints to business activities and growth expectations and find that the factors, which are perceived as main business barriers, are not necessary those, which are associated with low growth expectations. In particular, perceptions of both corruption and of inadequate tax systems are main barriers to growth.

Keywords: Entrepreneurship, SME, Employment, Human Capital, Taxes, Corruption

JEL classification: D21, L21, P37

This research was supported under the European Commission 5th Framework Programme in the ACCESSLAB project

Introduction

For most countries in Central and Eastern Europe, the transition process has been well underway for over fourteen years. In May 2004, ten of these countries joined the European Union On the surface, these countries have developed a private sector that in terms of size and economic importance reflects the levels observed in advanced Western economies. However, a closer look shows that the composition of the private sector has been different. Whereas in transition countries most of the private sector emerged due to a shift of resources from state to private hands (through privatisation), in advanced western countries, the private sector emerged through the development of privately-owned enterprises (Pissarides 2004). Regardless of this difference, the development of a healthy small and medium-sized enterprise (SME) sector is of special importance in transition countries not only for their wealth and job generation possibilities, but also for their ability to foster innovation, experimentation and adaptation in the business environment.

In this paper, we focus on the factors affecting enterprise growth in the transition country context. We use a data sample based on a survey of 399 SME owners in Lithuania. Lithuania provides an excellent example of a transition country that has successfully transformed its status from a centrally planned Soviet republic to a fast-growing, sovereign, market-oriented and democratic EU member state. We are specifically interested in the factors affecting two types of growth expectations: intention to increase the number of employees and intention to increase business turnover. Though growth expectations might be viewed as a subjective assessment, a number of authors have indicated that business growth is at least partially determined by the entrepreneur's motivations and intentions for the business (Bird, 1988; Davidsson, 1991; Kolvereid, 1992; Cooper, 1993; Herron and Robinson, 1993; Cliff, 1998; Wiklund et al., 2003). In addition, by asking entrepreneurs about their expectations about the future, we alleviate the problem of endogeneity, unlike the typical situation where growth indicators are explained by some contemporary characteristics of firms.

In our analysis, we incorporate a set of explanatory variables including human capital measures, firm level attributes, sectoral affiliation and export behaviour. In addition, we include perceptions of the main external barriers, i.e. taxes and corruption into account as they may have an influence on growth expectations.

Our study provides the following contributions. Firstly, our data is unusually rich in its representation of both micro enterprises and self-employed entrepreneurs. This allows us to more accurately compare the effect of firm size on growth aspirations for all SME size categories. Our results indicate that while small and medium firms expect to grow, the smallest firms i.e. micro firms do not; thus there seems to be a stagnant pool of very small enterprises. This finding contradicts a negative link between size and employment growth found in other studies (Faggio and Konings 2003; Bechetti and Trovato 2002) We argue that the discrepancy stems from the fact that the smallest firms are being typically underrepresented in other studies[1].

[1] See sections 3 and 4 below. Amadeus Database has been a popular source of firm level data, with the smallest firms truncated; a recent paper utilising it for employment growth estimations is Faggio and Konings (2003). WBES World Bank survey and EBRD surveys are better in this respect, albeit the

Secondly, we are able to test the effect of the two most significant business barriers on growth aspirations. Here we find that both the high level of taxes as well as corruption are identified as negatively related to growth aspirations.

This paper is organised as follows. Section 2 examines the business environment in Lithuania and places it in the context of economic transition. Section 3 extends the discussion to the theoretical settings and presents some empirical results by other authors. Section 4 describes the survey and resulting sample of entrepreneurs. Section 5 presents the variables used in our estimation model and Section 6 presents our results. Section 7 concludes.

1. The business environment in Lithuania in a comparative perspective

In Lithuania, as in many other transition countries, private enterprise mushroomed during the initial transition period in the early 1990's. From 1993 – 1995 there was a steadily increasing trend in the number of enterprises in Lithuania in all size categories of registered businesses. However, the trend was reversed in the mid 1990's.[2] In particular, the period from 1999 – 2000 has seen a significant decrease in registered SMEs. At the beginning of 1999 there were 81,600 registered[3] SMEs but by the end of 2000 there were only 52,000 registered SMEs (SMEDA[4] 2004). The main factors influencing this rapid decrease seem to be both internal changes and external economic shocks. Internal changes included increased labour costs (for hiring employees), additional taxation, additional bureaucratic barriers, increased competition from large chain stores (especially for trade related businesses) and low consumer demand. The latter factor may be linked to external shocks, which included both the Russian rouble crisis (August 1998) and an increasingly unfavourable Litas-Euro exchange rate implied by the fixed exchange regime combined with comparative nominal trends in Lithuania and the Euro area at that time[5]. The Lithuanian Human Development Report (UNDP 1999) noted that the Russian crisis was hardest on small businesses that were involved in trade with Russia. In addition, a simplification of the regulations for de-registering inactive businesses in 2000 resulted in the de-registration of many inactive businesses which may have influenced the apparently large decline in private businesses from 1999 to 2000.

---

samples are still skewed; see: Beck *et al.* (2002), Batra *et al.* (2003), Fries *et al.* (2003). All those authors notice the problem.

[2] We focus our study here on legally registered private enterprises though in doing so, we are probably underestimating the true size of Lithuania's private sector. A study 'Preliminary Estimation of Monetary flows in Lithuania' carried out by the Economic Research Center of Lithuania estimates that the 'underground' or informal economy could account for as much as 36 percent of GDP in 1994 and 41 percent of GDP in 1995 (World Bank 1998). A study carried out by the Lithuanian Department of Statistics presents more conservative estimates; accordingly, in 1995 the informal economy accounted for 23.4 percent of GDP (Lithuanian Department of Statistics 1997). However, the distortion is likely to more greatly affect the size and profitability of reported businesses then their actual number. That results from the fact, that the preferred strategy of informal activity may be to register a business but hide part of earnings and employment. (As argued by Kontorovich (1999) in relation to Russia).

[3] The number of registered SMEs is likely to include a significant percentage of inactive SMEs, thus a change in the register is only a crude indicator of the number of SMEs, which are active. Estimating the total number of active SMEs in Lithuania is difficult. For further discussion see Aidis 2003: 69)

[4] Lithuanian Development Agency for Small and Medium-sized Enterprises.

[5] Since February 2, 2002, the Litas has been tied to the Euro.

1.1 Obstacles to doing business

Data collected jointly by the EBRD and World Bank in 1999 and 2002 rating obstacles to doing business in 26 transition countries highlights a number of key problems as perceived by business owners. The two survey results are presented in Table 1 below, for a relatively coherent group of eight new EU member states and three likely future members[6].

Central and Eastern European (CEE) countries show visible improvements achieved in most areas, especially for infrastructure. However, regulation remains an exception, with very little progress on average. For the Lithuanian case, business owners seem to be more greatly affected by financial barriers than most other transition countries. Tax issues also score high as business barriers for the Lithuanian business owners, however this is consistent with the results for other transition economies. In fact, the Lithuanian scores are slightly below the mean in this respect. While on average the business owners in CEE find taxes the most difficult area, the opposite is true for infrastructure. One may also note that corruption is a dimension where the standard deviation across this group of countries remains particularly high in both 1999 and 2002. On corruption, Lithuania improved its relative scores between 1999 and 2002, going down from marginally above the cross-country average to being marginally below in the latter year.

Table 1: Average rating of obstacles to doing business in 1999 and 2002: New EU member states plus three likely future members.

	Financial		Infra-structure		Tax issues		Regula-tion		Judicial		Crime		Corruption	
year	'99	'02	'99	'02	'99	'02	'99	'02	'99	'02	'99	'02	'99	'02
Bulgaria	2.9	2.9	2.3	1.2	3.0	2.4	2.2	1.7	2.3	2.0	2.7	2.1	3.1	2.2
Croatia	3.1	2.5	1.9	0.9	3.3	2.2	1.4	1.7	2.5	2.4	2.1	1.5	2.8	2.0
Czech R.	2.4	2.5	2.5	1.0	3.3	2.4	1.8	1.7	2.2	1.7	1.9	1.7	2.2	1.6
Estonia	2.4	2.1	1.6	1.4	2.7	2.0	1.1	1.8	1.8	1.7	1.6	1.7	1.7	1.6
Hungary	3.0	2.4	1.6	0.9	3.1	2.4	2.4	1.6	2.0	1.3	2.1	1.3	2.5	1.6
Latvia	2.6	2.0	2.1	1.7	3.2	3.0	1.8	2.1	2.4	2.0	2.1	1.8	2.6	2.2
Lithuania	**2.5**	**1.9**	**1.8**	**1.6**	**3.3**	**2.8**	**1.6**	**1.7**	**2.3**	**2.3**	**2.2**	**1.9**	**2.3**	**2.1**
Poland	3.0	3.0	1.7	0.7	3.2	2.9	2.3	2.0	2.4	1.9	2.5	1.9	2.7	1.9
Romania	3.0	2.7	2.5	1.6	3.3	3.0	1.4	2.0	2.3	2.5	2.0	1.9	2.2	2.7
Slovak R.	3.3	2.6	1.9	1.0	2.9	2.3	1.9	1.9	2.2	2.2	2.5	1.8	2.8	2.1
Slovenia	2.9	2.1	1.8	0.7	2.9	1.7	2.2	1.4	2.4	1.6	1.8	1.1	2.2	1.3
Mean	*2.8*	*2.4*	*2.0*	*1.2*	*3.1*	*2.5*	*1.8*	*1.8*	*2.3*	*2.0*	*2.1*	*1.7*	*2.5*	*1.9*
St.dev.	*0.3*	*0.4*	*0.3*	*0.4*	*0.2*	*0.4*	*0.4*	*0.2*	*0.2*	*0.4*	*0.3*	*0.3*	*0.4*	*0.4*
Mean'02-Mean'99		*-0.4*		*-0.8*		*-0.6*		*0.0*		*-0.3*		*-0.4*		*-0.5*
Lith.indic.–Mean	*0.3*	*0.5*	*0.2*	*-0.4*	*-0.2*	*-0.3*	*0.2*	*0.1*	*0.0*	*-0.3*	*-0.1*	*-0.2*	*0.2*	*-0.2*

Source: Adapted from Pissarides (2004) based on EBRD data with additional computations in the last four rows.

[6] In addition to Bulgaria and Romania, we include Croatia, which did not yet start the EU membership negotiations, but is likely to in the near future.

2. Literature on determinants of SME growth

We now turn to a brief literature review. First we argue that the growth of businesses and employment growth in particular are key performance indicators for SMEs. Next, we discuss findings on the determinants of growth.

3.1 Business performance measures

Even though no consensus regarding the definition of small business performance exists, venture profitability and increase in employees are two ways in which business performance is typically measured (Chandler and Hanks 1993; Robinson 1999; Vesper 1996; Watkins et al. 2003). However, the profitability indicator is problematic in the context of SMEs for two reasons. Firstly, SMEs frequently rely on simplified accounting where the measures of profit are not clear-cut. Secondly, it is typical for many new firms to follow a period of losses or low profitability in the initial phase of their existence. Thus, growth and growth expectations may be a better measure of performance. As argued by Johnson *et al.* (2000): 'Employment growth is perhaps the most important measure of performance from a welfare perspective. A private sector is successful in a post-communist country only to the extent it manages to create jobs'. (p. 13). Similar conclusions are supported by other authors. For instance Klapper *et al.* (2002) stress that the SME sector is the most dynamic part of transition economies. One may also note, that the importance of employment creation by the SME sector is also crucial in high income economies, as documented by Lopez-Garcia (2002) who confirm the role of SMEs as absorbing employment released from both industry and agriculture, by creating jobs in the service sector. And finally, while we focus on employment, the issue of growth can also be captured by the investment dimension, as in Fries *et al.* (2003).

Growth can be either measured by backward looking accounting and employment data or by forward looking expectations of owners. As the data is typically generated by surveys, there is a serious risk of substantial measurement error if data for several past years is collected. Moreover, in case of new recent start-ups there is not much past history to rely on, which leads to the sample selection bias. In addition, some studies have indicated that perceptions of performance may be more insightful indicators than objective measures because perceptions draws on the insider knowledge (Osborn et al. 1980; Watson et al. 2003) of firm's goals, strategy, structure and processes. Though it is not without controversy, there is increasing evidence indicating that attitudes such as intentions to grow a business can be used to predict behaviour (Davidsson 1991; Wiklund et al. 2003).[7]

3.2 Determinants of growth

The results of a number of studies indicated that both business and business owner characteristics can influence business growth. Existing studies have shown that

[7] Recent work by Wiklund et al. (2003) indicate that small business manager's feelings about whether the growth of their businesses is good or bad can be explained based on the consequences that they expect from growth. Interestingly, financial gain is not the outstanding determinant of attitude toward growth. Employee well-being is the single most important determinant of overall attitude toward growth. But it is not unlikely that the managers also have their own well-being in mind.

human capital as measured by work experience, education and other skills that increase knowledge accumulation are not only important characteristics of entrepreneurial capacity (Sexton and Upton 1985) but have a positive influence on both firm survival, growth (Cooper et al. 2002) and entrepreneurial performance (Cooper and Gimeno-Gascon 1992; Chandler and Hanks 1998). Education seems to provide the knowledge base and analytical and problem-solving skills to more effectively deal with the demands of entrepreneurship (Watson et al. 2003). In a study of the influence of venture teams on venture performance, Watkins et al. (2003) find a significant and positive relationship between perceived venture growth and higher levels of education and work experience. They also found that younger business owners with fewer employees were significantly more likely to grow their ventures than the sample as a whole. However other studies have indicated that middle aged entrepreneurs are more likely to grow their businesses than other age groups (Burns 2001). Business sector may have an influence on these results with younger entrepreneurs growing their firms faster in IT sectors (Burns 2001). As a result, the relationship between business owner's age and business growth is still not completely understood.

Work experience can further supplement an entrepreneur's education with more practically based skills for venture performance. However perhaps even more importantly, previous entrepreneurial experience i.e. in having started up another private business may increase the likelihood for growth in the current business. This is a result of 'learning by doing' in which the entrepreneur improves their skills and chances for business success by building up their entrepreneurial experience. The different roles, which are played by the technically related work experience and by the entrepreneurial experience, may be linked to the recent empirical work based on the distinction between the two alternative views of entrepreneurship (Lazear 2004). Namely, the first view is based on believe 'that entrepreneurs are technical specialist who base their new companies on innovation' (*Ibid.*, p. 208). If the view is correct, both previous sector-relevant job experience and specialist education may be critical factors determining entrepreneurial success. An alternative view however is that entrepreneurs are 'generalist', 'jacks of all trade', as their main role is in co-ordinating a range of activities, about which they need some sufficient amount of knowledge. In our interpretation and application of Lazear's (2004) results, previous entrepreneurial experience and more broad type of education may be more conductive to entrepreneurial success.

On a related theme, in a review of literature on the antecedents to business start-up and growth, Storey (1994) found reasonable evidence indicating a negative relationship between being unemployed before starting a business and subsequent business growth. Though unemployed individuals experience a strong push into self-employment, they may not have the skills needed to grow the business and may have lower growth aspirations.

Studies in Western countries have indicated that gender affects business development. More specifically, female businesses tend to be smaller and are less likely to grow than male-owned businesses (Cooper *et al.* 2002). A study by Cliff (1998) indicates that female business owners tend to have lower growth thresholds for their businesses than men, which can partially explain the tendency for women to have smaller businesses with lower turnovers. However, the same may not necessary

hold for the transition economies such as Lihtuania, where equal aspirations of women and high female entrepreneurship rates have been the norm (Aidis 2003).

A study by Faggio and Konings (2003) on five transition countries shows a negative relationship between firm size and firm growth indicating that smaller firms are likely to grow faster than larger firms. However, as stressed by the authors, the small firms are heavily underrepresented in their sample. Similarly, Becchetti and Trovato (2002) found a negative link between size and growth (and positive with age of business), controlling for a wide range of factors, albeit again their sample contains firms with more then ten employees only. On the other hand, the results reported by Fries *et al.* (2003), based on a large cross-country sample from transition economies including micro firms, indicate a positive, albeit non-linear relationship between growth (as measured by both revenues and assets) and size in the relevant range of size.[8] Similar findings are reported by Batra *et al.* (2003), using the WBES survey. Batra *et al.* show that while the difference between medium and small size companies in growth rate is not significant, it is becoming significant in relation to large firms, which grow faster.

Another important determinant of growth relates to the international versus domestic orientation of sales. As confirmed by Beck *et al.* (2002), utilizing a large cross-country survey, for which 80 percent of firms are small and medium sized, exporting is a highly significant factor affecting firm growth. Similar results based on the same sample are reported by Batra *et al.* (2003). In addition, Becchetti and Trovato (2002), found a positive, albeit marginally insignificant effect of exporting on growth for their sample of Italian firms.

Three studies, which focus directly on the link between business barriers and growth, are Johnson *et al.* (2000), Beck *et al.* (2002) and Batra *et al.* (2003). The latter two are both based on the WBES conducted by World Bank in 80 countries between mid 1998 and 2000. The econometric findings of the studies vary, and they are not fully compatible, as the survey instruments are different and the size distribution of firms in the samples differ. The first study (Johnson *et al.* 2000) does not cover firms with less than ten employees. Perception of barriers is captured by assessment of the extent of 'extralegal payments' in the business sector in which the company operates, and by assessment of the credibility of courts in enforcing contracts. On both measures, no significant effects on firm growth was found (Johnson *et al.* 2000).

On the other hand, Beck *et al.* (2002) relies on a more extensive range of indicators, and a larger sample with wide cross-country variation. They consider three dimensions: quality of financing, quality of the legal system, and corruption, all three based on 7-11 detailed questions with answers based on 6 point Likert scale. If a single dimension is included in the specification separately, all three turn out to have highly significant negative effect on firm growth. The effect of corruption becomes insignificant, when the three are included jointly, possibly due to multicollinearity. Another interesting finding is that the significance of these factors vary with the size of company: 'small firms report the highest financing and corruption constraints, whereas large firms report the highest legal constraints' (Beck *et al.* 2002, pp. 13-14). Similarly, using the same sample but different specifications, Batra *et al.* (2003) find

[8] As can be calculated from Table D.2 in their paper, the earliest point where the relationship between size and growth turns from positive to negative is somewhere above 900 employees (as measured by real growth in fixed assets; see Fries *et al.* 2003, p.46).

that financing, high taxes and corruption are significantly and negatively associated with business sales growth.

In a related study in Lithuania, Aidis (2004) found that they do not influence the business in isolation but have an inter-related effect. For instance, business owners who perceived to be affected by formal barriers such as the tax level and business legislation was found to be more likely affected by informal barriers such as governmental corruption at the national level and the implementation of business regulations[9]. In our study, we are interested if the main business barriers identified by SME owners, namely taxes and corruption would have an interrelated effect on growth aspirations.

Figure 1 summarises the determinants of SME growth as found in the literature and according to our predictions. The relevant factors are grouped as owner attributes, firm level attributes and business environment characteristics.

(Figure 1)

3. Survey and sample characteristics[10]

Our analysis is based on data collected by one of the authors in Lithuania. From September - December 2000, Lithuanian language questionnaires were sent out to private business owners throughout Lithuania. Due to the inability to obtain accurate lists of operating private businesses in Lithuania[11], the survey was not based on a random sample and most addresses were obtained through the membership lists of various entrepreneurship organizations[12] This may have resulted in a bias for businesses that are older and have higher turnovers than the average private business in Lithuania. The response rate was high, at fifty percent. Of the 505 respondents, 399 were business owners[13].

Table 2 compares distribution of firms in our sample with that reported by the Lithuanian Department of Statistics (LDS). While the smallest companies are still underrepresented in our sample, we may note the bias is still smaller than in many other studies, where it is not unusual to exclude all firms below ten employees or similar size.

[9] Due to space constraints, we refer interested reader to Aidis (2004) for further discussion of business barriers in Lithuania.

[10] An extensive description of the survey and sample characteristics can be found in Aidis (2003).

[11] As in many other transition countries, an accurate list of legal enterprises in Lithuania does not exist. Previous surveys attempted using the official list of registered businesses from the Lithuanian Department of Statistics indicated that the official register was rife with non-existent businesses or inaccurate addresses. See Aidis (2003) for further discussion.

[12] The address lists of members from the five branches of the 'private' Lithuanian Chambers of Commerce (Vilnius, Kaunas, Panevezys, Siauliai, and Klaipeda), the Lithuanian Business Employer's Confederation (LVDK) and the Kaunas Regional Association of SMEs were used. The Lithuanian Chamber of Commerce and the LVDK are two of the largest entrepreneurship organizations in Lithuania.

[13] A business owner met the following criteria: they had their own business, it was still in operation and their main business activities were not in the agriculture sector.

Table 2: Enterprise type as percentage of total private enterprises in Lithuania

Enterprise type (number of employees)		LDS 2000	Our Survey 2000
Self-employed	(0)	79.4[a]	11.0
Micro	(1 – 9)		34.0
Small	(10 – 49)	16.2	38.3
Medium	(50 – 250)	3.8	16.0
Large	(250+)	0.5	0.8[b]

[a] combined percentage for self-employed and micro-enterprises; [b] This represents three observations, which were subsequently not used in estimations.

4.1 Growth

Our analysis of growth intentions is based on responses to the following question from the survey:

> *In the next five years, do you think that your business will:*
> *(please mark all relevant responses):*
> *(a) increase the number of employees*
> *(b) increase turnover*
> *(c) decrease the number of employees*
> *(d) decrease turnover*
> *(e) stay the same*
> *(f) I don't know*

The question is asked in a depersonalised, objective mode, i.e. about expectations, not intentions or strategies of the owner, to avoid possible bias. The respondents would typically assume that growth is something positive and might be inclined to present themselves in a better light, if asked about their intentions and potential. The wording applied here suggests that it is not only the entrepreneur, who is responsible for the enterprise development.

The analysis was greatly facilitated by the fact that all respondents who declared expected increase in employment, also declared expected increase in turnover, but not vice versa. These results lead to the following ranking, presented in Table 3.

Table 3: Categorization of answers for the question on growth expectations

a. variable 'future' (four categories)	frequency of answers:	***b. variable 'future_3c' (three categories)***	frequency of answers:
(4) increase employment and turnover	182		
(3) increase turnover, but not employment	83	(3) increase employment and turnover	182
(2) the same or don't know	106	(2) increase turnover, but not employment	83
(1) decrease turnover or employment	22	(1) the same or don't know & decrease turnover or employment	128
(missing)	6	(missing)	6
Total	399	Total	399

As the number of responses in the lowest category is relatively small, combining it with the one above ma be reasonable, as illustrated by an alternative

categorisation (b) above. We estimated alternative models, using both specifications (see below). In particular, we applied the ordinal probit estimator, where, for a sequence of cut points: $k_0,\ldots, k_i ,\ldots, k_n$ (with k_0 corresponding to $-\infty$ and k_n to $+\infty$), the probability of observing an outcome i is given by:

$$P(outcome = i) = P(k_{i-1} < \boldsymbol{X\gamma} + u < k_i) = \Phi(k_i - \boldsymbol{X\gamma}) - \Phi(k_{i-1} - \boldsymbol{X\gamma}) \qquad (1)$$

where $\boldsymbol{X\gamma}$ is a matrix of explanatory variables with a corresponding (column) vector of coefficients and $\Phi(.)$ refers to the standard normal cumulative distribution function.

In addition to this model, we also applied a simpler binary probit model, with the dependent variable distinguishing between the entrepreneurs predicting employment growth and all other outcomes:

$$P(outcome = 1) = \Phi(\boldsymbol{X\gamma}) = \int_{-\infty}^{\boldsymbol{X\gamma}} \phi(t)dt \qquad (2)$$

5. Variables defined

In deriving the set of explanatory variables, we draw from the literature discussed in section 3. Our particular interest is in the link between perceptions of business barriers and growth expectations. The difference in explanatory power of barriers may not correspond to their direct ranking. To give an example, demand and financial constraints, typical for hard-budget market economy are commonly perceived as a major nuisance, as confirmed by the survey results. Yet it does not imply these have the most impeding impact on growth. Assessment of the importance of given obstacles may indicate problems in everyday business, which the entrepreneurs may be able to overcome nevertheless. Quite a different set of factors may influence the decisions to develop and expand.

The survey generated data on a number of characteristics that are consistent with our prior expectations on a possible set of determinants of growth. Firstly, we have size, as measured by employment. The variable distribution is highly skewed to the left, with 43 observations in self-employed category, i.e. with no employment other than the owner of the business (see Figure 2 and Table 2). For that reason, we categorise the employment variable, using the four size categories, as recommended by the standard EU definition. The benchmark category is ‘self employed’ and we introduce dummy variables for micro, small and medium size enterprises correspondingly (see Table 2 above). Three observations with employment above 250 are eliminated from the analysis. Testing for the relationship between size and growth expectations is important, since as indicated in section 3, the link between the size and growth of enterprises remains a highly debated issue in the literature.

(Figure 2)

We are also interested in examining if human capital variables such as sector-relevant job experience, entrepreneurial experience, starting from employment or non-employment, education, age and gender are related to growth intentions. In particular, the first two may be perceived as proxies for the distinction between ‘specialist’ and ‘generalist’ human capital, as defined by Lazear (2004). We include these as well as

firm level variables such as export orientation, location and sectoral affiliation in our estimations. Export orientation provides us with an indication of the influence of internationalized business operations on business growth. Capital city location is included in order to control for the effects of rapid economic growth concentrated in the capital city as compared to the rest of the country. This specific capital city development vs. underdeveloped smaller cities characterizes many transition countries. Finally controlling for sector effects is a standard for these types of estimations.

The questionnaire instrument related to perception of barriers had two parts. In the first part, the respondents were asked to assess the importance of nineteen business barriers, each separately. In the second part, the task was to identify the three most important barriers. The problem with the separate assessment of barriers is that it is based on 5 point Likert scale and the respondent is unable to differentiate between the most serious barriers, which are all given the highest scores. In this respect, the second question (enumerating the three most important barriers) has an advantage and this is the one we used for the subsequent analysis.

For all of the barriers included in the questionnaire, Figure 3 below illustrates the frequency of responses identifying a given barrier as one of the three most important ones.

(Figure 3)

Our estimation strategy was to include dummy variables for seven barriers, which were most frequently identified. It turned out that only those related to taxes and corruption were significant. In addition, there is multicollinearity between the tax dimensions, which makes the coefficients sensitive to small changes in specification and data, i.e. not robust and problematic to rely on. There is no single straightforward solution to this problem. Our response was to restrict ourselves to the two of the most important business barriers, namely ‘taxes to high’ and ‘corruption at the national level’ and exclude ‘frequent changes to tax policies’ and ‘ambiguity of taxes’. However, interpreting the results, one should bear in mind that the retained tax indicator should not be narrowly related to the level of taxes, but interpreted as a proxy for a broader cluster of problems with tax system.

The results of six specifications are reported below. Our dependent variable relates to expected growth categorised into four ranks, as described above, where the highest rank is the expected positive growth of both employment and turnover. In the first specification, we use the dependent variable with four categories and include indicators for human capital, exporting, location, employment size categories, sectoral controls and perceptions of barriers, as described above. In the second specification, we drop insignificant factors. In the specification two, we use three categories of expected growth (instead of four) as dependent variable and in specification three we compress the dimensions further, by using expected employment growth as a binary variable, to see if the results are robust to the modification. Finally, specifications four to six, replicates the three previous ones with size measure given by turnover, instead of employment. See Appendix 1 for a summary of the independent and dependent variables used in our estimation model.

