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WP3 Competition-driven labour market developments, their institutional and policy implications

Deliverable 23. Labour market adjustment of Bulgarian, Hungarian and Romanian enterprises

by Gábor Kőrösi*

A comparative study based on

'Competitive pressure, labour demand and wage formation in the Bulgarian corporate sector' by Nikolay Markov and Rumen Dobrinsky
'Competitive pressure on the transitional labour market: Hungarian evidence' by Gábor Kőrösi, and
'Competitive pressure, labour demand and wage formation in the Romanian corporate sector' by Gábor Kőrösi and Geomina Turlea

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Executive summary

As transition started, most former socialist economies experienced a very substantial adjustment on the labour markets. Suddenly increasing competitive pressure, together with the wholesale reduction of state subsidies brought significant changes both in employment and in wage determination practices. Aggregate employment declined dramatically in many countries. This adjustment to the emerging market conditions led to large movements in employment and wage structure. Obviously, magnitudes and the time path of these developments varied substantially from country to country, depending on the particular characteristics of the transition process.

Labour market adjustment was part of the overall transition process: its speed and depth very much reflected the particular characteristics of the structural adjustment in the economy and society. It was strongly influenced by policies limiting or accommodating structural adjustment, on the form and timing of the privatisation process, and on the external environment of the economy. Labour market adjustment had direct social consequences: mass unemployment, quickly increasing income differentials, all having obvious social and political effect. The three economies, compared in this paper, Bulgaria, Hungary and Romania, followed very different strategies, and the time path of the transition process was very different. Still, some long-run consequences are strikingly similar: for example, aggregate employment was 70-75% of the 1989 level in 2004 in all three countries. This indicates that were very powerful economic forces, competitive pressures determining the basic directions of the adjustment process. These forces shaped the overall dynamics of labour market adjustments. However, different groups of firms in different phases of the transition process may have experienced variations to these overall characteristics, as there were substantial variations in initial conditions and competitive pressures.

However, there are important differences if we look at the labour market outcomes at a more disaggregate level. This paper analyses three aspects of labour adjustment: job-flows, labour demand, and wage determination in the three economies. We compare the most important characteristics, and identify the measurable effect of competitive pressure on labour market outcomes, whenever possible.

Job reallocation was more intensive in all three economies than typical to developed market economies. However, there were important country-specific differences. Intensive job reallocation only started after the macroeconomic stabilization in 1997 in Bulgaria. By 1999, when the Romanian sample starts, adjustment resulted in intensive job reallocation. Hungary experienced extremely strong reallocation for more than a decade, thus completely restructuring employment in the corporate sector. While job destruction is intensive in all three economies, job creation fluctuated substantially. It was more stable and relatively evenly spread over the sectors in Hungary. In Bulgaria intensive job creation only started in 1998. Job creation rates were significantly lower in Romania even in 2002, and it was very uneven: intensive job creation was mostly concentrated on the Trade sector.

Labour demand was heterogeneous over the sectors in all three economies. It obviously depends strongly on output dynamics. However, output elasticity of labour demand was much more stable in all three countries than the wage elasticity. Wage elasticities vary a lot over sectors in all three economies, and they also fluctuate more intensively. Labour demand was only moderately sensitive to wage shocks in Bulgaria, but its importance increased substantially. Labour demand initially was much more sensitive to labour cost in Hungary, but it gradually got very inelastic by the turn of the century. However, it again became somewhat more elastic, and by 2002 it reached similar levels than in Bulgaria. Wage elasticity is much more unstable in Romania than in the other two economies. While corporate labour market behaviour seems to shift gradually in Bulgaria and Hungary, where year-to-year changes are relatively moderate and most sectors move parallel, it apparently still is very unstable in Romania.

Wage determination seems to be rather different in the three economies. The short-run productivity elasticity indicates an unusually intensive rent-sharing in all economies, especially in Bulgaria and Hungary. Competitive pressure variables and ownership rarely have significant marginal effect, and these coefficients are very unstable even if significant. Their overall effects seem to show up in the heterogeneity of sectoral wage dynamics, but rarely significant within the sectors. Most probably aggregate pressures dominate firm or sector specific ones. Competitive pressure and ownership jointly influence the specification. Thus, competitive pressure rather has an indirect effect on labour adjustment in all three

countries, causing substantial heterogeneity in the corporate labour market behaviour.

There are characteristic differences in the speed of adjustment over the three economies. Labour adjustment seems to be very fast in Hungary. Past levels matter more in Bulgaria, and especially in Romania. In Romania wages seem to respond more to lagged levels of the major variables than to the contemporaneous ones, indicating a very slow adjustment process. These differences in the speed of adjustment may measure differences in national labour regulation, introducing institutional rigidities into the labour market outcomes, it may also reflect differences in corporate governance, but it most probably is related to differences in the overall competitive pressure on the economies.

1. Introduction

All three countries experienced very substantial shocks after transition to market economy started. Suddenly increasing competitive pressure, together with the wholesale reduction of state subsidies brought significant changes both in employment and in wage determination practices. Labour market adjustment was part of the overall transition process: its speed and depth very much reflected the particular characteristics of the structural adjustment in the economy and society. Labour market outcomes reflected the frequently uneven course of market reforms. They were strongly influenced by policies limiting or accommodating structural adjustment, on the form and timing of the privatisation process, and on the external environment of the economy. On the other hand, labour market adjustment had direct social consequences: mass unemployment, quickly increasing income differentials, all having obvious social and political effect. As labour market developments increased (sometimes created) social tensions, politics responded to these tensions, and political interventions influenced labour market behaviour from time to time in all economies. However, the need for a massive reallocation of resources and the hardship this entailed for the population were persistent and severe constraints on the degrees of freedom open to policy makers.

Aggregate employment declined dramatically in many countries. Figure 1 depicts the development of aggregate employment in the three economies. Initially employment declined in Romania much more slowly, but the overall drop is very similar: in 2004 employment was slightly below the 75% of the 1989 level in all three countries. Employment decreased until 1997 in Hungary, 1999-2000 in Bulgaria, and it still continued to decline in 2004 in Romania. Unemployment was relatively small in these economies: the unemployment rate was 12.2% in Bulgaria in 2004; it was close to 6% both in Hungary and Romania. However, unemployment rates offer a poor description of the real employment situation in these economies: there are many newly inactive people, who used to work in the pre-transition period, and would happily continue working, if they could. Much of this underemployment is structural: many inactive people are poorly educated; they do not have the skills necessary in the transformed market economy. There also are substantial regional differences in employment rates.

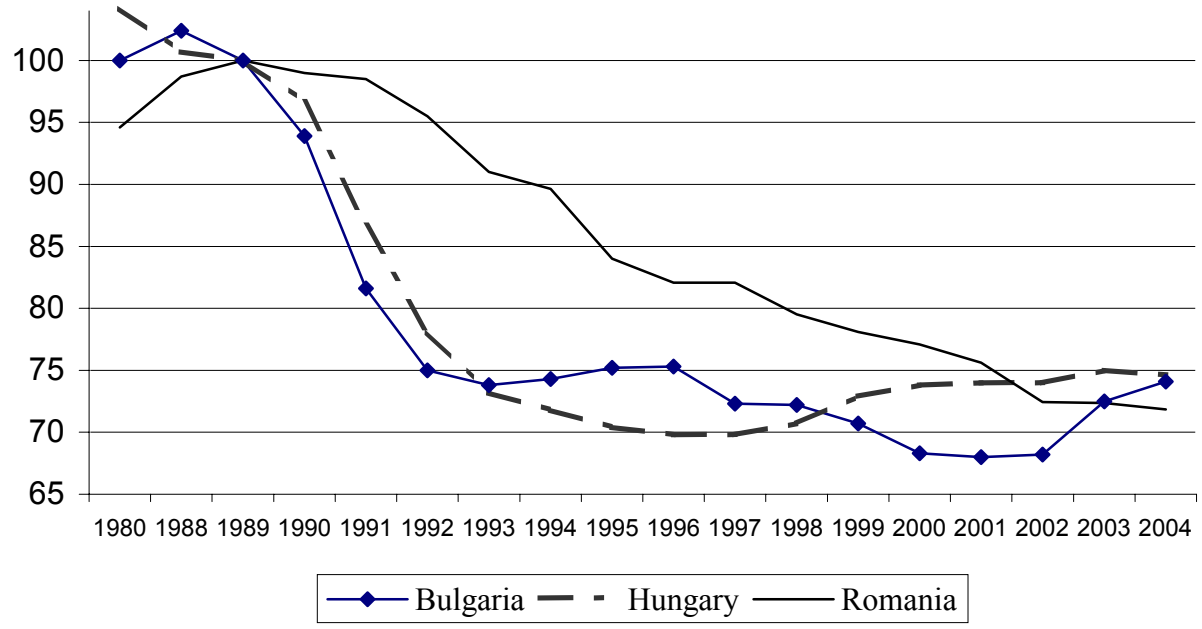


Figure 1 Employment in Bulgaria, Hungary and Romania; 1989=100

Data source: Economic Survey of Europe, UN ECE, 2005, No. 2

But employment change only was one indicator of the thorough adjustment these economies had to make. Figure 2 depicts aggregate real wage dynamics in the three economies.[1] All three economies experienced a substantial loss both in employment and real wages simultaneously, as a consequence of the collapse of socialism, as a consequence of the sudden shock of competitive pressure.

