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WORKING PAPERS

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Karl Aiginger

208/2003

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The Relative Importance of Labour Market Reforms to Economic Growth

Karl Aiginger*

Abstract

Insufficiently flexible labour markets combined with high welfare costs are often thought to be the main cause of unsatisfactory growth in Europe. This paper uses the OECD data on regulation of the product and labour market to confirm the difference in the extent of regulation between US and Europe in labour and product market regulation. However, there are at least two other explanations for European underperformance during the nineties: insufficient investment in long run determinants of growth and macroeconomic policy. We first show that European policy differed from that of the US in all three areas. The extent of the differences is decreasing for labour market regulation, but increasing for macroeconomic policy and for investment into future growth. Then we exploit performance differences between European countries to assess the relative importance of labour market reforms versus investment into long-run growth. The best performing European countries did fine tune incentives in labour and product markets, without dismantling the welfare regime and with little deregulation for regular labour contracts. The largest continental economies – Germany, France and Italy – did not reform their institutions to the same extent. However the main difference between the top 3 and the big 3 countries is the increasing investment of the successful countries into the determinants of long run growth. This indicates that labour market regulation may be an important condition for growth, while investment into research, innovation and new technologies is the sufficient condition.

JEL: E60, O11, O40

Keywords: Labour market reforms, market regulation, economic growth, transatlantic differences

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The Relative Importance of Labour Market Reforms to Economic Growth: European Evidence in the Nineties

Karl Aiginger

This paper assesses the role of labour market reforms with respect to economic growth. Analysing the reasons for slow growth in Europe in general, or why Europe has fallen behind the US during the past decade, many researchers (including OECD, EU, and IMF) single out Europe's inflexible labour markets as the primary suspect. The economic theory which tries to explain medium and long term growth – growth theory – refers to labour and product markets as relevant for economic growth in an indirect way insofar as research and innovation depends on market structure and the ability to appropriate profits in exchange for research efforts. Rigid labour markets are clearly not conductive to innovation, though good performing innovation systems can be rather different. The main determinants of long run growth for developed countries are research, education and diffusion of technologies. Macroeconomic policy – keeping in mind all the caveats with regard to lags, efficiency and impact of expectations – can be supportive to growth as it reduces cyclical imbalances and uncertainty. The objective of this paper is to investigate the role of labour market reforms for economic growth and its interplay with investments into determinants of the growth path and macroeconomic policy.

Much research is done on the impact of regulation on unemployment. *Nickel* (1997) has shown that some rigidities will aggravate unemployment like (i) generous unlimited benefits without obligations and assistance to find a new job, (ii) high unionization without coordination either between employers or employees and (iii) high taxes on labour. Other regulations however have no negative impact and can serve useful purposes. *Layard at al.* (1991) have studied the impact of institutions and shocks on the UK labour market. The fact that Europe did perform well in the sixties and seventies with the same labour market institutions is explained by the finding that interactions between labour market institutions and macroeconomic shocks matter (*Bertola et al.,* 2001, *Blanchard – Wolfers,* 2000). *Ljundqist* (2003) claims that employment protection reduces unemployment in tranquil times however decreasing productivity in this regime, but increases unemployment in turbulent periods. *Botero et al.* (2003) show that rich countries have less regulated labour market, but spend more on social security, indicating that regulation and welfare spending are not substitutes and indicators on both institutions should be taken into account in empirical research. Higher

regulation leads to higher unemployment, lower employment and a larger unofficial economy[1].

What is astonishing is that there is very little literature which combines explanations for labour market institutions with determinants used in growth theory to explain the long term growth path. The impact of innovation systems or of research inputs on the one hand and that of labour market regulation on the other hand are rather separated in the literature. An exception is the OECD growth project (*OECD,* 2003) in which both aspects are addressed. It is the objective of this paper to relate growth to both regulation and investments into future growth, and specifically to find out about the relative importance. The paper focuses on performance differences in the European Union in the nineties. Since the time period is rather short, the number of countries small and the explanatory variables have too little time variation, we do not apply panel technique, but divide countries into a good performing group and into countries with rather disappointing performance in the eighties and describe policy differences in both groups.

Section 1 recalls the differences in the economic performance between the EU and the US. Then we illustrate how economic strategy in the US differed from Europe during the nineties in the three policy areas: US labour markets were more flexible, macro economic policy was more supportive of growth, and the US consistently invested more into the future determinants of growth (growth drivers). To learn more about the relative importance of the three policy areas we split European countries into a group of top performing countries and a group of less successful European economies using a broad set of growth, employment, and stability indicators (section 3). Then we investigate to what extent the top performing countries differ from the low performing countries in the three policy sets, specifically in the changes in regulation and in investment in future growth.

1. Europe on a slow growth path

In this chapter we recall that Europe is experiencing a disappointing period of low growth; not only recently, over the very short run, but throughout the nineties. Explaining the underperformance specifically relative to the US, three different explanations are available. The most common is to blame inflexible labour markets, and perhaps to extend this blame on to product markets and to high costs of the generous welfare states. The second is that European macroeconomic policy has been restrictive and that rules for monetary authority,

[1] The impact of regulation on (un)employment is an ongoing research subject. The extreme opinions can be summarizes with the citation of *Nickell* (2003, p. 25), that "the countries .which still have high unemployment today simple have too few ticks and/or too many crosses" (where ticks are policy changes towards deregulation and crosses towards regulation) and with a citation of *Schettkat* (2003, p. 32) in the same publication: "the idea that European unemployment is caused by European welfare state mechanism is extremely weak".

as well as for fiscal policy, continue to be asymmetrically biased against growth in Europe. The third is that Europe does not invest enough into the future determinants of growth.

Table 1: US outperforms European productivity growth

	Growth of real GDP		Productivity growth per worker		Employment growth		Productivity growth per hour	
Growth p.a.	EU	USA	EU	USA	EU	USA	EU	USA
1991-1995	1.59	2.39	2.06	1.37	-0.46	1.01	2.45	1.14
1996-2000	2.65	4.04	1.22	2.40	1.41	1.60	1.42	1.97
2001-2002	1.29	1.27	0.41	1.58	0.87	-0.30	0.88	1.59
1991-2002	1.98	2.88	1.43	1.83	0.54	1.03	1.76	1.56

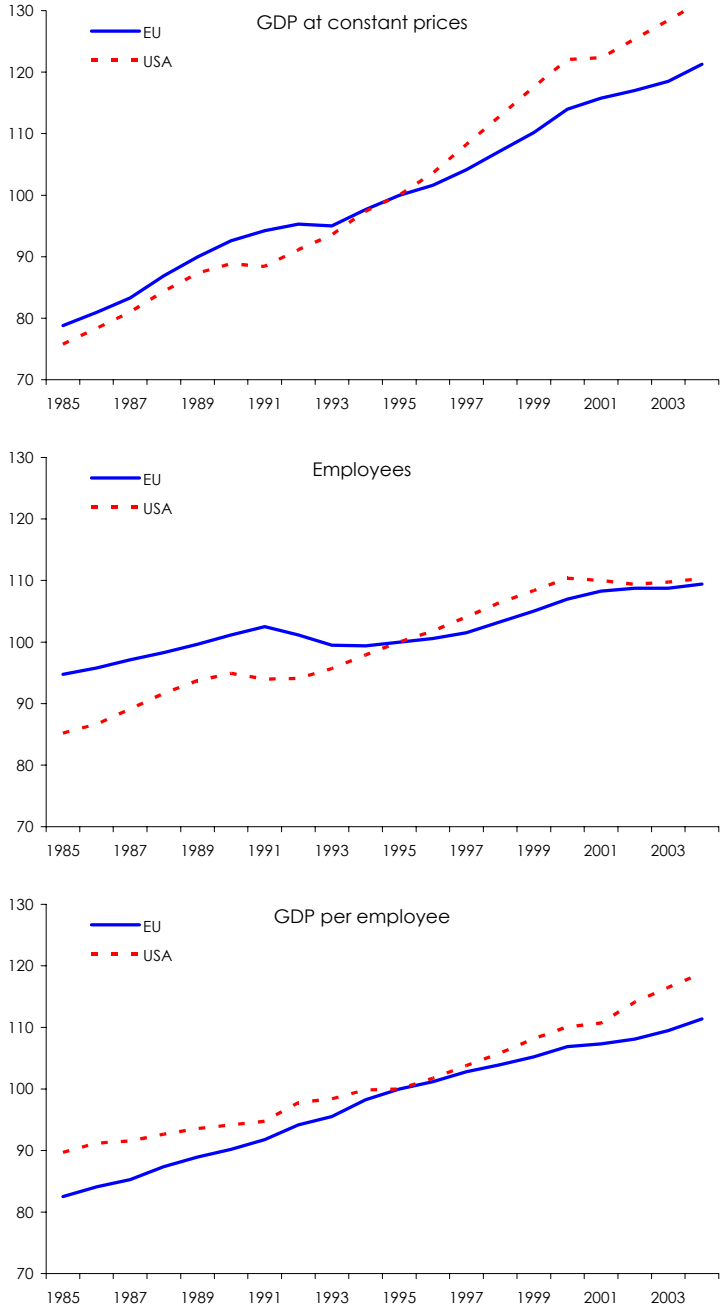
Source: WIFO calculations using data from the Groningen Growth and Development Centre.

