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Labour Market Institutions and Productivity in the New EU Member States

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LABOUR MARKET INSTITUTIONS AND PRODUCTIVITY IN THE NEW EU MEMBER STATES[∗]

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Abstract: We examine labour market institutions in eight Central and Eastern European new EU member states and their developments from the mid-1990s until EU accession. We try to assess to what extent these developments have constituted convergence towards "European" institutional structures, and whether it is possible to assess their impact on productivity growth. We find remarkable divergence in rates of unionization and bargaining coverage and spending on active labour market policies. Levels of labour taxation have been falling in a number of new member states from the previously relatively high levels. Our examination of the previous experience of European countries suggests that this might have a positive effect on productivity growth. However, labour market institutions are not found to be significant determinants of productivity growh in a sample that includes the new member states.

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1. Introduction

Prior to accession to the EU, the Central and Eastern European new member states have adopted a range of labour market institutions similar to those in the Western European countries (Riboud et al. 2003). Since the period of transition from planned to market economies, many of these institutions have been in a continuous process of reform and adaptation. In some cases, policy makers have justified the changes by the need for greater flexibility in the economy, in order to accommodate a dynamic process of growth and catching-up with Western European income levels, of which those of the CEE countries only make up only little more than a half. In the present paper, we consider the possible role of labour market institutions in either fostering or hindering growth and convergence to Western European income levels.

When speaking of the influence of labour market institutions on growth and output convergence, a relevant question is also whether and to what extent the institutions themselves are subject to convergence in the process of integration into the EU. There are several channels through which labour market institutions may be influenced in this process. Directives and transnational agreements may directly help shape national institutions of social protection or employment regulation. Labour unions in the new member states collaborate with and receive assistance from their EU counterparts and EU-level organizations. Another channel through which convergence might occur is imitation, whereby a country adopts institutions similar to that of a neighbouring western country. In outlining the trends in the development of the labour market institutions in the NMS, we therefore try to compare these to those in the western European countries. As for the time period, we consider the period from 1995 to the latest period with data available, thus concentrating less on specifically transition-related reforms than on more recent trends in the decade prior to EU accession.

We start out by reviewing some of the previous studies on the relationship between labour market institutions and productivity growth. Most of the existing studies concentrate on one or a few labour market institutions at a time, whereas there have been relatively few empirical studies that include a wider set of labour market institutions in growth models (as in e.g. Nickell, Layard (1999) and Buchele and Christensen (1999)). We find that for a number of labour market institutions, there exist theoretical models predicting both positive and negative effects on productivity and productivity growth. The signs of the effects vary also in different empirical studies.

After giving background data on the developments of labour market institutions in the new member states, we then estimate the relationship between labour market institutions and productivity growth based on a panel of OECD countries over the period 1970-1999. We also try to examine the effects of these institutions empirically in a smaller data set that includes also the new member states.

The paper is structured as follows. Section 2 reviews some results from the theoretical and empirical literature on the effects of labour market institutions on productivity growth. Section 3 briefly reviews the labour market institutions in the Central and Eastern European new member states and their recent developments. Section 4 looks at the relationship between labour market institutions and productivity growth based on the past experience of the OECD countries and more recent data on the NMS. Section 5 concludes.

2. Labour market institutions and productivity

Labour market institutions may influence growth in various ways. First, institutions may affect the accumulation of factor inputs, physical or human capital. Although arguably input accumulation may be less important for long-run growth rates, it can certainly matter for catching up in levels of productivity. Second, apart from input accumulation, labour market institutions can affect growth by influencing total factor productivity. The relevant mechanisms here could be e.g. their effect on the relative ease of "creative destruction" processes in the economy, but a number of other channels may also be important. In the following, we briefly review some theoretical and empirical results from previous studies on these relationships. We consider in turn labour taxes, unemployment benefits, labour unions, employment protection legislation, and active labour market policies.

Labour taxes
Daveri and Tabellini (2000) examine the growth effects of labour taxes in an overlapping-generation model. In their framework, taxation of labour affects growth rates via their effect on employment. If higher taxes lead to an increase in labour costs and a decrease in employment, this increases the capital-labour ratio, reducing the marginal product of capital and discouraging investment. Furthermore, in their model the lower employment rate, lowering the incomes of young individuals, decreases their savings, which also leads to less investment. The growth effects of these changes in unemployment may be permanent or transitory, depending on the form of the production function. Based on a sample of OECD countries, Widmalm (2001) finds evidence that the share of taxation levied on personal

income, and also tax progressivity, have negative effects on growth. She suggests that this may be due to distortionary effects of tax progressivity on educational decisions and thus to human capital accumulation. Manovskii (2002) argues, on the contrary, that progressive labour income taxation encourages workers to temporarily accept lower incomes in order to spend more time training and earn higher income later, and the resultant increase in human capital accumulation is beneficial for growth.

Employment protection

Employment protection can affect productivity growth in several different ways. On the one hand, employment protection raises the cost of hiring and firing employees, thereby reducing the rate of labour reallocation away from less to more productive activities. On the other hand, employment protection improves job security, which may aid worker participation, whereas the resultant longer job tenures may be associated with more on-the-job training and human capital investments. Nickell and Layard (1999) consider the positive effects to productivity growth as more likely. However, several other authors emphasize the adverse effects of employment protection. Mortensen (2004) shows in a Schumpeterian growth model how employment protection can lead to a lower incentive to innovate. Saint-Paul (2000) shows that high employment protection favours "secondary", less risky innovation activities that improve existing products with more stable demand, while primary innovation is more likely to be concentrated in countries with more flexible employment regulations. He finds observed innovation patterns in Europe and the U.S. to be consistent with these predictions. An empirical study by OECD (2003) examines the effect of employment protection across industries with different innovation characteristics. Their results indicate that employment protection legislation (EPL) may reduce R&D intensity in industries where technological change entails high firm and worker turnover, whereas it matters less in those high-technology industries in which innovation processes are cumulative, i.e. supported by firm-specific workforce skills that evolve in parallel with technology. Importantly, the effects of EPL on R&D activities were also found to interact with the degree of co-ordination and to vary by industry, while becoming obscured at the aggregate level.

Collective bargaining

The theoretical impact of union wage bargaining on growth has been studied in a number of settings. The effects may be negative, due to investment-reducing effects of union activities (Nickell, Layard 1999). However, Palokangas (2004) argues that union wage pressures

encourage firms to seek higher productivity through R&D activities, which increases growth in the longer run. A similar result is reported in Palokangas (1996). Lingens (2003) examines the case in which unions bargain the wages of the low-skilled, and finds that the effect of unions on growth is ambiguous, depending on the elasticity of substitution between high-skilled and low-skilled labour. Lingens (2004) discusses the union effects in a variety of neoclassical as well as endogenous growth models and concludes that in a majority of models, union wage bargaining slows down the rate of economic growth.