All three economies experimented with macro-economic stabilization. In Bulgaria, the deepening macroeconomic imbalances escalated into a severe financial crisis combining a crash in public finances, run on the banks and a collapse of the currency, all of which gave rise to a hyperinflationary hike in early 1997. The crisis was a turning point in Bulgaria's transition and since that time the situation has changed radically. In terms of economic policy, the emphasis was placed on fast macroeconomic stabilization (based on a currency board arrangement) and acceleration of structural reforms. There was a remarkable turnaround in economic performance: inflation rapidly fell to low single digits, public finances were brought under firm control and the economy grew steadily at a relatively high pace. (*C.f.,* Dobrinsky, 2000)

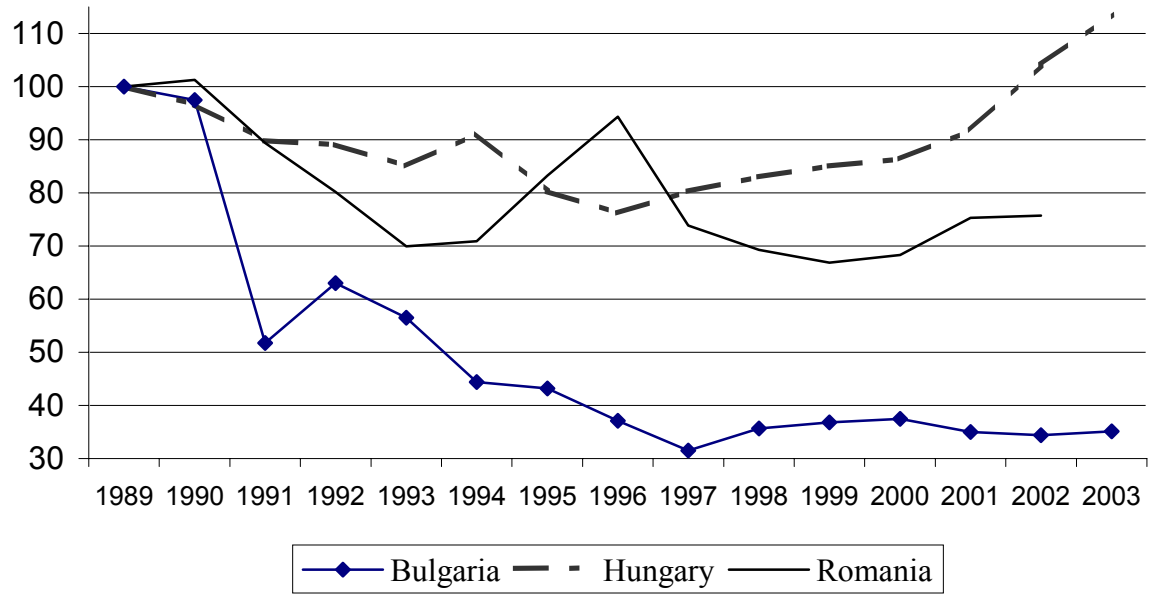


Figure 2 Real wages in Bulgaria, Hungary and Romania; 1989=100

Data source: Economic Survey of Europe, UN ECE, 2005, No. 2

The Hungarian stabilization crisis was mild only relative to the Bulgarian one. The 1995 reform addressed the major macroeconomic distortions, and created a favourable environment for the ongoing microeconomic restructuring. FDI inflow increased substantially after 1995, which was a major ingredient of the privatisation process. As multinationals dominated many segments of the Hungarian economy since mid-1990's, they very strongly determined the market conditions for all companies. (*C.f.,* Halpern and Wyplosz, 1998)

Romanian transition did not see one single major stabilisation package. Romania experimented with many alternative policies. Probably this inconsistency in policy making was one major reason for the large fluctuations in the macroeconomic performance, and the unstable corporate environment.

Our analysis starts after the initial shock of market liberalisation. We do not analyse the process of transformational shock (*c.f.,* Kornai, 1993). We restrict our empirical analysis for its aftermath. The time frame of the empirical analysis was 1995-2001 for Bulgaria, 1992-2002 for Hungary, and 1999-2002 for Romania. The empirical analysis is based on company level data for all three economies.

[1] Real wages were deflated by CPI; they are expressed in domestic currency.

The analysis is carried out at two levels. First, we describe the labour reallocation process at characteristic segments of firms, differentiated by sector, ownership and size. The analysis of job flows disaggregates employment dynamics.

We analyse major factors determining corporate labour demand and wage determination in the second phase. Dynamic econometric models are estimated. We pay special attention to heterogeneity in behaviour. The most important characteristics is that very similar models were estimated for all three economies, although there were minor differences in the specifications, partly reflecting the different characteristics of labour adjustment in the specific country, but sometimes also influenced by the particular characteristics of the datasets.

The structure of the paper is the following: job-flows are analysed in Section 2. Section 3 discusses the factors determining labour demand. Wage determination is analysed in Section 4. Section 5 concludes.

2. Job flows

The methodology for analysing job flows and labour reallocation was introduced by Davis and Haltiwanger (1992) and Davis et al (1996). They suggest to analyse a decomposed measure of job creation and destruction instead of aggregate employment figures. First employers are separated to two subsets: one representing those entering market or expanding employment, the other representing those employers downsizing employment or exiting the market. Several useful measures are calculated from these subsets: gross job creation, destruction and reallocation, and net measures as a balance of the gross job flows. *Gross job creation* within a group of firms (*e,g,,* sector) denotes the total jobs created in firms with growing employment. *Gross job destruction* within the same group is total number of lost jobs in firms with declining employment. From these one can derive *net job creation* (as the difference of the two) and *job reallocation* (which is their sum). Finally, *excess job reallocation* denotes the difference between *job reallocation* and *net job creation*.

The typical annual gross job creation and destruction rates are in the neighbourhood of 10% for many developed market economies, giving an approximate 20% gross reallocation rate for a typical sector. Excess job reallocation rate measures the flexibility of the labour market: its value is typically in the range of 5% (inflexible) to 15% (flexible) for developed market economies. However, there are very characteristic variations over countries and sectors, indicating different levels of flexibility and maturity of the specific market, *c.f.*, Davis and Haltiwanger (1999).

It is no surprise that practically all CEE economies were characterised by massive job destruction (with typically 9-13% rates) and little job creation (with approximately 1% intensity) during the initial transitional recession. That was the mechanism creating very substantial unemployment within a relatively short period in many countries; *c.f.*, Bilsen and Konings (1998), Konings (2003), Commander and Coricelli (1995), Haltiwanger and Vodopivec (2002) or Blanchard (1997). That was also a characteristic feature of Bulgarian and Romanian transition: both countries had very little job creation in the initial period of transition.

Sample periods in our study are different, but they all cover the period after the initial transformational crisis. There is one important characteristics: we mostly use samples of firms. Both job creation and destruction have two important components: firm creation and destruction, and variations of employment levels at continuing firms. In our samples, however, we cannot usually control the firm selection process: an old firm may enter our sample or a firm may disappear from the sample even if continues operation. Thus we cannot analyse the very important process of job flows resulting from firm flows. A very important element of the transition process is the restructuring of the corporate sector: loss-making firms are liquidated; inefficient firms are broken up, or merged into more efficient ones. We compared gross job flows computed from the entire population of firms, taking into account the consequences of such firm restructuring, and also the 'narrow' measures only computed from the continuing firms for Hungary. The differences are large: overall measures are typically 50 to 100% higher than the corresponding 'narrow' measure. Thus, when using the 'narrow' measures, we seriously underreport gross job flows.

Job flow measures were computed for various groups of firms, classified by sector, size, or

ownership for all three countries. Figures 3-8 summarise the most important results. The magnitudes of these narrow job flow figures is frequently comparable or larger than the broader measures reported in the literature for developed economies. However, there are huge variations over the group of the firms, or over countries. Two countries may have the same aggregate employment dynamics, but very different job flow intensity. Larger intensity indicates more flexible labour markets, and stronger reallocation of resources. Large job reallocation is essential for the successful restructuring of the economy, which is the main task of the transition process. However, its balance obviously matters: initially, large job reallocation meant intensive job destruction.

Macroeconomic stabilization clearly had a positive effect on labour reallocation in Bulgaria. However, net job destruction prevailed in the entire period, resulting in declining total employment in the corporate sector. Net job destruction, however, was much smaller in manufacturing than in other sectors; most of the job flows represented restructuring rather than downsizing. Capital intensive sectors, like engineering continued destroying jobs on a large scale, however, the more labour intensive sectors started to increase overall employment during the fast reallocation after the stabilization shock was over.

Before macroeconomic stabilisation, the very intensive job reallocation was dominated by job destruction in Hungary, too. However, there is evidence of substantial job creation even in this very volatile period. Firms seemed to operate rather flexibly on the labour market in almost all sectors throughout the entire sample period. There were clear sectoral differences: manufacturing on the whole had positive net job creation between 1997 and 2001. Engineering was the job creation powerhouse of the Hungarian corporate sector until 2001. On the other hand mining and agriculture shed labour almost continuously. However, the period 2001-2 is different from the second half of the 1990's: while the late 1990's were characterised by net job creation in several sectors that stopped after 2000. Clearly, Hungary being a small open economy, international business cycle had a strong effect on the export markets. But 2001 also brought substantial wage rises, stipulated by the government minimum wage regulation, which also had a negative effect on the flexibility of labour markets.