Europe is currently stuck in a slow growth period, with several countries at the brink of a recession. Growth has been lingering at approximately 1 % over the past two years, and a similarly meagre rate is expected for 2003. This confirms the disappointing performance of Europe during the previous decade. Macro economic growth in Europe decelerated to 2.1 % (following rates of 2.6 % in the eighties and 3.0 % in the seventies). Macroeconomic growth in the USA was higher by more than one percentage point. Labour productivity accelerated during the second half of the decade and remained well above the level of European productivity growth throughout the ensuing recession. Thus after decades of catching up, the gap between European and US productivity widened[2]. There is no consolation from alternative indicators of economic success: European unemployment remained persistently high (at about 8 %, after peaking at 11 % in 1994); the employment rate, which had been higher in Europe up to the eighties, is now 13 percentage points lower than in the US, where employment increased at both ends of the quality scale: "High Tech" as well as "Big Mac" together created about 21 million jobs between 1990 and 2000[3].

[2] The extent depends on the specific time chosen. Emphasising the second half of the nineties and including the most recent data (up to 2003) strengthens the evidence that the productivity gap has widened. The difference has increased specifically in productivity per worker, less in productivity per hour and least in per capita income. For the last indicator however, the US lead is still about 40 %. Caveats refer to the unequal increase of productivity across sectors, the inflating property of excessive stock market evaluations and differences between hedonic prices and conservative price measurement techniques. For an overview of data bases and differences in productivity levels, as well as in catching up, see *Aiginger – Fouquin – O'Mahoney* (2003).

[3] In the second half of the nineties, the number of jobs in Europe has increased by 15 million, but many new jobs have been part time; rather than boosting growth, this has lowered productivity.

Figure 1: Growth of output, employment & productivity



Source: WIFO calculations.

2. Three policy areas decisive for growth

Three policy areas are specifically relevant to economic growth and employment. The first is structural or microeconomic policy, especially the organisation of product and labour markets; the second is macroeconomic policy, pertaining to monetary and fiscal policy, the third is growth policy, specifically strategies to increase the long term growth path.

As to the reason why the European economy is not growing faster and is not creating enough jobs, the majority of studies, including those of the OECD and the European Commission, blame market inflexibility, specifically the inflexibility of labour markets. "Key policies to raise labour utilisation are well known: to reform tax and benefit system, specifically unemployment support and tax wedge, to ease labour and product market regulation" (OECD Economic Outlook 2003, chapter 5). Or in the words of the European Commission: "A coherent strategy with the goals of non inflationary rate of growth...basically requires deep, comprehensive reforms of the product, capital and labour markets. . . . Growth is sluggish since labour utilisation is low in Europe" (*Karl Pichelmann,* 2003).

In a nutshell, this means that the European growth path is low, since labour (and product) markets are not competitive. Labour markets are inflexible insofar as the choices of firms and employees are restricted by law or collective bargaining. Employment is subsequently lower than it would be in unregulated markets. The regulation of product markets deters innovation and job creation. The mastermind behind inflexible market institutions is the welfare state with high wages and tax wedges, disincentives to work and to take risks (e.g. high replacement rates, costly rules for dismissals, rigid working times)[4].

There is certainly some truth in this argument. Flexible markets foster structural change and allow innovative firms to grow fast; incentives for innovators are high, any variant of demand – however fancy or sophisticated, small or short lived it may be – will be satisfied[5]. The counter argument may be that a policy favouring labour market flexibility, lowering costs and regulation poses the severe downward risk of insufficient demand at least in the short run. If the demand reducing forces are stronger than the supply effect of cheaper and more flexible labour this effect might extend to the medium-term.

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[4] To be fair, we have to acknowledge that extremely valuable empirical material has been gathered by the OECD, showing that economic growth depends on research, human capital on information and communication technology (*OECD,* 2001C, *Scarpetta et al.,* 2003, *OECD,* 2003). The more the papers switch from analysis to policy conclusion, the emphasis switches to deregulation and flexibility. As for the EU, the Lisbon targets stress research, innovation and knowledge as strategies for increasing growth (and making Europe the most competitive economy). But this strategy is monitored much more loosely (by means of "open co-ordination" or benchmarking) than the stability pact where processes and ultimately penalties are defined ex ante. For a balanced assessment of the causes of slow growth see *Bains et al.* (2002) and *Sapir* (2003).

[5] I will not recall the countervailing arguments that too much uncertainty may also depress consumption and investment and increasing risk adjusted long term profit rates, since the European reality of a public sector amounting to 40 % to 50 % of GDP is well above the level of intervention needed to reduce basic risks. Demand effects created by higher wages due to collective bargaining might also outweigh the supply effect.

Monetary policy may be unilaterally targeted towards low inflation or it may try to achieve an optimal trade off between stability and growth. In the latter case, monetary policy will stimulate the economy during periods of insufficient demand. Fiscal policy can be overly permissive in good times or can be restrictive throughout the cycle. Keynesian policy suggest to be expansionary during periods of slow demand and restrictive policies when the economy is overheated (with all of the technical, political, and theoretical problems involved).

Growth theory and empirical studies or determinants of long-run growth indicate that

- in low-income countries, economic growth depends on basic resources, such as energy, raw materials, and population growth;
- in an intermediate stage of development, growth depends on physical capital (the share of physical capital in GDP);
- in high-income countries, growth depends on human capital, research, and the diffusion of new technologies

New growth theory stresses the importance of profitability for innovation of firms; this gives an indirect support to the relevance of market structure and flexibility. Management science focuses on capabilities, strategic advantages and resources for growth. *Porter* (1990) emphasizes demanding business environment, sophisticated consumers and a competitive environment for gaining a competitive advantage. Low wages and taxes, as well as an unregulated market are helpful in the short run, as is a monopoly position and other kinds of restricted competition may be. But prudent business strategies should be based on self-created resources and capabilities.

Investment in growth drivers – R&D, human capital, capabilities, and competitive advantage – dominates in growth theory, since they are the sufficient condition for growth. Increasing flexibility without monitoring investment in growth drivers may not succeed in the short run and if persistency and cumulative processes are strong, not even in the long run.

3. The US differs from Europe in all three policy sets

Product and labour markets are less regulated in the US

The OECD provides indicators describing product market regulation and labour market regulation. The information is ranked on a scale ranging from 0 (unregulated) to 6 (highly regulated).

The indicator on product market regulation measures the degree of regulation for network industries (PMRDYN): it rates the US at 1.36 in 1998, the unweighted EU average is 3.26. Only the United Kingdom is less regulated (1.02) than the US. The difference in regulation was larger in 1990, namely 2.21 vs. 4.73. The change of liberalisation was in absolute terms larger in all

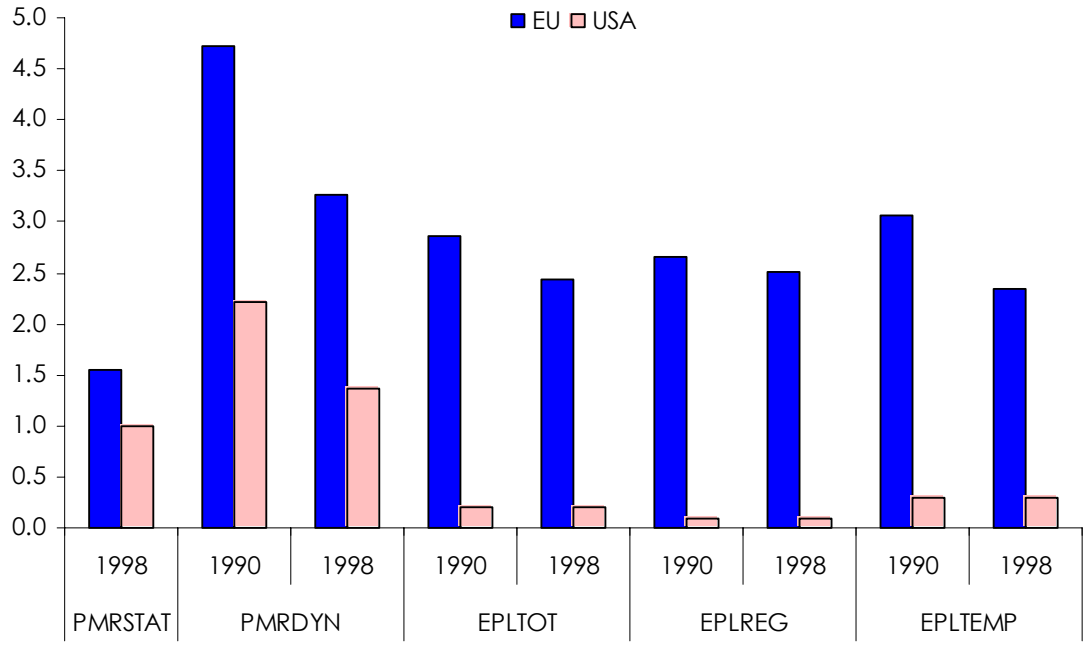
European countries relative to the US – with the exception of Greece[6]. In percentage terms US product markets were deregulated even stronger – despite of starting from an already deregulated position.