A number of empirical studies of the effect of unions on productivity growth tend to support the view that on average, union activities reduce growth. Menezes-Filho et al. (1998) find that the effects are nonlinear: some level of union power is beneficial for R&D investment, but the effects turn negative once it passes a certain threshold, or if the unions only bargain over wages. Booth (1995), reviewing earlier studies of US and British evidence, concludes that on average, the impact of unionisation on productivity and productivity growth is negative. OECD (1997) cites empirical studies by Dowrick (1993) and Heitger (1987), which have found a U-shaped relationship between corporatism and productivity growth, such that economies with intermediate levels of union power grow more slowly. Padovano and Galli (2003) study a panel of 18 OECD countries over a period of 39 years, finding evidence of a significant negative impact of corporatism on growth and confirm the U-shaped relationship and a negative effect of unionisation on growth. However, Nickell and Layard (1999) suggest that negative effects of union activities may be mitigated by appropriate response from the management, such as introducing participation programs.

Unemployment benefits

There are a number of studies in which unemployment insurance affects productivity through the matching process and increase in the number of more productive, higher-capital jobs. Acemoglu and Shimer (2000) argue that unemployment insurance increases labour productivity by providing incentives for workers to seek higher-productivity jobs as well as for the employers to create such jobs. Kumar (2002) argues that unemployment benefits reduce the matching rate of workers, thereby increasing capital investment and boosting workers' productivity. Centeno and Novo (2005) find empirical support to the positive impact of the generosity of unemployment insurance on the job match quality. In an endogenous growth model by Corneo and Marquardt (2000), the growth effects of unemployment insurance can be neutral or positive, depending on whether it is financed by workers or by firms. However, in a model by Young (2004), any level of unemployment insurance leads to

lower levels of capital stock and growth, since lower employment reduces the marginal product of capital, and this, together with a reduced need for precautionary savings due to unemployment insurance, lowers investment.

Active labour market policies

Active labour market policies (ALMP) could be expected to be beneficial for growth. Measures such as job placement services, job clubs etc can improve the matching process and reduce unemployment, whereas various types of training are meant to directly increase the prospective workers' productivity. In practice, the effects depend on the extent to which such policies are effective. Empirical evidence on this is mixed. Calmfors et al. (2001), examining Swedish ALMP programmes, find no evidence of training programmes' positive effects on employment or of improved matching efficiency. Boone and van Ours (2004) analyze 20 OECD countries over the period 1980-1999 and find labour market training to be the most effective among active measures in reducing unemployment, but do not find any effect of job subsidies. OECD (2005) find that job-search assistance often has a large impact, but emphasize that even similar programmes can have different effects depending on their details and context. An overview of recent microeconomic evaluation studies can be found in RWI Essen (2005).

Summary

Predictions from theoretical models with regard to productivity growth effects of labour market institutions are varied. For most institutions, there are valid theoretical reasons for both positive and negative effects on growth. In empirical studies, the more consistent results have been those for the negative effects of labour taxes and unions. Employment protection has been found to be negatively associated with total factor productivity growth in industry-level studies, but positively in cross-country aggregate growth regressions.

3. Labour market institutions in the NMS
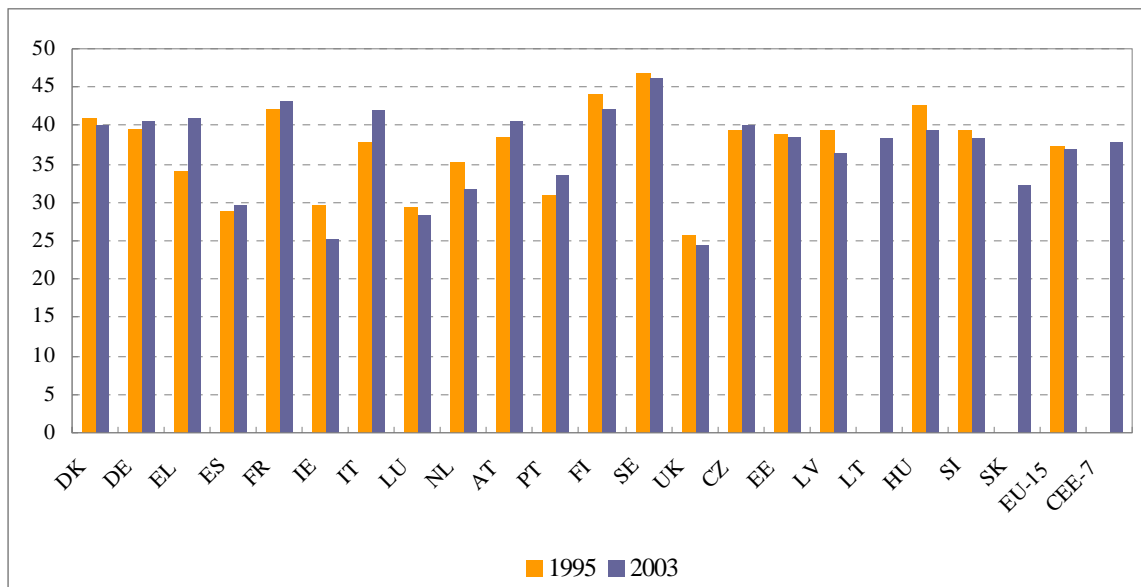
Taxation of labour

A recommendation often made to the Central and Eastern European countries is to reduce their tax burden on labour. Indeed, both the average tax wedge on labour and the implicit tax rates on labour (European Commission, *Structures...*, 2005) are slightly above the EU-15 average. There is also substantially less variation in the levels of labour taxation among the

CEE than in the EU-15 countries. In part, the high levels of labour taxation in CEE countries have been imposed by the transition process. The initial slump in output, extensive labour reallocation and the excess of labour with redundant qualifications brought about massive unemployment and increased social expenditure, which had to be financed by high taxes on the employed. Other factors, e.g. the aging populations, have also played a role. The structure of taxation in the CEE countries differs from that typical in the EU in its relatively higher share of consumption taxes and lower share of capital taxes.

Figure 3.1. Implicit tax rates on labour in the EU, 1995 and 2003

Source: European Commission (2005). CEE-7 excludes Poland.

The general trend of taxation of labour in the CEE member states appears to be downwards.[1] Implicit tax rates on labour have decreased in Estonia, Latvia, Hungary, Slovenia and Slovakia, while there has been a slight increase in the Czech Republic. Over the past decade, the new member states have also converged in their levels of overall tax burdens, but diverged from the old EU member states.

While the level of labour taxation is close to the EU average, their tax systems generally exhibit less progressivity. The Baltic states and Slovakia have adopted flat income taxes, while other countries such as Hungary and Slovenia have reduced the number of tax brackets over the period under review. Tax wedges for low-wage earners, on the other hand, are on average higher in the CEE than in the EU-15 countries (Võrk et al. 2006). In several

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[1] Note that Figure 3.1 only illustrates developments up to 2003, but significant reforms have taken place or are planned since then (e.g. Slovakia's 2004 flat tax reform, Estonian and Lithuanian income tax reductions, etc. For details, see European Commission (2005).

countries, one can observe that although implicit tax rates on labour have decreased, tax wedges for low-wage earners have increased, which is possibly due to "bracket creep", e.g. by the increasing share of the wages exceeding the threshold of non-taxable income.