Figure 3 Gross job creation, destruction, and net job creation/destruction

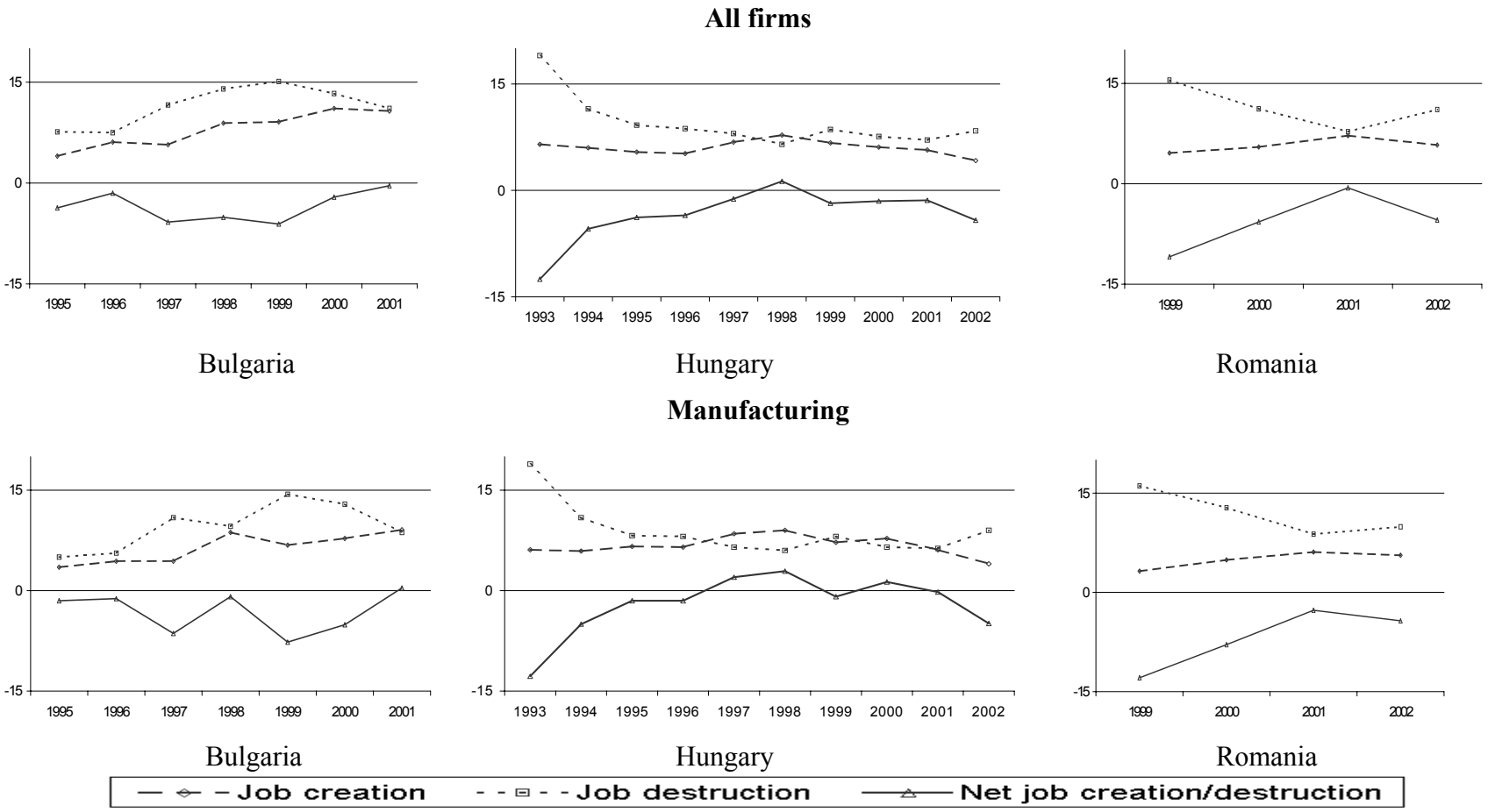
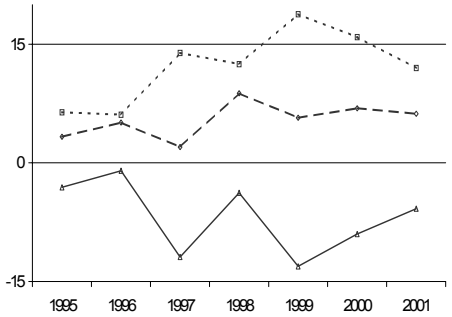
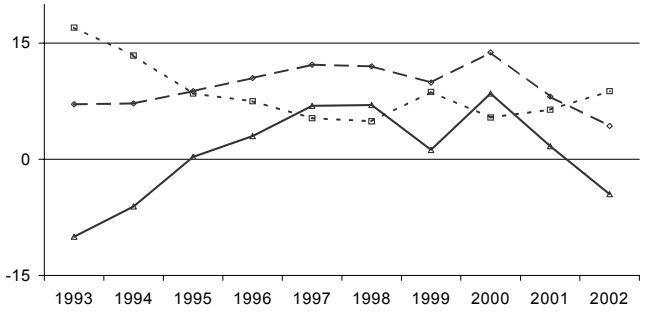


Figure 4 Gross job creation, destruction, and net job creation/destruction

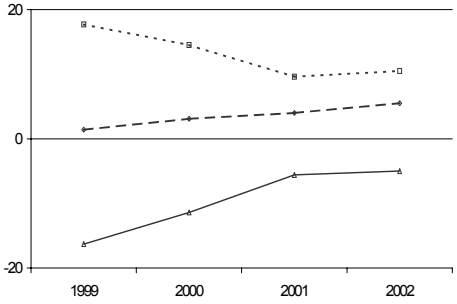
Engineering



Bulgaria

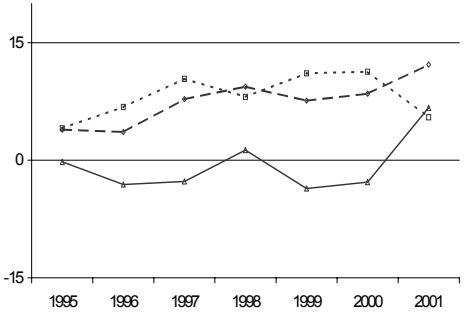


Hungary

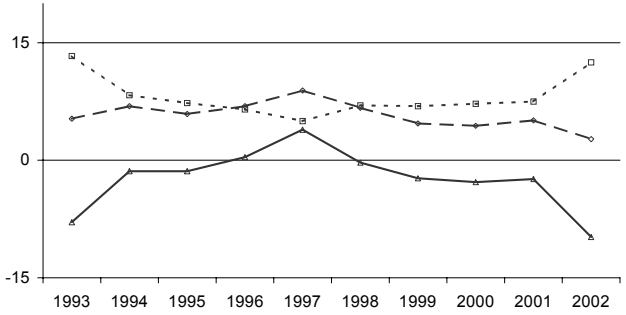


Romania

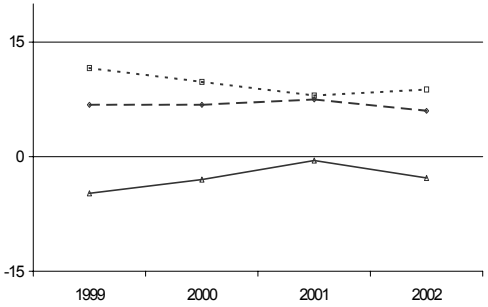
Textile, clothing and footwear



Bulgaria



Hungary



Romania

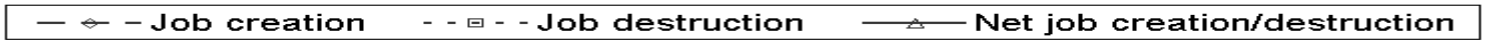
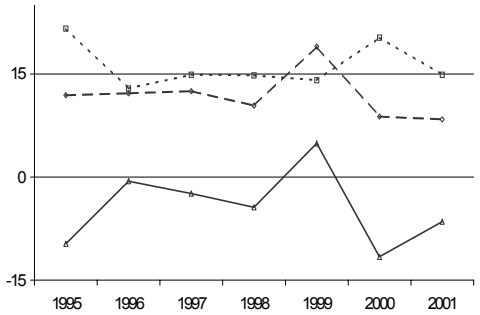
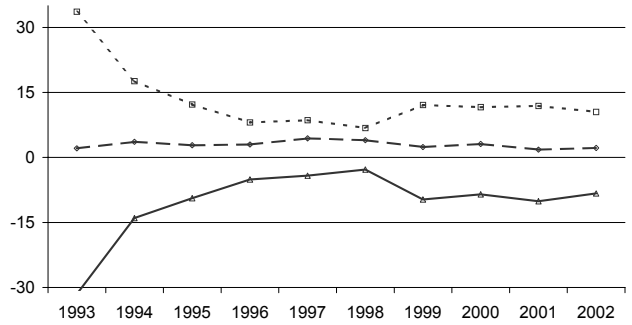


Figure 5 Gross job creation, destruction, and net job creation/destruction

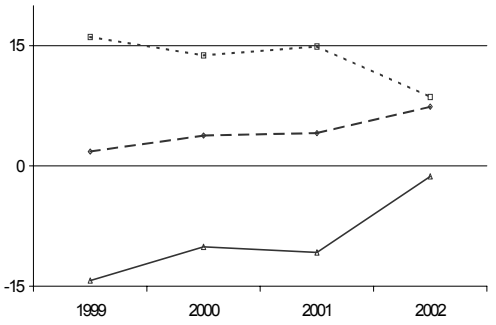
Agriculture



Bulgaria

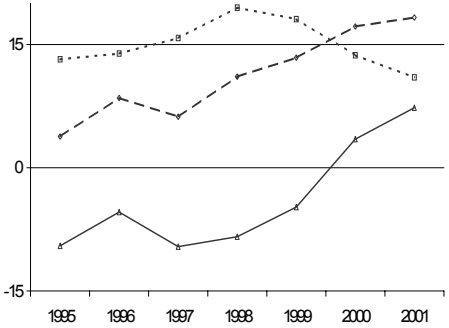


Hungary



Romania

Trade



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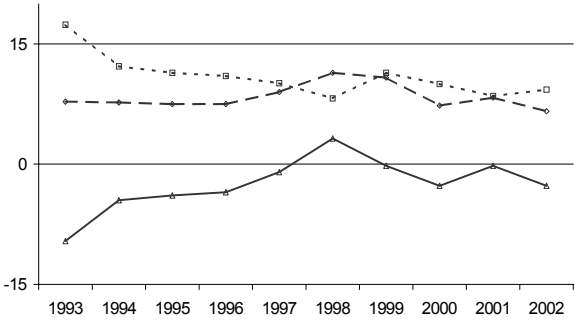
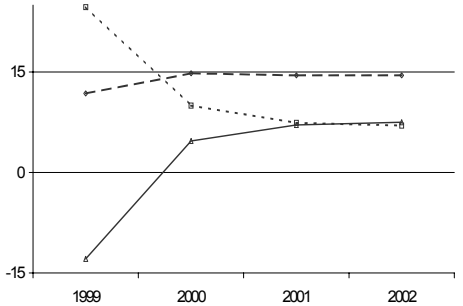


Hungary



Romania

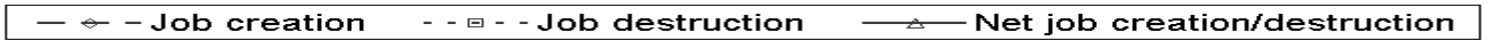
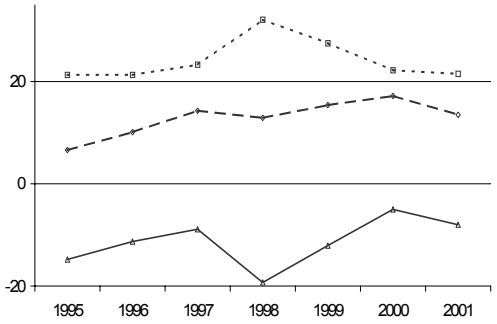
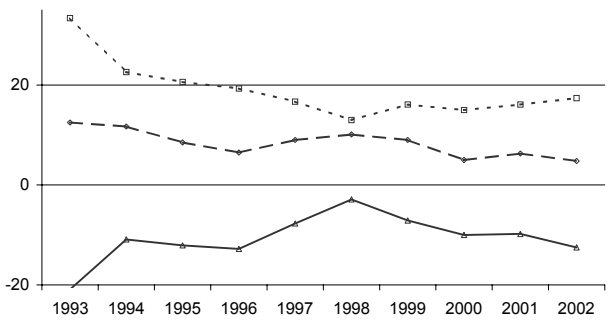