6. Results

All the estimation results are presented in Tables 4a and 4b. Unemployed prior to starting a business, age and gender are not significant as predictors of growth expectations. Age is highly insignificant, while gender is marginally significant in one specification, and insignificant in others. Interestingly, the sign of the gender coefficient is positive is all specifications, indicating that the impact of gender may be very different from that observed in high income countries; if anything women entrepreneurs have higher growth aspirations than their male counterparts. Unemployment prior to starting a business also has the expected negative sign. The other human capital measures are either significant or marginally insignificant depending on the specification. In particular, we found no evidence that the 'specialist' experience is more relevant than 'generalist' or vice versa. Both seem to matter, as documented by coefficients on experience in the same sector of activity and on entrepreneurial experience. Though 'learning by doing' through previous job experience and entrepreneurial experience does have a positive effect. In addition, we found a clear general positive effect of higher education. On the firm level, we can see a clear positive effect of exporting, and positive, albeit insignificant effect of business being located in the capital city. Sectoral affiliation is mostly insignificant, apart from some negative effect on growth expectations of 'services activities other than trade'.

Size effects are clearly important. Medium, small and micro size companies expect to grow, while the self-employed express little interest in developing their business. Moreover, the coefficients in Table 8a are neatly ordered according to size group: the larger the size category, the more likely is that the company will grow. Here, our results are consistent with those obtained from research based on samples, which include the smallest firms, as in Fries *et al.* (2003). It may also be interpreted as providing support for the arguments presented by Earle and Sakova (2001) theorizing that in transition countries, own account workers (business without employees) a more likely a form of hidden unemployment than a form of entrepreneurship. This is clearly a point of concern for policy makers.

When we replace employment by turnover as a size measure, the most robust result is that the entrepreneurs that express an interest to grow are those whose annual turnover is about 300,000 Euro or more (two highest categories in terms of revenue, between which there is little difference in coefficients in all specifications). Thus, the big are getting bigger, and micro enterprises and self-employed are stagnant.

Taxes and corruption have a negative effect on growth aspirations throughout. The result is consistent with the literature discussed above. In the case of corruption it also indicates that this barrier, while not named as very important by the majority of entrepreneurs (see Figure 3), has a detrimental effect on growth where encountered.

Table 8a. Results

	(1) growth expectations (ordered using four ranks)	**(2)** growth expectations (ordered using three ranks)	**(3)** growth expectations (positive employment growth as binary outcome)
Human capital:			
higher education	0.37* (0.15)	0.34* (0.16)	0.26 (0.18)
job experience same sector	0.20 (0.13)	0.25† (0.14)	0.26† (0.15)
entrepreneurial experience	0.27* (0.13)	0.32* (0.14)	0.18 (0.15)
Unemployed prior to starting	-0.24 (0.25)	-0.15 (0.27)	-0.26 (0.30)
business owner's age	-0.08 (0.06)	-0.09 (0.07)	-0.09 (0.07)
age2	0.0008 (0.0007)	0.0010 (0.0007)	-0.0010 (0.0008)
female	0.16 (0.15)	0.23 (0.16)	0.18 (0.18)
Firm level attributes:			
company is exporting	0.34* (0.14)	0.31* (0.14)	0.22 (0.16)
location: Vilnius	0.14 (0.15)	0.16 (0.15)	0.04 (0.17)
Firm size: number of employees (reference category: self employed)			
micro	0.49* (0.23)	0.68** (0.25)	0.56* (0.28)
small	0.57* (0.23)	0.82*** (0.25)	0.82** (0.28)
medium	0.80** (0.28)	1.05*** (0.299)	1.00** (0.33)
Barriers			
taxes	-0.31* (0.14)	-0.35* (0.14)	-0.35* (0.16)
corruption	-0.41* (0.17)	-0.34† (0.18)	-0.31 (0.20)
Sectors (reference category: manufacturing)			
construction	0.02 (0.35)	0.05 (0.36)	0.16 (0.38)
retail trade	0.04 (0.18)	0.11 (0.19)	0.15 (0.21)
wholesale trade	-0.05 (0.21)	-0.03 (0.22)	0.11 (0.23)
business services	-0.25 (0.22)	-0.21 (0.23)	-0.23 (0.25)
other services	-0.37† (0.21)	-0.52 (0.22)	-0.30 (0.25)
Log likelihood	-382	-325	-213
LR χ^2	55***	62***	40**
Pseudo R^2	0.07	0.09	0.09
No of observations	338	338	339

Notes
(i) estimator: ordered probit for specifications 1- 2; binary probit for specification 3,
(ii) three companies with employment above 250 excluded from estimation,
(iii) standard errors in parentheses,
(iv) significant at: †0.10 *0.05 **0.01 ***0.001,
(v) ancillary parameters (and constant in specification 3) not reported, and available on request.

Table 8b:

	(4) growth expectations (ordered using four ranks)	**(5)** growth expectations (ordered using three ranks)	**(6)** growth expectations (positive employment growth as binary outcome)
Human capital:			
higher education	0.33 (0.15)	0.30 (0.16)	0.26 (0.17)
job experience in same sector	0.22 (0.13)	0.25† (0.14)	0.25† (0.15)
entrepreneurial experience	0.21 (0.13)	0.26† (0.14)	0.13 (0.15)
unemployment prior to starting	-0.17 (0.25)	-0.05 (0.27)	-0.19 (0.30)
business owner's age	-0.07 (0.06)	-0.07 (0.07)	-0.08 (0.07)
age2	0.0007 (0.0007)	0.0007 (0.0007)	0.0008 (0.0008)
female	0.24 (0.16)	0.31† (0.17)	0.26 (0.19)
Firm level attributes:			
company is exporting	0.34* (0.14)	0.25† (0.14)	0.25 (0.16)
location: Vilnius	0.10 (0.15)	0.13 (0.16)	0.03 (0.17)
Firm size: Annual turnover (reference category: below 100,000 Lt (≈Euro 30,000))			
100,001-500,000 Lt	0.52* (0.21)	0.51* (0.23)	0.41 (0.25)
500,001-1,000,000 Lt	0.29 (0.22)	0.27 (0.24)	0.36 (0.26)
1,000,001-5,000,000 Lt	0.64*** (0.20)	0.65** (0.22)	0.60* (0.24)
>5,000,000 Lt	0.63* (0.25)	0.69** (0.262)	0.62* (0.29)
Barriers			
taxes	-0.27* (0.14)	-0.28 (0.14)	-0.29† (0.15)
corruption	-0.30† (0.17)	-0.22 (0.18)	-0.18 (0.20)
Sectors (reference category: manufacturing)			
construction	0.15 (0.27)	0.21 (0.38)	0.37 (0.40)
retail trade	-0.04 (0.18)	0.00 (0.19)	0.06 (0.21)
wholesale trade	-0.16 (0.20)	-0.16 (0.21)	-0.04 (0.23)
business services	-0.26 (0.21)	-0.26 (0.22)	-0.33 (0.25)
other services	-0.36† (0.21)	-0.55* (0.23)	-0.29 (0.15)
Log likelihood	-369	-318	-210
LR χ^2	58***	59***	36*
Pseudo R^2	0.07	0.08	0.08
No of observations	330	330	331

Notes:

(i) estimator: ordered probit for specifications 4 and 5; binary probit for specification 6,

(ii) three companies with employment above 250 excluded from estimation

(iii) standard errors in parentheses,

(iv) significant at: †0.10 *0.05 **0.01 ***0.001

(v) ancillary parameters for cut-off points available on request.

7. Conclusions

Our study focused on factors affecting the growth of new firms, which is arguably the key indicator of business performance and entrepreneurship as well as an important factor in overall economic development. Following recent trends in the literature, we use business owner expectations of future growth as a methodologically attractive way of measuring growth potential for SMEs. We experiment with alternative formulations of this measure and found the results robust.

In particular, we discover that growth expectations differ according to firm size, with small and medium size enterprises expecting growth and micro firms and self-employed being more stagnant. Arguably, we are able to detect these effects, due to a broad coverage of size dimension by our sample. Analysis of the results in the available literature shows that the link between size and growth is sensitive to sample coverage.

We also analyse the link between the perceptions of barriers by business owners and their growth expectations. Both taxation and corruption were found to be significant barriers to the growth aspirations of SMEs in our sample.

An interesting but not surprising result was the significant influence of private business experience on intention to grow in the current business. This effect may be more important in the transition context than in advanced western countries since 'entrepreneurial' skills were never taught (directly or indirectly) in the centrally planned system. Our results seem to indicate that 'learning by doing' has proved to be an important form of human capital in the transition context.

Finally, we are able to confirm two further results, consistent with the literature. Firstly, export orientation is an important factor facilitating growth of small firms. Secondly, human capital matters: higher education of entrepreneurs is correlated with higher growth expectations. Further research in this area would be useful in order to model the interactions between the characteristics of entrepreneurs, perceptions of barriers and growth expectations in more detail.

Our study also provides some insights for business growth in the transition country context. Though our data is from Lithuania, EBRD indicators show that Lithuania scores in an average way as compared to other transition countries in Central and Eastern Europe and in that respect can be seen as a typical transition country example. Our results indicate that even as formal institutions are established, informal practices such as corruption continue to form major obstacles to private business development and growth. The policy implications of these results support the development of strategies to reduce the possibility for corruption to occur so as through depersonalized contact with governmental officials.

References

Aidis, R. 2003. By law and by custom: Factors affecting small- and medium-sized enterprises during the transition in Lithuania. Thela Thesis: Amsterdam.

Aidis, R. 2004. Institutional impediments to small- and medium-sized enterprise development in transition countries, Small Business Economics, forthcoming.

Batra, G., D. Kaufmann and A. Stone. 2003. Investment Climate Around the World: voices of the Firms from the World Business Environment Survey. Washington DC: The World Bank.

Becchetti, L. and G. Trovato. 2002. The Determinants of Growth for Small and Medium Sized Firms. The Role and Availability of External Finance. Small Business Economics Vol. 19, 291-306.

Beck, T., A. Demirgűc-Kunt, and V. Maksimovic. 2002. Financial and Legal Constraints to Firm Growth. Does Size Matter? World Bank, mimeo.

Burns, P. 2001. Entrepreneurship and Small Business. London: Palgrave Macmillan.

Chandler, G. and S. Hanks (1993) Measuring the performance of emerging businesses:A validation study, Journal of Business Venturing vol. 8, pp. 391 – 408.

Chandler, G. and S. Hanks (1998) An examination of the substitutability of founders' human and financial capital in emerging business ventures, Journal of Business Venturing vol. 13, pp. 353 – 369.

Cliff, J. (1998) Does one size fit all? Exploring the relationship between attitudes towards growth, gender and business size, Journal of Business Venturing, vol. 13:6, pp. 523 – 542.

Cooper, A. and F. Gimeno-Gascon (1992) 'Entrepreneurs, processes of founding and new firm performance' in D. Sexton and J. Kasarda (eds) The state of the art of Entrepreneurship, PWS-Kent: Boston, MA, pp. 301 – 340.

Cooper, A. 1993. Challenges in predicting new firm performance. Journal of Business Venturing 8: 241 - 253.

Cooper, A.C., J. Gimeno-Gascon and Carolyn Y. Woo (1994) Initial human and financial capital as predictors of new venture performance, Journal of Business Venturing, vol. 9:5, pp. 371- 395.

Cooper 2002

Davidsson, P. 1991. Continued Entrepreneurship: Ability, need and opportunity as determinants of small firm growth. Journal of Business Venturing 6:405 – 429.

Earle, J. and Z. Sakova. 2000. Business start-ups or disguised unemployment? Evidence on the character of self-employment from transition economies. Labour Economics 7:575 – 601.

European Bank for Reconstruction and Development (EBRD). 2002. Transition Report: Agriculture and rural transition. London.

European Bank for Reconstruction and Development (EBRD). 2003. Transition Report: Integration and Regional Cooperation. London.

Faggio, G. and J. Konings (2003) Job creation, job destruction and employment growth in transition countries in the 90s, Economic Systems vol. 27, pp. 129 – 154.

Fries, S., T. Lysenko and S. Polanec 2003. The 2002 Business Environment and Enterprise Performance Survey: Results from a Survey of 6,100 Firms, EBRD Working Paper, No. 84.

Herron, L. and R. Robinson. 1993. A structural model of the effects of entrepreneurial characteristics on venture performance. Journal of Business Venturing 8:281 – 294.

Johnson, Simon, John McMillan and Christopher Woodruff (2000), 'Entrepreneurs and the ordering of institutional reform. Poland, Slovakia, Romania, Russia and Ukraine compared', Economics of Transition, 8, pp. 1-36.

Klapper, L., V. Sarria-Allende and V. Sulla. 2002. Small and Medium-Size Enterprise Financing in Eastern Europe. World Bank Research Policy Working Paper. No. 2933.

Kolvereid, L. 1992. Growth Aspirations among Norwegian entrepreneurs. Journal of Business Venturing 7: 209 - 222.

Kontovorich, V. 1999. 'Has New Business Creation in Russia come to a halt?' Journal of Business Venturing 14: 451-60.

Lazear, E. 2004. 'Balanced Skills and Entrepreneurship' American Economic Review 94: 208-211. Lithuanian Department of Statistics. 1997.

Lopez-Garcia, P. 2002. Labour Market Performance and Start-Up Costs: OECE

Neapskaitoma Ekonomika: Sampratos, Tyrimai, Problemos. Vilnius.Lithuanian Department of Statistics. 2001. Statistical Yearbook of Lithuania 2000. Vilnius. Lithuanian Development Agency for Small and Medium-sized Enterprises.(SMEDA) 2004. Survey of Lithuanian SMEs, http://www.svv.lt.Evidence, Centre for Economic Performance Discussion Paper, No. 565.

Pissarides, F. (2004) 'Financial Structures and private sector development in the new Europe' Chapter 3 in D. Masciandoro (ed) Financial Intermediation in the New Europe: Banks, Markets and Regulation in the Accession Countries, Edward Elgar: Northhampton, MA, forthcoming

Robinson, K. (1999) An examination of the influence of industry structure on eight alternative measures of new venture performance for high potential independent new ventures, Journal of Business Venturing vol. 14, pp. 165 – 187.

Sexton, D. and N. Upton (1985) The entrepreneur: A capable executive and more, Journal of Business Venturing vol. 1, pp. 129 – 140.

Storey, D. 1994. Understanding the Small Business Sector. London: International Thomson Business Press.

Vesper, K. (1996) New Venture Experience, Vector Books: Seattle WA, pp. 1- 19.

Watkins et al 2003

Watson, W., W. Stewart, Jr. and A. BarNir (2003) The effects of human capital, organizational demography and interpersonal processes on venture partner perceptions of firm profit and growth, Journal of Business Venturing vol. 18, pp. 145 – 164.

Wiklund, J. , Davidsson, P. and F. Delmar (2003) What do they think and feel aboutgrowth? An expectancy-value approach to small business manager's attitudes toward growth, Entrepreneurship, Theory and Practice Spring 2003, pp. 247 – 270.

World Bank. 1998. Lithuania: An Opportunity for Economic Success. Washington DC.

United National Development Program (UNDP). 2000. Lithuanian Human Development Report. Vilnius, Lithuania.

Appendix 1: Variables defined

Independent Variables	**Characteristic**	**N**	**Mean**	**SD**
Human capital				
Higher education	One if the respondent has a university education, zero otherwise.	393	0.72	0.45
Job experirnce in same sector	One if the respondent has previous employment experience in the sector where they started their own business, zero otherwise.	389	0.48	0.50
Experience with other business	One if the respondent had started a private business besides their current business, zero otherwise.	395	0.02	0.14
Unemployed prior to starting	One if the respondent had not been in employment prior to starting their private business, zero otherwise.	395	0.73	0.26
Business owner's age	Continuous variable measuring business owner age.	390	42.76	8.77
Age2	Age variable squared	390	1905.2	787.9
Female	One if the respondent is female, zero otherwise.	396	0.25	0.43
Firm level attributes				
Exporting	One if the business is exporting, zero otherwise.	396	0.48	0.50
Location: Vilnius	One if the business is located in Vilnius, zero otherwise.	394	0.26	0.44
Micro	One if the business has less than 9 employees, zero otherwise.	396	0.34	0.48
Small	One if the business has 10 to 49 employees, zero otherwise.	396	0.39	0.49
Medium	One if the business has 50 to 249 employees, zero otherwise.	396	0.16	0.37
Construction	One if the business is engaged in construction, zero otherwise.	396	0.04	0.19
Turnover	Ordinal variable indicating annual business turnover for 1999. Five categories: (1) up to 100 000 Lt; (2) 100 001 – 500 000 Lt; (3) 500 001 – 1 000 000 Lt; (4) 1 000 001 – 5 000 000 Lt; (5) more than 5 000 000 Lt.	388	3.00	1.39
Barriers				
Taxes	One if 'taxes are too high' is considered one of the tree most important business barrier, zero otherwise.	368	0.63	0.48
Corruption	One if 'corruption at the national level' is considered one of the three most important business barrier, zero otherwise.	368	0.16	0.37
Sectors				
Retail trade	One if the business is engaged in retail trade, zero otherwise.	396	0.25	0.43
Whoesale trade	One if the business is engaged in wholesale trade, zero otherwise.	396	0.15	0.36
Busin. services.	One if the business is engaged in business services, zero otherwise.	396	0.14	0.35
Other services	One if the business is engaged in other service activities besides business services, zero otherwise.	396	0.17	0.38
Dependent Variables	**Characteristic**	**N**	**Mean**	**SD**
Growth expectations (using four ranks)	Ordinal variable indicating the respondent's growth aspirations in the next five years. Four categories: (1) decrease turnover or employment; (2) the same or don't know; (3) increase turnover, but not employment; (4) increase employment and turnover.	393	3.08	0.98
Growth expectations (using three ranks)	Ordinal variable indicating the respondent's growth aspirations in the next five years. Modified to three categories: (1) the same or don't know or decrease turnover or employment; (2) increase turnover, but not employment; (3) increase employment and turnover.	393	2.81	1.32
Growth expectations (positive employment growth as binary outcome)		399	0.46	0.50

N = total number of observations; SD = standard deviation.

Figure 1: Influences on Business Growth

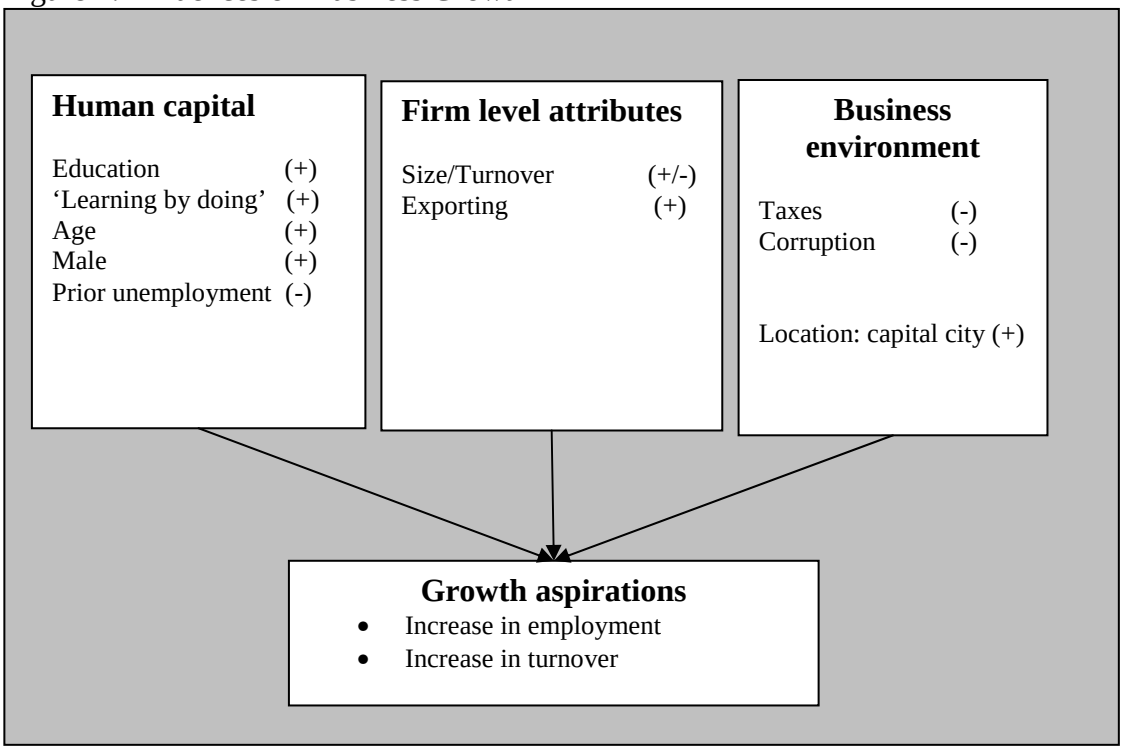


Figure 2. Histogram for employment

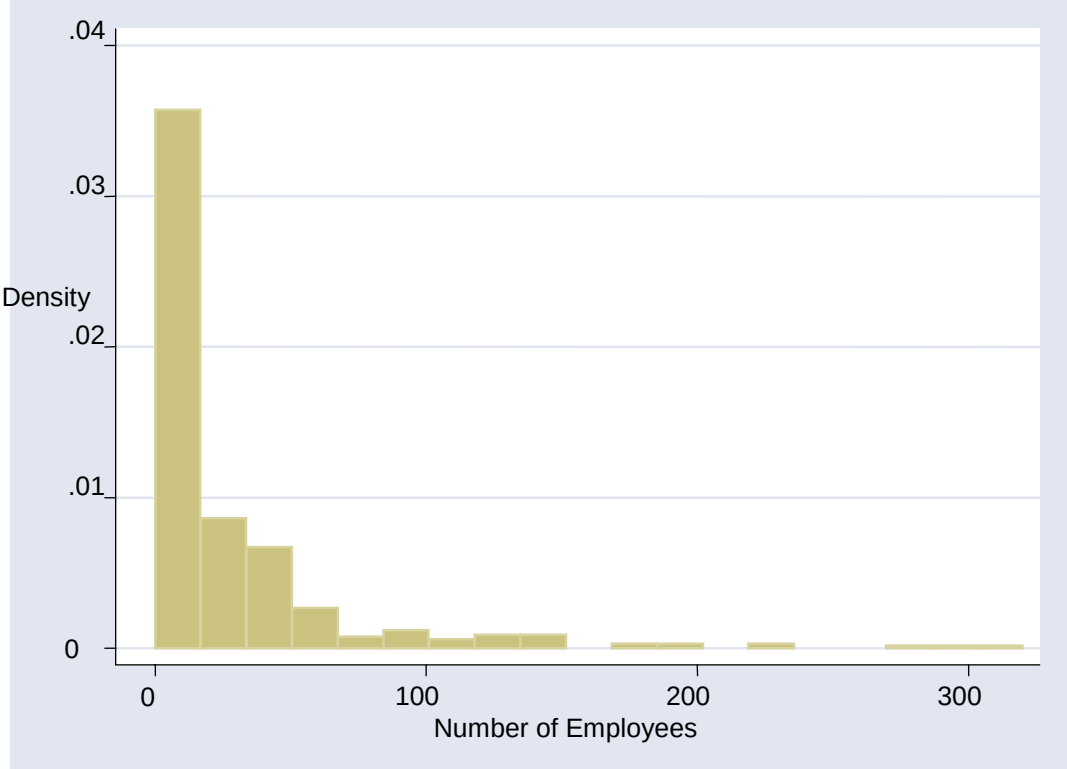
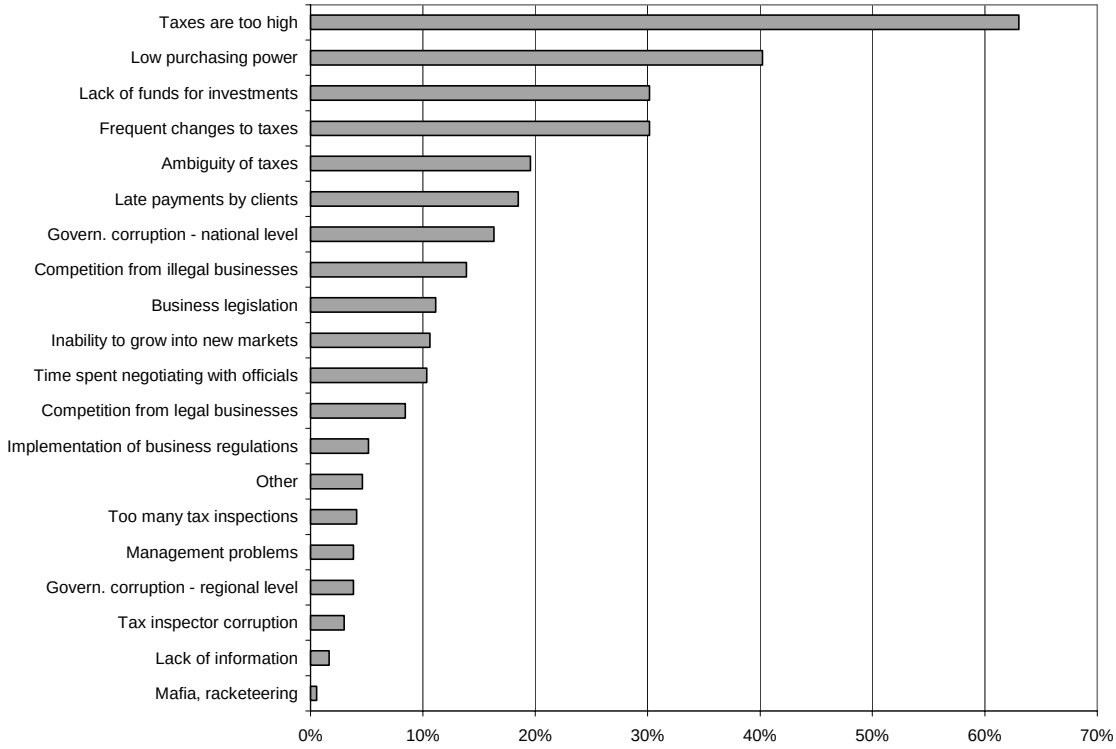


Figure 3. Percentage of entrepreneurs identifying a given dimension as one of the three most important business barriers.



Wage Bargaining, Privatisation, Ability to Pay, and Outside Options – Evidence from Hungary♣

Janos Köllő† and Tomasz Mickiewicz‡

† Hungarian Academy of Science, IZA and WDI
‡ SSEES at University College London. Senate House, Malet Street, London WC1E 7HU
T.Mickiewicz@ssees.ucl.ac.uk

ABSTRACT

This paper examines the determinants of short-term wage dynamics, using a sample of large Hungarian companies for the period of 1996-1999. We test the basic implications of an efficient contract model of bargaining between the incumbent employees and the managers, which we are unable to reject. In particular, there are structural differences between the ownership sectors consistent with our prior knowledge on relative bargaining strength and unionisation measures. Stronger bargaining position of workers leads to higher ability to pay elasticity of wages, and lower outside option elasticity. Our results indicate that while bargaining position of workers in domestic privatised firms may be weaker than in the state sector, the more robust difference relate to state sector workers versus the privatised firms with the majority foreign ownership.