Unemployment benefit replacement rates

Under the conditions of planned economy, unemployment was very low in Central and Eastern European countries. With the transition to market economies, unemployment also emerged as a problem and it was necessary to introduce some forms of unemployment assistance. Systems of unemployment insurance were introduced in most countries and initially the benefit levels were fairly generous, but over time the fiscal pressures mounted as unemployment rose, and several countries have had to cut replacement rates (Vodopivec et al. 2003). Some changes have occurred also in the period under review. Benefit replacements were lowered in Czech Republic in 1998, and Poland changed the replacement rate in 1997 from the previous 36% of average wage to flat-rate benefit (which is differentiated according to the length of prior economic activity). Hungary introduced changes in UI benefits in 1997, introducing a single benefit replacement rate, which previously had been differentiated according to the duration of unemployment. Estonia, on the other hand, introduced an unemployment insurance system in 2003 which was more generous than the previously applied flat-rate unemployment assistance benefit system, under which replacement rates were as low as 7%. In part, the system was introduced to comply with the European Social Charter.

**Figure 3.2. Expenditure on passive labour market policy in the EU,
% of GDP normalised on the per cent unemployment rate**
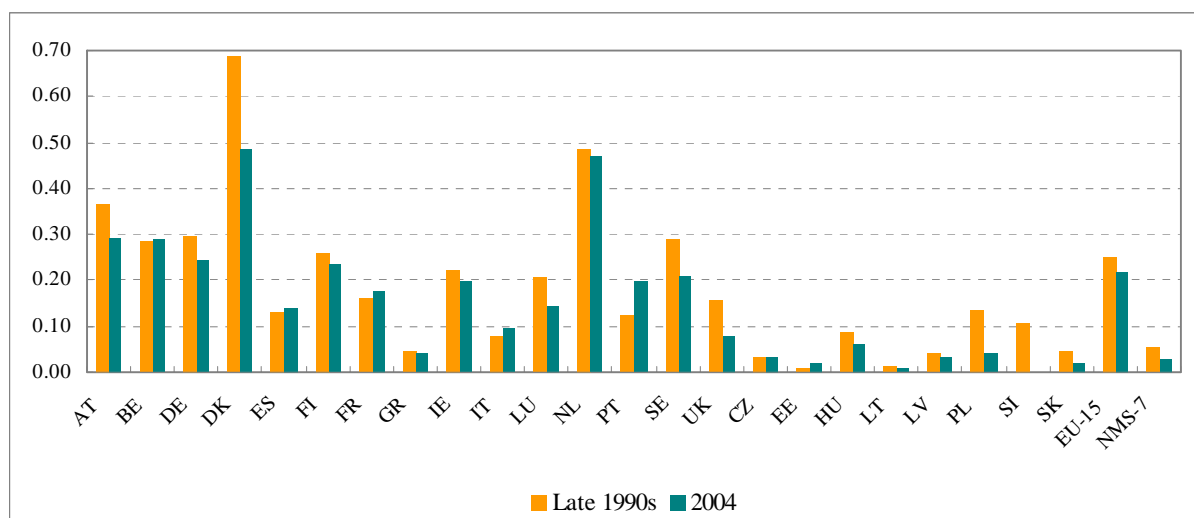
At present, replacement rates generally range from 50% to 70%. The unemployment insurance systems are generally much less generous than in EU-15 countries in their benefit durations. Typically, it is possible for the unemployed to receive insurance benefits for a period of 6 to 12 months, in some cases the duration depends on work experience. The overall generosity of the system thus depends on not only the benefit replacement rates but also duration of payment and eligibility rules. If the latter are too restrictive, they may exclude a significant share of the unemployed in the economy. Eligibility rules matter also for individuals' work incentives, since becoming unemployed is a much less attractive option if the likelihood that one might not fulfil the conditions of eligibility for unemployment insurance benefits is higher or more uncertain.

Figure 3.2 shows passive labour market measures as a percentage of GDP, normalised on the per cent unemployment rate, as a measure of generosity of unemployment insurance systems, which depends on all the parameters of replacement rates, benefit duration, and coverage. This measure can be thought of as the share of GDP devoted to passive labour market measures per percentage point of the unemployment rate. As can be seen from Figure 3.2, this summary measure of unemployment insurance generosity is much lower in the Central and Eastern European countries. In a number of NMS such as Latvia, Hungary, Poland and Slovakia, it has declined over time, while it has remained stable in Lithuania and the Czech Republic. Estonia is an exception with an increase, but it is notable that despite the nominally comparable replacement rates and payment durations, the overall level of expenditure is still low compared to other NMS states. However, Vodopivec et al. (2003) note that in CEE countries, expenditure has been increasing on other, means-tested income support schemes that are also available to the unemployed. When assessing the effects of generosity of unemployment insurance on work incentives, measures involving only the parameters of UI systems must therefore by interpreted with some caution.

Unions

Unions are generally much weaker in the CEE member states than in the EU-15. As of 2002, average union density in the eight new member states stood at 23%, considerably lower than

the EU-15 average of 43% (EIRO 2003).[2] The differences between new and old member states are even greater when the coverage of collective bargaining is considered: the average coverage rate (weighted by the size of the labour force in each country) in nine new member states (ten NMS less Malta) is 37%, only about a half of the EU-14 figure of 72% (EU-15 excluding Greece). Furthermore, collective bargaining is, in general, conducted primarily at company level in the new member states, while the sectoral level is most common for the old member states (Ibid.). In these respects, industrial relations in most CEE new member states are more reminiscent of those in the USA than in the EU. Slovakia and Slovenia, in some respects, are exceptions to this general description, due to the presence of sector-level bargaining in these countries and, in the case of the latter, total collective bargaining coverage.

Table 3.1. Union density and bargaining coverage in the CEE countries, 2002

Country	Union density	Bargaining coverage
Czech Republic	30%	25%-30%
Estonia	14%	28%
Hungary	20%	31%
Latvia	15%	<20%
Lithuania	15%	10%-15%
Poland	15%	40%
Slovakia	35%	48%
Slovenia	41%	100%

Source: EIRO (2003).

Looking at the developments in industrial relations since the middle of the 1990s, the common trend apparent in both old EU countries as well as the new member states is a decline in union membership. However, the fall has been much steeper in the new member states (especially in the Baltic States, Poland and Hungary) than in the EU-15, so that overall, one can say there has been further divergence from old Europe since the mid-1990s. Some of the reasons for the decline of unions are to some extent shared between the two groups of countries, such as deindustrialisation and an increase in the share of the less unionised services sectors. Other causes are specific to the situation of the transition economies, such as

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[2] The figure for the EU-15 is an unweighted average. Average union density weighted by the relative sizes of the countries' labour forces is 30%, according to EIRO (2003). The corresponding figure for the ten NMS countries was 22%.

the loss of credibility of the institution of the unions, which had been compulsory under the communist regimes. Also, privatisation, high unemployment, and the increase in the number of small and medium-sized enterprises have been quoted as reasons behind low unionisation rates in the new member states (EIRO 2002). The collective bargaining process is also hampered by lack of institutional capacity and resources of the social partners (Ibid.) However, it remains to be seen to which effect the European-level co-operation of trade unions and employer organisations might have in this regard.