Table 2: Differences in regulation between Europe and the US

	PMRDyn			EPL total			EPL Regular contracts			EPL Temporary contracts		
	1990	1998	1998/1990	1990	1998	1998/1990	1990	1998	1998/1990	1990	1998	1998/1990
EU	4.73	3.26	-30.93	2.9	2.4	-15.00	2.7	2.5	-5.38	3.1	2.3	-23.36
USA	2.21	1.36	-38.54	0.2	0.2	0.00	0.1	0.1	0.00	0.3	0.3	0.00

Source: WIFO calculations using OECD database on Regulatory Indicators.

Figure 2: Decreasing differences in product & labour market regulation



Source: WIFO calculations using the OECD Regulatory Database. – PMR = Product market regulation, STAT = Static indicator, Dyn = Dynamic indicator (network industries), EPLTOT = Labour market regulation (all contract types), EPLREG = Labour market regulation (regular contracts), EPLTEMP = Labour market regulation (temporary contracts).

For labour market regulation (EPL), the difference between the US and Europe seems to be even larger. The US labour market is assessed as being practically unregulated, with an index

[6] OECD publishes also a second indicator which comprises domestic as well as external regulation, but is only available for 1998. According to this indicator (PMRSTAT) the US scores 1.0, while Europe's grade is 1.6. The least regulated product markets exist in the United Kingdom (0.5), the highest regulation is shown for Italy (2.3). We call it static since it is only available for one year: 1998. It contains 17 indicators of state control over business, barriers to trade and investment, and barriers to entrepreneurship (*Nicoletti – Scarpetta – Boylaud,* 1999).

of 0.2. The European labour market is graded at 2.4 on a scale from 0 to 6. Even the most market oriented European country – the United Kingdom – is more highly regulated than the US. Strict regulation is reported for southern European countries, as well as for France and Germany (3.1 and 2.8 respectively in 1998). European labour markets were moderately deregulated in the nineties, as is reflected by a decrease in the index from 2.9 to 2.4. Only minor changes occurred in regular contracts[7], the bulk of change took place via the deregulation of temporary contracts[8]. Regulation in the United Kingdom, Ireland, Denmark, and the Netherlands is no longer stricter than in the US for temporary contracts. The US did not change its – albeit low – degree of labour market regulation, neither for regular nor for temporary contracts.

Taken as a whole, this information illustrates how Europe's product and labour markets are still more highly regulated in comparison to the US, although the differences between the US and Europe have decreased for labour markets. For product markets the difference decreased in absolute terms but increased slightly if measured in relative terms.

Table 3: Indicators of macroeconomic policy in the EU and USA

	Deficit in % of GDP		Government expenditures in % of GDP		Taxes in % of GDP		Nominal short-term interest rates		Real short-term interest rates	
	EU	USA	EU	USA	EU	USA	EU	USA	EU	USA
1990	-4.77	-4.36	48.87	35.50	43.52	31.13	10.91	7.75	5.78	3.70
1991	-5.48	-5.05	50.07	36.21	44.66	31.17	10.83	5.53	5.41	1.82
1992	-5.83	-5.92	51.40	36.90	45.60	30.98	11.12	3.52	6.69	1.05
1993	-5.63	-5.02	52.41	36.23	46.77	31.22	8.43	3.08	4.85	0.67
1994	-5.27	-3.67	51.35	35.15	46.08	31.48	6.43	4.67	3.78	2.54
1995	-4.91	-3.09	51.22	35.01	46.31	31.93	6.62	5.97	3.70	3.71
Average 1990-1995	-5.32	-4.52	50.89	35.83	45.49	31.32	9.06	5.09	5.03	2.25
1996	-3.68	-2.22	50.90	34.56	47.22	32.35	5.10	5.46	2.77	3.45
1997	-2.12	-0.95	49.24	33.60	47.13	32.65	4.76	5.68	2.95	3.65
1998	-1.63	0.28	48.27	32.72	46.64	33.00	4.61	5.50	2.66	4.20
1999	-0.97	0.73	47.75	32.46	46.78	33.18	3.53	5.41	2.13	3.91
2000	-1.13	1.46	47.07	32.33	45.94	33.79	4.77	6.53	3.19	4.33
Average 1996-2000	-1.91	-0.14	48.65	33.13	46.74	32.99	4.55	5.72	2.74	3.91
2001	-1.48	-0.47	47.22	33.41	45.74	32.94	4.40	3.77	1.99	1.36
2002	-1.95	-3.18	47.43	34.78	45.48	31.60	3.48	1.80	0.99	0.66
Average 2001-2002	-1.72	-1.83	47.33	34.09	45.61	32.27	3.94	2.79	1.49	1.01
Average 1990-2002	-3.45	-2.42	49.48	34.53	45.99	32.11	6.54	4.97	3.61	2.70
Average 1996-2002	-1.85	-0.62	48.27	33.41	46.42	32.79	4.38	4.88	2.38	3.08
Difference 2002-1998	-0.32	-3.46	-0.84	2.06	-1.16	-1.40	-1.12	-3.70	-1.67	-3.54

Source: WIFO calculations using AMECO.

[7] The degree of regulation for permanent contracts is measured by the *procedural requirements (*delay) necessary before notice of dismissal can take place (prewarnings), notice and severance payments, penalties for unfair dismissals etc.

[8] The regulation of temporary contracts is assessed according to the reasons for which temporary working contracts are offered, maximum renewals, and maximum cumulated duration.

While the OECD database on regulation provides excellent information about the scope of regulations, it does not include all aspects of labour market flexibility and is in need of complementary information on the welfare system and the size of social spending[9]. The share of social spending in GDP increased for Europe from 25.5 % to 27.3 % (ESSOS database), partly reflecting higher unemployment and the use of early pension and disability schemes to combat unemployment[10]. This database does not allow comparisons with the US. According to the OECD database, public welfare spending is 24 % in Europe and 16.4 % in the US (*OECD,* 2003). These numbers depend on several statistical issues: whether or not benefits are taxed, whether they are paid as transfers or via tax deductions, and whether or not private spending is included. The difference is largest for gross public spending and smallest for net spending including private contributions (25.8 % vs. 23.4 %).

US fiscal and monetary policy is more growth oriented

US monetary policy in the nineties not only actively fostered price stability, but also assumed responsibility for economic growth and output stability. In the business trough of 1993 nominal interest rates amounted to 8.4 % in EU in contrast to 3.1 % in the US, real rates differed also by more than 4 percentage points (4.9 % vs. 0.7 %). In the recent recession, the US reduced interest rates early and courageously, in order to support economic growth, finally arriving at a Fed rate of 1 % in mid 2003 vs. 2 % in Europe. The US strategy was implemented by a monetary authority with a reputation of being tough and inflation-minded, which acknowledged its legal responsibility for stability and growth. It was administered by a chairman of the Federal Reserve Bank, who exerted his authority and actively accepted responsibility for the economic fate of his country. The fiscal deficits during the recession of 2001-2003 were not restrained by rigid policy rules. The US budget position switched from a surplus to a large deficit, the balance shifted between 1998 and 2002 by 3.5% in the US but only by 0.3 % for Europe (see Table 3). Fiscal policy in the US allowed automatic stabilisers to work further in 2003; it increased expenditure (inter alia for security and war) and implemented a generous long term tax reduction plan. The overall government deficit is now estimated to be well above 4 % of GDP, while in the European Union it is 2.5 %.

The US outperforms Europe in 14 of 16 long-run growth determinants

Table 4 applies a system of 16 indicators[11] to measure the investment of countries into those variables which theory and empirical studies have shown to be important for long-run growth. The set comprises indicators of research input and output, of education expenditures and

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[9] The inclusion of indicators on regulation as well as on social spending, is necessary since *Botero et al.* (2003) show that these institutions are no perfect substitutes and correlation is very weak in a sample of 85 countries (R = 0.0746).