We examine several extensions. We augment the bargaining specification by controls related to workers' skills and find that the basic findings are robust to that. We take a closer look at the outside options of the workers. We find some interactive effects, where unemployment modify the impact of availability of rents on wages. We interpret our results as an indication that bargaining power of workers may be affected by changes in their outside options. We also experiment with one concise indicator of reservation wage which is closest to the theoretical model specification and combines sectoral wages, unemployment benefits and regional unemployment levels,. We found that measure performing well.

Finally, we found that while responsiveness of wages towards ability to pay is higher in the state sector, variation in wage dynamics is lower. This may indicate some wage smoothing in the state sector, consistent with the preferences of employees.

Keywords: wages, bargaining, unemployment, privatisation, foreign ownership, Hungary

JEL Classification: D21, J30, L32, P31

this draft: July 2004

♣ This research is part of the European Commission Framework 5 Project, "Regional Labour Market Adjustment in the Accession Candidate Countries", co-ordinated by Peter Huber, WIFO, Vienna. We are indebted to Martin Falk and Frederick Guy for comments, and to participants of the seminars at WIFO and UCL for discussion.

Introduction

Wage inflexibility and rent sharing are potentially important explanations of why employment levels fail to recover in post-communist economies, and why unemployment rates stabilised at double-digit levels in many of them. Wage rigidity may have also contributed to the survival of regional inequalities paramount by western standards.

However, researcher's knowledge of how wages are actually set in these countries is rather poor. The characterisations of the institutional setup as 'centralised' versus 'decentralised' or 'coordinated' versus 'uncoordinated' are inevitably arbitrary since it is difficult to assess the practical importance of the existing institutions. In the country under examination, for instance, Labour Force Survey data from 2001 suggested that 22% of the employees were union members, 24% earned a wage influenced by collective agreements, 41% was employed at unionised firm, over 95% worked in a two-digit industry where at least one firm (potential wage leader) concluded collective wage agreement, and 100% was subject to minimum wage regulation and addressee of a national tripartite agreement on the 'desirable' rate of wage growth. Which of these figures bear relevance for wage determination is an open empirical question that can be best understood by studying actual wage evolutions on the micro level.[1]

In this paper we analyse a panel of Hungarian firms applying a bargaining framework where wages respond to changes in both ability to pay, outside options and, potentially, bargaining power. We take sales per employee as a proxy of ability to pay. The influence of regional and industrial factors are observed through the responses of wages to worker's outside options. Bargaining power is related to the distinction between firms with majority ownership of the state, private domestic owners and foreign owners.

The main contribution of our paper is the following. First, we test the implications of the bargaining framework controlling for skills and experience characteristics, and demonstrate that the basic implications are robust to the augmentation. Second, the results shed some light on the implications of the privatisation process for rent sharing. In particular, privatisation to foreign strategic investors induce a stronger attenuating effect on rent sharing than privatisation to domestic owners. Third, while rent sharing is more pronounced in the state sector, we also find indication of some wage smoothing there. Forth, we use a measure of regional unemployment, which takes into account that firm' employment may be split between several regions. Arguably, the measure applied has lower measurement error an that is why we are able to detect a strong wage-curve type effect. Fifth, we discover that regional unemployment may also modify the ability to pay elasticity of wages, that is the inside and outside variables interact.

[1] Authors' calculations using the 2001 April-June wave of the LFS. It might worth mentioning that the data are themselves of questionable precision. Union coverage in the mid-1990s was estimated to be in the range of 20-30% on the basis of firm and worker surveys (Neumann 1997) while some often-quoted sources like ILO (1997) and OECD (1999) suggested 60% level, see Cazes and Nesporova (2003). **{{OECD & ILO – missing in bibliography; also the whole footnote -> move to section 3.3?}}**

Section 2 motivates the basic model of wage bargaining we refer to. Next, in section 3 we discuss proxies and indicators for variables. Section 4 describes data. Subsequently we focus on interference, presenting our specifications and results in section 5. Section 6 concludes.

2. Model of wage bargaining

We start with a brief presentation of a theoretical model that may motivate the intuition of the empirical specification we wish to test. The two main categories of bargaining models relate to (i) 'right to manage' and (ii) 'efficient contract' frameworks.[2] The difference relates to the fact that in the latter case the bargaining process may include employment while in the first case, the managers determine employment unilaterally after wage decisions are taken. Therefore, in the first case, the resulting wage and employment combination is always placed on the labour demand (marginal revenue product of labour) curve. In the second case, they may be off labour demand curve, as simultaneous bargaining over two variables extends the possible range of solutions.

However, the empirical difference between the predictions of the 'right to manage' and 'efficient contract' models do not relate to interference on wage levels, but rather on employment. Many models in the "efficient contract" category assume high weight attached to employment in the objective function of the risk-averse employees and therefore predict contract curves, on which employment levels are higher than those resulting from the competitive equilibrium. In contrast, in the 'right to manage' situation, the bargaining solution is always to the left of the maximum profit (competitive) solution, while still on the marginal revenue product curve. Therefore in the latter case the employment is lower.

As we do wish to focus on wages without making predictions about the employment outcomes, the model of 'efficient contract' with risk neutral incumbent workers bargaining with managers of the firm appeals to us. This is also motivated by the patterns of unionisation in the country under examination. Union density is relatively low with 8.2 per cent of the workers being union member in small firms (less than 50 workers) and 23.8 per cent in large firms. Even in unionised large firms members account for only half of the employees.[3] Practices characteristic of unions that maximise the welfare of a *fixed* membership, such as restrictions put on hiring workers other than those previously laid off from the firm, are largely missing. Hungarian unions apparently seem uninterested in several issues relevant for employment-aware bargaining such as import policies, customs duties, or immigration legislation. Given these features, the assumption of bargaining between the firm and a small group of insiders (Carruth and Oswald 1985) seems to fit better than the presumption of employment-aware unions (McDonald and Solow 1982).

[2] One may also notice that the insider control model can be interpreted as a special case of the efficient contract model.
[3] Hungarian Labour Force Survey April-June 2002.

In view of this, we adopt the model, in which the contract curve is vertical, thus employment remains equivalent to the competitive solution. The empirical appeal of such a model results from the fact, that – unlike models assuming solutions along the demand for labour curve – the increase in bargaining position of the incumbent workers leads to higher wages, but does not affect the employment level negatively. The highest attainable wage corresponds to zero profits. Lowest wage is equivalent to alternative wage and corresponds to the profits, which would result from the (short term) competitive equilibrium. The bargaining is depicted by Figure 1 below.

(Figure 1)

Following Svejnar (1986) we write the generalised Nash bargaining as:

$$U_L^{\beta} U_L^{1-\beta} = \left[\frac{L}{\delta \bar{L}} (w^{\delta} - w_a^{\delta}) \right]^{\beta} \pi^{1-\beta} = \left[\frac{L}{\delta \bar{L}} (w^{\delta} - w_a^{\delta}) \right]^{\beta} \left[R - wL - H \right]^{1-\beta} \qquad (1)$$

where:
w is total wage (labour cost) derived by the worker from his/her employment,
w_a corresponds to the alternative wage,

$\bar{L}$ represents incumbent employment,
L relates to employment secured as a result of the (implicit) bargain,

δ is a measure of risk aversion (with higher value implying more risk loving),

π represents profits,

R is total revenue,

H relates to non-labour costs of production, and

γ represents the bargaining power of the incumbent workers, where $0 \leq \gamma \leq 1$.

Assuming risk neutrality ($\delta = 1$), the contract curve corresponding to this problem on the employment-wage plane is vertical, that is employment level is equivalent to the profit maximising (competitive) equilibrium ($L=L^*$) while wages exceed the opportunity cost level in proportion to the incumbent workers bargaining power. The solution reduces to the following condition:

$$w = w_a + \gamma \frac{\pi^*}{L^*} = (1-\gamma) w_a + \gamma \left(\frac{R}{L^*} - \frac{H}{L^*} \right) \qquad (2)$$

where π^* represents non-zero profits evaluated at the (short term) competitive solution.

Thus, we can immediately derive the following implications from the model: /i/ higher bargaining strength is associated with higher responsiveness of wages to the firm's ability to pay and lower responsiveness to outside options;

/ii/ increase in the reservation wage of the employees will lead to the increase in wages ($\frac{\partial w^*}{\partial w_a} = 1 - \gamma + \frac{R}{L^*} - \frac{H}{L^*} > 0$), as long as the firm produces positive value added;

/iii/ with stable employment, positive external shocks to profits (positive to revenues, negative to non-wage costs) will lead to the increase in wages, as long as the workers have some bargaining strength ($\frac{\partial w}{\partial\left(\frac{R}{L^*}\right)} = \gamma \geq 0$).

We will focus on those three implications in the empirical section, yet without attempting to estimate the exact structural form.[4]

3. Proxies

3.1. Ability to pay

As discussed, following equation (2), we expect wages to respond positively to alternative wages, profits and bargaining power of incumbent workers. Yet the issue of empirical proxies is not trivial.

A number of studies use profits per employee as a proxy for quasi rent (Fakhfakh and Fitzroy 2002, Hildreth and Oswald 1997). Yet, there are problems since profits are clearly endogeneus.[5] In particular, in line with the bargaining model, wage is a function of profit estimated at the competitive equilibrum solution (π^*), not of realised profit after wage cost is paid (π). As value added is distributed between profit and wages, that may lead to negative correlation and create an attenuation bias when profit is taken as determinant of wages with assumed positive sign. The problem could be alleviated by use of instruments, and this is the approach followed by the authors quoted above, but that brings in different estimation problems – as always, reliable exogeneous variables which may affect profits on individual firm level are difficult to find.[6] Third, profits are volatile – they vary significantly from one year to another. The current ability to pay is in practice determined by retained earnings accumulated over several years. The above authors were able to use data sets, which span over long time dimension and could control for several lagged values of profits. Such dataset are rarely available for transition countries.

For that reason, revenue per employee may be used as a proxy for ability to pay, which is still consistent with equation (2). This variable was utilised in seminal paper by Nickell and Wadhwani (1990) and applied in the transition economies context by Grosfeld and Nivet (1999), Basu *et al.* (2000), Christev and Fitzroy (2002)

[4] In particular we will follow typical design and approximate the model by log-linear specification.
[5] See Van Reenen (1996).
[6] One possibility is to use sectoral level data on profits and demand shocks, provided the relevant data is available. This is the approach taken by Abowd and Lemieux (1993) and Christofides and Oswald (1992).

and Mickiewicz and Bishop (2003). In particular, when the specification is augmented by sectoral wages, the difference between revenue per employee and prevailing sector wage may be treated as a very good indicator of available quasi-rent (Van Reenen 1996). Revenue per head might be also interpreted as labour productivity. Yet, unlike productivity measures based on some production function specifications, this is a very imperfect indicator of labour productivity. Even if we label the variable as "productivity", it is still a very good indicator of availability of quasi rents, as argued above. In the context of productivity it is important however to control for the skill composition of workers. This will be addressed in the empirical section.

3.2.Outside options

The indicators of outside options, which appear often in the estimation of wage equations, are regional unemployment and outside wages.

The negative relationship between regional unemployment rates and wages is often interpreted in terms of the wage curve, which relates to the cross-sectional relationship between the level of wages and the level of unemployment (Blanchflower and Oswald 1995). The empirical results confirming microeconomic wage curve are common in studies of European transition economies, but empirical specifications differ. We may notice first that the standard interpretation of the basic wage bargaining model implies regressing change in wages against change in unemployment, if the second is taken as an indicator of outside options (typically in natural logarithms). This amounts to first-differencing from wage curve, thus the derived specifications are parallel. Thus, bargaining model is one possible way to provide theoretical justification for the wage curve.

However, the research on the cross-sectional link between unemployment and wages is driven by empirics and specifications differ. In particular, Blanchflower (1990) found that four alternative measures of unemployment and employment – some in levels, and some in first differences are negatively and significantly related to annual earnings. Grosfeld and Nivet (1999) regress first difference of wages against – alternatively – both the level of regional unemployment and the first difference in regional unemployment (for Poland), while Mickiewicz and Bishop (2003) use the latter specification. Duffy and Walsh (2001) and Kertesi and Köllő (1999) (for Hungary) apply directly the wage curve (both variables in levels), while Christev and FitxRoy (2002) regress first difference in wages against unemployment level (both papers for Poland) similar to earlier papers by Christofides and Oswald (1992) (for the UK) and Holmund and Zettenberg (1991) (five OECD countries). Holmund and Zetterberg (1991) also hypothesise that unemployment (they use an economy wide unemployment rate) is likely to slow down wage growth,[7] in their study of the determinants of industry wages in five countries. Yet, their results show that the effects of aggregate unemployment vary across countries: negative as expected for Sweden, Finland and Germany, yet positive for Norway and the USA. The result is interesting as it possibly reflects differences in institutional labour market

[7] However, they note that the depressing effect of higher unemployment is likely to be bigger in an aggregate wage equation.

characteristics implying that wage curve may be specific to the labour market institutions. In particular, the positive coefficient for the USA may imply a more competitive labour market, which can be interpreted along the lines of the 'first generation' models, where wages may compensate for higher unemployment risk. Following this line of argument, one may notice that evolving institutional frameworks in transition countries make testing wage curves for transitional economies a non-trivial task.

One should also note that the link between wages and unemployment can be interpreted not only in terms of bargaining theory but also in terms of efficiency wage theory, where wages do not result from bargaining process but from optimising decisions by the firms (Shapiro and Stiglitz, 1984).

In addition, as just mentioned, there is a dissenting tradition of the neo-classical or "first generation" of papers by researchers such as Harris- Todaro (1970), Hall (1970) and Rosen (1986) predicting that unemployment and wages would move in the same direction. This relies on the perfectly competitive theory and compensating differentials. Wages may have to compensate for job characteristics, location, flexibility, risk to health etc. Duffy and Walsh (2001) provide a brief survey of the "first generation of papers" written in the 1970's and 1980's, which all found a positive relationship between wages and unemployment. However, they criticise this line of research for failing to control for regional fixed effects. They argue that after including regional dummies, the relationship between regional pay and unemployment are in fact negatively correlated (*Ibid*., p.25). The evidence is still not conclusive. A recent study by Cahuc *et al*. (2002) on a panel of French firms finds some new evidence that confirms the predictions of equalising differences, as unions accept lower aggregate wages when workers benefit from lower unemployment risk. As argued above, the parameters of the wage curve are conditional on labour market institutions (competitiveness in particular), and may be therefore neither cross-country nor time invariant, thus still worth further testing.

Less controversy relates to the use of alternative wage as an indicator of outside options. One may notice that the latter link should be more relevant, if the likelihood of re-entering employment for those workers, who may loose their job is high. Thus, outside wages and regional unemployment may interact in their effect on wage dynamics. High unemployment/vacancy ratio, low turnover in the job market and low outflow into jobs from unemployment, would diminish the importance of alternative wages, and the level of employment benefits would count more. For studies based on one country, unemployment benefits are typically uniform. But the likelihood of entering a new job may be negatively correlated with regional unemployment. If so, one would expect the latter to be significant component of outside opportunities.

3.3. Bargaining strength

Finally, we consider proxies of bargaining strength. In line with the empirical papers exemplified above (in particular: Grosefeld and Nivet (1999), Christev and FitzRoy (2002) and Mickiewicz and Bishop (2003)), we link bargaining to ownership

characteristics. In particular we hypothesise the stronger position of incumbent workers in the state sector versus the private sector. This intuition is supported by results of earlier research on Hungarian labour market by one of the authors. The results are based on data from the 1998 Wage Survey augmented with data on collective agreements. In that year the probability that a worker was covered by a collective wage agreement was lower by 8.2% in case of mixed ownership, 18% in case of private domestic owners, and 34.5% in case of foreign ownership compared to state-owned firms, after controlling for firm size. (based on logit model, with firms in the budgetary public sector excluded, marginal effects, N=103,561, pseudo r2=0.356).8 This allows direct interpretation based on institutional characteristics of bargaining (not necessary explicit). Interestingly, it is supported by another dimension, which is directly linked to outside options. This second piece of information comes from the single data set on severance pay – 1994, workers losing jobs and becoming unemployment insurance recipients in April 1994. The probability that a state sector worker received severance pay after controlling for tenure and a manual/non-manual dummy was 11% higher in fully state-owned firms and 16% higher in partly state-owned firms compared to private firms including foreign ones (logit, marginal effects, N=5075, pseudo r2=0.2).

4. Data

4.1 Data description

As argued by Hamermesh (1993) firm level data may be superior to household data for studying the firm-specific issues such as rent sharing. Our sample of large firms is drawn from the National Labour Centre's Wage Survey (WS), which is a matched employer-employee database. The surveys were carried out in May 1986 and 1989 and have been conducted each May since 1992. It contains data of about 150,000 workers employed in 6,000 to 12,000 firms, depending on year.

The sampling procedure is two-step. At the first step firms are selected, while at the second, a random sample of full-time employees is drawn within each firm. The table below summarises the variations in the sampling procedures by sector and firm size.

Table 1. Sampling procedures for the National Labour Centre Wage Survey

Category	Selection of firms	Selection of employees	Notes
Budget institutions	100%	100%	Armed forces excluded
Firm > 20 employees	100%	about 10%	1986-
Firms with 11-20 employees	about 12%	100%	1995-
Firms 5-10 employees	about 12%	100%	1999-

[8] Turnover statistics broken down by ownership are not available.

The sub-sample for this panel was drawn by selecting firms, which reported at least 30 individual observations (representing roughly 300 employees) in all years between 1996 and 1999. The firm-level data on the level of employment and nominal variables were taken from the firms' Financial Reports delivered to the tax authorities. All data refer to annual flows or annual average stocks. The PPI indexes were drawn from National Accounts on the 4, 3, 2 or 1 digit level whichever was available (32 distinct values). The unemployment rate attached to the firm is the weighted mean of the micro-region-level unemployment rates given the location of the firm's branches. The ownership variable is based on shares in equity as reported in the Financial Reports. The industry-level variables are calculated using the data of all firms observed in the WS. Since the firm-level response rate is close to 100 per cent in the size category considered in this paper we did not use weights to correct for occasional non-response.

4.2 Descriptive statistics

Table 2 below presents a description of all available variables.

Table 2. Description of variables

l_rwage: logarithm of real wage (deflated using a corresponding sectoral ppi)
ebt_rev: earnings before taxes (but net of financial costs) divided by sale revenue
rtrev: real total revenue from sales
rtremp: real total revenue from sales per employee
rswage: real sectoral wage
unsu_n: ILO-methodology survey based regional unemployment (constructed as a weighted average of unemployment rates is case of few places of operation)
reswage: reservation wage, constructed as described in section 5.1 below,
Experience and education:
exp_old_young = No of old educated / No of young educated,
ed_low_high = No of low educated / No of high educated
exp_old_tot = No of old educated / (No of old educated + young educated))
lowedu = No of low educated / (No of low educated + high educated),
where 'old' means age above population mean, and 'young' below mean, and 'high education' stands for secondary and higher education.
Dummies:
small = lowest one third of firms ranked by employment at the beginning of the period,
large= highest one third of firms ranked by employment at the beginning of the period,
state = majority state ownership,
mixed = state, private and foreign shares are all<50 per cent
dom_maj = majority private domestic ownership,
for_maj = majority foreign ownership,
year97, year98, year 99 = annual dummies,
Sectoral controls constructed as a set of orthogonal contrasts between:
serv_ind = services versus industry,
trade_ser = trade versus other services,
minh_ind = mining & heavy industry versus other industry,
util_ind = utilities versus other industry,
cons_ind = construction versus other industry,
eng_man = engineering versus other manufacturing,
chem_man = chemical industry versus other manufacturing.

Note: The following prefixes will be used: *d_* denotes annual change, *l_* denotes logarithm, *dl_* denotes logarithmic difference, *dp_* relates to percentage change (applied where logarithms cannot be directly applied due to variables with some negative values, like profit)

Median values for selected variables and for basic ownership and sectoral cross-sections of firms in the data set are presented in Table 3 below. Reported significance levels relate to non-parametric tests on the equality of medians.

Table 3. Median values for selected variables over 1996-1999

Category	log change in real wage *dl_rwage*	earnings before taxes/sales *ebt_rev*	change in (EBT / sales) *d_ebt_rev*	log change in real sales *dl_rtrev*	log change in (real sale/empl) *dl_rtremp*	% change in (low ed/ total) *dp_lowedu*	% change in (old ed/ total edu) *dp_exp_old*
All firms	.060 (*1279*)	.134 (*1796*)	.001 (*1279*)	.036 (*1279*)	.055 (*1279*)	-.011 *(1033)*	-.000 *(1035)*
State majority ownership	.049 (*306*)	.216*** (*452*)	.002 (*306*)	.020** (*306*)	.037** (*306*)	-.009 (*269*)	.006 (*269*)
Mixed	.010** *(38)*	.126 (*63*)	-.002 (*38*)	.029 (*38*)	.055 (*38*)	-.026 (*34*)	.035 (*34*)
Private majority ownership	.062 (*508*)	.135 (*687*)	.002 (*508*)	.016* (*508*)	.060 (*508*)	-.005* (*392*)	.001 (*392*)
Foreign majority ownership	.070† (*427*)	.095*** (*594*)	.000* (*427*)	.086*** (*427*)	.076† (*.427*)	-.026** (*338*)	-.023† (*340*)
Industry	.057 (*946*)	.128*** (*1327*)	.001 (*946*)	.024*** (*946*)	.047 (*946*)	-.013 (*759*)	.000 (*759*)
Services	.067 (*329*)	.164*** (*463*)	.000 (*329*)	.073*** (*329*)	.070 (*329*)	-.003 (*270*)	-.007 (*274*)

Notes:
(i) Number of observations in each category is given in brackets. The growth rates of the variables were trimmed so that outlier observations in the tails of each variable were removed (0.5% on both ends, i.e. 1% in case of each variable). That relates to all subsequent estimations. Results on data with outliers (N=1323 in case of first differences, as compared with N=1279 here) are available on request.
(ii) *** Significant at .001; ** Significant at .01; **** Significant at .05; † Significant at .1
(iii) Significance levels relate to Pearson χ^2 (continuity corrected) based on the non-parametric test on the equality of medians. Fisher's exact test (two-sided) produces very similar significance results (not reported).

Several conclusions follow immediately from Table 2. Wage growth seems to be very similar across the ownership and sectoral cross-sections, apart from mixed ownership, where it is lower, but this category contain a very small number of observations. More importantly, the wages are growing faster in the foreign sector as compared with the rest of the sample. The result can be linked to better performance of foreign firms in terms of growth of both sale revenues and sales per employee (but not in terms of profits). Interestingly, the foreign controlled companies are also changing the skill composition of their workforce reducing the share of low-educated workers; the effect is highly significant as compared with other ownership sectors. Obviously this is an important complementary explanation of stronger wage growth, which should be controlled for in multivariate settings.

State firms are characterised by significantly higher profitability, but on the other hand, the performance of state sector is worse if measured by both the growth of sales and the dynamics of the sales per employee, albeit the last difference is not significant. The combination of those two characteristics may suggest some static rents resulting from market power.

Also, the comparison between the industry and service sector is showing no differences in wage increase, but clear differences in performance indicators. The service sector is performing better in terms of both profitability and dynamics of revenues (but the difference in the dynamics of revenue per head is not significant). The underlying tertiarisation process and the initial underdevelopment of services inherited from the command economy period may suggest higher growth opportunities in the latter period.

Last but not least, we looked into the distribution pattern of the key variables. The most interesting case relates to the pattern of wage dynamics, once it is split between the state and the private sector. Namely, standard deviation of wage dynamics is far lower in the state sector than in the private sector. The corresponding histograms are presented as Figure 5 below. We will return to this result later.

(Figure 2)

5. Interference

5.1 Methods and specifications

The panel we have at our disposal has a very short time dimension. That renders any attempt at dynamic specification difficult to justify. For that reason our estimation strategy relies on transforming all variables into natural logarithms and applying 'within' panel estimation (fixed effects model). The model seems to have most natural interpretation in terms of the comparative statics of equation (2), which were discussed above. In addition, the Hausman test rejected a potentially more efficient GLS random effects estimator as inconsistent (for specification (1) in Table 4 below, the test renders $\chi 2(6)=189.18$, which is highly significant). A possible criticism of the use of the fixed effects estimator for wage equations based on regional data is that it does not take into account the potential endogeneity of unemployment. While the issue has been raised in the literature, Bell et al. (2000) argue that the problem is unlikely to be serious due to "the high degree of persistence in labour demand and the notoriously sluggish response of unemployment to shocks of any kind" (Ibid. p.9). Moreover, in case of estimation based on individual company level wages, where regional unemployment is included on the right hand size, the problem is alleviated even further, even if we allow for some impact of large companies on regional labour markets.

Following earlier discussion, in the benchmark specification we regress wages on revenue per employee, sectoral wages and regional unemployment (all controlling for time effects and individual fixed effects). Subsequently, we attempt to see if the model is robust to alternative specifications.

First, we modify the proxies for alternative options, combining unemployment and outside wages in one indicator of reservation wage:

$W_r = (1-U)*W_s + Ub$,

where b relates to replacement ratio, Ws is sectoral wage, and U is the local unemployment rate.9 Finally, we introduce interactive effects of unemployment with the ability to pay measure (revenue per employee).

The next set of tests relates to interactive effects based on ownership sectors. We look at the differences to see if they are consistent with our prior expectations related to bargaining strength.

Finally, we apply tree quantile regressions, for medians, first and third quartile of wage growth. While the fixed effect model coefficients may be interpreted as short-term effects around the individual means, the median regression offer an additional test of robustness of our results. Here, to account for individual effects, we first difference all the variables. In addition, the two quartile regressions offer an opportunity to test directly if the characteristics of response differ along the distribution of the dependent variable. That is interesting to investigate, given the fact that the distribution of wage dynamics variable in the state sector is more compressed than in the private sector (see Figure 2 in the descriptive section above). More specifically, we are able to test if estimated coefficients of explanatory variables for wage dynamics are different for firms characterised by high wage growth from those for firms with low or negative wage growth and if the ownership differences matter in this context.

[9] In time of our work of this paper we became familiar with Dobbelaere (2004) who applied similar approach independently (her sample being drawn from Bulgaria 1997-1998).

5.2 Results

All estimation results are presented in Tables 4-6.

Table 4. Fixed effects (within) models. Dependent variable: natural logarithm of real wage (l_rwage). Benchmark specifications: (1)-(3); controlling for education and experience: (4)-(5).