Figure 3.3. Union density in 1995 and 2002, NMS-8 and EU-13
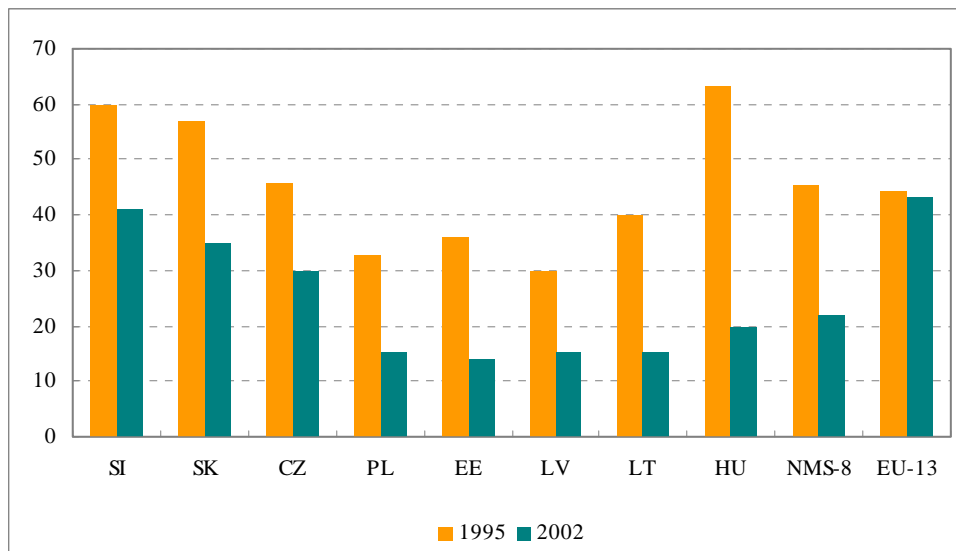
Source: Riboud et al. (2002); EIRO (2003); OECD Employment Outlook (2004). EU-13 excludes Luxembourg and Greece. Unweighted averages for NMS-8 and EU-13.

Employment protection

Average values for available indexes of the strictness of employment protection legislation tend to be fairly similar for EU-15 and CEE (see Figure 3.4).[3] However, such averages may not be very informative in the case of EPL, concealing considerable variation across the CEE countries as well as within the EU-15 group. All of the new Central and Eastern European member states have a similar pre-transition background of very strict employment regulations, which they all have subsequently relaxed, in order to cope with the need of substantial labour reallocation necessary for the process of economic transformation. Yet, due to differing policy choices and various country-specific factors, they have ended up with fairly variable levels of employment protection. Cazes (2002) notes that a number countries have tended to adopt

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[3] Employment protection legislation (EPL) indexes are constructed on the basis of a variety of items reflecting different aspects such as regulations regarding individual dismissals, collective redundancies, temporary employment, etc. The greater the value of the index, the greater the overall strictness of employment protection legislation. For details, see e.g. OECD *Employment Outlook* 2004, p. 102-106, or Eamets and Masso (2005).

levels of EPL similar to their closest western neighbours. Also, the relatively richer Central European countries (with the exception of Slovenia) appear to be more flexible in their employment protection legislation, whereas the poorer Baltic states have opted for levels similar to Sweden.

Figure 3.4. Overall EPL index in the EU*, late 1990s and 2003
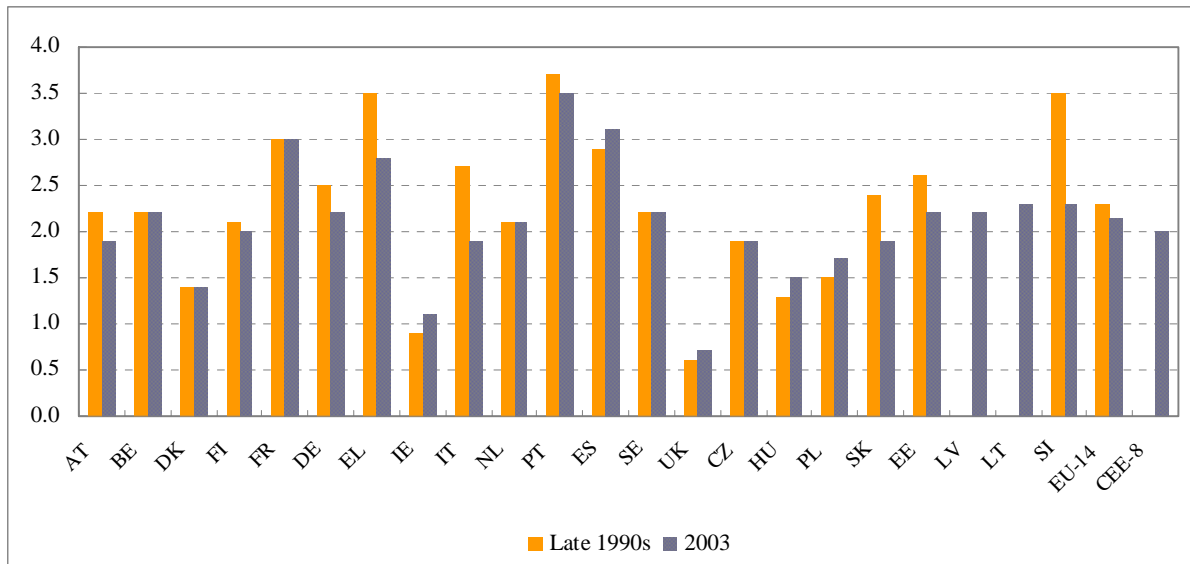
Source: OECD Employment Outlook 2004; Riboud et al; Eamets and Masso (2005); Kajzer (2005)
* EU-14 excludes Luxembourg.

Judging by the overall EPL index, the Czech Republic and Hungary have the most flexible regulations among the CEE countries. Slovakia and Poland come next, followed by the three Baltic countries and Slovenia with a level of the index close to EU-14 average. The strictness of the legislation regarding regular contracts is fairly high, except in Latvia, Hungary and Poland where it stands at approximately the EU-14 average level. In the Baltic states and Slovenia, collective dismissals are regulated as strictly as in the strictest of the old EU countries. In other CEE countries, the regulations are less strict than the EU-14 average, a notable change towards increased flexibility occurring in Slovakia with the new 2003 labour code.

Table 3.2. Employment protection legislation in NMS-8, 2003

| Country	Regular contracts	Temporary contracts	Collective dismissals	Overall EPL
Czech Republic	3.3	0.5	2.1	1.9
Estonia	3.1	1.4	4.5	2.6
Hungary	1.9	1.1	2.9	1.7
Latvia	2.3	2.1	4.0	2.5
Lithuania	3.0	1.4	4.9	2.7
Poland	2.2	1.3	4.1	2.1
Slovakia	3.5	0.4	2.5	2.0
Slovenia	2.9	0.6	4.9	2.3
CEEC average	2.8	1.1	3.7	2.2
EU-14 average	2.3	2.0	3.4	2.4

Source: Eamets and Masso (2005), OECD Employment Outlook (2004), Kajzer (2005). Data for the Baltic States are for the late 1990s. EU-14 excludes Luxembourg.

In the regulation of fixed-term employment contracts, there has been convergence among the group of old EU member states from the late 1990s to 2003. Several Southern European countries with previously very high levels of the respective EPL indices have relaxed their regulations, while previously the most flexible Anglo-Saxon countries have become somewhat more restrictive. As of 2003, average EPL on temporary contracts in the old member states stands at 2.0. Among the new member states, temporary work is more strictly regulated in the Baltics and Poland, whose EPL is relatively close to that of Nordic member states. Slovakia, Slovenia and the Czech Republic, on the other hand, are very flexible, resembling Ireland and the UK.