[10] Its peak was 28.8 % in 1993.

[11] The system was developed in *Aiginger* (2002).

educational attainment, ICT share in production and ICT expenditures (as a proxy for the speed of diffusion of new technologies). The astonishing result is that in 1990, the US was leading in all 16 indicators. During the nineties, the EU began to catch up in five of them, ultimately surpassing the US in two, while the difference is still increasing for 11 indicators (see Table 4). The higher rate of growth in the US during the nineties and in more recent years comes of no surprise, once we are familiar with this evidence[12]. Figure 3 illustrates European spending or performance in relation to the US; the dotted line represents the beginning of the nineties, the continuous line the end. Each value within the unit circle indicates underinvestment in Europe relative to the US.

Table 4: Investment in future growth

	1990		1999		Lead of US (+) resp. EU (-) 1990	Change in favour of US (+) resp. EU (-) 1999
	EU	USA	EU	USA		
Indicators on R&D: input and output						
Total expenditure on R&D in % of GDP 1992/98	1.88	2.65	1.86	2.66	+	+
Business Enterprise Expenditure on R&D (BERD) in % of GDP 1992/98	1.20	1.98	1.15	2.04	+	+
Research intensity in manufacturing 1990/98	2.00	3.07	2.01	3.23	+	+
Publications per inhabitant 1992/99	6.15	9.52	8.14	9.27	+	-
Patents per resident 1990/97	2.24	3.63	2.48	4.48	+	+
Indicators on education system: input and output						
Percentage of the population that has attained at least upper secondary education by age group (1998)	53.00	87.00	70.00	88.00	+	-
Percentage of the population that has attained at least tertiary education, by age group (1998)	19.00	37.00	25.00	36.00	+	-
Indicators on ICT: production and use						
ICT expenditure in % of GDP 1992/2000	3.69	5.65	6.40	8.75	+	+
Information technology (IT) expenditure in % of GDP 1992/2000	1.69	2.97	2.71	5.50	+	+
Telecommunication (TLC) expenditure in % of GDP 1992/2000	2.00	2.67	3.69	3.25	+	-
PCs per 1000 inhabitant 1992/99	0.93	2.53	2.49	5.17	+	+
Internet users per 1000 inhabitant 1992/99	0.03	0.18	1.59	2.72	+	+
Cellular Mobile Subscribers per 100 capita 1992/99	1.52	4.25	39.59	31.16	+	-
Indicators on share of "progressive" industries						
Share of technology driven industries in nominal value added 1990/98	21.85	26.46	22.92	30.27	+	+
Share of skill intensive industries in nominal value added 1990/98	16.81	18.27	16.67	18.64	+	+
Share of ICT industries in nominal value added 1990/98	7.28	10.07	6.80	14.31	+	+

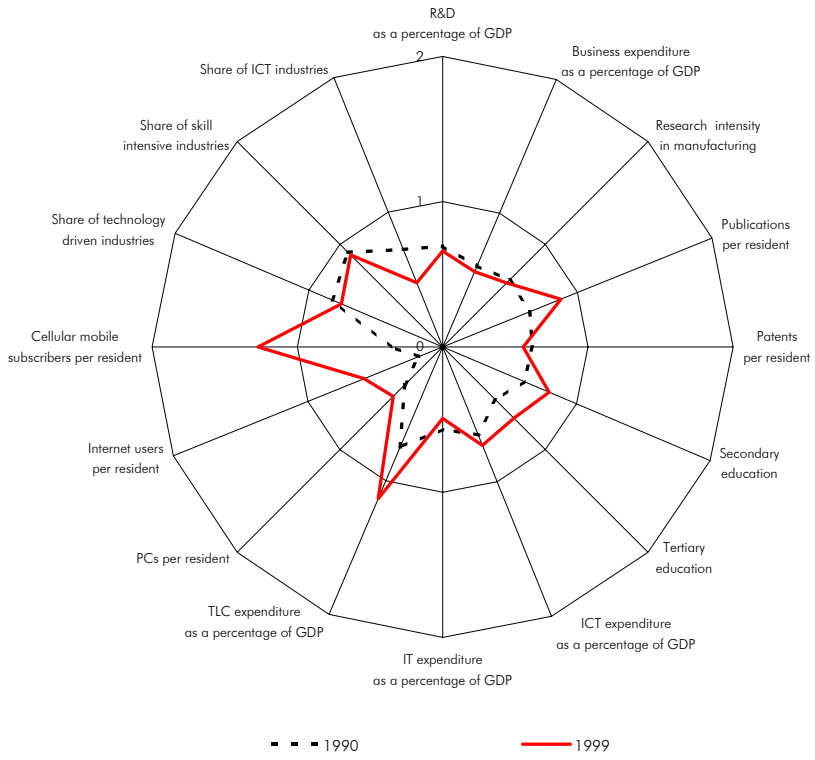
Source: WIFO calculations. – Remarks: 1990 (1999) means that year in the nineties for which the earliest (or latest) data are available (both are indicated following the name of the variable).
For the percentage with secondary and tertiary educations, the older (45-54) and the younger (25-34) age groups are compared.

Summing up the information in this section reveals that US policy differed during the nineties from that of Europe in all three policy sets. US markets were less regulated, with larger difference in the labour markets. Fiscal and monetary policy was more growth oriented in the US and the US economy invested more into the long run determinants of growth. The labour

[12] Some of the advantages of investment into future components of growth were already evident during past decades, when Europe did grow faster than the US. There are two explanations for this: first, per capita GDP as well as productivity, is still much lower in Europe, so that higher European growth contains an element of catching up, and secondly, it is argued that the European innovation system may have been well adapted to imitation and diffusion periods, while the US innovation system is better suited to periods witnessing the emergence of new general purpose technology like ICT (*Aiginger – Landesmann,* 2002).

market regulation declined, while differences in the macro policy and with respect to growth drivers appear to have widened. We will now take a look at differences in performance across Europe and compare these differences to the policy strategies in regulation and investment into future growth.

Figure 3: Growth drivers Europe vs. the USA



Source: WIFO calculations. – Remark: Each indicator outside the unit circle reveals superior performance of Europe vs. the USA.

4. Learning from European diversity: performance differences

Economic performance in Europe was in general disappointing during the nineties, but the differences between countries also became more evident. Looking at output growth, productivity and employment reveal two groups of countries with quite different performances. Examining this difference will help us to learn which of the policy differences between US and EU can explain performance differences between European countries.

The countries which performed better with regard to growth in output, productivity and employment are – if we let aside Ireland as a fascinating catching-up country – Sweden,

Finland and Denmark[13]. We therefore cluster these three countries together under the heading "top 3 countries". On the other hand there is a group of countries with less favourable performances: this group includes Germany, Italy and France; we call this group "big 3 countries", these are the three large continental European economies.

The grouping is based on a set of 25 indicators on growth of output, productivity, on employment, inflation and fiscal stability[14]; see Table 4 for the indicators and the last row for the performance ranking. It is reassuring that other studies also arrive at similar results. The structural data of the EU Commission, as well as the European Innovation Scoreboard of the European Commission ranks Sweden, Finland, and Denmark as top countries. These countries are also ranked – among the EU member countries – as the 1st, 2nd, and 3rd in the World Competitiveness Report 2002 of the World Economic Forum (WEF), and among the top countries in the ratings of the IMD (2003).

The growth difference between the top 3 and the big 3 amounts to 1½ percentage points for GDP and 3 percentage points for manufacturing. Productivity is accelerating for the top 3, and is decelerating for the large three. Employment is higher in the top 3, unemployment lower. The most impressive differences are in the fiscal indicators. The debt/GDP ratio was previously higher in the top 3 and is now 20 percentage points lower. Budget deficits used to be 5 % of GDP in each, now they are approaching the upper limit permitted by the European Stability Pact for each of the big continental economies while the top 3 enjoy surpluses. On the one hand, the improvement was the result of a strategy to limit expenditures, on the other hand the consequence of regaining growth.

[13] As seen from the indicator set Ireland would qualify as top performer too. We consider Ireland as a fascinating story of catching up. Its strategy combined low wages, taxes, and favourable treatment of foreign direct investment, with a successful policy of upgrading skills and promoting link between FDI and endogenous firms. However the policy cannot be repeated in other developed countries.

[14] For a more thorough explanation for the indicators used see *Aiginger* (2003).