Figure 6 Gross job creation, destruction, and net job creation/destruction

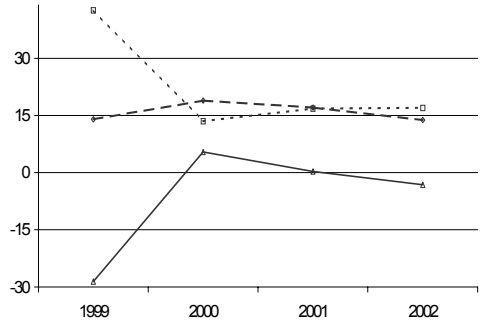
Small firms



Bulgaria

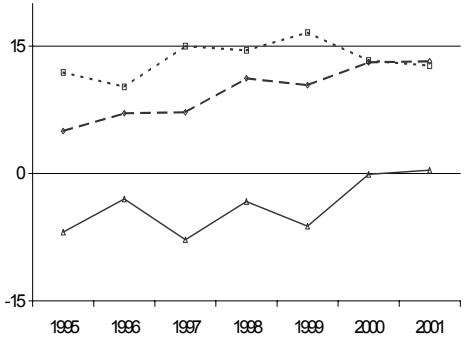


Hungary



Romania

Medium sized firms



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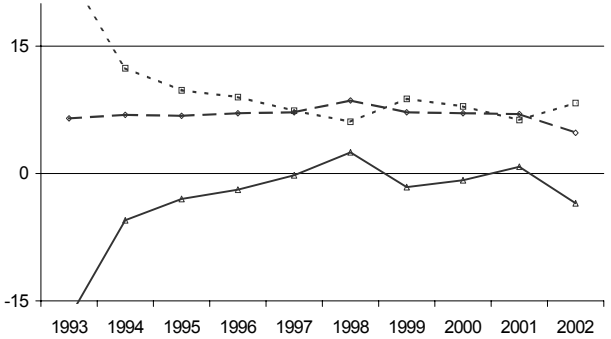
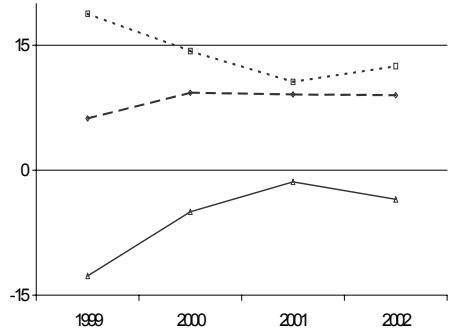


Hungary



Romania

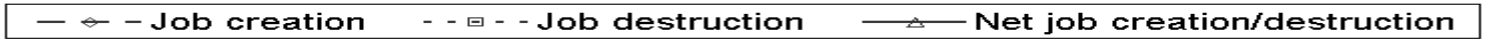
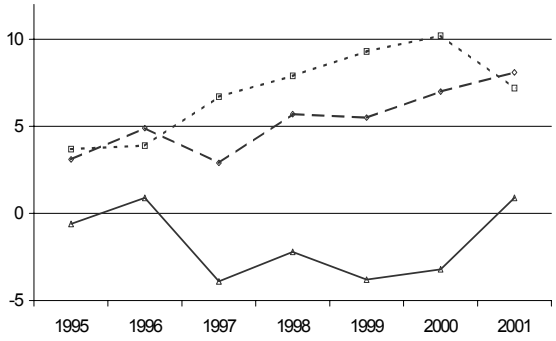
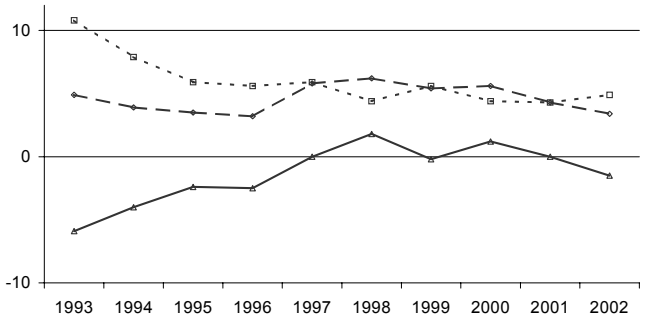


Figure 7 Gross job creation, destruction, and net job creation/destruction

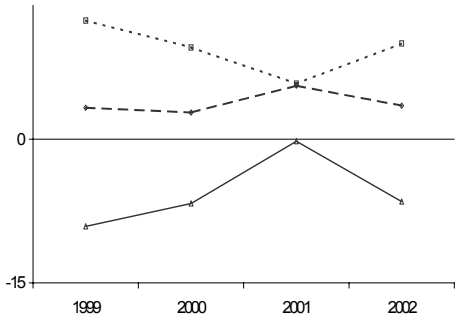
Large firms



Bulgaria

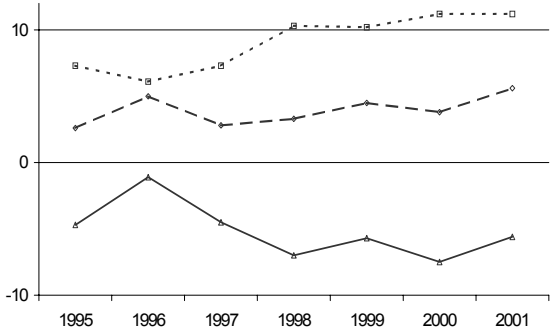


Hungary

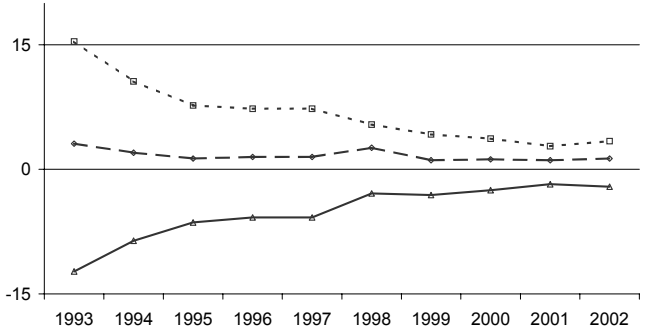


Romania

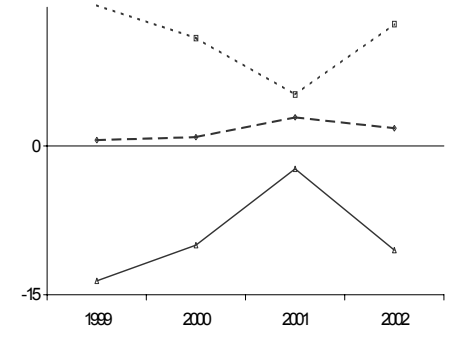
State owned firms



Bulgaria



Hungary



Romania

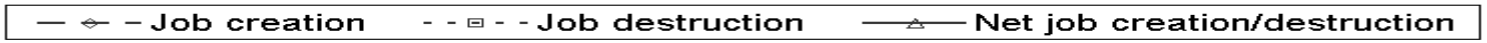
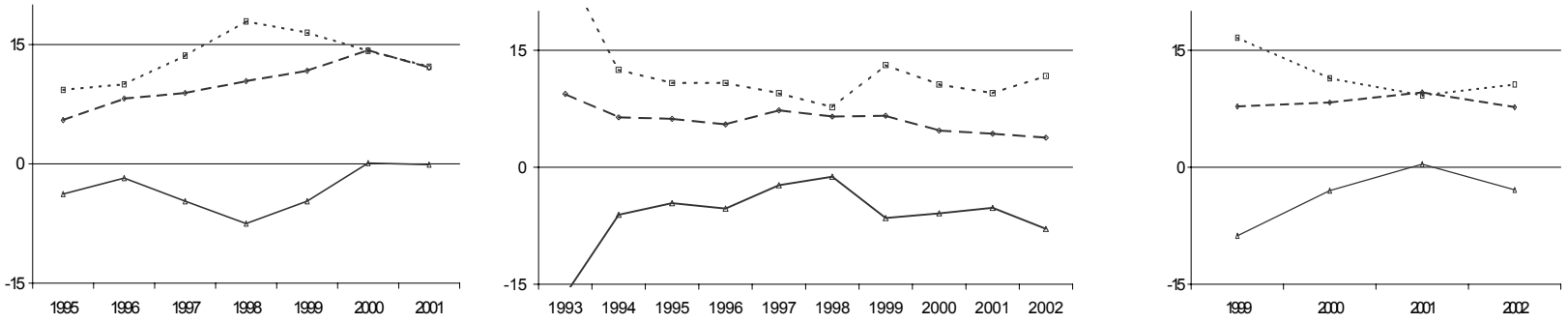


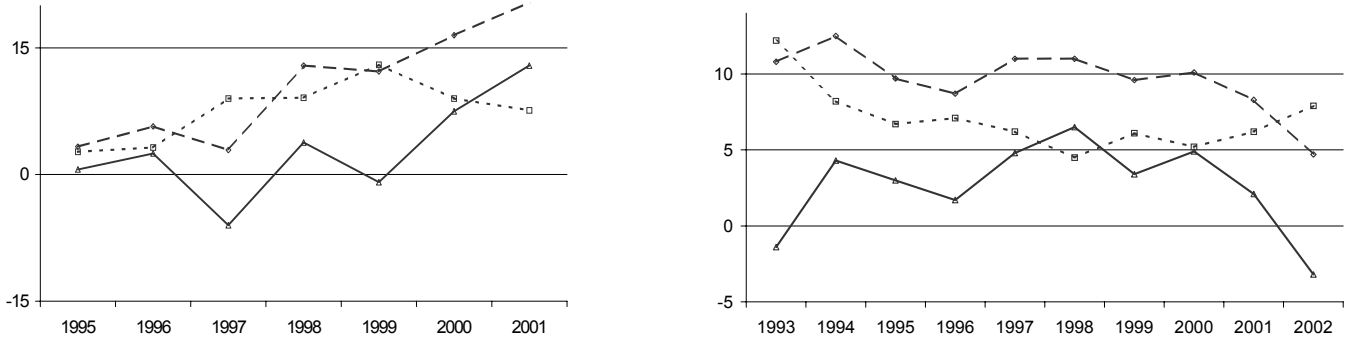
Figure 8 Gross job creation, destruction, and net job creation/destruction

(Domestic) private firms

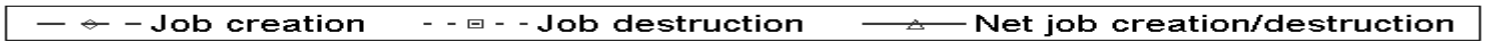


Bulgaria Hungary Romania

Foreign owned firms



Bulgaria Hungary



Job destruction strongly dominated job reallocation in Romania during the period 1999-2002, although the situation clearly improved markedly even in this short period. Labour intensive sectors, like light industries, fared somewhat better, but trade was the only sector with net job creation.