From the late 1990s to 2003, changes in EPL have occurred in both directions among the CEE countries. Regulation on temporary employment has become slightly stricter in Hungary with amendment to the labour code that restricted the renewal of fixed term contracts. Poland has lifted some renewal restrictions on temporary contracts, but also introduced stricter regulations for temporary work agencies, with the overall effect increasing the EPL index for temporary contracts from 0.8 to 1.3. The new 2003 labour code in Slovakia has liberalised employment regulations with regard to collective dismissals as well as regular employment. Evidently, the most significant reforms among the CEE countries have taken place in

Slovenia, where the revision of labour code resulted in a drop in the overall EPL index from 3.5 to 2.3 as of 2003, according to Kajzer (2005).

Figure 3.5. Employment protection and passive labour market policies in the EU
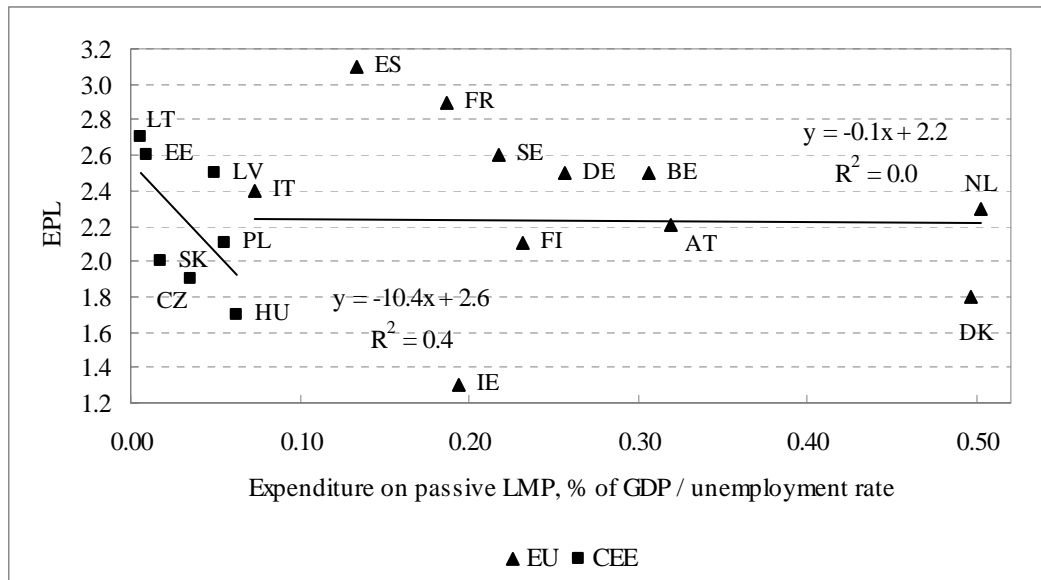
Source: OECD Employment Outlook, various issues; Vodopivec et al. (2003); Paas et al. (2003); authors' calculations. Latest available data.

Figure 3.5 shows the combinations of employment protection and unemployment insurance systems in European countries. Among the new member states, there appears to be a negative correlation between strictness of EPL and generosity of UI. The group of Baltic States have higher EPL and less generous unemployment benefits, while the Central European countries have more flexible regulations combined with more generous UI systems. However, even the countries with most generous UI remain in the lower end of expenditure on passive measures among European countries. Given also the very low spending on active labour market policies in the CEE countries, the group appears very far indeed from the so-called flexicurity model exemplified by Denmark.

In making cross-country comparisons of EPL indicators, an important caveat to be kept in mind is that there may be gaps between regulations and actual enforcement of these regulations, which can vary across countries. Thus, even though EPL may nominally be strict in a particular country, effective flexibility may be increased by weak enforcement of regulations and easily available work-arounds such as formal self-employment, rental labour, informal work, or simply disregarding regulations. Cazes and Nesporova (2003) find a positive association with stricter EPL and temporary employment. Eamets and Masso (2005), examining the case of the Baltic states, find evidence of numerous violations of the labour

code, under-reporting of violations, and voluntary forfeit/resignation of employee rights in employment contracts. They also find a remarkably weak relationship between the EPL index and the employers' assessment of hiring and firing practices.

It might be expected that the actual strictness of employment protection is gradually converging towards its nominal value, as the enforcement of regulations is gradually strengthened and institutional quality improves. However, this does not appear to be the case for e.g. the Baltic states, for which employers' assessment of the hiring and firing practices indicate gradual increase in flexibility rather than vice versa. Also, despite the impressive-looking EPL liberalisation reforms, the hiring and firing practices in Slovenia are still considered the most restrictive among the CEE-8 countries by employers, with little change since 2000 (Gwartney et al. 2005).

Active labour market policies

Active labour market policies such as labour market training, job subsidies, business start-up subsidies and various targeted measures have been introduced in all new member states. However, the levels of spending on such programmes are very low. Furthermore, the spending has been lagging behind the growth of GDP, so that spending has tended to decrease over the past decade in relation to GDP. This is the case even in countries like Poland and Slovakia in which unemployment rates have been very high in recent years. If, as above with passive labour market expenditure, we consider ALMP spending as a percentage of GDP divided by the unemployment rate, the average level in Central and Eastern European countries for which data are available amounts to only approximately 10% of the respective EU figure. However, despite the low levels of spending, there is some positive evidence on the effectiveness of some active policies are the new member states (Ederveen and Thissen 2004). Also, it is likely that the expenditure figures will somewhat increase in the near future as resources from the European Social Fund start complementing national spending on active labour market policies.

Table 3.3. Expenditure on active labour market policies, % of GDP
(in brackets: normalised on the percent unemployment rate)

Country	1996	2004
Czech Republic	0.12 (0.031)	0.133 (0.016)
Estonia	0.06 (0.006)	0.043 (0.004)
Hungary	0.37 (0.039)	0.207 (0.034)
Latvia	0.16 (0.012)*	0.085 (0.007)
Lithuania	0.09 (0.006)	0.154 (0.015)
Poland	0.49 (0.040)	0.16 (0.008)
Slovakia	0.56 (0.048)	0.072 (0.004)
NMS-7 average	0.26 (0.026)	0.12 (0.013)
EU-14 average	1.17 (0.13)	0.7 (0.11)

Source: Eurostat; OECD Employment Outlook 1999-2005; Paas et al. (2003).
* 1998 data for Latvia.

Summary of developments

Table 3.4 below summarizes the developments in labour market institutions in the Central and Eastern European economies during the past decade. The signs signify the direction of change in the respective indicator. Thus, e.g. a plus sign in the UI generosity column means that generosity has increased. Areas in which the clearest trends emerge are unions and collective bargaining coverage, which have declined in all countries. Labour taxes have been falling in most countries and remained stable in others. Expenditure on active labour market programmes has decreased in most countries for which data are available. The more diverse categories are employment protection, which has become stricter in Hungary and Poland and relaxed or remained stable elsewhere. The generosity of unemployment insurance systems has either declined or remained stable in most countries, Estonia being the sole exception.