Table 5: Economic performance across Europe

	Belgium	Den-mark	Germany	Greece	Spain	France	Ireland	Italy	Nether-lands	Austria	Portugal	Finland	Sweden	United Kingdom	Top 3	Large 3
Real growth of GDP																
Growth 1993/2002	2.0	2.5	1.3	2.8	2.8	1.9	7.9	1.6	2.7	2.0	2.5	3.3	2.9	2.8	2.9	1.6
Acceleration*	-0.3	0.8	-1.8	1.4	-0.4	-0.4	4.3	-0.7	-0.2	-0.7	-1.0	1.7	1.1	0.3	1.2	-1.0
Macro productivity growth																
Growth 1993/2002	1.4	1.8	1.1	2.1	1.0	1.3	3.6	1.3	1.1	1.7	1.7	2.5	2.7	1.9	2.4	1.2
Acceleration*	-0.6	0.5	-1.2	1.3	-0.8	-0.9	0.1	-0.4	-0.5	-0.6	-1.3	-0.1	1.0	0.1	0.5	-0.8
Manufacturing growth																
Growth 1993/2002	1.7	3.2	1.2	1.7	2.4	1.8	13.1	1.4	1.5	4.2	2.5	6.1	3.8	0.9	4.4	1.4
Acceleration*	-0.1	0.5	-1.4	1.1	0.7	0.3	6.0	-0.9	-0.6	1.1	-0.9	4.5	1.6	-1.0	2.2	-0.7
Productivity growth in manufacturing																
Growth 1993/2002	3.1	3.4	3.2	3.7	3.4	0.6	14.1	-0.2	1.9	4.7	3.6	7.2	2.8	1.4	4.5	1.2
Acceleration*	0.4	0.8	0.3	3.4	0.1	-0.9	5.3	-3.3	-1.6	1.4	-0.7	4.7	-2.8	-2.7	0.9	-1.3
Potential output																
Growth 1993/2002	2.1	2.2	1.7	2.6	2.9	2.0	7.5	1.6	2.8	2.2	2.8	2.7	2.4	2.5	2.4	1.8
Acceleration*	0.0	0.6	-0.7	1.4	0.2	-0.1	4.0	-0.6	0.4	-0.2	-0.3	0.5	0.4	0.1	0.5	-0.5
Total Factor Productivity																
Growth 1993/2002	0.7	1.6	0.4	1.4	0.4	0.9	3.6	0.8	0.9	0.8	0.7	2.7	2.4	1.6	2.2	0.7
Acceleration*	-0.6	0.6	-1.4	1.4	-0.7	-0.4	1.2	-0.3	-0.4	-0.7	-1.2	1.3	1.4	0.1	1.1	-0.7
Employment rate																
Average 1993-2002	57.5	76.2	67.7	54.3	54.1	61.1	60.6	56.8	71.3	72.9	69.0	63.2	73.2	74.9	70.8	61.9
Absolute change 1993-2002	2.7	2.9	0.6	1.6	6.5	3.3	13.7	1.9	9.8	-0.6	1.6	3.1	-2.3	4.2	1.2	2.0
Unemployment rate																
Average 1993-2002	8.6	5.8	8.4	10.0	15.4	10.7	9.0	10.8	4.5	4.1	5.7	12.5	7.7	7.1	8.7	9.9
Absolute change 1993/2002	0.2	-4.1	1.8	2.0	-3.5	-1.3	-11.0	0.3	-2.6	0.9	0.8	-2.6	-0.7	-4.7	-2.5	0.3
Inflation rate																
Average 1993-2002	1.9	2.2	1.9	6.6	3.4	1.5	2.9	3.1	2.6	2.0	3.7	1.6	1.6	2.4	1.8	2.2
Absolute change 1993/2002	-0.8	0.3	-2.6	-12.3	-2.4	-0.5	1.4	-2.7	0.3	-2.2	-5.4	-1.4	0.1	-2.1	-0.3	-1.9
Budget deficit in % of GDP																
2002	-0.1	-1.8	3.3	1.7	0.4	3.4	1.7	2.3	1.5	0.6	3.0	-4.4	-0.8	1.3	-2.3	3.0
Absolute change 1993/2002	-8.9	-2.4	-1.1	-6.8	-5.9	-1.4	-0.5	-8.6	-3.2	-1.9	-2.8	-6.1	-6.4	-3.6	-5.0	-3.7
Public debt in % of GDP																
2002	105.3	45.2	60.8	97.8	54.0	59.5	33.3	106.7	52.6	67.6	58.1	42.7	52.4	38.4	46.8	75.7
Absolute change 1993/2002	-27.3	-21.1	17.9	17.1	7.1	20.0	-66.9	-1.0	-25.2	10.4	3.7	2.1	-10.7	-0.8	-9.9	12.3
Taxes in % of GDP																
2002	50.1	57.1	45.3	44.7	39.3	50.6	32.6	45.2	45.9	51.3	43.2	53.7	59.1	39.4	56.6	47.0
Absolute change 1993/2002	4.2	-0.8	1.4	8.7	-2.8	2.3	-10.4	-0.6	-5.4	-1.0	2.6	-7.3	-5.4	-1.2	-4.5	1.0
GDP per capita at PPP 2002																
1000 EURO	26.1	27.2	24.6	15.9	20.2	24.5	29.3	24.5	27.0	26.4	16.6	24.4	24.3	24.7	25.3	24.5
Overall performance ranking**	9	3	14	7	10	12	1	13	6	8	11	2	4	5		

Source: WIFO calculations using AMECO. – * Acceleration: growth p.a. 1993-2002 minus growth p.a. 1983-1992; ** Ranking according to 25 indicators (unweighted).

5. Policy differences between the top 3 performers and the 3 big countries

In this chapter we analyse differences in the policy strategies of the top 3 and large 3 countries.

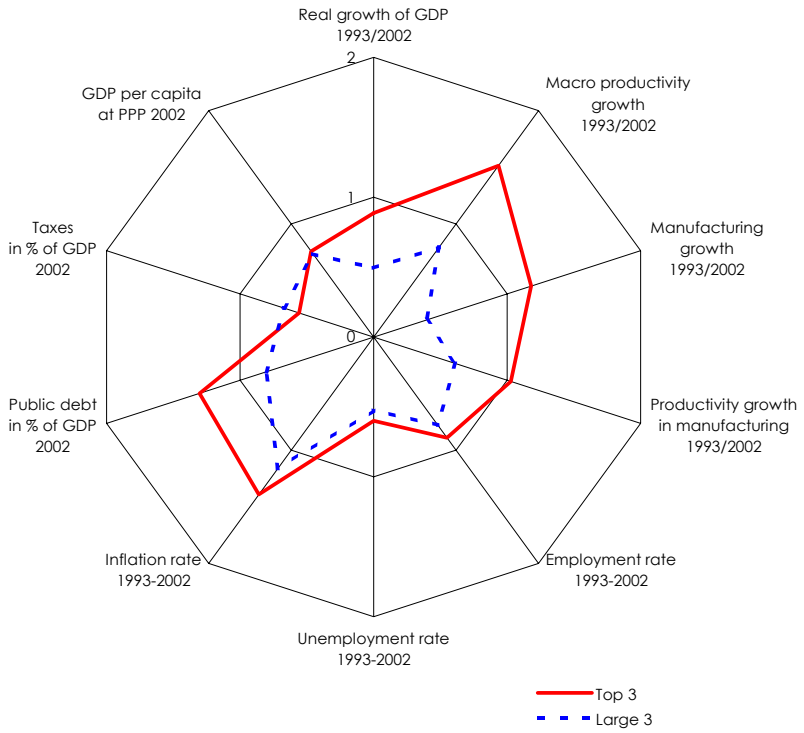
Product and labour market reforms

Looking at the indicators of product and labour market regulation, the surprising result[15] is that the top 3 countries had higher welfare costs, but less regulated labour markets already at the start of the nineties relative to big 3 and to EU average and also less regulated product markets in network industries.

[15] This is surprising from the joint hypothesis that regulation plus welfare costs are detrimental to growth. See however *Botero* (2003) for the low correlation between welfare costs and labour market regulation or *Bjorklunf – Freeman* (1994) or *Marterbauer* (2000) that Sweden is a work fare country.

The OECD indicator of product market regulation – which is available only for 1998 (PMRSTAT) – shows that the top 3 countries are approximately at the EU average[16]. More exactly, Denmark and Sweden are rated as marginally less regulated (1.4), while Finland is rated as slightly more regulated than the EU average (1.7 vs. 1.6), due to remaining state control over business enterprises. The product markets of the large countries are more regulated. Germany is slightly below the EU average, while France and Italy have highly regulated product markets.

Figure 4: Performance Top 3 and Large 3 in Europe vs. USA



Source: WIFO calculations using AMECO. – Top 3: Denmark, Finland, Sweden; Large 3: Germany, France, Italy.