	(1)	(2)	(3)	(4)	(5)
ln (real sales/employment) (l_rtremp)	.217*** (.013)	.220*** (.013)	.276*** (.048)	.205*** (.013)	.204*** (.013)
ln real sectoral wage (l_rswage)	.148*** (.020)	-	.149*** (.020)	.147*** (.020)	.144*** (.020)
ln regional unemployment (l_unsu_n)	-.120*** (.033)	-	-.156*** (.044)	-.136*** (.036)	-.134*** (.036)
"reservation wage" construct (l_reswage)	-	.151*** (.020)	-	-	-
ln (unemployment times sales/employment) (lrem_x_lun)	-	-	.021 (.017)	-	-
ratio of low educated to high educated workers (ed_low_high)	-	-	-	-.002 (.002)	-
ratio of experienced high educated to unexperienced high educated workers (exp_old_young)	-	-	-	-.002 (.002)	-
share of low educated in total no of workers (lowedu)	-	-	-	-	-.001† (001)
share of experienced in total no of workers (exp_old_tot)	-	-	-	-	-.044 (.040)
year97	-.002 (.007)	.001 (.007)	-.002 (.007)	-.009 (.007)	-.010 (.007)
year98	-.021 (.010)	.007 (.008)	-.013 (.010)	-.020 (.011)	-.019 (.011)
year99	.072*** (.011)	.090*** (010)	.071*** (.011)	.062*** (.012)	.061*** (.012)
constant	-.647*** (.085)	-.335*** (.020)	.746*** (.115)	-.652*** (.093)	-.566*** (.101)
Null: all individual firm effects = zero (F statistics for joint significance)	24.14***	25.90***	24.11***	22.93***	19.11***
R^2	.49	.49	.49	.50	.50
No of firms	492	492	492	492	492
No of observations	1796	1796	1796	1608	1611

Notes:

(i) Standard errors in parentheses.

(ii) *** Significant at .001; ** Significant at .01; **** Significant at .05; † Significant at .1

Table 5. Fixed effects (within) models. Dependent variable: dl_rwage. Interactive ownership effects.

	(1)	(2)	(3)	(4)
ln (real sales/employment) (l_rtremp)	.245*** (.019)	.248*** (.019)	.250*** (.019)	.252*** (.019)
ln (real sales/employment) x priv. domestic dummy (l_rtremp_do)	-.010 (.014)	-.011 (.015)	-.014 (.015)	-.018 (.015)
ln (real sales/employment) x foreign dummy (l_rtremp_fo)	-.051*** (.016)	-.055*** (.016)	-.057*** (.016)	-.053*** (.016)
ln real sectoral wage (l_rswage)	.141*** (.020)	.140*** (.020)	.093** (.035)	.116** (.037)
ln real sectoral wage x priv. domestic dummy (l_rswage_do)			.040 (.034)	.017 (.035)
ln real sectoral wage x foreign dummy (l_rswage_fo)			.068† (.036)	.041 (.039)
ln regional unemployment (l_unsu_n)	-.136*** (.036)	-.076 (.046)	-.087† (.047)	-.093* (.047)
ln regional unemployment x priv. domestic dummy (l_unsu_n_do)		-.036 (.030)	-.026 (.031)	-.016 (.032)
ln regional unemployment x foreign dummy (l_unsu_n_fo)		-.083* (.039)	-.057 (.041)	-.046 (.042)
share of low educated in total no of workers (lowedu)	-.001† (.001)	-.001† (.001)	-.001† (.001)	.000 (.001)
share of low educated x priv. domestic dummy (lowedu_do)				-.001† (.001)
share of low educated x foreign dummy (lowedu_fo)				-.002† (.001)
private domestic majority ownership dummy (dom_maj)	.027 (.025)	-.063 (.081)	-.034 (.085)	.080 .108
foreign majority ownership dummy (for_maj)	.128*** (.038)	-.078 (.104)	-.018 (.109)	.083 (.122)
year97	-.011 (.007)	-.011 (.007)	-.012 (.007)	-.012 (.007)
year98	-.023* (.011)	-.020† (.011)	-.019† (.011)	-.020† (.011)
year99	.057*** (.012)	.060*** (012)	.061*** (.012)	.060*** (.012)
constant	-.666*** (.102)	-.523*** (.125)	-.553*** (.126)	-.635*** (.133)
Null: all individual firm effects = zero (F statistics for joint significance)	18.67***	18.69***	18.71***	18.25***
R^2	.51	.51	.51	.51
No of firms	492	492	492	492
No of observations	1612	1612	1612	1612

Notes:
(i) Standard errors in parantheses.
(ii) *** Significant at .001; ** Significant at .01; **** Significant at .05; † Significant at .1

Table 6. Quantile regressions. Dependent variable: dl_rwage

	(1) q25	(2) q50	(3) q75	(4) q75-q25	(5) q50-q25	(6) q75-q50
dl_rtremp	.194*** (.023)	.245*** (.030)	.264*** (.037)	.069† (.038)	.051* (.024)	.019* (.032)
dl_rtremp_st	.158** (.058)	.108* (.043)	.069 (.064)	-.090 (.064)	-.050 (.041)	-.039 (.045)
dl_rswage	.087** (.027)	.081*** (.023)	.113*** (.021)	.026 (.027)	-.006 (.022)	.032 (.020)
dl_unsu_n	-.130** (.046)	-.040 (.033)	-.026 (.044)	.105* (.047)	.091 (.037)	.014 (.039)
dlrev_x_dlun	.384** (.139)	.467* (.184)	.593* (.232)	.209 (.198)	.083 (.142)	.126 (.126)
small	.003 (.007)	.006 (.007)	.013† (.007)	.010 (.008)	.004 (.006)	.007 (.006)
large	.005 (.008)	.006 (.006)	.012 (.007)	.006 (.008)	.001 (.006)	.005 (.006)
state	.018* (.008)	.003 (.006)	-.016† (.008)	-.034** (.011)	-.015† (.008)	-.019* (.008)
for_maj	-.002 (.008)	.004 (.007)	.003 (.009)	.005 (011)	.006 (.007)	-.001 (.007)
year98	.007 (.011)	.010 (.010)	-.007 (.009)	-.014 (.011)	.003 (.010)	-.017 (.011)
year99	.078*** (.010)	.070*** (.008)	.069*** (.011)	-.009 (.012)	-.009 (.008)	-.001 (.009)
serv_ind	-.001 (.002)	-.002 (.002)	-.005† (.003)	-.004 (.003)	-.002 (.002)	-.002 (.003)
trade_ser	-.014* (.006)	-.012* (.005)	-.000* (.008)	.013 (.010)	.002 (.006)	.011 (.007)
minh_ind	.004 (.004)	.004 (.004)	.002 (.004)	-.002 (.005)	.001 (.003)	-.003 (.004)
util_ind	-.004* (.002)	-.005*** (.001)	-.007*** (.002)	-.003 (.002)	-.001 (.002)	-.002 (.002)
cons_ind	-.000 (.003)	.002 (.003)	.003 (.006)	.003 (.005)	.002 (.003)	.001 (.005)
eng_man	.012** (.004)	.007* (.003)	.005 (.003)	-.007† (.004)	-.005 (.003)	-.002 (.004)
chem_man	.006 (.005)	.001 (.003)	-.000 (.004)	.006 (.005)	-.005 (.004)	-.001 (.004)
constant	-.052*** (.009)	.001 (.007)	.060*** (.009)	.122*** (.010)	.054*** (.007)	.058*** (.008)
Pseudo R^2	.20	.22	.21	-	-	-
N of observ.	1275	1275	1275	1275	1275	1275

Notes:

(i) Number of bootstrap replications: 100.

(ii) Bootstrap standard errors in parantheses.

(iii) *** Significant at .001; ** Significant at .01; **** Significant at .05; † Significant at .1

'Smaller firms' (column 4) refer to the bottom 1/3 of the sample when ordered by size at the beginning of the sample period. Correspondingly, 'larger firms' (column 5) refer to the top 1/3 of the sample.

5.3. Discussion

Clearly, wages seem to respond to the measures of ability to pay, i.e. to sales per employee. The estimates of corresponding aggregate elasticities vary between 0.20 and 0.28 depending on specification (Table 4). They are similar to those found for Poland by other researchers. Comparing with previous results on Poland, we may see, that Grosfeld and Nivet (1999) reported sales per employee elasticity of wage at 0.14 for early transition period and Mickiewicz and Bishop (2003) at 0.23. However, Christov and FitzRoy (2002) fiund higher elasticities for Poland, at 0.60-0.62 for more recent period.

Turning to alternative wage, we may see that the sectoral wage is consistently significant (with elasticity estimates in a range of 0.14-0.15), and so is unemployment (elasticity between –0.12-0.14). Combining both variables into one proxy of reservation wage lead to estimate of elasticity (0.15), which is in a very similar to range.

We also investigated if the regional unemployment effect on wages may have a more composite way. In specification reported in column 3 of Table 4 we introduce an interactive effect between the unemployment rate and the sales revenue per employee (lrem_x_lun). The same effect is than reproduced in quantile regressions (Table 6), this time defined as interaction between logarithmic changes (dlrem_x_dlun). While the variable is insignificant in the first specification, it remains significant in the subsequent three. It suggest that in addition to the direct effect of the two variables, we have a situation, where increase in regional unemployment is associated with higher sensitivity of wages to ability to pay. For sake of illustration, see Figure 3 with the estimated effects from column 2 of Table 6 (a range of values for simulations is taken approximately within one standard deviation each way from the sample means). The curves depict the estimated change in wages as a function of change in company revenues, at different rates of change in regional unemployment. When unemployment is increasing (see the upper curve) changes in ability to pay have stronger effect on wages. Higher revenues are conducive to higher wages irrespective of whether unemployment falls or rises but the revenue-specific differentials widen as conditions on the local labour market are deteriorating.

Most of these implications are straightforward to interpret. When revenues do not change the firm simply takes no action. When revenues rise the workers acquire a part of the gain in the form of higher wages, and their ability to do so does not strongly vary with changes in outside opportunities. When revenues fall the firm cuts wages, particularly when unemployment is on the rise. This, we believe, is consistent with the assumption of revenue sharing with incumbents who are not highly exposed to fluctuations in the labour market.

We tested if the results are driven by changes in the firm's skill composition using data on the shares of (i) low-educated, (ii) young-educated and (iii) old-educated workers with 'high education' standing for secondary or higher education, and 'old' standing for experience longer than the median. Using this data we test two sets of

variables. In Table 4, column 4 we report a specification, where we control for experience and education, defining the following variables:

dp_exp_old_you = percentage change (old educated / young educated),
dp_ed_low_high = percentage change (low educated / high educated)
and in column 5:
dp_exp_old_tot = percentage change (old educated / (old educated + young educated))
dp_exp_lowedu = percentage change (low educated / low educated + high educated).

The second specification detects an effect of change in skill heterogeneity on wage dynamics, even if the time period is very short to allow much variation in those variables, and the measures applied here are crude.

We do not intend to conclude that skills and experience dimension does not matter. Interestingly, we also explored interactive effects between ability to pay and the experience and education variables. It seems that both may have some positive modifying effect on ability to pay elasticity of wages. Thus, it may be that more experienced workforce and that with higher level of education has stronger bargaining position. Nevertheless, the obtained results were insignificant and not robust to specification. For that reason we leave it for further research.

Last but not least, we hypothesised that the bargaining position of incumbent workers is likely to be stronger in the state sector. To see if this is confirmed empirically, we estimated the basic model with two sets of interactive affects: for firms with majority domestic private ownership and those with majority foreign ownership, with the state sector firms taken as a benchmark (mixed with a small number of firms with mixed ownership). Table 5 presents the corresponding specifications. There are clear differences between the state sector and both private domestic and foreign sectors. Looking into details one may see, that the differences are most clear in case of the elasticity of ability to pay and again in case of the interactive effect with sectoral wage. Ability to pay elasticity of wages is insignificantly higher in the state firms as compared with the domestic private firms, and insignificantly higher as compared with the foreign firms. In the latter group, the modifying effect of local unemployment is also strongest.

The results are consistent with the theoretical model and our prior knowledge about the bargaining position of workers, which is the strongest in the state sector, followed by the domestic private firms and weakest in the foreign firms. Correspondingly, responsiveness to the ability to pay diminishes and responsiveness to outside options increases, as predicted.

Quantile regressions (Table 7) reveal another difference with respect to state sector behaviour. Where the econometric model predicts low (negative) real wage growth, the wage growth in the state firms is stronger. On the other hand, where the model predicts high growth, the state firms are characterised by weaker growth dynamics. The corresponding inter-quantile differences are significant (Table 7, columns 4-6) and may be taken as an indication that there is some wage smoothing in the state sector (which may be consistent with the workers preferences playing more important role there). On the other hand, in this respect the foreign companies are not different from the private domestic companies.

Again, In the quantile regressions, we measure differences in bargaining power of the state sector workers by introducing the interactive effect between the state sector dummy and ability to pay (dl_rtremp_st).10 But this time we are able to detect if the effect vary for different positions of firms on wage distributions. We may see that it is significant and strongest in case of companies with lowest and average wage growth and weaker and insignificant where wage growth is high. A tentative conclusion is that the bargaining strenght matters most, where the wage growth is weak. In case of companies with strongest wage growth, the modifying impact of bargaining strength is weak.

6. Conclusions

The findings from the panel analysed in the paper seem to support the basic implications of a bargaining model with incumbent workers. In particular, the wages are responsive to alternative measures of firm's ability to pay and there are structural differences between the ownership sectors consistent with our prior knowledge on relative bargaining strength and unionisation measures.

However, we examined several extensions. We augmented the bargaining specification by controls related to evolution in workers' skills and find that the basic implication of the bargaining model are not affected, even if wage dynamics is influenced by the change in composition of workers skills as approximated by education. We took a closer look at the outside options of the workers. We found that while the effect of regional unemployment on wage dynamics is significant, when an appropriate measure is used. We also found an interactive effect, where unemployment dynamics modify the impact of availability of rents on wages. In case of rising unemployment, the effect of ability to pay appears to be amplified. Wages were most considerably cut in the case of falling revenues and fast-rising unemployment – a situation where worker's insistence on the prevailing wage may put even incumbent jobs at risk.

We found significant link between firm-level and industry-level wage dynamics but the estimated elasticity of firm wages with respect to sector wages were fairly low (about 0.14), calling into question if industry wage agreements have strong impact on firm-level wage determination. We also experimented with one concise indicator of reservation wage, which combines sectoral wages, unemployment benefits and regional unemployment levels, which is closest to the theoretical model specification. We found that measure performing well.

Finally, we found that while responsiveness of wages towards ability to pay is higher in the state sector, variation in wage dynamics is lower. This may indicate some wage smoothing in the state sector, consistent with the preferences of employees.

[10] Alternatively, we could drop *dl_rtremp* altogether, replacing it by a set of interactive effects, created by multiplying *dl_rtremp* by all ownership sectors dummies. However in that case, we would risk enforcing the significant results for those new variables. Our specification is more conservative, i.e. it is a better method of testing if state sector affiliation has modifying effect on elasticity. The coefficient on *dl_rtremp_st* may be interpreted as a differential effect of the state sector affiliation on elasticity.

Bibliography

Abowd, J., and Lemieux, T., 1993,The effects of product market competition on collective bargaining agreements: the case of foreign competition in Canada, Quarterly Journal of Economics, 108, 983-1014.

Adamchik, V. and Bedi, A., 2000,Wage Differentials between the Public and the Private Sectors; Evidence from an Economy in Transition, Labour Economics, 7, 203-224.

Allison, P., 2002, Missing Data, (Sage Publications Thousand Oaks).

Arellano, M., and Bond, S., 1991, Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Review of Economic Studies, 58, 277-297.

Balcerowicz, L., 1995, Socialism, Capitalism, Transformation, (Central European University Press, Budapest).

Baltowski, M. (ed.), 2002, Przedsiebiorstwa Sprywatyzowane w Gospodarce Polskiej, (PWN, Warszawa)..

Basu, S., Estrin, S., and Svejnar, J., 2000, Employment and wages in enterprises under communism and in transition: evidence from Central Europe and Russia, WDI Working paper, 114b.

Bell, B., Nickell S. and Quintini, G., 2000, Wage Equations, Wage Curves and All That, Centre for Economic Performance Discussion Paper, No 472.

Blanchard, O., 1997, The Economics of Post-Communist Transition,(Clarendon Press, Oxford) .

Blanchflower, D, G., 1990, Fear, unemployment and pay flexibility, Mimeo.

Blanchflower, D, G., 2001, Unemployment, well-being and wage curves in Eastern and Central Europe, Journal of Japanese and International Economics, 15, 364-402.

Blanchflower, D. and A. Oswald, 1995, “An Introduction to the Wage Curve”, Journal of Economic Perspectives, 9, 3, pp. 153-167.

Boeri, T., Burda, M., Kollo, J., 1988, Mediating the transition: Labour markets in Central and Eastern Europe, (CEPR, London)..

Brainerd, E., 2002, Five years after: the impact of mass privatisation on wages in Russia, Journal of Comparative Economics, 160-90.

Cahuc, P., and Gianella, C., Goux D., and Zylerberg, A., 2002, Equalizing wage differences and bargaining power: evidence from a panel of French firms, CEPR Discussion Paper No. 3510.

Carlin, W., S. Estrin, M. Shaffer, 1999, Measuring Progress in Transition and Towards EU Accession: A Comparison of Manufacturing Firms in Poland, Romania and Spain, University of Michigan, William Davidson Institute Working Paper, No. 224.

Carlin, W., S. Fries, M. Schaffer, P. Seabright, 2001, Competition and Enterprise Performance in Transition Economies. Evidence from a Cross-country Survey, University of Michigan, William Davidson Institute Working Paper, No. 376.

Cazes, S. and A. Nesporova, 2003, Labour Markerts in Transition. Balancing Flexibility and Security in Central Eastern Europe, ILO, Geneva.

Christev, A and Fitzroy, F., 2002, Employment and wage adjustment: insider-outsider control in a Polish privatisation panel study, Journal of Comparative Economics, 30, 251-275.

Christofides, L., and Oswald, A., 1992, Real wage determination and rent sharing in collective bargaining agreements, The Quarterly Journal of Economics, 985-1002.

Demsetz, H., and Lehn, K., 1985, The Structure of Corporate Ownership: Causes and Consequences, Journal of Political Economy, Vol. 93, 1155-1177.

Demsetz, H. and Villalonga, B., 2001, Ownership Structure and Corporate Performance, Journal of Corporate Finance, Vol. 7, 209-233.

Djankov, S. and P. Murrell, 2002, “Enterprise Restructuring in Transition: A Quantitative Survey”, Journal of Economic Literature, 40, 3, 739-792.

Dobbelaere, S., 2004, “Ownership, Firms Size and Rent Sharing in Bulgaria”, Labour Economics, 11, 165-189.

Dong, X., 1998,Employment and wage determination in China's rural industry: investigation using 1984-90 Panel data, Journal of Comparative Economics, 26, 485-502.

Duffy, F., and Walsh, P., 2001, Individual pay and outside options: evidence from the Polish Labour Force Survey, IZA Discussion paper, No. 295.

Fakhfakr, F., and Felix FitzRoy, F., 2002, Basic wages and firm characteristics: rent sharing in French manufacturing," University of St Andrew's, CRIEFF discussion paper, DP0203.

Furubotn, E., 2001, The New Institutional Economics and The Theory of the Firm, Journal of Economic Behaviour and Organization, 45, 133-153.

Goux, D., and Maurin, E., 1999, Persistence of inter-industry wage differentials: a re-examination using matched worker firm panel data, Journal of Labour Economics, 17, 3, 492-533.

Gregg, P., and Machin, S., 1992, Unions, the demise of the closed shop and wage growth in the 1980's, Oxford Bulletin of Economics and Statistics, 54, 53-71.

Griliches, Z., Economic Data Issues, 1986, in: Z. Griliches and M. Intriligator eds., Handbook of Econometrics, (Elsevier Science Publishers)Vol. III, 605-654.

Grosfeld, I., and Nivet., J., 1999, Insider power and wage setting in transition: evidence from a panel of large Polish firms, 1998-94, European Economic Review , 43, 1137-1147.

Hamermesh, S., 1993, Labor Demand (Princeton University Press)..

Harris, R., and Todaro, M., 1970, Migration, unemployment and development: a two sector analysis, American Economic Review, 60, 126-142.

Haskel, J., and Symanksi, S., 1993, Privatisation, liberalisation, wages and employment: theory and evidence for the UK, Economica, 60, 161-82.

Havrylyshyn, O., and McGettigan, D., 1999, Privatisation in transition countries: evidence for the first decade, IMF, Economic issue, 18.

Hildreth, A., and Oswald, A., 1997, Rent sharing and wages: evidence from company and establishment panels,Journal of Labour Economics, 15, 20, 318-337,

Holmund, B., and Zetterberg, J., 1991, Insider effects in wage determination: evidence from five countries, European Economic Review, 35, 1009-34..

Jones, D., 1998, Economic effects of privatisation-evidence from a Russian Panel," Comparative Economic Studies, Vol. 40, 75-102.

Johnson, S., D. Kaufmann, A. Shleifer, 1997, Politics and Entrepreneurship in Transition Economies, Working Paper, William Davidson Institute, University of Michigan Business School, No. 57.

Judson, R., and A. Owen, 1999, Estimating Dynamic Panel Data Models: A Guide for Macroeconomists, Economics Letters, 65, 9-15.

Kertesi, G. and J. Kőllő, 1999, "Unemployment, Wage Push and the Labour Cost Competitiveness of Regions – The Case of Hungary, 1986-1996", Budapest Working Papers on the Labour Market No 1995/5, Hungarian Academy of Sciences and Budapest University of Economics.

Kornai, J., 1995, Transformational Recession: The Example of Hungary, in: C. Saunders (ed.), Eastern Europe in Crisis and the Way Out, (Macmillan, Haundmills).

Lee, Y., 1999, Wages and employment in China's SOE's, 1980-1994: Corporatisation, market development and insider forces, Journal of Comparative Economics, 27, 702-729.

Lehmann, H., and Wadsworth, J., 2000, Tenures that shook the world: worker turnover in Russia, Poland and Britain, Journal of Comparative Economics, 28, 639-664.

Lindbeck, A., and Snower, D., 1987, The insider-outsider theory of employment and unemployment, (The MIT Press, Cambridge, London, England).

Mickiewicz, T., Baltowski, M., 2003, "All Roads Lead to Outside Ownership: Polish Piecemeal Privatisation", in: D. Saal and D. Parker, eds., Handbook of Privatisation, (Edward Elgar, Cheltenham), Chapter 19.

Mickiewicz, T. and Bishop, K., 2003, "Wage Determination: Privatised, New Private and State Owned Companies. Empirical Evidence from Panel Data", William Davidson Institute Working Paper, No 584.

Neumann, L., 1997, “Circumventing Labour Unions in Hungary: Old and New Channels of Wage Bargaining”, European Journal of Industrial relations, 3, 2, 183-202.

Nickell, S., and Wadhwani, S., 1990, Insider forces and wage determination, The Economic Journal, 100, 401, 496-509.

Nickell, S., and Wadhwani, S., 1989 Insider forces and wage determination, Centre for Labour Economics, London School of Economics, Discussion Paper No. 344, Pohl, G., Anderson, E., Claessens, S., Djankov,, P., 1997, Privatisation and restructuring in Central and Eastern Europe, World Bank Technical Paper, No. 368, Finance, Private sector and infrastructure network, Washington.

Rosen, S., 1986, The theory of equalising differences, in Orley, C., and Layard, R., (eds.) The Handbook of Labour Economics, (New York, North Holland).

Sato, Y., 2000, Search theory and the wage curve, Economic Letters, 66, 93-8.

Shapiro, C and Stiglitz, J., 1984, Equilibrium unemployment as a worker discipline device, American Economic Review, 74(3), 433-44.

Svejnar, J., 1986, Bargaining Power, Fear of Disagreement and Wage Settlements: Theory and Evidence from U.S. Industry”, Econometrica, 54, 1055-1078.

Van Reenen, J., 1996, The creation and capture of rents: wages and innovation in a panel of UK companies,The Quarterly Journal of Economics, 111, 1, 195-226.

Figure 1. A model of wage bargaining

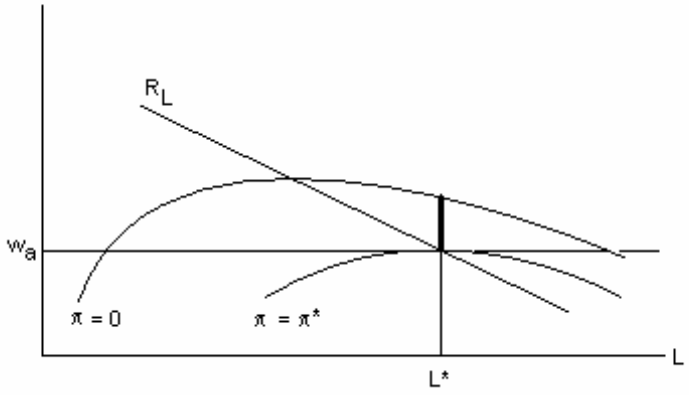


Figure 2. Histograms: wage dynamics in the state and private sector

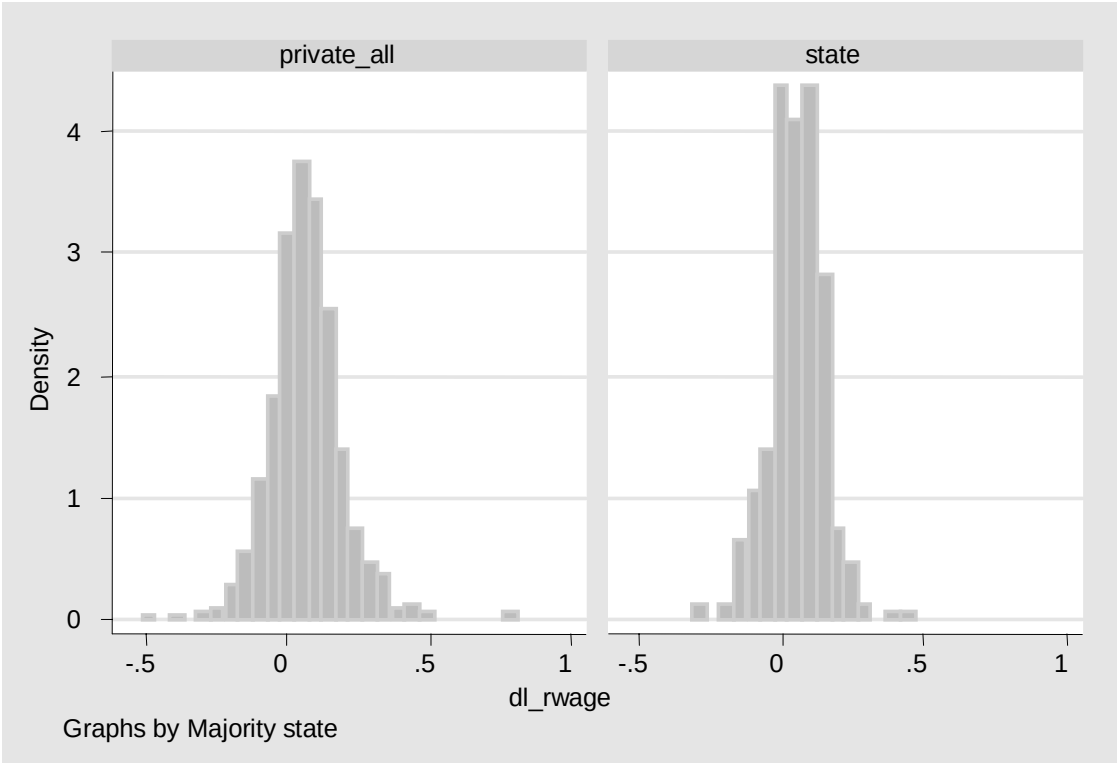
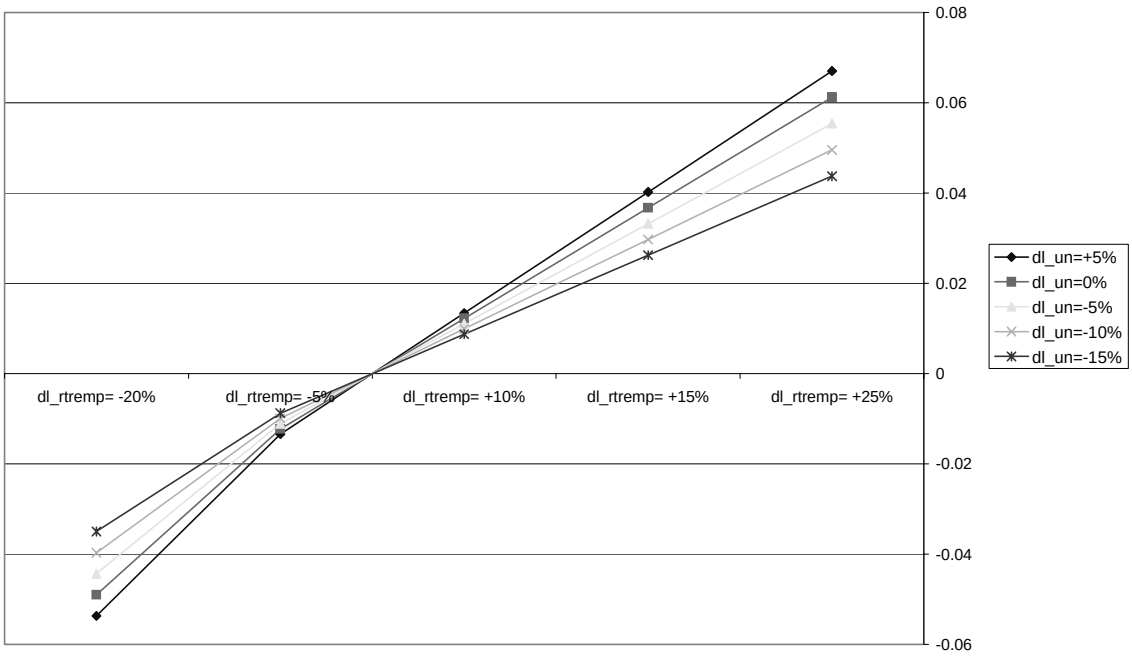


Figure 3. The effect of a change in (sales/worker) on the wage at various rates of change in local unemployment (simulations based on Table 6, column 2)



WAGE DETERMINATION: PRIVATISED, NEW PRIVATE AND STATE OWNED COMPANIES. EMPIRICAL EVIDENCE FROM PANEL DATA♣

***Tomasz Mickiewicz*‡ *and Kate Bishop*†**

‡ SSEES at University College London. Senate House, Malet Street, London WC1E 7HU
T.Mickiewicz@ssees.ac.uk. Corresponding author

† SSEES at University College London. Senate House, Malet Street, London WC1E 7HU
K.Bishop@ssees.ac.uk

ABSTRACT

This paper examines the determinants of wage pressure in large companies, including ownership characteristics and the impact of regional labour markets. By using a panel of 329 Polish largest firms during the period 1997- 2001, we find evidence of rent sharing activities, however there is also asymmetry in quasi rent elasticity of wages. The wage setting mechanism seems to differ between new private companies, privatised companies, state firms and mixed ownership. In particular, wages in state firms are highly responsive to regional labour market conditions, while firms in other sectors are not. Rent sharing is visible in both the state sector and new private companies, yet several specific characteristics differ. On the other hand, quasi rent elasticity appears to be suppressed in privatised companies.