Table 3.4. Changes in labour market institutions in NMS-8, mid-1990s to post-2000

Country	UI generosity	ALMP	Union density	Bargaining coverage	EPL [*]	Labour taxes
Czech Republic	0	–	–	0	0	0
Estonia	+	–	–	0	–	–
Hungary	–	+	–	–	+	–
Latvia	–	–	–	–	–	–
Lithuania	0	+	–	0	–	–
Poland	–	–	–	–	+	–
Slovakia	–	–	–	–	–	–
Slovenia	0		–	0	–	0

[*] *The downward trend in EPL for Baltic states is based on the hiring and firing index in Gwartney et al. (2005).*

When these changes are set against those among EU-15 countries, some general common trends become apparent, like e.g. the decline in unionization, which however is much more pronounced in the new member states so that the gaps between the new and old member states have widened over the past decade. Divergence has also occurred in labour taxation, with the EU average mostly remaining stable whereas NMS average has declined; and active labour market policies, which have received increasing resources in the EU while expenditure in the NMS has declined. Although in several NMS economies, employment protection has been relaxed with unemployment insurance at the same time becoming more generous, there has been no substantial advance towards the "flexicurity" model promoted by the EU. Even in the most generous NMS, spending on passive labour market policy remains near the EU-15 minimum. We can conclude that although European integration and the EU accession process has exerted real influence on the development of national labour market institutions in the NMS, the overall picture is that of institutional divergence.

4. Empirical analysis

OECD 1960-1999

What conclusions can be made from the above discussion with regard to growth effects of trends in labour market institutions in the NMS? As we have seen from the brief survey in Section 2, for most institutions different theoretical models predict different effects on productivity growth; in some models the impact is ambiguous and depends on values of particular parameters. Here, we attempt to approach the question empirically. First, we take a look at the past experience of OECD countries by estimating some summary growth

regressions with labour market institutions as explanatory variables. Essentially similar exercises have been carried out by Nickell and Layard (1999) using cross-country data. The main difference of our approach consists in our use of a panel data set. We use a sample which includes most Western European countries plus the US, Japan, New Zealand, Canada and Australia (for details, see the Data Appendix). The data are averaged over non-overlapping five-year periods between 1970 and 1999. Data from labour market institutions are from the dataset of Belot and Van Ours (2004). The five-year averages are suitable both because annual data would not contain enough variation in institutional variables and also because we are interested in longer-run relationships between institutional variables and productivity growth.

We estimate the traditional growth regression in the following form:

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t}, \tag{1}$$

where y is the logarithm of real GDP per worker (GDP per hour worked was also used), X is a set of explanatory variables, η is a country-specific effect, and ε the error term. The i and t subscripts denote country and time period, respectively. The set of explanatory variables includes investment share in GDP, labour tax rate, an index of employment protection, unemployment benefit replacement rates, union density, the degree of centralization of collective bargaining, and active labour market policies (see Data Appendix on variables).

Separate sets of equations were estimated with growth of GDP per worker and GDP per hour worked as the dependent variable, as well as with and without country-specific fixed effects. The estimation results from the growth regressions are shown in Tables A1 and A2 in the Annex. The tax rate variable was significant and with a negative coefficient in the fixed effects equations. However, it turned insignificant when growth of GDP per hour worked was used as the dependent variable. Unemployment benefit replacement rate was significant and positive in fixed effects specifications with per worker productivity growth, but negative with per hour GDP growth equations with fixed effects. The active labour market policies variable entered with a negative sign and turned insignificant when country fixed effects were introduced in the model. Its inclusion in the model affected the signs and significance of other variables, one of the reasons for which is probably the shorter time period (1985-1999) for which equations with ALMP could be estimated. Employment protection, in equations where it was significant, had a positive sign. The union density variable was negative in equations where it was significant, with the exception of one case where ALMP was also included.

Two interaction terms were also included in the regressions, one for the interaction between employment protection and centralization and the other for union density and centralization. The first term was significant and negative in all specifications. The second was significant and negative in the labour productivity growth regression with fixed effects, but positive in the model with hours and no fixed effects.

Nickell and Layard (1999) found that variables for labour market institutions turned insignificant once the initial productivity variable was included in growth regressions. In contrast, in all of our specifications, the corresponding term was included and had a correct sign (except in the presence of active labour market policy variable), while labour market institutions retained their significance. Our results broadly confirm their results for the negative effect of labour taxation and positive effect of employment protection. However, some the institutional variables appear fairly sensitive to the particular sets of variables used, and the use of GDP per hour vs. per worker growth seems to affect the results in some cases.

We also estimated equations to see whether any of the labour market institutions can explain growth of total factor productivity. This enables us to see whether the significant labour market institution variables affect productivity growth through their influence on input accumulation, or whether their impact occurs separately from inputs. Table A3 presents the results of a simple regression of TFP on all institutional variables. The replacement rate, the degree of centralization and the union density emerge as significant variables here. However, their signs are different in models with and without country fixed effects.

The new member states

As of 2004, the average GDP per hour worked in the eight Central and Eastern European countries made up 46.5% of the corresponding EU-15 figure. Since 1995, the difference has declined by 8 percentage points. Estonia and Lithuania have made the most progress in closing their respective gaps with the Western European levels, although they remain among the least productive of the new member states. Slovenia is in the leading position with the highest productivity among the NMS-8 at 63% of the EU-15 average, approximately the level of Spain relative to France in 1960 (Caselli and Tenreyro 2005). The average NMS-8 hourly productivity figure of 46.5% of EU-15 is lower than that of GDP per worker, which stands at 54% of the Western European level. This is due to a higher average number of hours worked in the Central and Eastern European countries: in 2004, the average annual number of hours worked per employee was 2001 in NMS-8 and 1589 in EU-15.

Figure 4.1. GDP per hour gaps between NMS-8 and EU-15, 1995 and 2004
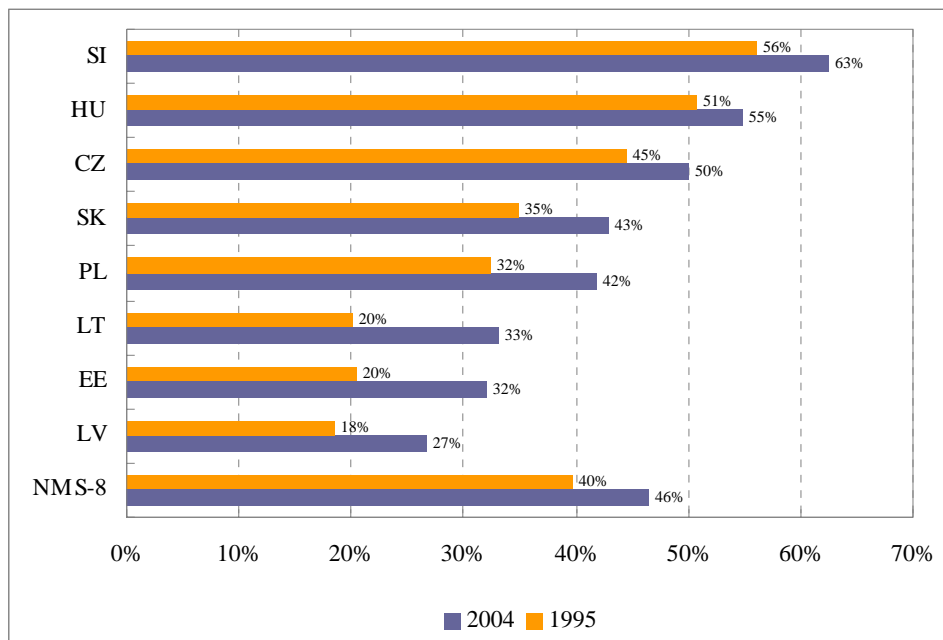
Source: GGDC, authors' calculations.