Size matters in job reallocation. Small firms reallocated labour much more intensively in all three economies; however, the balance was very negative in Bulgaria and Hungary. Net job creation at small firms became positive in 2000 in Romania, which is very different from the other two economies. The possible interpretation is that macroeconomic stabilization in the mid 1990's was successful both in Bulgaria and in Hungary, tightening financing constraints substantially. The tight liquidity constraint especially restricted the dynamic small firms, having negligible collateral. As real stabilization was repeatedly postponed in Romania, liquidity was more freely flowing to the corporate sector, and that helped financing expanding small firms.

Job reallocation tended to be slower at larger firms, but in Bulgaria and Hungary larger firms were more successful in net job creation. That clearly was linked to the successful privatisation in Hungary: as multinational firms moved in, they reorganised the newly acquired firms, and fast expansion was accompanied by intensive net job creation. Also, the substantial FDI inflow concentrated net job creation into some sectors with relatively high capital intensity in Hungary, like engineering. The situation was the opposite of that in the other two economies; net job creation was mostly concentrated on labour intensive sectors.

Ownership clearly was an important factor: the remaining state-owned sector had negligible job creation in Hungary and Romania, and although their job creation rate was somewhat larger in Bulgaria, it clearly was lower than in the private sector. On the other hand, foreign-owned firms were net job creators in the post-stabilisation Bulgaria, and in Hungary in the period 1994-2001. FDI clearly contributed substantially to job reallocation, to the restructuring of the economy.

Job destruction was very persistent in all three countries: persistence rates frequently exceeded 90%. The only exception was Bulgaria before stabilization: the relatively low job destruction rates were coupled with low persistence, indicating that job destruction was frequently the result of random fluctuations rather than restructuring in that period. The huge persistence of job destruction indicates the depth of the restructuring process: inefficient firms, unable to compete under the increased pressure, had to downsize their activities permanently.

Job creation rates are less persistent, but these figures frequently still were larger than the roughly 60% typical to developed market economies. Small firms were less likely to create jobs permanently than larger ones. High persistence in both job creation and job destruction indicates a strong differentiation of firms: unsuccessful firms almost permanently downsized, while there were dynamic firms with substantial productivity gains, which could increase output at phenomenal rates. The *average* expanding firm grew by at least 25% annually in Hungary between 1992 and 2001, and by more than 30% in Romania between 1999 and 2002. However, in three out of four years the *average* expanding Romanian firm increased output by more than 50%, driven by huge productivity gains.

This rapid differentiation process means that the relatively stagnant aggregate employment was the outcome of the fast destruction of jobs at a large number of firms, unable to operate under the increased competitive pressure, and the usually somewhat slower, but still substantial job creation at the group of successful newly emerging firms, which, on the other hand, could gain market share extremely fast at the expense of the traditional old firms. However, the characteristics of the emerging new economy also depended strongly on the intensity of the FDI: foreign-owned firms were key participants in the restructuring process. In Hungary, where FDI was large, job creation was especially fast in some capital-intensive sectors, while in the other two economies, where FDI flow was smaller, it was concentrated in some labour-intensive sectors. That clearly indicates the importance of liquidity constraints.

3. Labour demand

We used a 'classical' dynamic labour demand model for all three countries as the basic specification. It can be derived from a standard model of profit maximizing firm, facing demand constraint under a budget constraint represented by a Cobb-Douglas production function. (*C.f.,* Nickell, 1986) The advantage of the model is that it has been applied to several transition economies, for example: Basu et al. (1997), Christev and Fitzroy (2002), Estrin and Svejnar (1998), Grosfeld and Nivet (1997), Konings and Lehmann (2002), Köllő (1998), Kőrösi (1997, 2002) and Markov et al (2002). The model is:

$$log\ L_t = \mu\ log\ L_{t-1} + \alpha_0\ log\ Q_t + \alpha_1\ log\ Q_{t-1} + \beta_0\ log\ w_t + \beta_1\ log\ w_{t-1} + b + \varepsilon_t$$

where L_t is the labour demanded (expressed as number of employees); Q_t is output and w_t is the real labour cost. We augmented this model with variables describing the competitive environment and ownership of the firm. We performed a series of estimations of the labour demand model. As the period of estimation was characterized by turbulent structural change (precluding the existence of a stable equilibrium path that could be identified via a panel estimation), the labour demand equation was only estimated for each year in the sample separately. We also assumed that labour market behaviour may be heterogeneous, thus we estimated the same model for various groups of firms, classified by sector, size and ownership.

All variables in the basic model specification were treated as endogenous. In view of this and in due to the presence of a lagged dependent variable among the regressors the labour demand equations were estimated by GMM. Although the annual group-specific estimation results are frequently qualitatively similar, there are also important differences among them; structural breaks are significant in most cases.

There are some important differences in the model specification among countries, but there also are some common characteristics. Sectoral differences are important: labour

demand partly depends on the technology applied. Heterogeneous groups of firms with respect to sectors (*e.g.,* classified by ownership or size) always fail on the model specification (*e.g.,* overidentification) tests, indicating structural breaks in some important coefficients. Thus, we concentrate on analysing sectoral labour demand model.

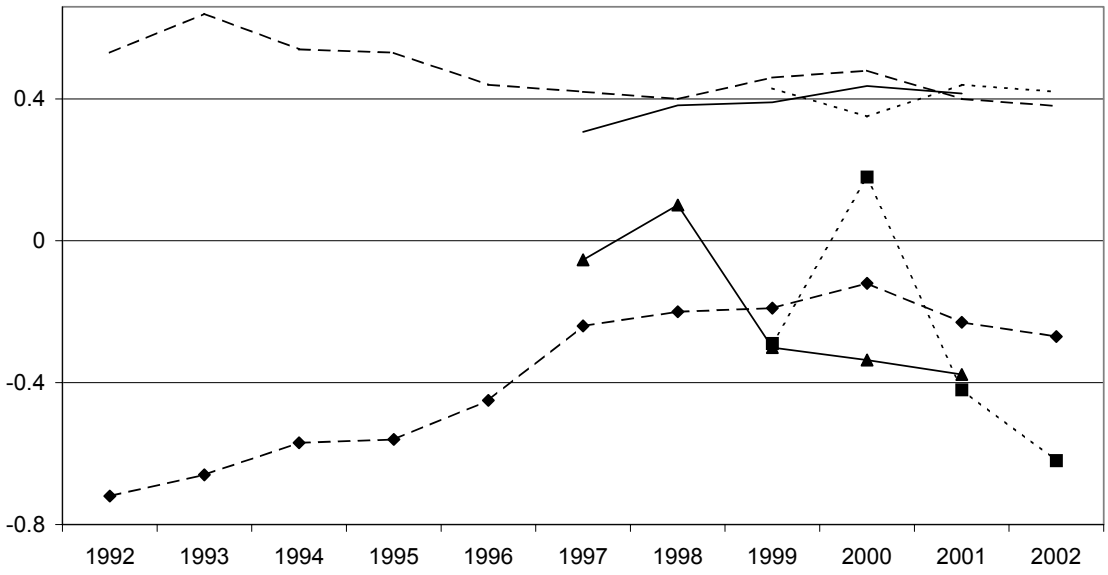
Two common characteristics, always estimated for all countries are the output and the labour cost (wage) elasticity of the labour demand. Thus, we first look at these characteristics. Figures 9-11 summarize short-run output and wage (labour cost) elasticities of labour demand estimated for major sectors.

Labour demand obviously depends strongly on output dynamics. The output elasticity of labour demand was rather stable in all countries, especially in Hungary: its value typically ranged between 0.4 and 0.5, although slightly declining in several sectors. The output elasticity of labour demand increased substantially in Bulgaria after macro-economic stabilization, and by 2001 it was larger than in Hungary. It fluctuated more in Romania, both over time and over sectors. But basically differences were relatively small.