[16] The data set supplies an overall indicator of product market regulation for 1998 (since it is only available for one year we call it static, PMRSTAT). It contains 17 data on the state control of business enterprises (e.g. size of public sector, voting rights, legislative control, price control, and demand and control regulation in general, barriers to entrepreneurship, and on barriers to international trade and investment). A varying indicator is measuring the regulation of network industries (electricity, telecom, gas etc.), we label it PMRDYN.

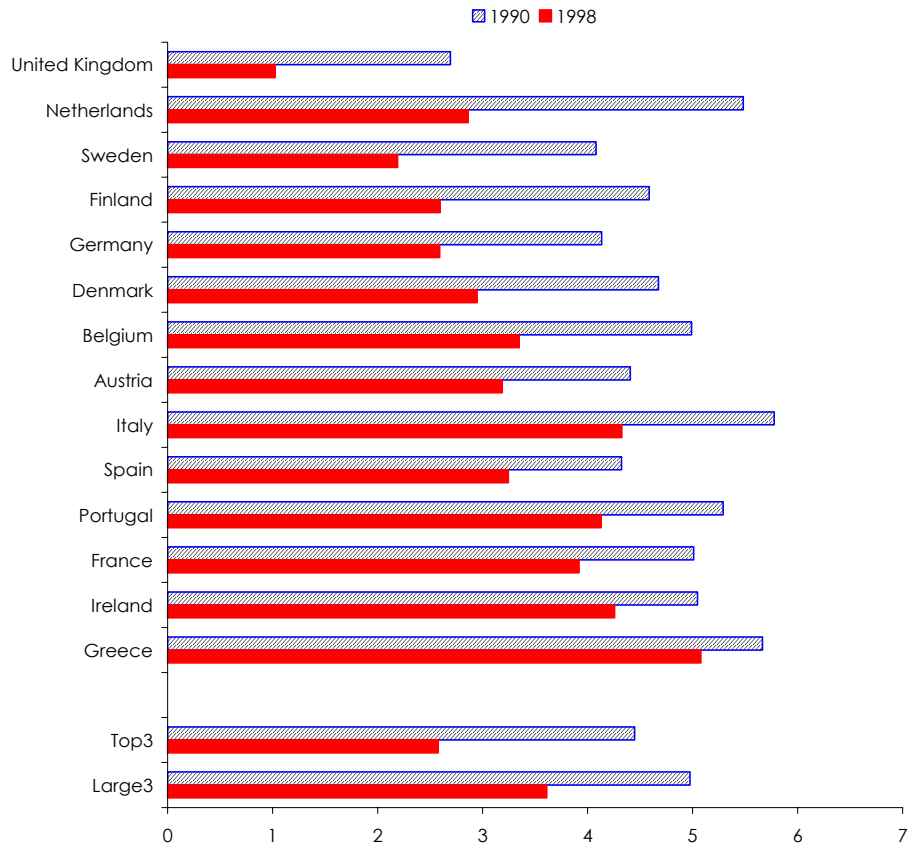
Table 6: The regulation of product and labour markets in different European countries

	PMRSTAT	PMRDYN			EPL total			EPL Regular contracts			EPL Temporary contracts		
	1998	1990	1998	1998-1990	1990	1998	1998-1990	1990	1998	1998-1990	1990	1998	1998-1990
Belgium	1.9	4.99	3.35	-32.9	3.0	2.1	-30.0	1.6	1.6	0.0	4.4	2.6	-40.9
Denmark	1.4	4.68	2.95	-36.9	2.4	1.5	-37.5	1.8	1.7	-5.6	3.1	1.2	-61.3
Germany	1.4	4.13	2.59	-37.3	3.6	2.8	-22.2	2.9	3.0	3.4	4.2	2.5	-40.5
Greece	2.2	5.67	5.08	-10.3	3.6	3.5	-2.8	2.8	2.6	-7.1	4.5	4.5	0.0
Spain	1.6	4.32	3.24	-24.9	3.7	3.2	-13.5	3.8	2.8	-26.3	3.5	3.7	5.7
France	2.1	5.01	3.92	-21.8	2.7	3.1	14.8	2.4	2.5	4.2	3.0	3.7	23.3
Ireland	0.8	5.05	4.26	-15.6	1.0	1.0	0.0	1.7	1.7	0.0	0.3	0.3	0.0
Italy	2.3	5.78	4.32	-25.1	4.2	3.3	-21.4	3.0	3.0	0.0	5.3	3.6	-32.1
Netherlands	1.4	5.48	2.86	-47.8	3.1	2.4	-22.6	3.1	3.2	3.2	3.0	1.5	-50.0
Austria	1.4	4.41	3.19	-27.7	2.4	2.4	0.0	2.8	2.8	0.0	2.0	2.0	0.0
Portugal	1.7	5.29	4.13	-22.0	4.2	3.7	-11.9	5.0	4.3	-14.0	3.5	3.2	-8.6
Finland	1.7	4.59	2.59	-43.4	2.2	2.1	-4.5	2.5	2.3	-8.0	1.9	1.9	0.0
Sweden	1.4	4.08	2.19	-46.3	3.4	2.4	-29.4	3.1	3.0	-3.2	3.8	1.8	-52.6
United Kingdom	0.5	2.69	1.02	-62.0	0.5	0.5	0.0	0.7	0.7	0.0	0.3	0.3	0.0
EU	1.6	4.73	3.26	-30.9	2.9	2.4	-15.0	2.7	2.5	-5.4	3.1	2.3	-23.4
USA	1.0	2.21	1.36	-38.5	0.2	0.2	0.0	0.1	0.1	0.0	0.3	0.3	0.0
Top 3	1.5	4.45	2.58	-42.0	2.7	2.0	-25.0	2.5	2.3	-5.4	2.9	1.6	-44.3
Large 3	1.9	4.97	3.61	-27.4	3.5	3.1	-12.4	2.8	2.8	2.4	4.2	3.3	-21.6

Source: WIFO calculations using the OECD Database on Regulatory Indicators.

Figure 5: Product Market Regulation 1990 and 1998

Countries ordered according to largest relative decrease in regulation



Source: WIFO calculations using the OECD Database on Regulatory Indicators.

Network industries (PMRDYN) were slightly less regulated in the top countries in 1990 and were subsequently liberalized quicker than in the large countries. All three top economies are now less regulated than the EU average. Out of the big 3 continental countries, Germany has a below average regulation of network industries, while Italy and France are assessed as highly regulated. France – together with Spain – has the lowest speed of liberalisation. Average regulation is now 2.6 in the top 3 countries vs. 3.6 in the large 3.

As far as labour market regulation (EPL total)[17] is concerned, the top 3 countries had below average positions already in 1990, with lower levels of regulation in Finland and Denmark and higher levels as compared to the EU average in Sweden. During the nineties, Denmark, Sweden reduced labour market regulation significantly, and Finland lowered the degree of regulation marginally. The group average decreased faster than in the EU. The change was mainly due to the fast deregulation of temporary contracts, for which the regulation indicator dropped from 2.9 to 1.6[18]. For regular contracts, only a few changes were reported[19]. Labour market regulation had been above average in the big countries and the difference to the top countries widened. Regulation of regular contracts were tightened against the general trend in Germany and France, and kept at its high level in Italy. Temporary contracts were deregulated in Germany and Italy, but not at a speed similar to that in the top countries, France increased regulation also for temporary contracts.

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[17] The data set contains 15 indicators of strictness of employment protection, grouped into workers with regular contracts and workers with fixed term contracts or temporary work agencies.