In Figure 4.2 we have plotted the average growth rates of GDP per hour worked over the past decade against the level of GDP per hour in 1995. There is a clear inverse relationship, with the poorest Baltic states growing the fastest, Poland and Slovakia are in the middle with annual growth rates between 4 and 5%, and the richest countries, Czech Republic, Hungary and Slovenia have had the slowest growth rates. This relationship suggests that the convergence process may provide the most significant explanatory variable in the relationship explaining differences in growth rates among the NMS. Simple scatter plots between productivity growth and institutional variables are therefore not likely to be informative in revealing actual relationships.

Figure 4.2. Growth 1996-2004 and GDP per hour 1995 in NMS-8

The chart shows a scatter plot with a downward-sloping trend line. The y-axis is labeled "Average GDP/h growth 1996-2004" ranging from 1% to 9%. The x-axis is labeled "GDP per hour worked in 1995 (2000 PPS $)" ranging from 5 to 23. Data points are labeled: LT, EE, LV, PL, SK, CZ, HU, SI. The regression equation shown is:

$$y = -0.004x + 0.091$$
$$R^2 = 0.870$$
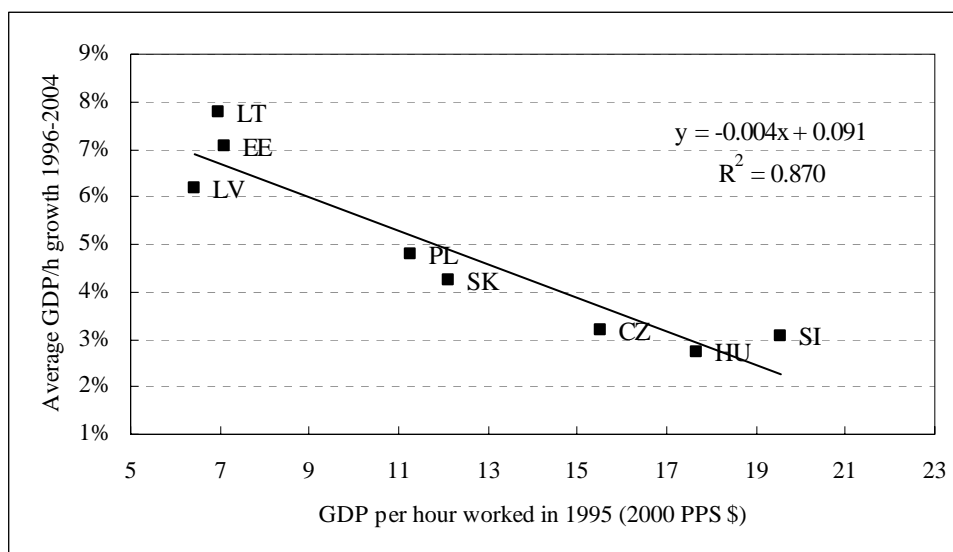
Source: GGDC, authors' calculations.

In the next regression, we have also included in the sample observations for the NMS-8 in the periods 1995-1999 and 2000-2004. The results are reported in Table A4. Obviously, the smaller sample imposes limitations on the possibilities for analysis here, and one must also keep in mind that the various measurement issues, such as e.g. those related to employment protection discussed above, are likely to be more serious in the CEE countries than in Western Europe. One result similar to the sample above is that of the negative correlation of active labour market policies. Both union density and the degree of centralisation are significant and have negative signs, but the effect disappears when other institutional variables are also included in the sample. The effects of other labour market institutions do not appear to be significant. In this sample, the convergence variable explains most of the variation in growth rates, and apart from taxation, effects of labour market institutions are not apparent.

5. Conclusions

We have examined the developments of the labour market institutions in the Central and Eastern European new EU member states during the decade prior to accession. The trends shared between all countries in this group are declines in the rates of unionization and the coverage of collective bargaining. In most countries, the taxation of labour has also declined. In the majority of countries, expenditure on active labour market policies has not kept up with GDP growth. The relative decline of ALMP spending appears especially pronounced when viewed on the background of substantially increased unemployment rates. Spending on passive measures has also been lower in most countries toward the end of the period under

review in comparison with mid-1990s. The situation is more varied in indicators of the strictness of employment protection legislation. Regulations have been relaxed in Slovenia and Slovakia; employers' assessments of hiring and firing procedures have become more favourable also in the Baltic States. The more flexible countries, Hungary and Poland, on the other hand, have tightened their regulations somewhat with regard to temporary work.

Some of the trends have been in the same direction in the NMS and Western European countries. Unions have weakened in both groups of countries, but the new member states have moved more rapidly towards lower unionisation and less decentralised bargaining systems, so that there has been divergence in this regard. Taxation of labour remained mostly stable in EU-15, whereas it has fallen in most NMS countries, however the latter development has to be viewed against the background of fairly high levels of labour taxation in the CEE. Divergence has occurred also in spending on both active and passive labour market policies. One can perhaps speak of institutional convergence to the EU in the sense that largely similar institutions have been adopted, but the parameters of the systems differ in important ways.

As for the possible effects of the labour market institutions on productivity growth, results from previous empirical studies indicate that high labour taxes may be detrimental for growth. Negative effects of unionisation have been found in a number of studies. The effects of employment protection legislation have been found harmful to innovative activity and growth at industry level, although positive effects have been found in cross-country regressions with aggregate productivity.

Estimating a regression using panel data on OECD countries in the period 1970-1999 with labour market institutions as explanatory variables, the results confirm the negative sign of the labour tax variable. However, the variable turns insignificant when hourly productivity is used as the dependent variable, indicating that taxes may affect productivity through the effects on hours worked. In case of employment protection, union density and centralization of bargaining, the effects seem to depend on particular combinations of these institutions and their interactions. For active labour market policies, positive effects were not found. In a smaller sample including also the NMS countries, the convergence term explained most of the differences in growth rates. Labour market institutions were generally insignificant, with the exception of the negative effects of ALMP, union density and bargaining centralisation in some specifications.

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Data Appendix

GDP, employment, hours: GGDC.

Investment: AMECO Database.

TFP: For OECD, estimates were derived from data in AMECO database.

Data on labour market institutions for OECD 1960-1999 are from the dataset by Belot and van Ours (2004). Data for NMS:

EPL index: OECD Employment Outlook, various issues; Eamets and Masso (2004); Paas et al. (2003); Kajzer (2005). Variable was normalised to the same scale as the series as used by BvO.

Union density: EIRO (2002), Riboud et al. (2003).