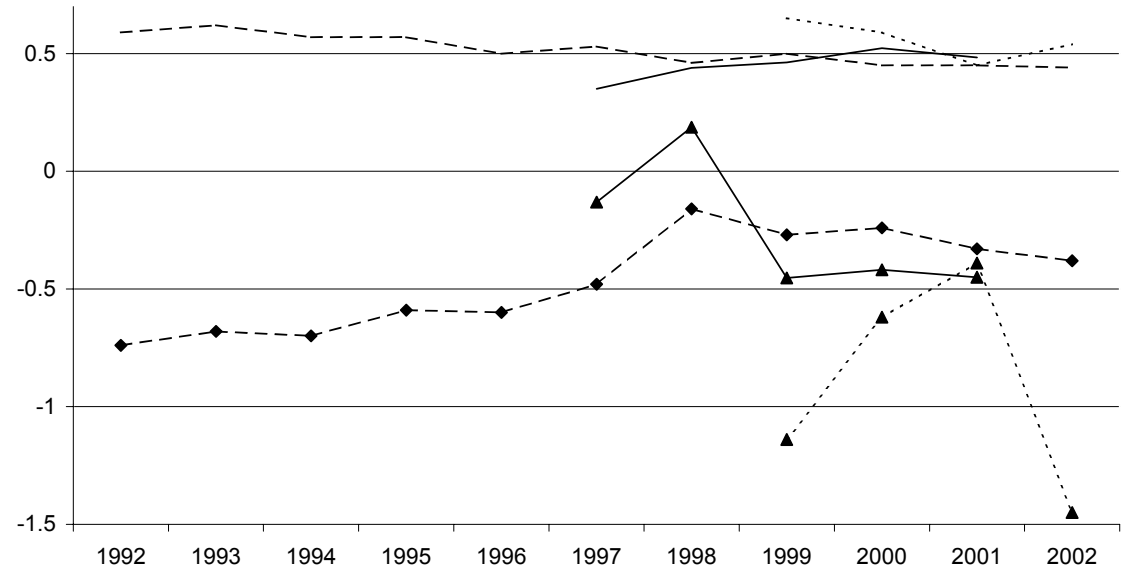
Wage elasticity varied much more: vary a lot over sectors in all three economies, and they also fluctuate more intensively. Labour demand was only moderately sensitive to wage shocks in Bulgaria, but its importance increased substantially. While labour cost elasticity was close to zero in 1997-8, its typical value was in the -0.3 to -0.5 range in 2001, which is the typical value for many market economies. Labour demand initially was much more sensitive to labour cost in Hungary, however, it got very inelastic by the turn of the century; when the elasticity was frequently insignificant. However, it again became somewhat more elastic, and by 2002 it reached similar levels than in Bulgaria. Wage elasticity is much more unstable, however, in Romania. It varies a lot over sectors and time: it may be insignificant in one year, while labour demand seems to be very elastic in the other with wage elasticities below -1. While corporate labour market behaviour seems to shift gradually in Bulgaria and Hungary, where year-to-year changes are relatively moderate and most sectors move parallel, it apparently still is very unstable in Romania.

Figure 9 Short-run output and wage elasticities of labour demand

All firms



Manufacturing



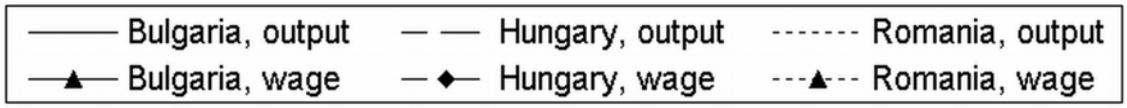
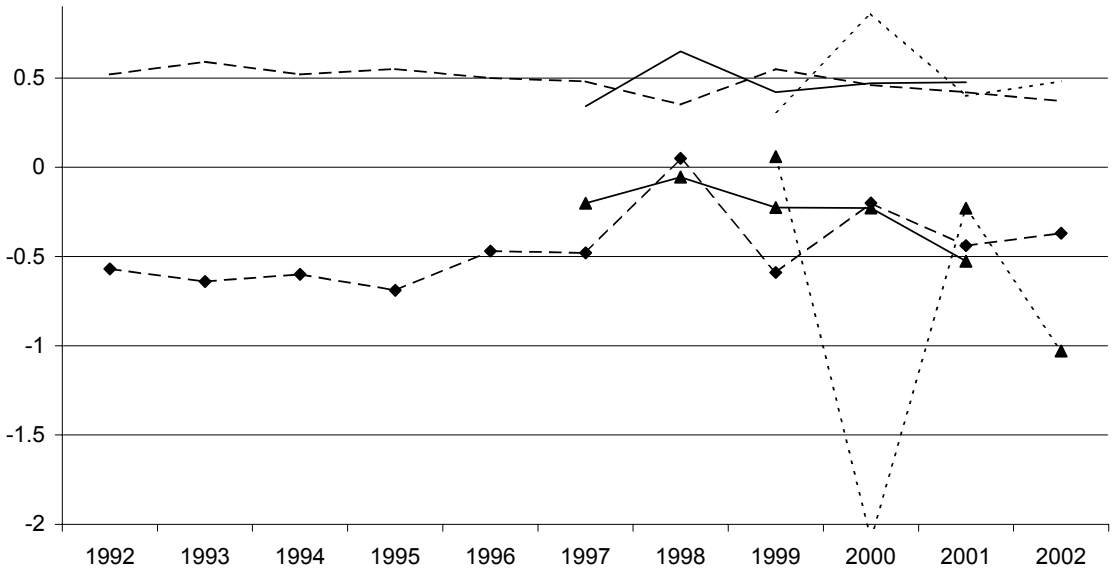
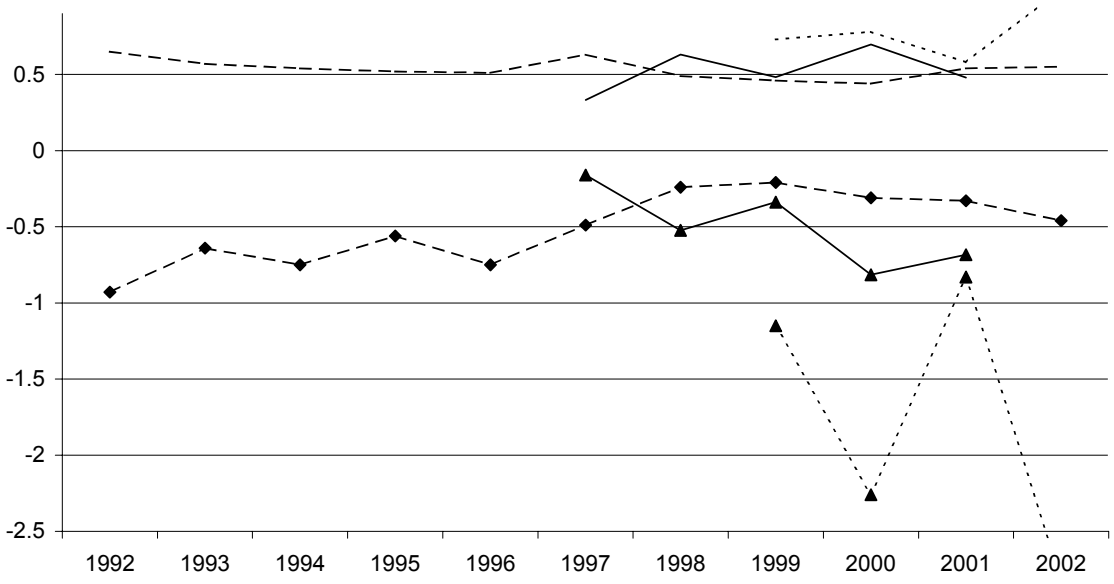


Figure 10 Short-run output and wage elasticities of labour demand

Engineering



Textile, clothing and footwear



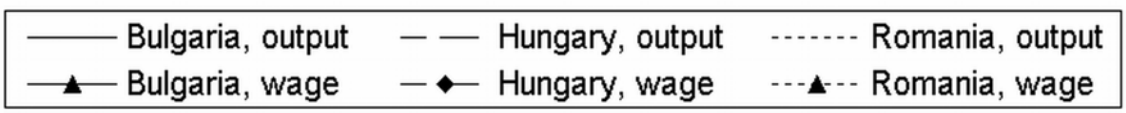
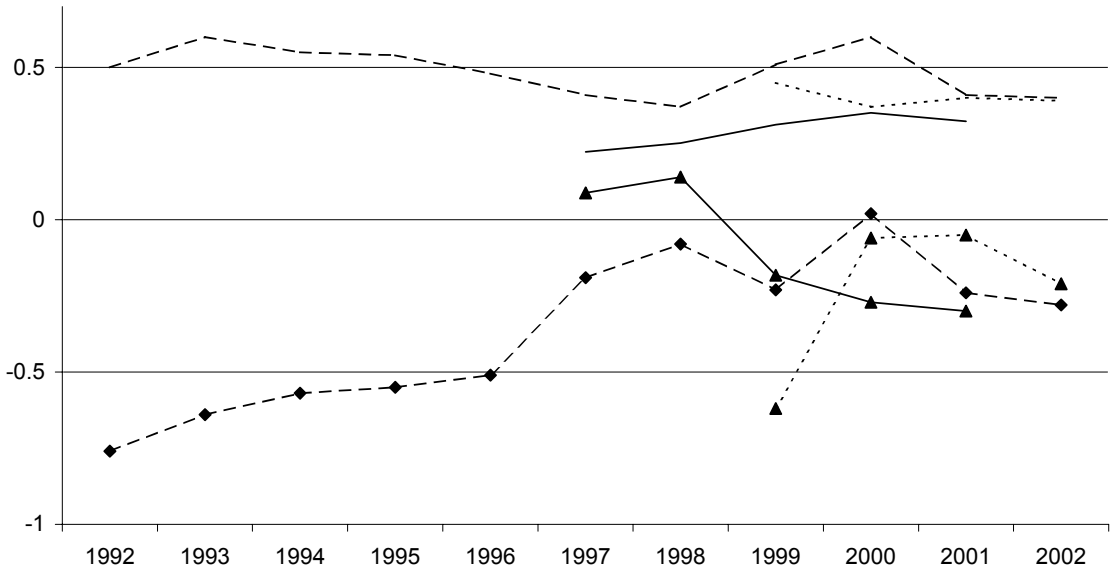
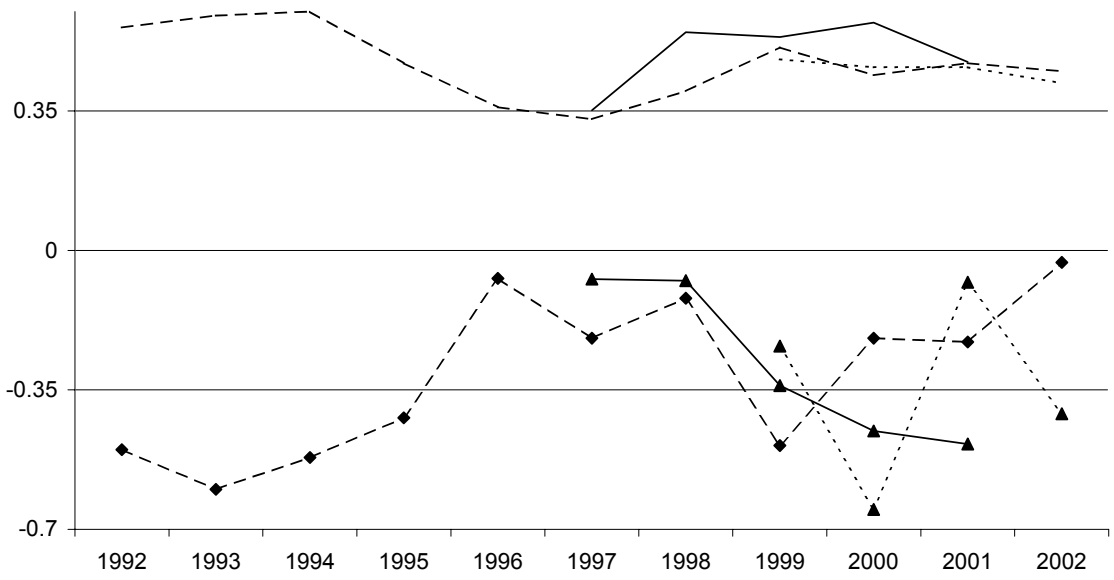