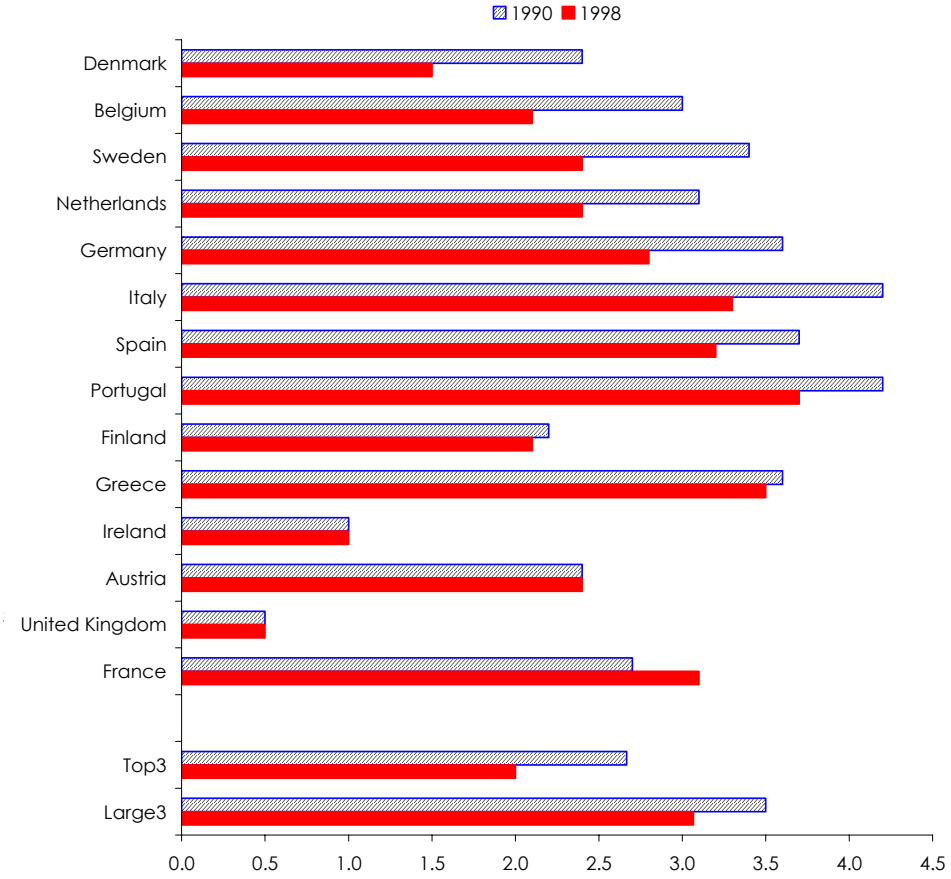
For fixed contracts, EPL measures procedural requirements (delay before notice of dismissal can start e.g. prewarnings, written statements of reasons, third party notification or consulting, approval of third party needed); Notice and severance payment, and standards of or penalties for unfair dismissal (Appropriative standards, length of (unconditional) trial period, legal penalties).

For temporary contracts, EPL contains: reasons for which temporary contracts (TWA) can be offered, maximum renewals, and maximum cumulated duration.

[18] Examples for changes regarding temporary contracts are: for a number of countries (e.g. B, DK, G, I, NI, NW, S) either fixed term contracts or contracts under TWAs or both can now be used in a wider range of situations than in the early nineties. In Denmark and Sweden, all restrictions on the types of work for which TWA employment is legal have been removed . . . (*Nicoletti,* 2002, p. 49). France has restricted the types of jobs that can be offered by TWAs and reduced the maximum number of successive fixed term contracts. In DK the restrictions on the number of renewals have been removed. And the maximum duration of successive contracts has been increased in D, B, DK, J, I, NL (*Nicoletti et al.,* 2000, p. 50).

[19] Changes regarding permanent contracts were made in Finland, Portugal, and Spain, which have significantly waived regulation for permanent workers (*Nicoletti,* 2002, p. 49). In Finland, the delay between the start of notice and the notice period itself were reduced, and procedures somewhat simplified (*Nicoletti,* 2002, p. 49).

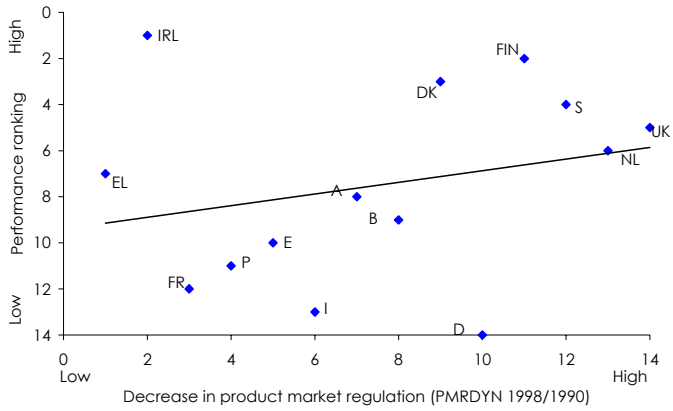
Figure 6: Labour market regulation 1990 and 1998
Countries ordered according to largest relative decrease in regulation



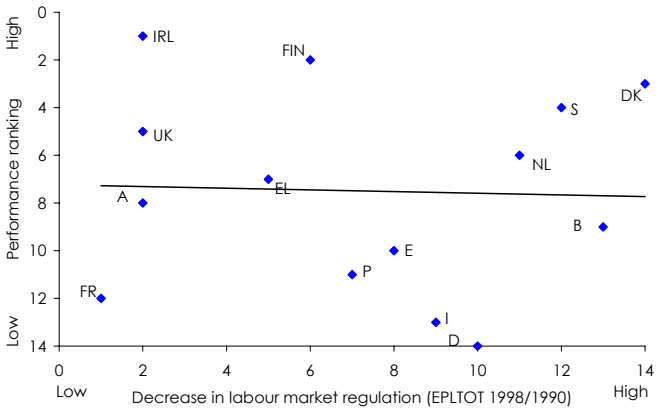
Source: WIFO calculations using the OECD Database on Regulatory Indicators.

Figure 7: Performance and regulatory change (rank correlation)

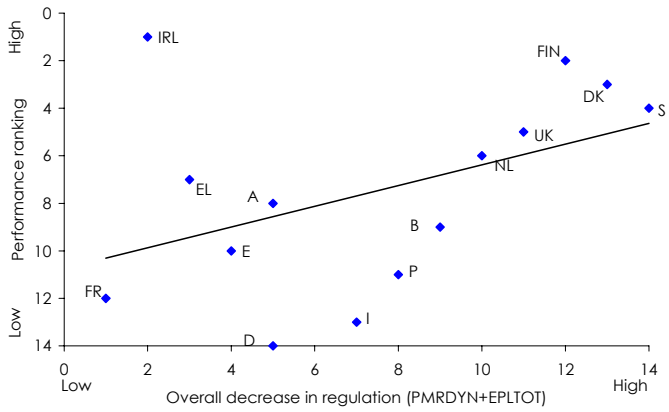
Regulatory change of product market (network industries)



Regulatory change of the labour market (all contracts)



Overall change of regulation (product and labour market)



Source: Performance ranking see Table 5, regulatory change ranked by relative decrease in OECD indicators on regulatory change.

If we look at the whole picture for all EU countries (see Figure 7), we see that the contribution of market regulation for explaining performance differences exists, but is limited. Correlations between rankings in regulatory reforms and in performance are positive (in the sense that lower regulation is associated with better performance). This relation is however (i) not significant, and (ii) it is more driven by product market liberalisation than by labour market regulation and (iii) was closer in 1990. We have to keep in mind the usual caveats regarding correlations with respect to the direction of causality and the problem of omitted variables.

The OECD database on regulatory change focuses on formal regulation. In the joint hypothesis of inflexible markets and comprehensive welfare regulation, welfare costs and taxes are important too. It therefore makes sense to look at indicators of welfare costs separately. Social outlays in % of GDP amounted to 29 % in 1990 in the top 3 countries, above the EU average as well as higher than in the big countries (26 %). They decreased to 28.8 % in 2000. The large countries increased their share by 2 percentage points to 28.1 %, a position 0.8 percentage points above the EU average. Decreasing outlays in the top countries plus increasing shares of social costs relative to GDP closed the gap from 3.5 percentage points to 1.5 percentage points.

The overall conclusions which can be drawn from these indicators are that the top countries had a lower labour market regulation already at the start of the nineties, and then deregulated faster than the big continental economies. Social costs relative to GDP were higher at the start of the nineties but decreased, while they increased in the big continental countries. These contrary trends closed the difference in social expenditures from 3.5 percentage points to 1.5 percentage points. The top countries deregulated product markets, specifically for network industries, more strongly than the large countries. Two of the large continental countries are lagging behind in labour as well as in product market reforms, the third in labour markets[20].

Differences in macroeconomic policy

Within Europe, monetary policy has also varied from country to country, first and most prominently exemplified by the more restrictive policy of the German Bundesbank. With the upcoming Monetary Union on the horizon, all countries had to fulfil the convergence criteria. High inflation countries (France, Italy) specifically had to become more restrictive. Sweden and Finland went through strong devaluations during the first half of the nineties. Denmark continued to appreciate its currency parallel to the German currency. Of the large countries, the currency of Italy initially continued to depreciate, although this trend was reversed in the

[20] There are some labour market reforms which are not reflected in the indicators of regulatory change. These reforms are associated with labels like carrot and stick strategies, welfare to work measures or flexicurity. The reforms are often accompanied by organisational changes, such as decentralisation, private competition, and stricter controls for entering into disability or pension schemes. The top countries had and have high replacement ratios (specifically for low incomes), which have been decreased only marginally.

mid nineties. Germany and France continued to appreciate their currencies, before depreciating slightly during the process of entering the Monetary Union.