Collective bargaining coverage: EIRO 2002, Riboud et al. 2003; Paas et al. 2003.

Passive labour market policy expenditure: OECD Employment Outlook, various issues; Paas et al. (2003); Vodopivec et al. (2003); Eurostat (2006).

Active labour market policy expenditure: OECD Employment Outlook, various issues; Paas et al. (2003); Eurostat (2006).

Implicit tax rates: European Commission (2005).

Tax wedge: European Commission (2005), OECD Employment Outlook, various issues, World Bank (2005).

Annex. Estimation results

Table A1. Dependent variable log differenced GDP per worker, 5-year averages 1970-1999

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Tax rate	0.031	-0.05	0.033	-0.291***	-0.082	-0.31***
	(0.52)	(1.17)	(0.49)	(4.45)	(1.0)	(4.69)
Replacement rate	0.031	-0.089***	0.014	0.146***	0.206***	0.15***
	(1.02)	(3.44)	(0.49)	(3.13)	(2.99)	(3.04)
Centralization (*cen*)	-0.01	0.008	0.025	-0.007	-0.011	0.122***
	(1.29)	(0.84)	(1.34)	(1.28)	(1.43)	(2.93)
Empl. protection (*ep*)	0.014*	0.013	0.023	-0.025	-0.071***	0.08**
	(1.73)	(1.46)	(1.01)	(1.6)	(3.41)	(2.15)
Union density (*ud*)	-0.046**	0.12***	0.053	-0.101*	-0.119	0.064
	(2.06)	(4.98)	(0.58)	(1.9)	(1.2)	(0.61)
ALMP		-0.085***			0.012	
		(2.86)			(0.44)	
*cen*ep*			-0.007			-0.04***
			(0.77)			(3.03)
*ud*cen*			-0.052			-0.153**
			(1.17)			(2.37)
y_{t-1}	-0.208***	0.026	-0.212***	-0.211***	-0.005	-0.198***
	(6.71)	(1.25)	(6.29)	(6.94)	(0.28)	(6.37)
Investment rate	-0.153	-0.153	-0.201	-0.412**	-0.08	-0.469***
	(1.2)	(1.09)	(1.32)	(2.55)	(0.66)	(3.16)
R^2	0.60	0.87	0.95	0.84	0.95	0.84
Obs	104	61	104	104	61	104
Country fixed effects	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**

In parentheses under coefficients, *t*-values based on White heteroskedasticity-consistent standard errors.
Significance levels: *** p<0.01, ** p<0.05, * p<0.10
Where active labour market policies are included in the specification, the time period is 1985-1999.

Table A2. Dependent variable log differenced GDP per hour worked, 1970-1999

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Tax rate	-0.022	-0.033	-0.014	-0.047	0.116	-0.038
	(0.45)	(0.9)	(0.24)	(0.76)	(1.63)	(0.62)
Replacement rate	0.052**	-0.04*	0.043**	-0.143**	-0.01	-0.105*
	(2.08)	(1.68)	(2.4)	(2.61)	(0.73)	(1.89)
Centralization (CEN)	0.009	0.015**	0.037***	-0.011**	-0.007***	0.041
	(1.41)	(2.22)	(3.23)	(1.99)	(2.96)	(1.58)
Empl. protection (EP)	0.027***	0.017**	0.108***	0.012	-0.011	0.085***
	(4.24)	(2.41)	(8.52)	(0.9)	(1.25)	(2.89)
ALMP		-0.137***			-0.008	
		(6.22)			(1.18)	
Union density (UD)	-0.037*	0.075***	-0.177***	0.003	-0.056	-0.051
	(1.95)	(3.44)	(3.59)	(0.07)	(1.22)	(0.69)
CEN*EP			-0.046***			-0.028***
			(9.54)			(3.17)
UD*CEN			0.059**			-0.017
			(2.47)			(0.45)
y_{t-1}	-0.148***	0.15**	-0.141***	-0.141***	-0.082***	-0.137***

	(7.2)	(2.11)	(6.34)	(6.24)	(6.79)	(6.2)
Investment rate	-0.28**	-0.016	-0.354***	-0.459***	-0.214***	-0.425***
	(2.46)	(0.16)	(2.8)	(3.62)	(3.53)	(3.57)
R^2	0.77	0.91	0.89	0.87	0.98	0.78
Obs	89	61	89	89	61	89
Country fixed effects	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**

In parentheses under coefficients, *t*-values based on White heteroskedasticity-consistent standard errors.
Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$
Where active labour market policies are included in the specification, the time period is 1985-1999.

Table A3. Dependent variable log differenced TFP, 1970-1999

	(1)	**(2)**	**(3)**	**(4)**
Tax rate	0.006	0.001	-0.003	-0.009
	(0.83)	(0.13)	(0.25)	(0.63)
Replacement rate	-0.007*	0.001	0.024***	0.034***
	(1.91)	(0.34)	(2.98)	(2.7)
Centralization (CEN)	0.001	-0.007***	-0.005***	0
	(0.51)	(2.69)	(5.12)	(0.04)
Empl. protection (EP)	0	0.004	-0.004	0.006
	(0.3)	(0.91)	(1.41)	(0.97)
Union density (UD)	0.011***	-0.035*	-0.058***	-0.062***
	(3.45)	(2.0)	(4.14)	(3.11)
CEN*EP		-0.002		-0.003
		(0.76)		(1.64)
UD*CEN		0.022**		0.001
		(2.61)		(0.05)
R^2	0.32	0.39	0.63	0.63
Obs	76	76	76	76
Country fixed effects	**No**	**No**	**Yes**	**Yes**

In parentheses under coefficients, *t*-values based on White heteroskedasticity-consistent standard errors.
Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Table A4. Dependent variable log differenced GDP per hour worked, EU incl. NMS

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.06***	0.065***	0.073***	0.061***	0.062***	0.08***	0.068***	0.072***
	(3.8)	(3.8)	(3.99)	(3.56)	(3.62)	(4.36)	(4.05)	(2.74)
y_{t-1}	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(-5.13)	(-4.85)	(-4.28)	(-4.56)	(-4.75)	(-5.69)	(-5.44)	(-2.98)
Investment/GDP	-0.03	-0.014		-0.001				-0.02
	(-0.48)	(-0.23)		(-0.02)				(-0.21)
Employment protection legislation		-0.003						0.002
		(-1.37)						(0.31)
Tax wedge			0					0
			(-1.06)					(-0.01)
Passive LMP				-0.011				-0.001
				(-1.55)				(-0.05)
ALMP					-0.026***			-0.018*
					(-5.43)			(-1.78)
Union density						-0.016***		-0.006
						(-2.77)		(-0.61)
Centralisation							-0.005*	-0.003
							(-1.82)	(-0.79)
R2	0.49	0.51	0.51	0.53	0.61	0.55	0.53	0.63
Total obs	74	74	61	59	53	73	74	51

Time period: 1975-2004, when ALMP or PLMP is included: 1980-2004, observations for NMS: 1995-1999 and 2000-2004

In parentheses under coefficients, *t*-values based on White heteroskedasticity-consistent standard errors.

Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Countries included: AT, BE, CZ, DK, DE, EE, FI, FR, HU, IE, IT, NL, LT, PL, SE, SI, SK, UK