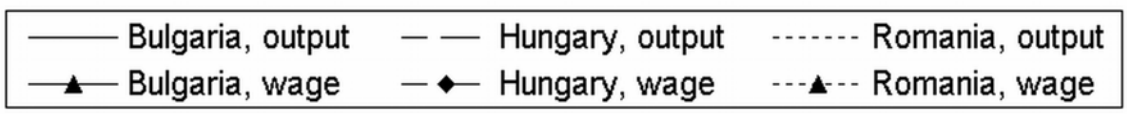
Figure 11 Short-run output and wage elasticities of labour demand

Trade



Services





While the output elasticity basically was in the expected range, the labour cost elasticity frequently is very different; in some cases it even had wrong sign, although that almost always was insignificant. The general tendency of the wage elasticity seems to reflect macroeconomic conditions. In turbulent periods firms may either be oversensitive to the cost of labour, when the competitive pressure is extreme, as in Hungary in the pre-stabilisation period, or in Romania in the sample period, or labour cost may become irrelevant, when companies experience a major shock, like the aftermath of the Bulgarian stabilisation, or the big productivity shock of the late 1990's in Hungary. Thus, wage elasticity fluctuations acted as a sensitive indicator of competitive pressure. The Romanian estimates clearly indicate the instability of the macro-economic conditions.

We augmented the labour demand model with variables measuring competitive pressure and ownership. These variables frequently were significant for the technologically heterogeneous groups of firms, indicating that competitive pressure, indeed, has an effect on labour demand. However, as technology apparently strongly differentiated corporate labour market behaviour, the values of the estimated coefficients may well be biased for those groups. Still, their joint significance matters. However, when analysing the sectoral labour demand estimates, competitive pressure variables are rarely significant. One explanation is that market structure variables, are typically multicollinear. That may be one explanation why results often vary considerably across different sectors (as well as over time). Market pressure variables, however, do not seem to have much effect on Romanian labour demand, no matter, if we look at them individually, or jointly; they just seem to fluctuate randomly. However, some tendencies can be identified in the other two countries. In Bulgaria, market concentration typically has a negative sign, indicating that firms adjust employment downward more easily in oligopolistic markets.

The importance of the market structure variables showed an interesting pattern in Hungary. While individual market structure variables are rarely significant, the joint test frequently is. However, their effect was variable. Competitive pressure, represented by the market structure variables typically influenced corporate labour demand in two periods: in the consolidation period (1994-6) and in 2001-2 when foreign demand eased

just when the government raised labour costs substantially for many firms. In the years between, in the period of rapid growth, the specific competitive pressure, represented by the market structure variables, usually had no measurable effect on employment at firm.

There are characteristic differences in the speed of adjustment over the three economies. Labour adjustment seems to be very fast in Hungary, labour demand always collapses to a simple equation assuming imminent adjustment. That was not the case in the other two countries. The situation in Bulgaria and Romania seems to be closer to an error correction specification around a steady state, except, that the long-run seems to be very unstable in all three countries. It indicates that no stable equilibrium labour market behaviour emerged in any of the three economies, as yet.

4. Wage determination

Transitional recession brought substantial real wage decline to the region. Most studies analyse the revaluation of human capital in Central and Eastern Europe comes from estimates of Mincer-type earnings functions. (*C.f.* Svejnar, 1999). However, we concentrate on the factors determining corporate wage determination rather than on individual wage differentials. We follow the seminal papers by Nickell and Wadhwani (1990) and Nickell et al (1994), analyzing the role of insiders in determining wages and the impact of product market power on wages. One important source was the efficiency wage hypothesis claiming that firms pay higher wages in order to attract more productive workers. (*C.f.* Akerlof and Yellen, 1986) Our benchmark model of wage formation (excluding structural factors) assumes that wages are primarily driven by productivity in the presence of non-negligible dynamic adjustment effects. It is also assumed that the size of the firm can also have an effect on the process of wage formation.

$$log\ w_t = \alpha_0 + \alpha_1\ log\ w_{t-1} + \alpha_2\ log\ L_t + \alpha_3\ log\ (Q_t / L_t) + \alpha_4\ log\ (Q_{t-1} / L_{t-1}) + \varepsilon_t,$$

where the number of employees L_t is taken as a measure of firm size. (*C.f.,* Bayard and

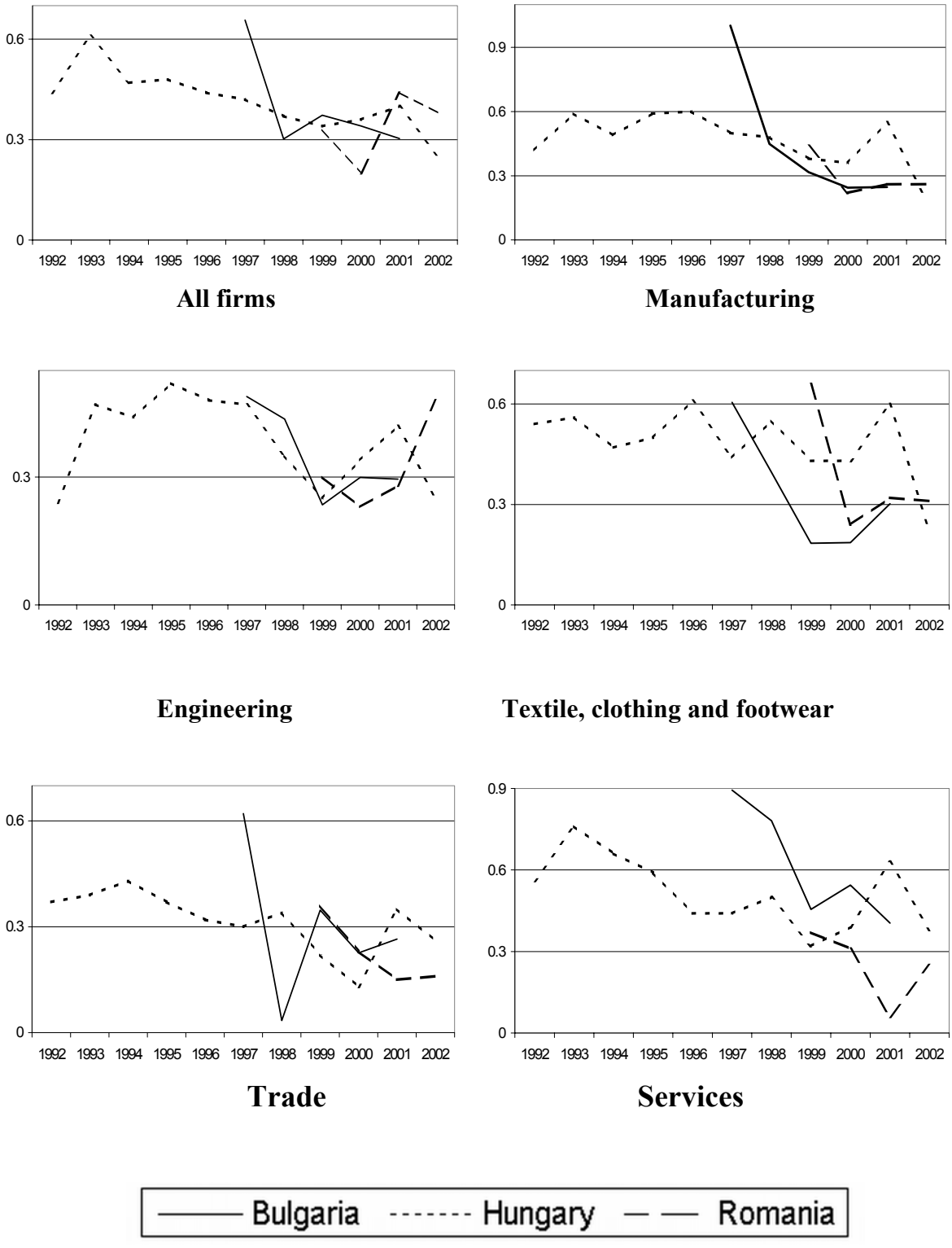
Troske 1999) The 'wage curve' assumption of Blanchflower and Oswald (1994) is also incorporated into the extended specification, assuming that the tightness of the local labour market, measured by regional unemployment, has a negative effect on the bargaining power of employees. We also augment the benchmark specification with variables characterizing competitive pressure and ownership, as defined above.

Similar models were extensively used for analysing the transition process in Poland. Grosfeld and Nivet (1997) found significant differences according to ownership categories for the early 1990's. Productivity proved to have an asymmetric effect on wage setting: wages responded to productivity at firms with increasing productivity only. Christev and Fitzroy (2002) analysed the situation in the mid-1990's. Their results confirm rent sharing behaviour in firms, where position of insiders is strong; however, they found no evidence for asymmetry effects. Bishop and Mickiewicz (2003) move the timeframe to the late 1990's. They found little ownership effect, and only weak rent-sharing. Their most robust results relate to labour market conditions. The value of the regional unemployment coefficient is quite stable and oscillated around two, indicating extremely high short-term wage curve effect cooling enterprise wages.

All that evidence indicates that major characteristics of wage determination substantially changed over the transition process. Thus, it was essential to estimate all these relationships allowing for shifts in time. Specification analysis also indicated strong sectoral structural breaks. Thus, we estimated the augmented dynamic wage model annually, for various groups of firms, classified by sector, size and ownership, as previously. As labour market variables and output are jointly determined, we treated them endogenously, again using GMM estimator.