Keywords: wages, quasi-rents, *de novo* firms, privatisation, unemployment

♣ This research was financed the European Commission Framework 5 Project, "Regional Labour Market Adjustment in the Accession Candidate Countries" (ACCESSLAB). The authors would like to express gratitude to Maciej Baltowski, Beata Manthey, Zbigniew Pastuszak and Anna Zalewska for their involvement in joint effort of developing the dataset. We thank Peter Huber and Gabor Kőrősi for providing useful comments on earlier draft. We also benefited from discussing the paper at seminars in Budapest University and in Trinity College, Dublin. Nonetheless, we take responsibility for all remaining errors.

JEL Classification: C23, D21, J21, L33, P31

1. WAGES, INSIDERS AND OWNERSHIP OF ENTERPRISES

Transition economies provide a useful ground for testing hypotheses related to ownership of industrial enterprises. As argued by Demsetz and Lehn (1985) and again more recently - by Demsetz and Villalonga (2001), long established markets for corporate control produce equilibria, where sector-specific efficient types of companies survive and inefficient ones disappear. In contrast, transition economies offer a plethora of ownership and organisational forms, created after the removal of command economy system. In this paper, we wish to investigate the implications of corporate control for wage setting patterns.

When the command economy1 system collapsed, both institutional reforms and stabilisation policies resulted in the initial 'transitional recession': plummeting labour demand, rising unemployment and a temporary decrease in real wages (see Huber et al. 2002, Mickiewicz and Bell 2000, Boeri et al. 1998). As Huber et al. (2002) state, the initial drop in employment levels and surge in unemployment was expected at the onset of the transition process. This was part of the 'transformational recession' (Kornai, 1995; Blanchard 1997). However, even when the output growth had recovered, employment levels did not. Employment levels in 1996 were between 5.6 (Romania) and 22-23 (Bulgaria, Hungary) percentage points below pre transition levels (Mickiewicz and Bell 2000; Boeri et al. 1998). Unemployment levels also appear to be heterogeneous among transition economies. Huber et al.. (2002) report that while the average unemployment rates in some of these countries are in the lowest EU range (Hungary, Slovenia), some others exceed significantly the maximum rate observed in the EU (notably Bulgaria and Poland).

Poland, the second largest transition economy, is an interesting case, as the macroeconomic trade-off between wage pressure and unemployment seems to be particularly unfavourable. Between 1998-2001, it underwent an increase in unemployment rate from below 10% to 16%, in order to reduce real wage growth from an unsustainable 8% in real terms to 4%.

The motivation of this paper is to look at some microeconomic foundations of this phenomenon. In fact, research on the impact of privatisation on labour market outcomes and firm level wage pressure in transition economies is limited.2

Our aim is to research the determinants of wage growth at the firm level during the period of 1997-2001 in Poland. In particular, we look at the effects of the privatisation process on wage setting. We wish to explore if the wage determination mechanism is different for state owned, privatised and 'de novo' private companies.

A key research question relates to the link between quasi rents and wage increases. The bargaining and rent sharing model imply the link between the company's ability to pay wages, provided that the bargaining position of employees is sufficiently strong. However, also, the temporary frictions may result in an upward sloping supply curve of labour (Hildreth

[1] See Jackman and Rutkowski (1994) or Boeri *at al*. (1998) for a description of labour markets under the command economy.

[2] For an overview of earlier results see Svejnar 1999.

and Oswald 1997). Therefore, 'a positive demand shock may trace out a simultaneous rise in total firm profits and in wages' (Ibid. p. 321). Only in the long run, is the increase eradicated by an increase in workers entering the labour market, which then eliminates the wage premium. Thus, in the short run, the correlation between wage and financial performance may be explained by both the competitive model and bargaining / rent sharing model. Only estimation of the long run provides an empirical test to distinguish between the two models, as according to the competitive model the correlation is expected to disappear.

Given this argument, the link between ability to pay and wage increases amongst different ownership categories becomes an important testing ground, where estimation of the long run effects is difficult. Moreover, different ownership categories may be characterised by different bargaining structures, while operating on the same markets.

This argument can naturally be tested in the environment of transition economies.3 Several results are available. First, Dong (1998) and Lee (1999) examine China. Dong (1998) finds direct evidence that in the township -village enterprises, wage changes are responsive to financial conditions. Similarly, Lee (1999) finds that profit per worker and change in profit per worker is positively associated with changes in wages for several types of employee.

Other researchers have also examined the impact of productivity on wage determination in European transition economies, taking into account differences in wage setting across ownership and organisational characteristics.4

An interesting feature of this research is that while differences between ownership sectors had been hardly detectable at the beginning of transition period, they became more evident later. As both the privatisation process and secondary transfers of ownership continue, the economic system evolves towards more stable structures, and this includes a bargaining and wage setting framework.

In particular, Basu et al. (2000) find that ownership and legal status of firms do not have a systematic effect on employment and wages for the early transition period, i.e. 1988-1992 in Poland, Czech Republic and Slovakia. In contrast, Grosfeld and Nivet (1999) - using a sample of large Polish manufacturing firms (taken from the same dataset we use, but in an earlier period) - find that a change in revenue per employee leads to changes in wages over the period of 1990-94; moreover there are significant differences between ownership sectors. Also Christev and Fitzroy (2002) employ a survey based panel of large Polish firms, in order to study wage and employment adjustment comparing a range of ownership and organisational

[3] Haskel and Szymanski (1993) test the impact of privatisation on wage setting in the UK. However, their results are not directly applicable to the transition economies for two reasons: /1/ legal and actual control rights in the UK companies before privatisation were very different from pre-privatisation state-owned enterprises in transition economies; /2/ their model is focused on utilities and network industries, where privatisation is parallel to change in regulatory regime; in contrast most of privatisations in transition countries were in core manufacturing branches.

[4] Here, we focus primarily on research based on enterprise level data. Slightly different questions are typically asked by researchers, who focus either on individual data or on regional level data. For results and discussion, see in particular Brainerd (2002), Lehmann and Wadsworth (2000), Adamchik and Bedi (2000), Lehmann and Wadsworth (2000), Boeri *at al.*, 1998; Pohl *et al.*, 1997.

forms. Their dataset covers 1994-1997, an even later period than Grosfeld and Nivet (1999), which may better capture some of the changes due to privatisation. Both studies confirm rent sharing behaviour in firms, where the position of insiders is strong.

Our approach stems from this tradition. Yet, while we agree that the position of insiders may be crucial for wage determination outcomes, we also believe that there is still an interesting gap in empirical literature in tackling this issue. Namely, we argue that an interesting distinction - which to our best knowledge has been so far overlooked in literature on wage setting in a transition environment – relates to the contrast between new private firms on one hand and both state and privatised firms on the other.

The corresponding question relates to the magnitude of the structural break in companies' behaviour induced by privatisation. A possible argument is that a mere change in ownership does not result automatically in a change in the way the company operates, due to organisational inertia. Correspondingly, new companies may start with a more efficient mode of operation, without a prolonged process of adjustment. In general, it is not ownership per se, but organisational features of the company, which may affect performance. According to this line of argument, the privatisation process may change little, in particular the position of insiders may be left unchanged.[5] From this perspective, transition economies offer unique opportunities for comparisons. During the post-communist transition, an important role has been played by new market entries, that is companies, which were neither privatised nor state owned but so called '*de novo*' firms, *i.e.* new companies launched after the transition process had started. This sector, sometimes branded as 'entrepreneurial', accounts for a high proportion of output, including a significant number of large companies (for early size estimates of this sector for transition economies, see Johnson *et al.* 1997). The quick emergence of the 'entrepreneurial sector' may be less of a paradox than it looks at first sight. First, some of those companies are green-field investment by foreign investors. Second, both domestic and foreign entrepreneurs could take advantage of the initial gaps in the structure of production, which correspond to high consumer demand, high growth opportunities, and high opportunities to sustain development from retained earnings. And last but not least, in Poland, the growth of those companies could be strongly enhanced by the transfer of assets from the state sector, taking advantage from both privatisation opportunities and direct asset sales by the state sector firms (see Balcerowicz, 1995). The process illustrates the point made earlier: the factors which account for the performance outcomes, may relate neither to characteristics of both assets nor labour, as those were poached from the state firms. An important point however is that the new entrepreneurs may be able to impose new organisational forms easily, which could possibly contrast with the inertia of privatised companies[6].

From recent studies on other aspects of performance in transition countries (Carlin et al. 1999; Carlin et al. 2001; and overview in Havrylyshyn and McGettingan, 1999), we know that the distinction between old firms and new firms appears to be significant.

[5] One possible theoretical perspective that can be applied to account for that relates to new institutional economics. See Furubotn 2001.

[6] For example Jones (1998) finds that insider ownership is linked to organisation inertia in the Russian case.

Focusing on that distinction, our study used four ownership categories (i.e. state companies, state companies with minority private ownership, privatised companies and companies established as private - de novo). Relatively large ownership groups enable us to check for corresponding interactive effects with more confidence, in order to see if the wage pressure response to ability to pay differs.

Revenue per employee is used as a proxy for ability to pay by other researchers, including Nickell and Wadhwani (1990), Grosfeld and Nivet (1999), Basu et al. (2000), Christev and Fitzroy (2002),. It is typically interpreted as a corresponding measure to labour productivity. Yet, this interpretation is questionable for two reasons. First, the level of sales per employee depends heavily on capital intensity of production. Second, by construction, changes in sales-labour ratio reflect both increase in sales and changes in employment. Thus, the indicator is difficult to interpret in terms of productivity. However, instead of rejecting this approach, we propose to add a qualification. Namely, we accept the line of reasoning presented by Van Reenen (1996), who argues that the difference between revenue per head and industrial wages is a good indicator of quasi rent. Thus if revenue per head is used, it is important either to include industrial wage in the chosen specification orto impose a linear restriction and focus directly on the difference between the two indicators.

Alternatively, some studies use profits per employee as a proxy for quasi rent (Fakhfakh and Fitzroy 2002, Hildreth and Oswald 1997). Yet, there are two problems. First, this measure excludes depreciation, which should be included in available cash flow. Second, by construction profits are negatively correlated with wages.7 The problem could be alleviated by use of instruments, but the approach brings in different estimation problems – as always, good instruments are difficult to find.8

The key results of our research show that wage determination in Poland differs far more for the new-old cross-section, than for state-private cross-section. In addition, the link with employment is important and the outside factors such as the sectoral wages, regional unemployment and employment rate are important in wage determination. We will now turn to discuss the latter issue.

[7] See Van Reenen (1996). Due to restricted data availability, researchers on transition economies, used some other proxies for the firm' performance. See Djankov and Murell, 2002 for overview.

[8] One possibility is to use sectoral level data on profits and demand shocks. This is the approach taken by Abowd and Lemieux (1993) and Christofides and Oswald (1992). Given we wish to control for sectoral wages, this path proved to be difficult to follow, due to multicollinearity problems.

2. Labour market conditions and wage pressure

Last but not least, outside labour market conditions play an important role in wage determination. The factors, which appear often in the estimation of wage equations, are regional unemployment and outside wages. The negative relationship between regional unemployment rates and wages corresponds to the wage curve. In addition, one should expect that the impact of short term unemployment is stronger (Nickell and Wadhwani 1990). This is due to the fact that the long - term unemployed are supposed to be inefficient in their job search and therefore they do not have an impact on wage determination. A counter argument might be that the large percentage of long-term unemployed represents a depressed labour market, which could have a cooling effect on wages.

The empirical results confirming microeconomic wage curve are common in studies of European transition economies, as in Grosfeld and Nivet (1999), Duffy and Walsh (2001), Christev and FitxRoy (2002) – which all focus on Poland, Christofides and Oswald (1992) for developed economies such as the UK, and Dong (1998) for China. They build on earlier studies related to OECD countries. In particular, Blanchflower (1990) found that four alternative measures of unemployment are negatively and significantly related to annual earnings. Holmund and Zetterberg (1991) also hypothesise that unemployment (they use an economy wide unemployment rate) is likely to depress wages,9 in their study of the determinants of industry wages in five countries. Their results show that the effects of aggregate unemployment vary across countries: negative as expected for Sweden, Finland and Germany, yet positive for Norway and the USA. The result is interesting as it possibly reflects differences in institutional labour market characteristics implying that wage curve may be labour market institution specific. In particular, the positive coefficient for the USA may imply a more competitive labour market which can be interpreted along the lines of the 'first generation' models (see below). Earlier identified cross-country differences and evolving institutional frameworks in transition countries, make testing wage curves for transitional economies a non-trivial task.

[9] However, they note that the depressing effect of higher unemployment is likely to be bigger in an aggregate wage equation.

Table 1. Results by other authors

Author	Coefficient for:		Timespan and methods
	Unemployment	Performance	
Christev and Fitzroy (2002) Poland	-0.06[10]	0.54[11]	1994-1997 GMM
Duffy and Walsh (2001) Poland	-0.15	NA	1991-1996 2SLS
Blanchflower (2001) Eastern Europe	Poland= -0.13 Rus= -0.07 Slovenia= -0.05 Hungary= -0.05	NA	1990-1997 Fixed effects
Grosfeld and Nivet (1999) Poland	-0.03	0.14	1991-1997 Fixed effects
Montuenga*at al.* (2003) Europe	France= -0.16 Italy =-0.08 Portugal= -0.01 Spain= -0.24 UK= -0.2	NA	1994-1996 GLS
Goux and Marin (1999) France	NA	0.05	1990-1995 Fixed effects
Hildreth and Oswald (1997) UK	NA	1.13	1980-86 GMM
Christofides and Oswald (1992) Canada	-0.08	0.003	1978-1984 GLS
Gregg and Machin (1992) UK	NA	0.12	1983-84 GMM
Holmund and Zetterberg (1991) US	0.02	0.09	1965-85 Autoregressive model
Blanchlower (1990)	-0.1	NA	1983-6, 89 Pooled techniques
Nickell and Wadhwani (1989) UK	-0.01	NA	1975-1982 GMM

[10] Christev and Fitzroy (2002), Christofides and Oswald (1992), Grosfeld and Nivet (1999), Montuenga (2003), Duffy and Walsh (2001) and Blanchflower (2001) use regional rates, Nickell and Wadwhani (1989) use imdustry rates and Holmund and Zetterberg use aggregate rate.

[11] Christev and Fitzroy (2002) and Grosfeld and Nivet (1999) both use growth in productivity, Hildreth and Oswald (1997) and Christofides and Oswald (1992) use profit per employee, Gregg and Machin (1992) uses sales per employee, Holmund and Zetterberg (1991) uses value added and Goux and Maurin (1989) uses operating income per empolyee.

One should note however that the link between wages and unemployment can be interpreted not only in terms of bargaining theory but also in terms of efficiency wage theory, where wages do not result from bargaining process but from optimising decisions by the firms (Shapiro and Stiglitz, 1984).

In addition, there is a dissenting tradition of the neo-classical or "first generation" of papers by researchers such as Harris- Todaro (1970), Hall (1970) and Rosen (1986) predicting that unemployment and wages would move in the same direction. This relies on the perfectly competitive theory and compensating differentials. Cahuc et al. (2002) summarise this idea: "the higher the risk of losing one's job, the higher the wage to compensate for this risk," (p15). Also wages may have to compensate for job characteristics, location, flexibility, risk to health etc.

Rosen (1986) provides some evidence of the theory of equalising differences, which "refers to the observed wage differentials required to equalise total monetary and non monetary advantages or disadvantages among worker activities and among workers themselves". The actual wage paid is the sum of labour services and worker characteristics, plus job attributes. Thus jobs offering unfavourable conditions pay wage premiums as offsetting compensation to attract workers. Unfavourable conditions include risk to health12, inflexible hours or the possible risk of lay off and unemployment, the latter being relevant to the private sector companies.

Duffy and Walsh (2001) provide a brief survey of the "first generation of papers" written in the 1970's and 1980's, which all found a positive relationship between wages and unemployment. However, they criticise this line of research for failing to control for regional fixed effects. They argue that after including regional dummies, the relationship between regional pay and unemployment are in fact negatively correlated (Ibid., p.25).

Nevertheless, the evidence is still not conclusive. A recent study by Cahuc et al. (2002) on a panel of French firms finds some new evidence that confirms the predictions of equalising differences, as unions accept lower aggregate wages when workers benefit from lower unemployment risk. Thus the higher the risk of loosing a job, the higher the wage needs to be to compensate for risk, i.e. the wage bargaining mechanism leads to equalising differences between firms (Ibid., p15). As argued above, the parameters of the wage curve are conditional on labour market institutions (competitiveness in particular), and therefore neither cross country nor time invariant, and still worth further testing.

A recent concise theoretical model underpinning the wage curve is offered by Sato (2000). His benchmark case is relevant to transition economies, as it describes the case where workers are not mobile13. The explanation for the wage curve is given by a search model with regional variations in productivity. By adopting wage bargaining assumptions the region with higher productivity experiences higher wages and lower unemployment. Even, if workers are mobile,

[12] One example Rosen (1986) gives is that in the Soviet era large wage premia were paid to workers in the permafrost regions of Siberia.

[13] Low spacial mobility in transition countries is discussed in Huber *et al.* (2002).

the traditional wage curve may hold if the search model is combined with regional variations in productivity and a city structure with congestion costs. While all the workers will want to live and work in the central business district, the living area of workers spreads and commuting and rental costs escalate. These costs will deter concentration in one region even if there are differences in productivity among regions.

Where we intend to contribute to this discussion, is to point out that unemployment elasticity of wages is ownership specific. As a result, in the environment where different types of firms respond differently to labour market conditions, the parameters of the wage curve may evolve along the ownership transformation.

Hypotheses

Here, we summarise our main hypotheses to be tested in the empirical section.

First, we expect that the link between quasi rents and wages to be ownership/ organisational sector specific. In particular, as discussed above, we wish to check if the contrast between new and old companies dominates the comparison between the state and privatised sector.

Second, due to labour market characteristics of the transition counties and Poland in particular, we expect to find confirmation for the microeconomic wage curve. However, we intend to explore if the results are invariant along the ownership cross section.

Third, we wish to test for asymmetry14 effects in quasi rent elasticity of wages, to see if the pattern evolves over time, comparing with earlier results, Grosfeld and Nivet (1999) in particular.

Last but not least, in the empirical section, we propose a new simple indicator of quasi rents and compare the results with other models, where tests relate to revenues per head.

3. Methodology and data description

3.1 Data

Hamermesh (1993) discusses problems associated with collecting data for studies of labour demand. He notes that household level data can be inappropriate for studying labour market issues; instead data describing plants or firms is superior (p.63). The conclusions apply to the research on wage determinants, in particular where the focus is on firm-specific issues such as rent sharing. Following this, we follow the stream of empirical literature on transition economies, which rely on publicly available company level data on largest companies. Our data corresponds closely to that used by Grosfeld and Nivet (1999) for an earlier period. Also

[14] The asymmetry hypothesis was suggested by Lindbeck and Snower (1987). They propose that the downward responsiveness of wages to a demand shock is less than that of the wage response to a positive demand shock.

datasets used by Basu et al. (2000) and Christev and Fitzroy (2002) are similar, while the latter paper uses data from a survey, yet sampled from a similar population of Polish firms.

The source of our data is from a different project (with participation of one of the co-authors), financed by the Polish Committee for Scientific Research (grant 1H02C-024-19), which was shared with us for the purpose of this study. The results of the earlier project (which focused on the group of privatised companies) are at present available in Polish, in an edited volume (Baltowski 2002).

The dataset was compiled by the Polish project team using all publicly available sources on Polish largest companies and the database of the Institute of Economics of the Polish Academy of Science, which is the basis of several published lists of largest companies' results. Where possible this was supplemented and checked using direct information publicly disclosed by the companies, and also available information by the Warsaw Stock Exchange and several lists published by journals and magazines, including Rzeczpospolita, Polityka, Gazeta Bankowa, Nowe Zycie Gospodarcze, Zycie Gospodarcze, Businessman.

Apart from standard type errors, several systemic problems were encountered by the Polish team during data processing. First, while in principle state companies were prevented from buying shares of other privatised companies in Poland, that neither applied to all privatisations (or semi-privatisations) resulting from bank-led restructuring programmes, nor to post privatisation ownership transfers, including for instance companies privatised via National Investment Funds programme. As a result, a number of 'privatised' companies are wrongly attributed to the private sector instead of state sector. Some of those links are not easy to detect, because of multi layered cross-company ownership. The dataset has been corrected for this type of error, where possible. Related problems relate to the distinction between minority and dominant class of owners. Also, sometimes companies are wrongly classified as 'de novo' private companies, either because they have been formally registered as a new company, as part of the privatisation proceedings, or because they are new companies created by other state-controlled firms.15 This relates in particular to companies privatised by employee buy-outs, i. e. by leasing (for details, see Mickiewicz and Baltowski, 2002). And last but not least, when compiling data for several years, one has to pay attention to the fact that some sources do not distinguish between individual companies and consolidated balances of capital groups with similar names. This has been checked for relevant companies, as compiling both categories into one time series would create a serious distortion in data.

As the data contain information about both the name of the company and location, we were able to match the data set with corresponding administrative units and subsequently with relevant regional labour market indicators available from the Polish Central Statistical Office. A particular problem we encountered was related to the fact that 82 out of 329 companies included in the sample are registered in Warsaw (25%) and they in fact are split into two sub-categories: companies operating nation-wide, and those where most of their operations are located in the capital city. Therefore, using information on individual companies, we

[15] In our dataset that relates to three companies: Centertel, Lim and Polcomtel, which we classified as 'state – mixed'.

identified 29 companies, for which most of operations (typically manufacturing production, but also hotels etc) are located in Warsaw. The remaining firms (53, equivalent to 16% of the sample) we label nation-wide. Those typically include both trade companies, retail networks in particular, but also manufacturing, where the majority of operations is spread across several locations. The chosen method to deal with this data problem was to attribute national averages as relevant labour market indicators in the case of those companies labelled nation-wide.

3.2 Descriptive statistics

Here descriptive statistics are presented for selected variables in the data set.

The table below presents median values for the three ownership categories. Reported significance levels relate to non-parametric tests on the equality of medians.

Table 2. Median values for selected variables over 1999-2001[a]

Variable	All firms	Private *de novo*	Privatised	State Mixed	State 100% Treasury
% change in real wage	8.56	6.15	10.30	9.26	6.26
% change in real total revenue	0.60	4.22***	-0.21	2.23	-1.66***
% change in revenue / employment	4.60	2.26	8.07**	6.78	2.54***
earnings before taxes / revenue	1.85	2.46**	2.15	1.50	1.39*
net income / revenue	1.12	1.70**	1.21	1.00	0.78**

*** Significant at 0.001; ** Significant at 0.01; **** Significant at 0.05; † Significant at 0.1

[a] Significance levels relate to Pearson χ^2 (continuity corrected) based on the non-parametric test on the equality of medians

Several conclusions follow immediately from Table 2. Wage growth is weakest both in the in the private de novo firms and in the ('non-reformed') state sector, albeit the reasons for that may be very different. Indeed, the results on wages contrast clearly with profitability: both gross and net measures of profitability are highest for the new private firms and lowest for the state sector, with both being consistently significant. This puts wage dynamics in perspective, as the crucial point is comparison between wage increase and financial results as that indicates the extent of rent sharing. From this perspective, the state sector looks very different from the new private firms. While in the latter group moderate wage growth is matched by financial

performance, in the former, similar wages increases are parallel to median net income rate being close to zero.

Another noteworthy point is that differences in profitability are strongly related to differences in dynamics of revenue: in the period we consider, the state sector was also characterised by the lowest revenue dynamics. In this case, contrast between those two ownership groups is even more significant.

Also, interesting differences relate to revenue per employee. While, de novo sector is characterised by highest dynamics of revenues, it is not so in relation to revenue per employee. Here, dynamics are higher in the privatised sector. This clearly results from different employment dynamics (i.e. the denominator). The de novo sector is simply more efficient in employment creation and preservation than both the state and the privatised sector. This exemplifies why revenue per head is not a good indicator of performance, in spite the fact that it is widely used as such in empirical research on transition economies. On the other hand, the difference between the revenue per head and sectoral wage may still be valid as a measure of available quasi rent, as argued by Van Reenen (1996).

In this category, the ‘unreformed’ state sector is still the worst performer, while privatised firms score best, but mostly due to labour shedding, as comparison with dynamics of total revenue easily reveals.

3.3 Variable description

This section presents the variables used in the model. Description is presented in Table 3 below.

Table 3. Description of available variables

Description of variable	Details / comments
Dependent variable	
l_rwage Logarithm of real wages	Logarithm of (average monthly wage in zlotys/consumer price index).Data available for 1996, 1998, 1999, 2000, 2001. CPI[16]: Central Statistical Office indicator
Internal characteristics	
l_employ: Logarithm of number of employees	Available for 1996-2001
l_rtremp: Logarithm of (real revenue / employment)	Logarithm of [(total revenue in million zlotys/ consumer price index) / employment] Available for 1996-2001
ebt_rev: Earnings before taxes/ revenue	Available for 1996-2001
ntin_rev: Net income/ revenue	Available for 1996-2001
state_trea100: State firm (dummy variable)	State ownership: entirely owned by the State Treasury
state_mix: State firm with mixed ownership (dummy variable)	Majority state ownership with other owners present: a firm with the majority of shares owned by the treasury, or a company, where majority of shares is held by a state firm; the category includes also few firms controlled by local governments
privatis: Priviatised firm (dummy variable)	A previously state-owned company, which was no longer state-owned by 2001
de_novo: *De novo* private firm (dummy variable)	A new private company, i.e. which is neither state owned nor was ever state owned
External characteristics (Central Statistical Office data)	
l_rswage: Logarithm of real sectoral wages	Logarithm of (average monthly wage in zlotys/consumer price index). Data available for 1996-2001, two digit NACE industrial sectors
l_unsu_n: Log of unemployment rate, province level	From labour force surveys (ILO definition) Unemployment rate at the provincial level; 17 (new) provinces. Mid year. Available for: 1995-2000

[16] Other studies have also used CPI as a deflator, such as Christofides and Oswald (1992) and Abowd and Lemieux(1993).

Description of variable	Details / comments
Dependent variable	
l_unre_s: Log of registered unemployment rate, sub-regional level	Sub-regions: 43 units, including large cities, as defined by the Central Statistical Office of Poland. End of year. Available for: 1998-2000
LTE: Proportion of long term unemployment in total employment, sub-regional	Short term: less than one year. End of year Available for: 1998-2000
l_emp_n: Log of employment rate, province	Mid year. Available for: 1995-2000; ; 17 (new) provinces

3. 4 Econometrics:details

While we employ other techniques to provide comparability with some earlier results, the focus of estimation is on Generalised Method of Moments. In particular, Judson and Owen (1999) supports the conclusion that the estimation method originated by Arellano and Bond (1991) is superior as compared with feasible alternatives for panels with a short time dimension. The GMM estimator is robust in that it does not require information of the exact distribution of the disturbances and is instrumental in combating the problems associated with potential endogenity. However, the panel we have at our disposal is particularly short– and furthermore it shrinks to three time points as soon as we apply first differences. While Christev and FitzRoy (2002) were able to estimate Arellano-Bond model on the data of similar dimension, it turned out to be problematic in our case. We adopt an approach, where we apply several available techniques including the dynamic specification, and report the results, using specification tests to indicate which models may be the most efficient.

We made several informed choices in the specification choice of the model.

Firstly, following recommended methodology, we focused on first differences to alleviate possible problems related to individual fixed effects. Secondly, while we follow a standard practice of using revenues per employee, while controlling for sectoral wages, when testing for rent sharing, we also combine a simple indicator of quasi rents (see below). Also, we adopted a restrained approach in our choice of ownership categories. Given that the relatively small samples of enterprises are available for transition economies, when too many distinctions are introduced, the corresponding groups are becoming small and one can notice volatility of results between various empirical studies. Therefore we choose the four ownership categories, described in Tables 1 and 2: state companies, state companies with minority private ownership, privatised companies and de novo firms.

Another critical element of wage setting relates to the response of wages to regional labour market conditions. As argued above, we extend the analysis here, as compared with earlier studies, both by correcting for companies, which operate nation-wide while being registered in

the capital city (see above). We also used several alternative labour market indicators, which include survey unemployment, registered unemployment and employment (not reported).17

4. Results and discussion

We start with the econometric design copied from Grosfeld and Nivet (1999), as their results are based on the same set of companies. The direct comparison is presented in columns (1) and (2) of Table 4 below. They show random effects estimations, which Grosfeld and Nivet (1999) choose as their preferred estimation method, as justified by Hausman test against fixed effects (within) model. Interestingly, the signs of the coefficients are the same and the size of the coefficients is in a similar range, apart from the impact of regional unemployment, where our results indicate a stronger effect on wage dynamics.

[17] In addition we tested for the hypothesis formulated by Nickell and Wadhwani (1990) distinguishing between long term and short term unemployment. We were unable to confirm it.

Table 4. Wage equations; comparison with Grosfeld and Nivet (1999). Dependent variable: *Δl_rwage*

	(1) 1991-1994 Random Effects GLS[a]	(2) 1998-2001 Random Effects GLS	(3) 1998-2001 Fixed Effects (within)	(4) 1998-2001 Pooled OLS[b]	(5) Arellano-Bond GMM Dynamic Estimation (one stage)	(6) Arellano-Bond GMM Dynamic Estimation (two stage)
Constant	0.097*	0.047	0.020	0.055*	-0.047	-0.058
	(0.039)	(0.035)	0.040	(0.022)	(0.076)	(0.077)
Δl_rtremp	0.140**	0.188***	0.232***	0.175***	0.170**	0.243*
	(0.020)	(0.041)	(0.054)	(0.043)	(0.070)	(0.105)
Δ l_rswage	0.894**	0.766***	0.948***	0.705***	-0.332	-0.349
	(0.052)	(0.195)	(0.231)	(0.153)	(0.710)	(0.862)
Δ l_unsu_n_{t-1}[c]	-0.031*	-0.227†	-0.170	-0.255†	-0.120	-0.156
	(0.014)	(0.123)	(0.147)	(0.146)	(0.226)	(0.217)
Wald χ^2	-	109.62***				
F			32.53***	72.27***		
Sargan test: χ^2 (over-identifying restrictions)					79.90***	28.14***
R^2	0.373	0.143	0.145	0.143		
N	678	587	587	587	311	311

*** Significant at 0.001; ** Significant at 0.01; **** Significant at 0.05; † Significant at 0.1

[a] Grosfeld and Nivet (1999)[b] Robust standard errors; corrected for possible interdependence of observations within the same provinces (clusters).

[b] Survey unemployment rates are mid year values , therefore one year lag is used .

[c] Survey unemployment rates are mid year values, therefore one year lag is used

In columns (3)-(6) we present the results of alternative specification methods, that is fixed effects, pooled ordinary least squares and Arellano-Bond GMM. The most consistent result relates to the impact of revenue per employee, which is consistently highly significant, with the size of the effects varying from 0.170 to 0.243, depending on the estimation method. The result can be interpreted as evidence of rent sharing behaviour, with the effect being marginally stronger than for the early transition period (0.140 in Grosfeld and Nivet 1999). The effect of regional unemployment is consistently negative, but less significant. In specification (4) where we correct standard errors for possible interdependence of observation within regions, the significance level is cut from below the 5% threshold (not reported) to below the 10% threshold. Finally, sectoral wages appear to correlate significantly with enterprise level wages, apart from the dynamic specifications.

Comparing the estimation methods, one can see that random effects, fixed effects and pooled OLS result in relatively similar estimations. The dynamic specifications seem to differ more,

nevertheless in both one stage and two stage specifications, and the Sargan test strongly rejects validity of the models. The value of $\chi 2$ is greatly reduced when the two stage procedure is used, yet not enough; the test still strongly rejects the validity of the second model. Also, estimations of the autoregressive term are not robust (which we did not report). The problem with Arellano-Bond specifications may results from the fact that we loose considerable number of observations. The reported number of observations is not only reduced by the fact that we lost one time point for the lagged dependent variable, but also because of the missing data problems in earlier time points used for instruments. One possible path would be to use maximum likelihood methods to impute missing values, for instance using expected maximisation (EM) procedure. That would possibly result with better estimates of coefficients, but unfortunately, also with inflated standard errors, with no clear method of correction.18

Thus, unlike Christev and Fitzroy (2002), who were had more success with their survey data and successfully estimated the Arrelano-Bond model for their panel of similar dimensions, we simply fail with the dynamic specification and propose to rely on simpler panel methods, as do Grosfeld and Nivet (1999).

Yet one lesson from the dynamic specifications (columns (5) and (6)) are important: even if dynamic models are deficient, they indicate that coefficients of sectoral wages are not robust for this change in specification. More than one reason for this is possible. One simple correction we may try, is to assume that the significance of sectoral wages in columns (1)-(4) is forced by the choice specification, namely, as the variable may capture time effects, which were not directly accounted for so far. Following this idea, we adjust for time effects. Results are presented in columns (1)-(3) in Table 5 below.

[18] See classic discussion in Griliches (1986). Also a recent overview is offered by Allison (2002).

Table 5. Wage equations with time effects. Dependent variable: Δ*l_rwage*

	(1) 1998-2001 Random Effects GLS	(2) 1998-2001 Fixed Effects (within)	(3) 1998-01 Pooled OLS[a]	(4) 1998-2001 Random Effects GLS	(5) 1998-2001 Fixed Effects (within)	(6) 1998-2001 Pooled OLS[a]
Constant	0.071	0.050	0.074	0.072	0.056	0.073
	(0.052)	(0.063)	(.087)			(0.087)
Δquasi_rent	-	-	-	0.187***	0.227***	0.176***
				(0.041)	(0.189)	(0.042)
Δl_rtremp	0.188***	0.235***	0.174***	-	-	-
	(0.041)	0.054	(0.043)			
Δ l_rswage	-0.141	0.599	-0.308	-	-	-
	(0.444)	(0.591)	(0.287)			
$\Delta l\_unsu\_n_{t-1}$ [b]	-0.187	-0.194	-0.193	-0.187	-0.165	-0.193†
	(0.152)	(0.190)	(0.109)	(0.151)	(0.189)	(0.220)
Wald χ^2	116.33***			116.64***		
F		19.66***	99.60***		24.01***	122.54***
R^2	0.154	0.147		0.154	0.153	0.154
Hausman test				$\chi^2(4)=1.67$		
N	587	587	587	587	587	587

*** Significant at 0.001; ** Significant at 0.01; **** Significant at 0.05; † Significant at 0.1

[a] Robust standard errors; corrected for possible interdependence of observations within the same provinces (clusters)

[b] Survey unemployment rates are mid year values (see Table 4); therefore one year lag is used

Indeed, coefficients on sectoral wages become insignificant and highly unstable, as they no longer capture time effects. Similarly, the regional unemployment variable – is insignificant for columns 1-5, and is only 10% significant for column 6 (i.e. when using the pooled OLS technique), yet – unlike sectoral wages – both the signs and magnitude of effects remain similar to earlier specifications. More positively, the coefficients on revenue per employee remain practically unchanged and highly significant – again, we have consistent evidence, which can be interpreted as evidence of rent sharing.

Inconsistent results on sectoral wages in the adjusted specification and negative signs of the coefficients suggest that the variable may be better used differently. Namely, as argued above, the ratio of revenue per employee over sectoral wage, may be a good proxy for quasi rents. The latter indicates the opportunity cost outside the company and the former is an indicator of ability to pay. If correct, the argument could explain the negative sign of the real sectoral wage coefficient: lower sectoral wages would mean higher relative rents. Correspondingly, we construct a new variable, which in logarithmic form is simply given as: quasi_rent = l_rtremp

– l_rswage. The results are reported in columns (4)-(6) of Table 5. The new indicator performs as expected. Coefficients are highly significant and similar to those estimated for revenue per head. Also, results on unemployment are not affected.

Finally, we compare the different estimation methods. Applying the Hausman test to random versus fixed effects models, i.e. to equations (4) and (5) in Table 5, we cannot reject the hypothesis that coefficients are the same, as the test statistic is highly insignificant ($\chi 2(4)=1.67$). On the basis of this test we recommend the random effects model. A similar result was obtained by Grosfeld and Nivet (1999), where the Hausman test produces the same effect. Despited the short time dimension of the model, the potential problems resulting from individual effects were clearly alleviated by first differencing of variables.

At this junction, we wish to explore further the characteristics of rent sharing, focusing on two issues: /1/ asymmetry, and /2/ dissimilarity in behaviour of different ownership categories of firms.

We start with asymmetry. In Table 6 below we allow for difference in quasi-rent elasticity of wages, by introducing a supplementary variable. This new variable - Δquasi_rent_in - takes a value of zero for all observations where Δquasi rent<0, and has a value equal to Δquasi rent where Δquasi rent>0. By doing this, we introduce a diiferential coefficient for those observations, where change was positive. As before, we apply both the fixed and random effects model, and find the latter preferable, as differences in coefficients appear insignificant based on Hausman test.

Table 6. Asymmetry. Dependent variable: Δ*l_rwage*[a]

	(1) 1998-2001; Random Effects GLS	(2) 1998-2001; Fixed Effects (within)
Constant	0.091 (0.053)†	0.067 (0.065)
Δquasi_rent	0.273 (0.062)***	0.284 (0.083)***
Δquasi_rent_in	-0.188 (0.102)†	-0.131 (0.146)
Δ l_unsu_n_{t-1} [b]	-0.189 (0.151)	-0.162 (0.189)
Wald χ^2	120.35***	
F		19.35***
R^2	0.160	0.158
Hausman test	$\chi^2(5) = 1.79$	
N	587	587

*** Significant at 0.001; ** Significant at 0.01; **** Significant at 0.05; † Significant at 0.1

[a] Time effects included

[b] Survey unemployment rates are mid year values (see Table 4); therefore one year lag is used

The results reveal that indeed, the elasticity of wages differs, when the increase in quasi rent is separated from the decrease. For firms with decreasing quasi rents, the elasticity of wages is 0.273, for those with increasing it falls to 0.085=0.273-0.188. This is a positive finding, as it indicates that wage pressure may be less of a problem than indicated by aggregate results. Companies in which performance is improving are capable of increasing retained earnings and

finance further development, as elasticity of wages is relatively low and therefore cost dynamics are kept under control. On the other hand, wage pressure seems to be responsive to deterioration in performance, which may indicate that it is not only wages but also employment, which ranks high in employees' utility function. Interestingly, in this respect the results differ from those obtained by Grosfeld and Nivet (1999) for the earlier transition period.19 While their estimation of elasticity for firms with increasing quasi rents is very similar to ours (0.166), they obtain a very different result for those, where quasi rents are decreasing: for their sample it is very low (0.018) and insignificant. The change in behaviour may reflect growing concerns of the employees about their employment, given the deterioration in labour market conditions. This particular effect however is not well captured by regional cross-section in labour market indicators – when we tested for different coefficients in elasticity of regional unemployment, we found virtually no difference between firms with increasing and decreasing quasi rents.

Table 7. Ownership. Dependent variable: Δl_rwage[a]

	(1) 1998-2001 Random Effects GLS. All [c]	(1a) Wald test for quasi_rent: privatised v. other groups [c]	(2) 1998-2001 Random Effects GLS. De novo firms	(3) 1998-2001 Random Effects GLS. Privatised	(4) 1998-2001 Random Effects GLS. State (Mixed)	(5) 1998-2001 Random Effects GLS. State (100%)
Constant	0.076 (0.051)		-0.115 (0.171)	-0.021 (0.109)	-0.025 (0.123)	0.224 (0.061)***
Δquasi_rent_dn	0.341 (0.102)***	$\chi^2(1)=11.03$ ***	0.395 (0.158)**			
Δquasi_rent_ps	-0.063 (0.071)	-		-0.105 (0.074)		
Δquasi_rent_mx	0.239 (0.097)**	$\chi^2(1)=6.44$* *			0.213 (0.091)*	
Δquasi_rent_st	0.283 (0.058)***	$\chi^2(1)=15.27$ ***				0.230 (0.047)***
Δ l_unsu_n_{t-1} [b]	-0.196 (0.145)		0.567 (0.571)	0.079 (0.304)	0.039 (0.361)	-0.668 (0.169)***
Wald χ^2	139.15***		16.55**	34.70***	17.72***	115.16***
R^2	0.181		0.105	0.176	0.191	0.356
N	587		127	168	80	212

*** Significant at 0.001; ** Significant at 0.01; **** Significant at 0.05; † Significant at 0.1

[a] Time effects included.

[b] Survey unemployment rates are mid year values (see Table 4); therefore one year lag is used

[c] All other Wald tests for differences in quasi-rent coefficients between ownership groups produced highly insignificant results

[19] Grosfeld and Nivet (1999) use revenue per employee. For reasons argued before, we prefer our new simple measure of quasi rents, but empirically it makes little difference.

Last but not least, we wish to explore, if wage behaviour differs across ownership sectors. We distinguish between four ownership categories: (i) companies entirely owned by the state treasury, (ii) companies with majority state shares, (iii) companies privatised until 2001, (iv) new private companies. All tests are presented in Table 7.

First we restrict ourselves to a comparison of differences in quasi rent elasticity of wages. Again, we separate corresponding coefficients by replacing Δquasi_rent by four new variables, which take values of zero for three of the ownership categories and equal the value of Δquasi_rent for one selected category. Wald test for differences in coefficients reveal that elasticity in the privatised sector differs significantly from all other ownership sectors. Unlike the other, there is hardly any evidence of rent sharing in the privatised sector – coefficients are low and insignificant. Further inspection reveals that a fault line is not between companies, which are controlled by the state, and those where privatisation process started: difference between the companies entirely owned by the Treasury and those with some minority private ownership is highly insignificant and coefficients are far more similar than those between privatised and mixed state ownership. In contrast, the Wald test for the two latter groups is undoubtedly significant (see Table 7, column 1a). Finally, there is strong indication of rent sharing in de novo sector. Yet, before paradoxically concluding that de novo sector is similar to the state sector, we wish to run separate estimations for all ownership sectors to explore if there are other differences beyond quasi rent elasticity of wages. The results are in columns (2)-(5) of Table 7.

The exercise turns out to be productive, as several additional conclusions can be drawn, including comparison with Grosfeld and Nivet (1999), who use a similar design (however: (i) there is no de novo group in their sample, as it relates to the early transition period, (ii) our groupings within the state sector differ). Looking both at Wald statistics and R2 it is easy to notice that wage behaviour of state companies is clearly most uniform and consistent. Interestingly, that confirms Grosfeld and Nivets' (1999) findings for the early transition period. Furthermore, the state sector reveals two additional characteristics. First, similarly to Grosfeld and Nivet (1999), regional unemployment coefficient is highly significant, while it plays no role for the other ownership sectors. The unemployment elasticity of wages in the state sector is remarkably high, at –0.668. Second, the value of the intercept term is best estimated for the state sector, it is also much higher than for the other sectors. In this respect, comparison with de novo sector is particularly interesting. While quasi rent elasticity of wages in de novo sector is slightly higher than in the state sector, the former exhibits the strongest trend in wage growth, independent of ability to pay. Clearly, a different wage setting mechanism is operating.

In the state sector, wage pressure seems to be strong, and is also highly responsive both to regional unemployment and to availability of quasi rents. In the new private companies, the basic trend in wage increases is insignificant but they respond stronger to quasi rents.

However, the most dramatic result relates to privatised sector, where we can notice a dramatic difference in wage behaviour as compared with the state sector. There is hardly any evidence of rent sharing in the privatised sector. In this respect, we were able to confirm earlier results

by Grosfeld and Nivet (1999). The positive results of privatisation still exist, even ten years after the early stages of economic reforms.

5. Conclusions

Our motivation was to see if the difference between new and old firms in wage setting dominates the state – privatised cross section. The answer seems to be that both distinctions are important. When we estimate separate equations, a clear pattern in wages setting emerges.

Wage dynamics in state firms are highly sensitive to regional unemployment, while this finding disappears in the private sector. On the other hand, in both state firms and new private firms, quasi rent elasticity of wages is substantial. That contrasts with the behaviour of privatised companies, where the rent sharing pattern is broken. What increases our confidence in this last effect is the fact that similar results were reported by Grosfeld and Nivet (1999) for the earlier transition period.

Two more general lessons are worth reporting. First, we hope that our proposed new simple measure of quasi rent may be effectively applied in the future, as it produces consistent results. Second, the sharp contrast in employment elasticity between ownership sectors indicates that wage curve parameters may be evolving over time in countries, which undergo ownership transformations. In particular, we may expect the unemployment elasticity of wages to decrease as a result of privatisation process.

Bibliography

Abowd, J., and Lemieux, T., 1993,The effects of product market competition on collective bargaining agreements: the case of foreign competition in Canada, Quarterly Journal of Economics, 108, 983-1014.

Adamchik, V. and Bedi, A., 2000,Wage Differentials between the Public and the Private Sectors; Evidence from an Economy in Transition, Labour Economics, 7, 203-224.

Allison, P., 2002, Missing Data, (Sage Publications Thousand Oaks).

Arellano, M., and Bond, S., 1991, Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Review of Economic Studies, 58, 277-297.

Balcerowicz, L., 1995, Socialism, Capitalism, Transformation, (Central European University Press, Budapest).

Baltowski, M. (ed.), 2002, Przedsiebiorstwa Sprywatyzowane w Gospodarce Polskiej, (PWN, Warszawa)..

Basu, S., Estrin, S., and Svejnar, J., 2000, Employment and wages in enterprises under communism and in transition: evidence from Central Europe and Russia, WDI Working paper, 114b..

Blanchard, O., 1997, The Economics of Post-Communist Transition,(Clarendon Press, Oxford) .

Blanchflower, D, G., 1990, Fear, unemployment and pay flexibility, Mimeo.

Blanchflower, D, G., 2001, Unemployment, well-being and wage curves in Eastern and Central Europe, Journal of Japanese and International Economics, 15, 364-402.

Boeri, T., Burda, M., Kollo, J., 1988, Mediating the transition: Labour markets in Central and Eastern Europe, (CEPR, London)..

Brainerd, E., 2002, Five years after: the impact of mass privatisation on wages in Russia, Journal of Comparative Economics, 160-90.

Cahuc, P., and Gianella, C., Goux D., and Zylerberg, A., 2002, Equalizing wage differences and bargaining power: evidence from a panel of French firms, CEPR Discussion Paper No. 3510.

Carlin, W., S. Estrin, M. Shaffer, 1999, Measuring Progress in Transition and Towards EU Accession: A Comparison of Manufacturing Firms in Poland, Romania and Spain, University of Michigan, William Davidson Institute Working Paper, No. 224.

Carlin, W., S. Fries, M. Schaffer, P. Seabright, 2001, Competition and Enterprise Performance in Transition Economies. Evidence from a Cross-country Survey, University of Michigan, William Davidson Institute Working Paper, No. 376.

Christev, A and Fitzroy, F., 2002, Employment and wage adjustment: insider-outsider control in a Polish privatisation panel study, Journal of Comparative Economics, 30, 251-275.

Christofides, L., and Oswald, A., 1992, Real wage determination and rent sharing in collective bargaining agreements, The Quarterly Journal of Economics, 985-1002.

Demsetz, H., and Lehn, K., 1985, The Structure of Corporate Ownership: Causes and Consequences, Journal of Political Economy, Vol. 93, 1155-1177.

Demsetz, H. and Villalonga, B., 2001, Ownership Structure and Corporate Performance, Journal of Corporate Finance, Vol. 7, 209-233.

Djankov, S. and P. Murrell, 2002, Enterprise Restructuring in Transition: A Quantitative Survey", Journal of Economic Literature, 40, 3, 739-792.

Dong, X., 1998,Employment and wage determination in China's rural industry: investigation using 1984-90 Panel data, Journal of Comparative Economics, 26, 485-502.

Duffy, F., and Walsh, P., 2001, Individual pay and outside options: evidence from the Polish Labour Force Survey, IZA Discussion paper, No. 295.

Fakhfakr, F., and Felix FitzRoy, F., 2002, Basic wages and firm characteristics: rent sharing in French manufacturing," University of St Andrew's, CRIEFF discussion paper, DP0203.

Furubotn, E., 2001, The New Institutional Economics and The Theory of the Firm, Journal of Economic Behaviour and Organization, 45, 133-153.

Goux, D., and Maurin, E., 1999, Persistence of inter-industry wage differentials: a re-examination using matched worker firm panel data, Journal of Labour Economics, 17, 3, 492-533.

Gregg, P., and Machin, S., 1992, Unions, the demise of the closed shop and wage growth in the 1980's, Oxford Bulletin of Economics and Statistics, 54, 53-71.

Griliches, Z., Economic Data Issues, 1986, in: Z. Griliches and M. Intriligator eds., Handbook of Econometrics, (Elsevier Science Publishers)Vol. III, 605-654.

Grosfeld, I., and Nivet., J., 1999, Insider power and wage setting in transition: evidence from a panel of large Polish firms, 1998-94, European Economic Review , 43, 1137-1147.

Hamermesh, S., 1993, Labor Demand (Princeton University Press)..

Harris, R., and Todaro, M., 1970, Migration, unemployment and development: a two sector analysis, American Economic Review, 60, 126-142.

Haskel, J., and Symanksi, S., 1993, Privatisation, liberalisation, wages and employment: theory and evidence for the UK, Economica, 60, 161-82.

Havrylyshyn, O., and McGettigan, D., 1999, Privatisation in transition countries: evidence for the first decade, IMF, Economic issue, 18.

Hildreth, A., and Oswald, A., 1997, Rent sharing and wages: evidence from company and establishment panels,Journal of Labour Economics, 15, 20, 318-337,

Holmund, B., and Zetterberg, J., 1991, Insider effects in wage determination: evidence from five countries, European Economic Review, 35, 1009-34..

Jones, D., 1998, Economic effects of privatisation-evidence from a Russian Panel," Comparative Economic Studies, Vol. 40, 75-102.

Johnson, S., D. Kaufmann, A. Shleifer, 1997, Politics and Entrepreneurship in Transition Economies, Working Paper, William Davidson Institute, University of Michigan Business School, No. 57.

Judson, R., and A. Owen, 1999, Estimating Dynamic Panel Data Models: A Guide for Macroeconomists, Economics Letters, 65, 9-15.

Kornai, J., 1995, Transformational Recession: The Example of Hungary, in: C. Saunders (ed.), Eastern Europe in Crisis and the Way Out, (Macmillan, Haundmills).

Lee, Y., 1999, Wages and employment in China's SOE's, 1980-1994: Corporatisation, market development and insider forces, Journal of Comparative Economics, 27, 702-729.

Lehmann, H., and Wadsworth, J., 2000, Tenures that shook the world: worker turnover in Russia, Poland and Britain, Journal of Comparative Economics, 28, 639-664.

Lindbeck, A., and Snower, D., 1987, The insider-outsider theory of employment and unemployment, (The MIT Press, Cambridge, London, England).

Mickiewicz, T., Baltowski, M., 2003, All Roads Lead to Outside Ownership: Polish Piecemeal Privatisation, in: D. Saal and D. Parker, eds., Handbook of Privatisation, (Edward Elgar, Cheltenham), Chapter 19.

Nickell, S., and Wadhwani, S., 1990, Insider forces and wage determination, The Economic Journal, 100, 401, 496-509.