One key feature of the wage-setting model is rent sharing. Thus, we first look at the short-run coefficients of the productivity; their estimates are summarised in Figures 12-15.

Figure 12 Short-run productivity elasticity of wage determination



The short-run productivity elasticity, measuring rent-sharing, rarely reaches the 0.2 level in developed market economies. In Poland, however, it reached 2 at one stage. The picture of the three countries typically was somewhere in between these two for most of the sample. Productivity differences had an extremely strong effect on wage dynamics in Bulgaria after the macro-economic stabilization; in some sectors it even was greater than one, but it was at least 0.5 for all groups of firms. However, it never reached such extreme levels, as in Poland. Short-run productivity elasticity substantially declined by 2001, but it was still well above the 0.2 level. Sectoral variations were much smaller at the end of the sample period.

The Hungarian situation was more stable, but the coefficients indicated a strong rent-sharing in most periods. Its intensity somewhat declined during the period, but it still exceeded significantly the 0.2 level in most sectors. Rent-sharing was larger and more stable in labour intensive sectors, as the light industries. The situation seemed to change somewhat in 2002, when the coefficients became smaller than previously. It may be related to the slow-down in labour reallocation: consistently to the efficient wage hypothesis, rent sharing seems to be the major vehicle how dynamic firms can attract high quality labour.

The short-run productivity elasticity significant in Romania in almost all cases, and its value typically is not less than 0.2. Its values are mostly in line with the other two countries, but it seems to fluctuate randomly. Admittedly, the sample is too short.

The wage curve hypothesis seems to yield somewhat strange results in these countries. One possible explanation is that we use a dynamic model, so unemployment really matters when it changes substantially, and by the beginning of our samples all countries had several year high unemployment experience; if anything, unemployment rates were decreasing in the sample periods.

Regional unemployment rarely influences significantly the wage determination in Bulgaria. Its sign seems to be random, when significant. Unemployment has a negative effect on wages in Hungary, when significant, however, significant values usually are clustered at the beginning of the sample period. Apparently as the distribution of the regional unemployment stabilised, its effect lost relevance to further wage dynamics. That may also explain the strange Romanian picture: its coefficient sometimes is significant and large, but its direction

changes over time. Unemployment rate may there act as a proxy of other, more important regional effects influencing wage dynamics. There are substantial regional wage differences in these countries, but on the whole, unemployment does not have a steady effect on wage dynamics.

Employment level rarely matters. Surprisingly, ownership also have a negligible effect on wage dynamics, although foreign-owned firms in Hungary, for example, pay 50-100% higher wages on average than domestic ones. That, of course, partly reflects differences in human capital of the employees, but it also is related to the substantial productivity differences. Given the strong rent-sharing in all segments of the labour market, there is no room for additional `ownership premium'.

Competitive pressure, measured at sectoral or firm level had much smaller effect on wages than was experienced for Poland, or, for example, for British firms. These effects seem to drive differences in corporate behaviour rather than causing a measurable shift in levels. The heterogeneity of corporate behaviour depends on sector, and the substantial sectoral differences apparently are related to the variations in competitive pressure. When we estimated the model for technologically heterogeneous groups of firms, competitive pressure variables seemed to be much more important, but those models are ridden by specification problems, mostly related to structural breaks. Although variables representing competitive pressure rarely have significant marginal effect, however, they jointly influence the specification. Thus, competitive pressure rather has an indirect effect on wage determination in all three countries. Their overall effects seem to show up in the heterogeneity of sectoral wage dynamics. Most probably aggregate pressures dominate firm or sector specific ones.

The dynamics of wage determination seems to be rather different in the three countries. The Bulgarian adjustment process seems to be the most standard one. The model could frequently be simplified to a differenced model for Hungary in the stable growth period of 1996-2000, but not before and after: levels seem to matter when shocks are large. Romanian wage setting seems to be very sluggish. Probably shocks are too large, but wages frequently seem to respond more to lagged effect than to contemporaneous ones. Apparently adjustment is hindered by some market rigidities.

5. Conclusions

The three countries followed very different transition strategies, which obviously influenced corporate labour market behaviour. However, there are some important common characteristics, too.

The first, very important common characteristic is that the transition process destroyed at least one fourth of all jobs over time in all three countries, if compared to employment at system change in 1989. This process proved to be lengthy and difficult in all three economies: employment declined for years even after strong recovery started. Aggregate employment decline still continued even in 2004 in Romania, while employment started to increase in Bulgaria in 2002 and in Hungary in 1997. However, it seems very unlikely that aggregate employment will reach pre-transition levels in the foreseeable future.

There are important differences if we look at the labour market outcomes at a more disaggregate level. Job reallocation was more intensive in all three economies than typical to developed market economies. However, intensive job reallocation only started after the macroeconomic stabilization in 1997 in Bulgaria, and we also know from Bilsen and Konings (1998) and Konings (2003) that job reallocation was less intensive in Romania in the period before 1998, when our sample starts. By 1999, when the Romanian sample starts, adjustment resulted in intensive job reallocation. Hungary, on the other hand, experienced extremely strong reallocation for more than a decade, thus completely restructuring employment in the corporate sector.

Job destruction was intensive in all three economies. However, the very intensive period of job destruction ended in 1995 in Hungary, in 2000 in Romania, while it was relatively less intensive in the pre-stabilization years in Bulgaria, where large-scale corporate restructuring only started after the currency crisis. Job destruction is extremely persistent in all three countries, although persistence is more consistent in Hungary than in the other two countries.

Job creation fluctuated substantially. It was more stable and relatively evenly spread over the sectors in Hungary. In Bulgaria intensive job creation only started in 1998. Job creation rates

were significantly lower in Romania even in 2002, and it was very uneven: intensive job creation was mostly concentrated on the Trade sector. Job creation is less persistent than job destruction, however, in Hungary and Romania it is more persistent than typical. It is interesting that state owned companies created relatively many jobs in Bulgaria. In Hungary and Romania, however, the remaining state-owned segment of the economy has extremely low job-creation capacity.

Labour demand was heterogeneous over the sectors in all three economies. It obviously depends strongly on output dynamics. The output elasticity of labour demand was rather stable in Hungary: its value typically ranged between 0.4 and 0.5, although slightly declining in most sectors. The output elasticity of labour demand increased substantially in Bulgaria after macro-economic stabilization, and by 2001 it was larger than in Hungary. It fluctuated more in Romania, both over time and over sectors.

Output elasticity of labour demand was much more stable in all three countries than the wage elasticity. Wage elasticities vary a lot over sectors in all three economies, and they also fluctuate more intensively. Labour demand was only moderately sensitive to wage shocks in Bulgaria, but its importance increased substantially. While labour cost elasticity was close to zero in 1997-8, its typical value was in the -0.3 to -0.5 range in 2001, which is the typical value for many market economies. Labour demand initially was much more sensitive to labour cost in Hungary, but it gradually got very inelastic by the turn of the century; when the elasticity was frequently insignificant. However, it again became somewhat more elastic, and by 2002 it reached similar levels than in Bulgaria. Wage elasticity is much more unstable, however, in Romania. It varies a lot over sectors and time: it may be insignificant in one year, while labour demand seems to be very elastic in the other with wage elasticities below -1. While corporate labour market behaviour seems to shift gradually in Bulgaria and Hungary, where year-to-year changes are relatively moderate and most sectors move parallel, it apparently still is very unstable in Romania.

Competitive pressure, measured at sectoral or firm level, and ownership both have much smaller effect on labour demand in all three economies than output and labour cost. These effects seem to drive differences in corporate behaviour rather than causing a measurable shift in levels. The heterogeneity of corporate behaviour depends on ownership, and the

substantial sectoral differences apparently also are related to the variations in competitive pressure. Although variables representing competitive pressure rarely have significant marginal effect, however, they jointly influence the specification. Thus, competitive pressure rather has an indirect effect on labour demand in all three countries.

Wage determination seems to be rather different in the three economies. The short-run productivity elasticity, measuring rent-sharing, typically exceeded the 0.2 level observed in developed market economies. Productivity differences had an extremely strong effect on wage dynamics in Bulgaria after the macro-economic stabilization; in some sectors it even was greater than one, but it was at least 0.5 for all groups of firms. Short-run productivity elasticity substantially declined by 2001, but it was still well above the 0.2 level. The short-run productivity elasticity of wages seems to be more stable in Hungary, but it typically also exceeded the 0.2 level. The picture is less clear in Romania: although short-run productivity elasticity is somewhere between 0.2 and 0.35 for many sectors; it frequently is insignificant, and there are many very small coefficients. However, the relatively large elasticities indicate an unusually intensive rent-sharing in all economies, especially in Bulgaria and Hungary.

Regional unemployment, indicating market pressure on wages, is expected to have a negative effect on wage dynamics. That `wage curve' effect was almost always insignificant in Bulgaria. It has the expected negative sign in Hungary, but it only was significant in the relatively early transition years. Unemployment seems to have a very uncertain effect on wage dynamics in Romania; its coefficient sometimes is significant and large, but its direction changes over time. Unemployment rate may there act as a proxy of other, more important regional effects influencing wage dynamics. There are substantial regional wage differences in these countries, but on the whole, unemployment does not have a steady effect on wage dynamics.

Competitive pressure variables and ownership rarely have significant marginal effect, and these coefficients are very unstable even if significant. Their overall effects seem to show up in the heterogeneity of sectoral wage dynamics, but rarely significant within the sectors. Most probably aggregate pressures dominate firm or sector specific ones.

There are characteristic differences in the speed of adjustment over the three economies.

Labour adjustment seems to be very fast in Hungary, labour demand always collapses to a simple equation assuming imminent adjustment, and that was also true for the wage equation in the second half of the 1990's. Past levels matter more in Bulgaria, and especially in Romania. In Romania wages seem to respond more to lagged levels of the major variables than to the contemporaneous ones, indicating a very slow adjustment process. These differences in the speed of adjustment may measure differences in national labour regulation, introducing institutional rigidities into the labour market outcomes, it may also reflect differences in corporate governance, but it most probably is related to differences in the overall competitive pressure on the economies.

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