Nickell, S., and Wadhwani, S., 1989 Insider forces and wage determination, Centre for Labour Economics, London School of Economics, Discussion Paper No. 344, Pohl, G., Anderson, E., Claessens, S., Djankov,, P., 1997, Privatisation and restructuring in Central and Eastern Europe, World Bank Technical Paper, No. 368, Finance, Private sector and infrastructure network, Washington.

Rosen, S., 1986, The theory of equalising differences, in Orley, C., and Layard, R., (eds.) The Handbook of Labour Economics, (New York, North Holland).

Sato, Y., 2000, Search theory and the wage curve, Economic Letters, 66, 93-8.

Shapiro, C and Stiglitz, J., 1984, Equilibrium unemployment as a worker discipline device, American Economic Review, 74(3), 433-44.

Van Reenen, J., 1996, The creation and capture of rents: wages and innovation in a panel of UK companies,The Quarterly Journal of Economics, 111, 1, 195-226.

CENTRE FOR THE STUDY OF ECONOMIC & SOCIAL CHANGE IN EUROPE

SCHOOL OF SLAVONIC & EAST EUROPEAN STUDIES

Inherited Labour Hoarding, Insiders and Employment Growth.

Panel Data Results: Poland, 1996-2002.

Tomasz Mickiewicz, Chris Gerry, Kate Bishop

Working Paper No. 37

UniversityCollege London
Centre for the Study of Economic and Social Change in Europe
Senate House, Malet Street, London, WC1E 7HU
Tel: 44(020) 7863 8517
Fax :44(020) 7862 8641
Email: csesce@ssees.ac.uk

Tomasz Mickiewicz,[♠] *Chris Gerry,*[♣] *Kate Bishop*[♦]

INHERITED LABOUR HOARDING, INSIDERS AND EMPLOYMENT GROWTH. PANEL DATA RESULTS: POLAND, 1996-2002.[♠]

[♠] SSEES University College London, Senate House, Malet St., London WC1E 7HU, E-mail: t.mickiewicz@ssees.ucl.ac.uk,

[♣] SSEES University College London, Senate House, Malet St., London WC1E 7HU, E-mail: c.gerry@ssees.ucl.ac.uk

[♦] Office for National Statistics, 1 Drummond Gate, London SW1V 2QQ, E-mail: kate.bishop@ons.gsi.gov.uk

ABSTRACT

Using panel data pertaining to large Polish (non-financial) firms this paper examines the determinants of employment change during the period 1996-2002. Paying particular attention to the asymmetry hypothesis we investigate the impact of own wages, outside wages, output growth, regional characteristics and sectoral affiliation on the evolution of employment.

In keeping with the 'right to manage' model we find that employment dynamics are not affected negatively by alternative wages.

Furthermore, in contrast to the early transition period, we find evidence that employment levels respond to positive sales growth (in all but state firms). The early literature, (e.g. Kőllő, 1998) found that labour hoarding lowered employment elasticities in the presence of positive demand shocks. Our findings suggest that inherited labour hoarding may no longer be a factor.

We argue that the present pattern of employment adjustment is better explained by the role of insiders. This tentative conclusion is hinged on the contrasting behaviour of state and privatised companies and the similar behaviour of privatised and new private companies. We conclude that lower responsiveness of employment to both positive and negative changes in revenue in state firms is consistent with the proposition that rent sharing by insiders is stronger in the state sector.

April 2004

ISSN 1476-1734

JEL Classification: C23, J23, P31

Key Words: employment, transition, asymmetry, ownership, insiders

[♠] This research was financed by the European Commission Framework 5 Project, "Regional Labour Market Adjustment in the Accession Candidate Countries" (ACCESSLAB).

INTRODUCTION

In a macroeconomic context characterised by 5% economic growth but 20% unemployment (Poland, 2004, 1st quarter) the issue of employment determination assumes particular importance. Using detailed firm level panel data relating to large Polish firms between 1996 and 2002, we concentrate on examining potential micro determinants of employment growth in Poland. We motivate our investigation with reference both to the existing economics literature on firm behaviour as well as to the Polish context. Research in the early years of transition reflected the view that state firms, faced by soft budget constraints, would not be willing to eliminate the excessive levels of labour hoarding inherited from the socialist period, and hence the quantity side of the labour market would exhibit inertia. Add to this the fact that employees held actual or effective control rights to many enterprises and the expectation of insider dominated outcomes was of particular concern. In this context, the observed enterprise adjustments that did occur were viewed by some as surprising. Firms *did* respond to output shocks by downsizing labour and wages. These adjustments reflected the imposition of hard budget constraints, across all ownership groups.

As the privatisation process has become embedded and the industrial structure more consolidated, later research (Grosfeld and Nivet, 1997) has pointed to considerable heterogeneity in enterprise responses. Indeed, behaviour has been described as being dependent on ownership, firm size, local labour market conditions and the nature of 'shock' experienced. Still more recent research has developed certain of these themes further (Christev and Fitzroy, 2002).

We draw on, but extend, the existing literature and provide an updated account of the micro foundations of labour demand and the evolving structure of corporate governance in Poland. Our contribution is fourfold. First, we take a new and robust approach to capturing the important heterogeneity among firms' responses to output shocks and relate this to several characteristics of interest. Second, we provide new evidence regarding the persistence of insider influence. Third, in using more recent data, we are able to comment on the continuation or otherwise of a variety of 'stylised facts' emerging from the earlier literature and, in so doing, provide a contemporary insight into the determinants of labour demand in large Polish firms. Finally, we hint at an alternative interpretation of the role of outside options and surmise that location may play a subtler role than that reflected simply in the local labour market.

We find that a) previous employment and internal wage levels influence current employment in the anticipated way; b) the asymmetrical effects on employment of positive and negative shocks, found in earlier empirical studies disappear, suggesting that inherited labour hoarding is no longer a general problem; c) revenue growth is positively related to employment growth in both privatised and new private firms but not among state firms – pointing towards the persistence of insider power in such firms; d) similarly, employment sensitivity to negative revenue shocks is lower in the state sector e) the development of the regional infrastructure is positively associated with employment growth, suggesting a different interpretation of the effects of standard outside regional variables may be necessary.

We proceed as follows. Section 2 provides an outline review of the most relevant literature. Section 3 describes our econometric approach. In section 4, following a discussion of the data, we detail our various empirical specifications. Section 5 presents the results and relates them to our central hypotheses and section 6 concludes the paper.

1. RELEVANT LITERATURE

2.1. Theoretical framework

There is a long history of both theoretical and empirical literature relating to aspects of employment behaviour in various categories of enterprise, in various countries, at various times. The transition process has provided a new and fertile ground for such studies. In this section we reflect briefly on the literature most relevant to our investigation. In doing this we motivate a series of testable hypotheses and provide a context within which to understand our findings1.

Our main focus in this paper is on the link between corporate control characteristics and the employment behaviour of firms. This can be analysed within the context of at least three different theoretical models. We elaborate on them briefly below though make no claim to testing differences between the models.2 Rather, for our purposes, they motivate parallel conclusions regarding the possible indicators of insiders' positions within an empirical framework of employment equations.

First, the issue of 'insider control' can be analysed within the classical framework of the literature on employee control (Ward (1958); Vanek (1970); Ireland and Law (1982)). This is a well-rehearsed literature arguing that firms dominated by insiders have low employment responsiveness to product demand shocks. Indeed, the labour managed firm always varies employment "by a smaller amount in response to given price changes than do their capitalist counterparts" (Laidler and Estrin, 1989). Given the extent, to which state firms have been controlled by insiders in both the late socialist period and in the transition period, we expect to observe either employee control or at least the strong position of employees in the bargaining process and hence potentially lower employment adjustments to output changes3. In addition, in cases where subsequent privatisations and reforms haven't sufficiently modified the internal control structures, we may expect those effects to prevail after privatisation. From this point of view, using new private firms as a benchmark is an important empirical test.

Second, the employee ownership models can be easily incorporated as a limiting case of more recent 'efficient contract' models, best exemplified by the seminal paper of Brown and Ashenfelter (1986). In this class of models bargaining is always related to both wages and employment and full insider control relates to the case, in which all bargaining strength lies with

[1] Appendix 1 summarises the key literature.
[2] For a good and accessible discussion of the problems relating to empirically testing employment determination models, see Booth (1995).
[3] Earle and Estrin (1996) and Köllo (1998) offer a good discussion of the insiders' control model in the context of transition economies.

labour. In addition, Brown and Ashenfelter (1986) developed three alternative scenarios derived from the impact of internal and external wages on employment. If the alternative wage acts as the sole determinant of employment, the employment contract is said to be strongly efficient4. That is, employment is set so as to equate the marginal revenue product of workers with the alternative wage. When both the internal and alternative wage are significant (negative) determinants of employment, employment determination is characterised as 'weakly efficient'. If only the internal wage is instrumental in determining employment, the outcome is consistent with a third theoretical model, that is, one of monopolistic price setting by the union and unilateral employment setting by the employer (i.e. the 'right to manage' model) 5. In this case employment will be lower than under efficient contracts. Brown and Ashenfelter test these hypotheses using US data for the period 1948-65, and are unable to reject the hypothesis that contracts are 'weakly efficient' but not 'strongly efficient'.

In merging the 'right to manage' model and the efficient contract model, Oswald (1993) offers a critique. He argues that, to the extent that unions are likely to focus on wages in the bargaining process rather than on the combination of employment and wages, it is perfectly plausible that 'efficient' bargaining may produce outcomes consistent with the 'right to manage' outcome.

On a related theme, an interesting implication stemming from Oswald's (1993) analysis, and consistent with insider ownership/control is that the employment response may be weak or even negative in response to a positive demand shock. That is, we expect to observe asymmetry of outcomes in response to positive and negative demand shocks. The underlying motivation for the asymmetry hypothesis can be traced back to Lindbeck and Snower (1987) yet, in the context of the transition economies, asymmetry has a specific interpretation. In particular, asymmetry may be suggestive of inherited labour hoarding. In other words, because of existing labour reserves, employment is inelastic with respect to an increase in sales, but not with respect to a decrease. Even without inherited labour hoarding, weak or even negative upward output elasticity of employment remains consistent with the insider hypothesis. More generally, in the absence of an 'insiders effect' and without inherited labour hoarding we expect to observe symmetry.6

We reiterate that it is not our intention to subject these theories to testing here7. Nevertheless, to understand and interpret our results it pays to keep in mind that alternative models of bargaining can produce similar testable hypotheses. From our point of view, two critical tests come from the fact that /i/ we expect employment to be less responsive in insider dominated companies, and /ii/ if, additionally, there is still asymmetry in response to negative and positive shocks, this can be viewed as an indicator that the legacy of socialist labour hoarding may still impact upon firm behaviour.

---

[4] It can be traced back to the efficient bargaining model by Leontief (1946).

[5] Under this framework a union chooses a wage rate constrained by demand for its member's labour and, as argued by Dunlop (1944), equilibria lie on the labour demand curve. It has been termed a monopoly union as its introduction into a competitive labour market would lead to a deadweight loss usually associated with monopoly (Currie, 1991, p.46).

[6] Indeed, Haskel *et al.*, (1997) study asymmetry in the UK. They find that employment adjustment is more common in times of a positive demand shock, as compared to a negative demand shock. Thus, there is evidence of asymmetry, but reversed as compared to transition economies.

[7] For a thorough discussion of the theoretical models, see for instance Layard *et al.* (1991) and Booth (1995).

2.2. Empirical findings

As appendix 1 illustrates, the early empirical evidence from the transition countries is strongly suggestive of negative wage elasticity of employment (to a declining degree as transition progresses) but there is little clear evidence relating to the outside option. For Poland, Basu et al. (2000) find own wage elasticity of –0.84 immediately after transition began; Grosfeld and Nivet present a figure of between –0.03 and –0.13 for the years 1988 – 1994; and Christev and Fitzroy (2002), using later data from 1994-1997, find wage elasticity of –0.08. For Hungary, Köllö (1998) finds elasticity declining from –0.6 to –0.3 by the start of transition. Körösi (2002), covering the period 1992-1999 for Hungary, finds that, in the initial years of transition, labour demand was much more responsive to own wages but by 1999 characteristics of employment adjustment in Hungarian firms, had converged on that of their Western counterparts. In sum, the literature suggests that own-wage elasticity coefficients peaked in the early transition period.

As witnessed by the growing body of research examining the relationship between ownership, control and employment patterns the issue of insider control manifestly relates to that of ownership. Konings et al. (1996) find evidence that, in the early transition period (i.e. pre 1991), new private firms, in which insiders are hypothesised to be less influential, contributed significantly to Polish job growth. Basu et al. (2000) and Grosfeld and Nivet (1997) did not find significant differences in employment behaviour for different ownership sectors in the early transition period in Poland (i.e. 1990-1991), but importantly, in neither case, were new firms identified. Grosfeld and Nivet (1997) offer an explanation for the absence of differences between privatised and state firms. Specifically, half of the privatised enterprises in their sample held an explicit commitment to keep employment levels stable during the first 1.5-3 years post-privatisation. This suggests the need to examine more recent behaviour.

Faggio and Konings (2003) examine job creation, destruction and employment growth in five transition economies: Poland, Slovenia, Bulgaria, Romania and Estonia, with firm level panel data from a similar period, i.e. 1993-97. They find that, in Poland and Romania, state ownership has a negative effect on employment growth in comparison with firms under majority private domestic ownership, and that large firms in more advanced transition economies downsized faster than in the laggards.8

2.2.1 Empirical findings on asymmetry

Estrin and Svenjar (1998) and Kőllő (1998) investigate this asymmetry hypothesis by looking at employment growth differences among firms experiencing/not experiencing declining real sales. Based on data from the early transition period (1986-9, 1989-2 and 1992-3) Kőllő finds that the

[8] Papers on other transition countries, discussing ownership cross sections include Konings *et al.* (2003) on Ukraine, Rutkowski (2002) on Croatia, Brown and Earle (2002) and Konings and Lehmann (2001) on Russia, Dong (1988) and Lee (1999) on China. See summary in appendix 1.

elasticity of labour demand is relatively high for firms with decreasing output (0.2-0.3), yet insignificant for those with increasing output. This is a finding consistent with the inherited labour surplus hypothesis. Moreover the relationship between output and employment became stronger over time, especially for privatised firms (Ibidem, p.92 and 100). Estrin and Svenjar (1998), using firm level data from 1988-1993 for Poland, Czech Republic, Slovak Republic and Hungary, also test the asymmetry hypothesis. Their results reveal that employment responded to both decreasing and increasing sales, but that the response was higher for firms with increasing sales: 0.36-0.44 as opposed to 0.12-0.35.

Christev and Fitzroy (2002) focus on Polish firms for a later period (1994 – 1997) than that covered by the above studies. They estimate an equation in first differences using GMM Arellano-Bond (1991) methods and split the variables for positive and negative growth of output. They find that employment growth responds only to decreasing sales and offer the interpretation that inherited labour hoarding persisted among Polish firms in that period. It is worth noting however, that the sample of these authors' did not include de novo firms, in which labour hoarding should not be observed. On the other hand, they find that state owned enterprises are characterised by a far smaller significant response to negative shocks than either the firms privatised to outsiders or firms included in the National Investment Funds programme. Again, this finding would appear to be consistent with insiders' control.

Similar results were obtained by Kőrősi (2002), who estimated labour demand equations annually for the period 1992–1999 for medium and large Hungarian firms. Interestingly, when the sample is restricted first to manufacturing firms, and second to engineering firms alone, the difference in employment response between firms with increasing and decreasing output seems to disappear in the most recent period. Accounting for sectoral differences may be important in so far as sectoral heterogeneity masks certain underlying trends, such as the fact that the impact of initial labour hoarding may be decreasing over time9.

Finally, size may also matter. Typically, smaller firms were more likely to be privatised and new companies are smaller by design at least in the early period. This implies a correlation between size and ownership, which may affect the robustness of conclusions. Several studies tackle this issue directly. Kőllő (1998) controls for small and large firms. His results for Hungarian firms reveal that small firms are characterised by stronger employment growth. Similarly, Faggio and Konings (2003) report a clear relationship between employment growth and initial size: larger firms are negatively associated with employment growth. Christev and Fitzroy (2002) include a variable to represent average firm size and find that larger firms tend to grow more slowly. As our sample is drawn from the largest Polish firms, extrapolation of our results to small firms should be viewed cautiously.

So, what lessons can be culled from this literature to inform our examination of the employment behaviour of large Polish firms? First, if employees attach significant weight to wages in the bargaining process then we should observe a negative correlation between employment and internal wages and thus can reject the 'strong efficiency hypothesis'. Second, if insiders maintain

9 This does present a potential empirical problem in the short run. While sectoral affiliation is a binary indicator, the real processes are continuous in character. The transition trend towards 'tertiarisaiton' likely relates to most post-socialist manufacturing companies without necessarily being reflected in sectoral statistics.

control over firms, we will observe low responsiveness of employment to final output. Third, since low upwards employment elasticity is also consistent with the labour hoarding story, it is both (i) low downwards elasticity and (ii) low upwards employment elasticity, which are indicative of a strong insider domination, in contrast with a situation, where only the latter holds. Finally, as a consequence of weak insider effects alongside an absence of residual labour hoarding, de novo enterprises should exhibit a positive association between output and employment growth.

2. METHODOLOGICAL APPROACH AND DATA

3.1 Data

This study is based on data procured from publicly available company level information relating to Poland's largest companies. The data is sourced from a project (with participation of one of the co-authors), financed by the Polish Committee for Scientific Research (grant 1H02C-024-19)10 and utilises all publicly available information on Poland's largest companies. Information is sourced from the Warsaw Stock Exchange and several lists of the 500 largest (revenue) companies published by journals and magazines, including Rzeczpospolita, Polityka, Gazeta Bankowa, Nowe Zycie Gospodarcze, Zycie Gospodarcze and Businessman. Ultimately, the veracity of the information used is verified and corrected in line with the companies' annual reports - now accessible in most cases. Our panel of firms is unbalanced since, inevitably, there are missing values for certain companies, in certain years. In addition, to limit the impact of potential measurement error, we eliminate 0.5% of observations in each tail of our key variables.11

Apart from standard type errors, there were several other noteworthy problems encountered during data processing. In principle, Polish state companies were prevented from buying shares in other privatised companies. In reality, this applied neither to privatisations (or semi-privatisations) resulting from bank-led restructuring programmes, nor to post-privatisation ownership transfers including, for instance, companies privatised via the National Investment Funds programme. As a consequence, a number of 'privatised' companies are wrongly attributed to the private sector rather than to the state sector. These cases are not necessarily easy to detect, due to the multi-layered nature of cross-company ownership, but the data has been corrected where possible. On a related theme there are problems with distinguishing the dominant ownership class from minority owner groups. There are also cases of companies being wrongly classified as 'de novo' private companies, either because they have been formally registered as a new company as part of the privatisation proceedings, or because they are new companies created by other state-controlled firms. The former case relates in particular to companies privatised through employee buy-outs (see Mickiewicz and Baltowski, 2003). We are also aware of the fact

[10] Other results of the project are available in an edited volume in Polish (Baltowski, 2002).

[11] On inspection, the observations in the tails cannot be explained other than as measurement errors. Typically, the inclusion of outliers makes rejecting the null hypotheses easier and inflates the coefficients upwards. These results are available from the authors on request.

that some sources do not distinguish between individual companies and consolidated balances of capital groups with similar names. Compiling both categories into one time series would create a serious data distortion.

In keeping with the literature we choose to use aggregate price indices to transform nominal series. In particular, following Christev and Fitzroy (2002) and Currie (1991) we use CPI since, arguably, use of PPI at sectoral level would erase some of the effects we are particularly interested in. Thus, while using the aggregate price index, we do not eliminate the impact of shifts in relative sectoral prices on total revenue. This is important because we wish the change in revenue to incorporate the impact of sectoral demand for the final product.

The construction of the ownership cross-section is far from straightforward and no approach is exempt from criticism. Though it is straightforward to identify de novo firms, since by definition they are a time invariant category, problems arise as soon as we begin to construct ownership indicators for privatised versus state companies. To reduce potential endogeneity, one approach could be to use pre-sample information on ownership to partition the data and hence treat ownership as time invariant. However, in most cases, future information pertaining to ownership was available in pre-sample time and it has been well established that the privatisation processes impacted upon firm behaviour prior to the formal privatisation date.12 This being so, treating ownership as pre-determined is unlikely to remove any potential endogeneity and a better option could be to distinguish between those companies, privatised during the period in question and those which were not. Yet, even then, some companies in the state group might again expect privatisation after the sample period and the impact of future expectation is not eliminated. In our specifications we utilise time variant dummy variables for our state and privatised categories, but note that estimates based on alternative ownership specifications, in line with those described above, do not affect the key results.

An appealing feature of our data is that, through the details concerning company and location, we are able to match the enterprises with corresponding administrative units and subsequently with appropriate regional labour market indicators, available from the Polish Central Statistical Office. We also adopt the public infrastructure indices, developed by Duffy and Walsh (2001) that rank voivodships according to six infrastructure indicators.13 However, assigning companies to regions created its own methodological challenges. 25% of the companies included in the sample are registered in Warsaw. These can be considered in two sub-categories: companies operating nation-wide, and those whose operations are located in the capital city. 9% of companies, typically in manufacturing production, are in the latter category. The remaining enterprises registered in Warsaw (16% of the sample) we consider to be nation-wide, typically consisting of trade companies and retail network firms, but also producers with several major sites. We attribute national averages of the relevant labour market indicators in the case of those companies labelled nation-wide.

[12] See Megginson and Netter (2001) for further discussion on methodology.

[13] These indicators relate to the number of telephones, fax machines, railways and public roads in the region as well as the urban share of the population and the share of services in total regional employment.

The above caveats aside our firm level data is relatively rich and concentrates on the largest Polish firms. We have reliable information on employment levels, wage levels, total earnings, ownership status and the sector of activity supplemented with information on regional wages, sectoral wages, unemployment and public infrastructure. Appendix 2 provides full variable definitions while Table 1 provides descriptive statistics for the key variables.

{Table 1 about here}

Interestingly, in terms of both revenue and employment dynamics, the performance of state companies is superior to their privatised counterparts possibly as a result of post-privatisation restructuring. The main difference however seems to be between these two groups and de novo firms, for which the growth of both employment and output is high, and the difference with the two other categories is highly significant. It is also worth noting that for the state firms, the distribution of the percentage change in employment seems to have more mass in the centre, as compared with the other categories. This is illustrated by lower absolute values at both the 25th and 75th percentiles. Thus, even at this preliminary stage of analysis we detect lower responsiveness of employment levels in state sector firms. The pattern related to the quality of infrastructure in a firms locality is not clear cut. Interestingly however, companies operating nation-wide exhibit better performance than the rest of the sample, in terms of both employment and revenue dynamics.

3.2 Econometric Techniques and Specification

To explore the hypotheses outlined above we employ generalised method of moments techniques (GMM). In their seminal paper, Arellano and Bond (1991) find that GMM is superior to instrumental variable estimators and recommend one step GMM for inference (Ibidem, p.293). More recently, Judson and Owen (1999) support the conclusion that this estimation method is superior to feasible alternatives for unbalanced panels with a short time dimension. The GMM estimator is robust in that it does not require information pertaining to the exact distribution of the disturbances and is instrumental in combating the problems associated with potential endogeneity. The estimator allows for the endogeneity of all regressors by using predetermined variables as efficient instruments. In essence, this model involves estimation in differenced form of the general distributed-lag model.

We have made several informed choices in our specification of the model and comment upon these briefly. Firstly, following Arellano-Bond methodology, we transformed variables into first (logarithmic) differences to alleviate possible problems relating to individual fixed effects. Secondly, in view of the relatively small sample size, we adopt a conservative approach in our choice of ownership categories. We focus our attention on the three ownership categories – state, privatised and de novo – described in appendix 2. Our key indicator of the enterprises financial position is the revenue growth experienced by the firm – a variable we interact in various ways to investigate the hypotheses outlined in the previous section.

We estimate the following basic specification:

$$\Delta employment_{it} = \Delta employment_{it-1} + \Delta real\_wage_{it} + \Delta real\_revenue_{it} + \Delta real\_sectoral\_wage_{it}$$
$$+ \Delta real\_regional\_wage_{it} + \boldsymbol{Z}\gamma + \sum O_{it} + \sum S_{it} + \sum T_t + \upsilon_{it} \qquad (1)$$

where Oit, Sit and Tit relate to ownership, sectoral and time controls respectively and Z is a matrix of interactive effects with a corresponding column vector of coefficients γ. As the variables are first-differenced, the inclusion of sectoral controls is not a necessity, as individual unobservable effects are taken care of, however we follow here the practice of some other researchers (Christev and FitzRoy (2002) in particular).

We estimate equation (1) without ownership and interactive effects and report our results in column 1, Table 2. Specification (2) introduces the first ownership test by interacting both revenue growth and wage growth with the dummy for state ownership. In the specifications (3)-(7), we drop the wage interactive term and introduce a differential slope coefficient, taking the value 0 for firms with positive revenue growth and the actual value of the negative revenue change for the remaining firms. This specification enables an initial test for signs of asymmetry. This term is then interacted with ownership dummies to further explore dimensions of asymmetry. That is, we are able to investigate the asymmetry hypothesis without dividing the sample into sub-groups. We then modify the composition of outside controls to obtain specifications (3)-(7). Specifically, specification (4) omits sectoral wages; specification (5) introduces regional infrastructure effects, including a dummy variable for firms operating in multiple locations; specification (6) retains the infrastructure controls at the expense of regional wages; and specification (7) retains the dummy for multiple location, drops the other infrastructure dummies and reintroduces a control for the regional wage. Finally we carry out two additional tests. Specification (8) introduces differential effects for de novo firms, enabling us to detect differential slope coefficients for all three ownership groups and to assess the difference between new private firms and privatised firms, in addition to the difference between the state sector and the aggregate private sector. Specification (9) retains controls and interactive effects for both state and de novo firms, but eliminates variables relating to asymmetry. In short, (9) is a specification similar to the basic specification (2), but distinguishing between all three ownership groups, to establish whether our focus on the private-state nexus was justified.

4. RESULTS

As expected, the lagged dependent variable is positive and significant, with the corresponding coefficient taking values between 0.22 and 0.29 in alternative specifications. This result reflects a somewhat smaller effect than Christev and Fitzroy (2002) who cover similar firms in an earlier period and obtain an estimated coefficient of 0.7 on lagged employment growth. Both cases suggest that employment growth is path dependent and that the empirical approach taken is therefore appropriate. The internal wage is negatively significant with a coefficient varying narrowly between –.57 and -.60 across the specifications. Higher internal wage growth is associated with lower employment growth and the 'strong efficiency' hypothesis is clearly rejected. The size of the effect is higher than that found by both Christev and Fitzroy (2002) and

Grosfeld and Nivet (1997), but lower than that found by Basu et al. (2000). Turning to outside options we find that sectoral wages and regional wages are positive but that only the latter are significant14. According to the 'weak efficiency' hypothesis the outside wage available to workers should be negatively related to employment change but, just as Brown and Ashenfelter (1986) found it "frequently positively related to employment" so too do we. It would seem to be the case that higher regional wages may reflect some factor other than the bargaining relations of firms and employees. This is a theme to which we return later. In terms of total revenue change we find a positive relationship with employment change, suggesting that output expansions are being transformed into employment growth as opposed to only wage growth. For the whole sample (Table 2, specification (1)), the output elasticity of employment is 0.28, which is entirely consistent with other studies for both Poland and Hungary (Basu et al. (2000), Kőllő (1998), Grosfeld and Nivet (1997)).

We turn now to ownership effects. The ownership dummies reveal that, compared to privatised and de novo firms, state sector firms have significantly lower employment growth, and the result is consistent across the specifications. This is as we would expect. On the other hand, we are unable to detect any effect related to the difference between de novo and privatised firms (Table 3, specifications (8) and (9)).

The sectoral controls point towards higher employment growth in the utilities sector and lower employment growth for the mining & heavy industry and construction sectors. We have particular confidence in the robustness of these results since not only are they consistent across specifications but they are also based on orthogonal contrasts rather than reflecting simple sectoral dummies. In particular, the poor performance of employment in the mining and heavy industry sector is consistent with the prior knowledge.

In specification (2) we add additional controls, interacting state ownership with both the own wage and total revenue. The results demonstrate the existence of clearly differing dynamics depending on ownership status. The negative association of the state/revenue interactive term shows that revenue growth in state firms translates into far lower employment growth than in other firms. This is consistent with either an interpretation of excess 'inherited labour' or of insiders appropriating rent in the form of wages as enterprise revenues grow. The latter explanation garners support from the fact that wage increases in state firms are more weakly associated with employment declines than is the case for other firms15. Taken together these two findings imply some element of 'insider control' in state firms.

Table 3 reports the results of our investigation of the asymmetry hypothesis. In specification (3), we estimate a version of specification (1) with the inclusion of a differential slope coefficient identifying the level of revenue change among firms experiencing declines in revenue. We also interact this term with the state sector dummy. We find the former coefficient to be negative but insignificant, suggesting that for negative revenue growth firms, the employment with respect to sales elasticity is lower than that predicted by the aggregate relationship incorporating the positive revenue growth firms. This is indicative of a general asymmetry effect – namely that

[14] We also experimented with a regional unemployment measure but found that to be highly insignificant.
[15] .It should be noted however that this differential effect is marginally insignificant.

employment is more responsive upwards than downwards – though the general asymmetry effect appears weak. This is potentially important since it diverges from the findings of earlier periods. For example, Christev and Fitzroy (2002) find that sales increases have little effect on employment growth whereas employment does respond to falling sales. Similar results were obtained by Kőllő (1998) for the early transition period in Hungary. For the early transition period, this was interpreted as evidence of high levels of initial labour hoarding enabling firms to expand output without increasing employment. In so far as such an interpretation is correct, our findings go some way to establishing that the initial 'widespread labour hoarding' may be over. Hence, when firms experience a positive demand shock they are inclined to adjust their labour force accordingly. It is only in the state sector, where output elasticity is generally dramatically lower, that we still observe the response to output decline being stronger than that to the output increase. But even in state sector firms, the difference is no longer significant. To see if our conclusions are robust we experiment with alternative sets of outside options in specifications (3)-(7) and find that our asymmetry results hold.

In specification (8) we introduce additional effects for de novo firms. Output elasticity of employment is stronger in privatised companies than in de novo companies where the output growth is positive, but the differences between the two groups are not significant. It is interesting to contrast that conclusion with the analysis based on descriptive statistics presented earlier. The highly significant and positive difference in the employment growth of de novo firms compared with other sectors, vanishes once we subject it to a multivariate approach and control for endogeneity using the GMM Arellano-Bond framework. Once more, the main difference is that for state firms with positive employment growth, the increase in employment for a given change in revenue is lower than for other firms. Taken together, this implies that expanding firms do indeed turn revenue growth into higher employment but that state firms do so at a lesser rate. In comparison, negative revenue growth per se does not imply anything for employment growth but again, among state owned firms, negative revenue growth is associated with lower employment elasticities compared with other sectors.

Christev and Fitzroy (2002), separating their sample into firms with positive and negative sales growth, conclude that there is no evidence of a 'significant positive employment response to positive sales growth'. This is taken as evidence of continuing labour hoarding. Our results offer a more optimistic interpretation of the progress of enterprise restructuring in Poland. In particular our more recent data reveals clear evidence that a strong positive response to revenue growth has emerged in large Polish firms, yet only in the private sector. For state owned firms the effect is significantly weaker and close to zero. That is, outside of state owned firms, labour hoarding is no longer a significant impediment to employment growth. In addition, state firms with negative revenue growth also exhibit lower employment elasticities than the aggregate suggests. The latter observation is in line with Christev and Fitzroy (2002) who find that 'state owned enterprises exhibit the smallest significant response to negative shocks'. But generally, we find no significant evidence of asymmetry between firms experiencing negative as opposed to positive revenue growth, regardless of the ownership sector. Somewhat surprisingly, in the aggregate, it no longer fits the 'transition model'.

In fact, we find that, employment responds positively to revenue growth but less strongly to revenue falls and so is already more in keeping with western economic models (e.g. Haskel et al, 1997). Notwithstanding this, elements of an 'unreformed' state sector still persist. State firms, whether experiencing expanding revenues or otherwise, exhibit lower employment elasticities than all firms. This result hints at alternative interpretations. First, it is consistent with sustained or consolidated insider (employee) control, where firms are less likely to raise employment in response to positive shocks and to lay off workers when faced with negative shocks. Alternatively, assuming that some labour hoarding was still present in state companies, an increase in revenue may help the companies to cover the costs of redundancies while, in the absence of growth, labour shedding is not possible.

Table 3 also contains potentially important results concerning outside options. Consistent with a series of empirical studies stretching back to Brown and Ashenfelter (1986) the coefficient for regional wages is positive and significant across our specifications. The reasons for this persistent result have not been explicitly identified to date. One possible explanation is that the regional wage may be a proxy for some alternative characteristic of the regional economy associated with firm growth. To investigate whether the variable reflects regional economic performance we experimented by including a regional unemployment variable but found this to be consistently insignificant. Hence, as a first stab at investigating this important issue we include regional infrastructure variables in specifications (5) and (6). Not only are our other findings robust to this variation but we find evidence that firms in regions with the best public infrastructure have higher levels of employment growth. This is clearly of interest to policy makers. On a related issue, firms operating in multiple regions also outperform other firms. The latter finding may partially reflect a firms propensity to locate multiple branches rationally and related efficiency gains, which are transformed into employment generation.

6. CONCLUDING REMARKS

Using data from a panel of large Polish firms, covering a longer and later period than other studies (e.g. Grosfeld and Nivet (1997), Basu et al., (2000) and Christev and Fitzroy (2002)) we make a series of interesting and important findings concerning firm employment behaviour. Not only does our data enable us to investigate employment determination further into the transition period but also allows us to identify de novo companies, which by the late 1990's were already appearing among Poland's largest firms.

First, we find that employment is affected by internal wages and not external wages. This may reflect monopoly price setting unions and unilateral employment setting by the employer (Brown and Ashenfelter, 1986), regardless of the ownership sector.

Second, as far as the asymmetry hypothesis is concerned, our results differ form earlier studies such as Kőllő (1998) and Christev and Fitzroy (2002). We find that firms no longer only respond to a decline in real total revenue, but to a positive demand shock too, suggesting that the earlier residual labour hoarding is now over.

Third, it is clear in all specifications that firm performance (measured as growth in real total revenue16) translates into employment growth. Similarly, poor performance (negative real output growth) is accompanied by lower elasticity of employment, but the difference between positive and negative growth is not significant.

The most compelling result of our analysis is that state sector firms exhibit far lower output elasticities of employment than firms in the private sector. In the case of positive output growth, the employment elasticity oscillates around zero.

Finally, our analysis offers up some crucial issues for further investigation and for policy makers to be aware of. In particular, it would seem that the quality of public infrastructure plays an important role in firm development. Our proxies for this characteristic are highly aggregated in this analysis but provide strong motivation for further research in this area.

Overall, our analysis offers up a clearer picture of employment determination in the later transition period. With the progress of privatisation, and the downsizing of state sector firms, visible in our results, the industrial structure is clearly still evolving and one may expect aggregate employment elasticities to increase over time. Currently Poland is experiencing high levels of unemployment and no net employment creation. Our results shed some light on the micro behaviour influencing those macro indicators.

BIBLIOGRAPHY

Arellano, M., and S. Bond, 1991, Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Review of Economic Studies, 58, 277-297.

Baltowski, M., ed., 2002, Przedsiebiorstwa sprywatyzowane w gospodarce polskiej, (PWN, Warszawa).

Basu, S., S. Estrin and J. Svenjar, 2000, Employment and wages in enterprises under communism and in transition: evidence from Central Europe and Russia, Working Paper, 114b, William Davidson Institute.

Booth, A., 1995, The economics of the trade union, (Cambridge University Press: Cambridge).

Brown, J., and O. Ashenfelter, 1986, Testing the efficiency of employment contracts, Journal of Political Economy, 94, 40-87.

Brown, J., and J. Earle, 2002, The reallocation of workers and jobs in Russian industry: new evidence on measures and determinants, Discussion Paper, 3663, CEPR.

Burgess, S., 1988, Employment adjustment in UK manufacturing, The Economic Journal, 98, 81-103.

Card, D., 1990, Unexpected inflation real wages and employment determination in union contracts," American Economic Review, 8, 669-688.

Checci, D., and G. Navaretti, 2003, Adjusting labour demand: multinational versus national firms – a cross European analysis, Discussion Paper, 3751, CEPR.

Christev, A., and F. Fiztroy, 2002, Employment and wage adjustment: insider-outsider control in a Polish privatisation panel study, Journal of Comparative Economics, 30, 251-275.

Currie, J., 1991, Employment determination in a unionised public sector labour market: the case of Ontario's school teachers, Journal of Labour Economics, 9, 45-66.

Dong, X., 1998, Employment and wage determination in China's rural industry: investigation using 1984-90 Panel data, Journal of Comparative Economics, 26, 485-502.

Duffy, F. and P. Walsh, 2001, Individual pay and outside options: evidence from the Polish labour force survey, Discussion Paper, 295, IZA.

[16] Earnings before taxes were largely insignificant.

Dunlop, T., 1994, Wage determination under trade unions, (Macmillan, New York).

Earle, J., and S. Estrin, 1995, Alternative ownership firms: the impact on restructuring, Economic Transition, 3, 111-115.

Estrin, S., and J. Svejnar, 1998, The effects of output, ownership, and legal form on employment and wages in Central European firms, in: S. Commander, ed., Enterprise Restructuring and Unemployment in Models of Transition, (World Bank, Washington D.C.), 31-56.

Faggio, G., and J. Konings, 2003, Job creation, job destruction and employment growth in the transition countries in the 90s, Economic Systems, 27, 129-154.

Grosfeld, I., and F. Nivet, 1997, Firms' heterogeneity in transition: evidence from a Polish panel data set, Working paper, 47, William Davidson Institute.

Haskel, J., B. Kersley, and C. Martin, 1997, Labour flexibility and employment adjustment: micro evidence from UK establishments, Oxford Economic Papers, 49, 362-79.

Ireland, N. and P. Law, 1982, The economics of labour-managed enterprise, (Croom Helm, London).

Judson, R., and A. Owen, 1999, Estimating dynamic panel data models: a guide for macroeconomists, Economics Letters, 65, 9-15.

Köllö, J., 1998, Employment and wages in three stages of Hungary's transition, in: S. Commander, ed., Enterprise behaviour in models of transition, (The World Bank, Washington D.C).

Konings, J., O. Kupets and H. Lehmann, 2003, Gross job flows in Ukraine, size, ownership and trade effects, Discussion Paper, 3802, CEPR.

Konings, J., and H. Lehmann, 2001, Marshall and labour demand in Russia: going back to basics, Journal of Comparative Economics, 30, 134-159.

Konings, J., H. Lehmann, and M. Schaffer, 1996, Employment growth, job creation and job destruction in Polish industry: 1988-91, Labour Economics, 3, 299-317.

Kőrősi, G., 2002, Labour adjustment and efficiency in Hungary, Budapest Working Papers on the Labour Market, 2002/4, Hungarian Academy of Science.

Laidler, D., and S. Estrin, 1989, Introduction to microeconomics, (Philip Allan, New York).

Layard, R., S. Nickell, and R. Jackman, 1991, Unemployment: macroeconomic performance and the labour market, (Oxford University Press, Oxford).

Lee, Y., 1999, Wages and employment in China's SOE's, 1980-1994: Corporatisation, market development and insider forces, Journal of Comparative Economics, 27, 702-729.

Leontief, W., 1946, The pure theory of the guaranteed annual wage contract, Journal of Political Economy, 54, 76-9.

Lindbeck, A., and D. Snower, 1988, The insider-outsider theory of employment and unemployment, (MIT, Cambridge Mass.).

Megginson, L. and J. Netter, 2001, From State to Market: A Survey of Empirical Studies on Privatisation, Journal of Economic Literature, 39, 321-389.

Mickiewicz, T. and M. Baltowski, 2003, All Roads Lead to Outside Ownership: Polish Piecemeal Privatisation, in: D. Parker and D. Saal, eds., International Handbook on Privatisation, (Edward Elgar, Cheltenham), 402-426.

Oswald, A., 1993, Efficient contracts are on the labour demand curve, Labour Economics, 1, 85-114.

Rutkowski, J., 2002, Towards a dynamic labour market and employment growth, background paper prepared for Croatia Economic Memorandum of World Bank, mimeo.

Smolny, W., 2002, Employment adjustment at the firm level. A theoretical model and empirical investigation for West German manufacturing firms, Labour, 16, 65-88.

Vanek, J., 1970, The General theory of labour managed firms, (Cornell University Press, Ithaca New York).

Ward, B., 1958, The Firm in Illyria: Market Syndicalism, American Economic Review, 48, 566-89.

Table 1: Descriptive statistics, 1998-2002: 25th , 50th and 75th percentiles.

Category	*Δ Number of employees*	*Δ Real wage*	*Δ Real total revenue*
All companies	-10.2% -2.4% 1.3%	-4.1% 1.7% 6.1%	-9.5% 1.9% 10.1%
State firms	-8.5% -2.4% -0.3%	-3.0% 1.7% 4.6%	-9.9% **-0.8% 7.0%
Privatised firms	-16.9% ***-4.2% 2.1%	-5.8% 1.7% 9.4%	-11.3% †-1.2% 11.1%
De novo firms	-7.4% ***1.4% 12.4%	-7.0% 1.4% 9.4%	-5.5% ***5.1% 18.6%
Companies in regions with poor infrastructure (I-IV)	-8.6% -2.3% 0.2%	-3.8% 1.7% 5.5%	-8.3% 1.4% 9.8%
Companies in regions with average infrastructure (V)	-14.9% *-3.1% -0.2%	-4.9% 1.7% 5.6%	-11.6% **-1.7% 7.5%
Companies in regions with best infrastructure (VI)	-10.2% -2.5% 2.2%	-4.4% 1.8% 7.3%	-0.8% 0.7% 10.0%
Companies with several major locations nation-wide	-8.4% *-0.6% 10.6%	-7.8% 1.0% 8.6%	-11.2% †2.2% 16.9%

Notes:

(1) The numbers given in each cell are 25th , 50th and 75th percentiles respectively.

(2) For computational ease, percentage changes are approximated by logarithmic differences.

(3) *** Significant at 0.001; ** Significant at 0.01; * Significant at 0.05; †Significant at 0.1. Significance levels relate to Pearson χ^2 (continuity corrected) based on the non-parametric test on the equality of medians.

Table 2: Own wages, outside options and ownership:

Dependent variable: Δ Employment	Specification:	
	(1)	(2)
Lagged dependent variable	0.283 (0.07)***	0.216 (0.07)***
Δ Real wage	-0.593 (0.05)***	-0.596 (0.06)***
Δ Real total revenue	0.308 (0.03)***	0.435 (0.04)***
Δ Real sectoral wage	0.203 (0.21)	0.251 (0.20)
Δ Real regional wage	1.091 (0.37) **	1.153 (0.35) ***
State ownership	-0.037 (0.01)**	-0.045 (0.01)***
De novo ownership	0.009 (0.02)	0.005 (0.02)
Δ Real wage * state	-	0.122 (0.09)
Δ Real revenue * state	-	-0.366 (0.06)***
Service sector versus industry	0.002 (0.00)	0.001 (0.00)
Trade sector versus other services	-0.001 (0.01)	0.003 (0.01)
Mining & heavy ind. versus other industry	-0.005 (0.00)*	-0.005 (0.00)*
Utilities sector versus other industry	0.008 (0.00)***	0.008 (0.00)***
Construction sector versus other industry	-0.022 (0.00)***	-0.022 (0.00)***
Engineering sector v. other manufacturing	-0.008 (0.27)	-0.008 (0.27)
Chemical sector v. other manufacturing	-0.007 (0.01)	-0.008 (0.005)
Constant	-0.010 (0.02)	-0.008 (0.02)
Second-order autocorrelation: z	-0.52	-0.77
Sargan test: χ^2	16.41	11.38
Number of firms	268	268
Number of observations	670	670

Notes:

1. Estimator: Arellano-Bond 1 step generalised method of moments.
2. *** Significant at 0.001; ** Significant at 0.01; *Significant at 0.05; † Significant at 0.1

Standard errors in parentheses.

Time dummies included.

Table 3: Asymmetry effects:

	alternative specifications for regional controls:						
Dependent variable: ΔEmployment	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged dependent variable	.238 (.062)***	.240 (.061)***	.284 (.053)***	.294 (.054)***	.288 (.055)***	.277 (.056)***	.282 (.056)***
ΔReal wage	-.565 (.05)***	-.565 (.05)***	-.585 (.05)***	-.596 (.05)***	-.585 (.05)***	-.592 (.05)***	-.596 (.05)***
ΔReal total revenue	.474 (.051)***	.477 (.051)***	.477 (.053)***	.471 (.053)***	.475 (.053)***	.518 (.069)***	.463 (.045)***
ΔReal sectoral wage	.251 (.194)						
ΔReal regional wage	1.147 (.35)***	1.219 (.35)***	1.112 (.374)**		1.161 (.36)***		
Firms in average infrastructure regions			.003 (.010)	-.003 (.010)		-.004 (.010)	-.002 (.010)
Firms in regions with best infrastructure			.011 (.010)	.017 (010)†		.017 (.010)†	.017 (.010)†
Firms with multiple locations			.033 (.016)*	.034 (.016)*	.028 (.015)†	.036 (.016)*	.036 (.016)*
State ownership	-.032 (.014)*	-.033 (.015)*	-.030 (.015)*	-.032 (.015)*	-.030 (.015)*	-.028 (.017)†	-.046 (.01)***
De novo ownership						.009 (.020)	.000 (.015)
ΔRevenue * state	-.475 (.11)***	-.463 (.11)***	-.463 (.11)***	-.463 (.11)***	-.462 (.11)***	-.508 (.12)***	-.381 (.07)***
ΔRevenue * de novo						-.103 (.112)	-.060 (.082)
Negative Δrevenue	-.084 (.092)	-.081 (.092)	-.082 (.095)	-.070 (.096)	-.082 (.094)	-.121 (.118)	
Negative Δrevenue * state	.209 (.158)	.189 (.159)	.197 (.164)	.192 (.166)	.192 (.163)	.236 (.181)	
Negative Δrevenue * de novo						.092 (.213)	
Constant	-.024 (.016)	-.019 (.015)	-.027 (.016)†	-.020 (.016)	-.022 (.016)	-.024 (.018)	-.015 (.016)
Second-order autocorrelation: z	-.41	-.42	-.71	-.84	-.73	-.75	-.77
Sargan test: χ^2	11.88	10.55	12.14	11.25	12.20	12.23	11.79
revenue elasticity of employment:							
de novo firms							*.403*
privatised firms							*.463*
state firms							*.082*
revenue increase: de novo firms						*.415*	
revenue increase: privatised firms						*.518*	
revenue increase: privatised & de novo	*.474*	*.477*	*.477*	*.471*	*.475*		
revenue increase: state firms	*-.001*	*.014*	*.014*	*.008*	*.013*	*.010*	
revenue decrease: de novo firms						*.386*	
revenue decrease: privatised firms						*.397*	
revenue decrease: privatised & de novo	*.390*	*.396*	*.395*	*.401*	*.393*		
revenue decrease: state firms	*.124*	*.122*	*.129*	*.130*	*.129*	*.125*	

Notes: (1) Estimator: Arellano-Bond 1 step generalised method of moments. (2) *** Significant at 0.001; ** Significant at 0.01; *Significant at 0.05; † Significant at 0.1. (3) Number of firms: 268. Number of observations: 670. (4) Standard errors in parentheses. (5) Time and sectoral controls included but not reported, the results were consistent with those in Table 2.

Appendix 1: Summary of existing empirical research

Transition Economies: Central Europe				
Authors	*Country and Time*	*Wage elasticity*	*Output/sales elasticity*	*Other selected comments*
Basu *et al.*, (2000)	Poland,1988-1991	-0.3 (1988/89) -0.84 (1990/91)	0.2	Privatised firms create less employment than other firms.
Grosfield and Nivet (1997)	Poland, 1988-1994, largest firms	-0.03 pre-transition -0.13 transition	0.06 pre-transition 0.25 transition	Privatised firms increased employment by 20% more than SOE's (1990-1).
Kőllő (1998)	Hungary, 1986-1993	-0.6 pre-transition -0.3 (1992/93)	0.2 – 0.3 decreasing 0 increasing 0.2 Sales elasticity	Firm size and export status important
Estrin and Svnejar (1998)	Poland, Czech Republic, Slovak Republic and Hungary 1989-93		Poland: significant for both increasing and decreasing, pre and post transition.	The degree of autonomy of the firm is not linked to elasticity of labour demand.
Christev and Fitzroy (2002)	Poland ,1994-1997	-0.08	More elastic for decreasing sales.	
Faggio and Konings (2003)	Poland, Slovenia, Bulgaria, Romania and Estonia, 1993-1997			Negative effect of state ownership on employment. Large firms downsized faster in advanced transition countries
Kőrősi (2002)	Hungary, 1992-9		Some evidence of asymmetry	Ownership not important for labour demand
Rutkowski (2002)	Croatia, 2000-1		No asymmetry evidence	Productivity, capital intensity & investment increase employment Ownership not important for LD. Smaller firms tend to grow faster.

continued

Transition Economies: China, CIS				
Authors	*Country and time*	*Wage elasticity*	*Output/Sales elasticity*	*Selected results*
Dong (1998)	China, 1984-1990	Negative own wage elasticity		Negative alternative wage elasticity consistent with weak efficiency
Lee (1999)	China, 1980-1994		Positive output elasticity	Profit/employees negatively affect employment in post 1985 period . Measures of insider power and corporatisation are insignificant factors.
Konings and Lehman (2001)	Russia, 1996-1997			State owned firms employment decline was less responsive to wage changes than private and mixed firms.
Konings *et al*., (2003)	Ukraine, 1998-2000			Negative relationship between firm size and net employment growth. New private firms show higher employment growth.
Non-transition countries				
Brown and Ashenfelter (1986)	US, 1948-1965	Negative own wage elasticity		Negative local unemployment elasticity consistent with weak efficiency in employment contracts.
Burgess (1988)	U.K, 1964-82	-0.06		
Card (1990)	Canada, 1966-1983	-0.03 to –0.58		Weak relation between employment and industry wage.
Haskel *et al.*, (1997)	UK, 1990		Employment adjustment more to positive shocks	
Smolny (2002)	Germany, 1980-1992			Product innovation is positively associated with employment growth.
Checci and Navaretti (2003)	Several EU countries	-0.3 Sweden -1.06 Spain		

Appendix 2: Definition of Variables

Variable name	*Description of variable*	*Details / comments*
state ownership	State owned firm (dummy, time variant)	Contemporaneous state ownership dummy
de_novo ownership	*De novo* private firm (dummy, time invariant)	A new private company, i.e. which is neither state owned nor was ever state owned
privatised	Privatised firm (dummy, time variant)	Contemporaneous privatised dummy
employment	Natural logarithm of number of employees	Available for 1996-2002
real wage	Natural logarithm of real wage cost	Ln of (average monthly wage cost in zlotys/consumer price index). Data 1996, 1998-2002. CPI: Central Statistical Office
real total revenue	Natural logarithm of real total revenue[17]	Total revenue/CPI. Available for 1996-2002.
Δ *real total revenue*	Change in revenue given as logarithmic difference (the operator Δ has the same meaning for other variables)	
Δ *revenue * state (de novo)*	refers to the interaction of the state/de novo dummy with the given variable (in this example: with revenue change)	
negative (positive) Δ *revenue*	Negative (positive) revenue growth, i.e. a variable which replicates for values of Δ *real total revenue>0* (*<0*) and takes zero in other cases	By constructution, the variable enables to test the differential effect as compared with the source variable (i.e. both Δ *real total revenue* and *negative (positive)* Δ *revenue* should be included in any given specification)
negative (positive) Δ *revenue * state (de novo)*	The variable defined in the previous row multiplied by the *state* (*de novo*) dummy	

continued

[17] We also have data on sales. Sales could be a better measure, i.e. more related to outcome from operations, but the data is less complete for that variable and correlation between sales and revenues is very close to one. Therefore, we opt for revenues. Estimations based on sales are available on request.

Variable name	*Description of variable*	*Details / comments*
Year controls	1999, 2000, 2001 dummies	Four years allowed given the GMM lag structure
Sectoral controls	- services versus industry - trade versus other services, - mining & heavy industry versus other industry, - utilities versus other industry, - construction versus other industry, - engineering v. other manufacturing, - chemical v. other manufacturing	Sectoral controls are constructed as orthogonal contrasts. When replaced by simple dummies, the results do not change. However, using orthogonal contrasts allows the sectoral controls to be uncorrelated with each other. Moreover, instead of being constructed as the difference against one benchmark group, the orthogonal contrasts allow describing the structure of sectoral differences in a more reach way. Details of coding are available on request.
External characteristics		
real sectoral wage	Logarithm of real sectoral wages	Logarithm of (average monthly wage in zlotys/CPI). Available for 1996-2001, two digit NACE sectors
real regional wage	Logarithm of real regional wage	Central Statistical Office data. At the provincial level; 17 (new) provinces. Annual average. Available 1998-2001
poor infrastructure	Categories I-IV of the taxonomy of public infrastructure of Polish regions (based on 49 regions)	Based directly on Duffy and Walsh (2001), which offers detailed description; clustering of categories I-IV in our sample results from the fact that there was a small number of companies in each of the four; Ranking is constructed in such a way that category VI corresponds to best infrastructure
average infrastructure	Category V	
best infrastructure	Category VI	
multiple locations	Dummy for companies operating nationwide	Companies within this category were not assigned to any infrastructure category. In other words this and the previous three categories are mutually exclusive

Medieninhaber (Verleger), Herausgeber und Hersteller: Österreichisches Institut für Wirtschaftsforschung,
Wien 3, Arsenal, Objekt 20 • Postanschrift: A-1103 Wien, Postfach 91 • Tel. (+43 1) 798 26 01-0 •
Fax (+43 1) 798 93 86 • http://www.wifo.ac.at/ •Verlags- und Herstellungsort: Wien

Verkaufspreis: 20,00 €, Download kostenlos:
http://publikationen.wifo.ac.at/pls/wifosite/wifosite.wifo_search.get_abstract_type?p_language=1&pubid=25287