With regard to fiscal policy, there is a difference between the top and large countries, insofar as the top countries are characterised by high government expenditures and – due to the effects of automatic stabilisers in high tax economies – highly counter-cyclical budgets. Government expenditures relative to GDP in the top countries first increased and then dropped from 62 % in 1995 to 54 % in 2002. Government expenditures decreased much less – from to 53 % of GDP to 50 % – in the large countries. Debt returned in the top countries to the level of 1990[21], in the large countries the debt ratio increased from 57 % (1990) to 76 % in 2002. [22] In 2002, the budget was in surplus in the top countries. Deficits were at the brink or outside of the range defined by the stability pact criteria in Germany, France and Italy.

Investment in growth drivers

Using the same dataset which showed the underperformance of Europe versus the US we find that the top three European countries outperformed the large three continental economies in 14 of 16 growth drivers. Specifically impressive is the dynamics in research input. The large countries had a research ratio of 1.7 % of GDP in 1981, higher than the top 3 countries (1.5 %). These lines crossed around 1988 and today the top countries have a research ratio of 3 %, thereby surpassing also the US. The large countries increased their research expenditures up to 1993; since then they have decreased to 2 %, which is one third lower than in the top group (Figure 8). Apart from R&D expenditures, the top countries are leading by a wide margin in publications per resident, educational attainment, and the diffusion of information technologies. For most indicators, the difference emerged or widened during the nineties. Large countries are leading only in two indicators, namely the share in high tech production and skill intensive industries.

When countries are ranked according to growth drivers, Sweden places first. It is among the three best performing countries in 15 of 16 indicators and leads in seven e.g. research expenditures, publications, and IT expenditures. Finland ranks second and made the greatest leap forward during the nineties: it excels in educational quality and in the share of workers with tertiary educations. It increased R&D in relation to GDP from 1.2 % to 3.4 % in 20 years. Denmark emphasised the diffusion of technology and clusters in information technology, health and biotechnology. In the large economies, the R&D ratio is falling slightly. In the overall ranking, Germany placed 3rd in 1990 and is now 6th, France and Italy maintained their unsatisfactory positions (ranks 6 and 11, respectively).

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[21] Debt in percent of GDP was 38 % in 1990 as well as in 2002, after a peak of 68 % in 1993-94.

[22] Which part of the development was due to automatic stabilisers, and which to discrete policies is not easy to tell. Cyclically adjusted deficits try to compensate for the cyclical effect. However, even adjusted time series are well known for their incorporation of a cyclical element.

Table 7: Differences between top and large countries in investment in growth drivers

	Average over the nineties			Change 2000 vs. 1990			The nineties relative to US	
	Top 3	Big 3	Top 3 vs. Big 3	Top 3	Big 3	Relative improvement Top 3 vs. Big 3	Top 3	Big 3
Indicators on R&D: input and output								
Total expenditure on R&D in % of GDP 1992/98	2.58	1.95	+	0.75	0.00	+	0.94	0.75
Business Enterprise Expenditure on R&D (BERD) in % of GDP 1992/98	1.76	1.18	+	0.48	-0.12	+	0.90	0.60
Research intensity in manufacturing 1990/98	2.44	1.89	+	0.49	-0.12	+	0.80	0.62
Publications per inhabitant 1992/99	12.92	6.15	+	3.70	1.67	+	1.37	0.65
Patents per resident 1990/97	3.69	2.73	+	0.61	0.42	+	0.91	0.67
Indicators on education system: input and output								
Percentage of the population that has attained at least upper secondary education by age group (1998)	72.50	60.17	+	-3.00	-3.67	+	0.86	0.72
Percentage of the population that has attained at least tertiary education, by age group (1998)	27.50	17.33	+	0.33	-0.67	+	0.78	0.50
Indicators on ICT: production and use								
ICT expenditure in % of GDP 1992/2000	5.43	4.29	+	2.99	2.30	+	0.77	0.61
Information technology (IT) expenditure in % of GDP 1992/2000	2.86	2.01	+	1.72	0.85	+	0.68	0.48
Telecommunication (TLC) expenditure in % of GDP 1992/2000	2.57	2.27	+	1.28	1.46	-	0.89	0.79
PCs per 1000 inhabitant 1992/99	2.67	1.50	+	2.68	1.55	+	0.74	0.41
Internet users per 1000 inhabitant 1992/99	1.35	0.36	+	3.58	1.27	+	1.20	0.32
Cellular Mobile Subscribers per 100 capita 1992/99	27.38	11.70	+	51.15	37.41	+	1.78	0.76
Indicators on share of "progressive" industries								
Share of technology driven industries in nominal value added 1990/98	18.13	23.09	-	5.23	0.04	+	0.65	0.83
Share of skill intensive industries in nominal value added 1990/98	18.35	17.72	+	0.03	-0.43	+	1.03	0.99
Share of ICT industries in nominal value added 1990/98	7.44	7.20	+	4.36	-1.36	+	0.65	0.63

Remarks: For the percentage with secondary and tertiary educations, the older (45-54) and the younger (25-34) age groups are compared. Large European countries: Germany, France, and Italy. Leading European countries: Sweden, Finland, Denmark.

The overall correlation between the performance ranking and the ranking for changes in future investment in growth is highly significant. The European economies with the best performances have increased their investments in growth drivers. However, a significant correlation between performance and growth is no final proof of causality; it could be that high growth enables research and low growth limits investment into future growth. Analyses of the discrete policies in Sweden, Finland, Denmark and the Netherlands promoting education, research, clusters and information technology, reveals that the focus on technology policy was initiated in the late eighties, and growth accelerated in the mid nineties. This indicates that reverse causation was not the main channel[23].

[23] If we compare the top three European countries with the US, we see that they have improved their positions relative to the US for thirteen of 16 indicators. The leading European countries surpassed the US in publications per inhabitant and in the number of Internet users (in addition to mobile phones and telecom expenditures, for which Europe as total entity is also ahead). The only areas where the top three European countries are not improving their relative positions are patents, the share of IT expenditures and the share of ICT industries in production. The top three European countries are falling back marginally in their shares of skill intensive industries. In contrast, the large three economies are lagging behind the US in 14 of 16 indicators and have improved their position in only 4.

Figure 8: Differences between top 3 and the big 3 in GDP and research

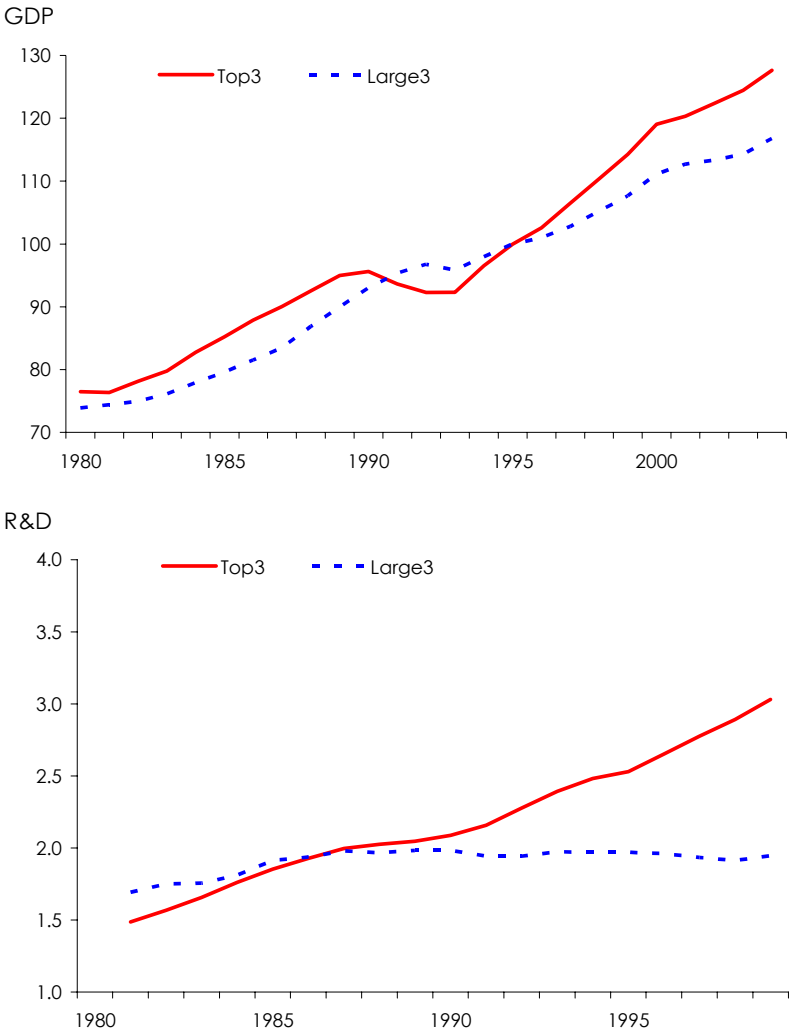
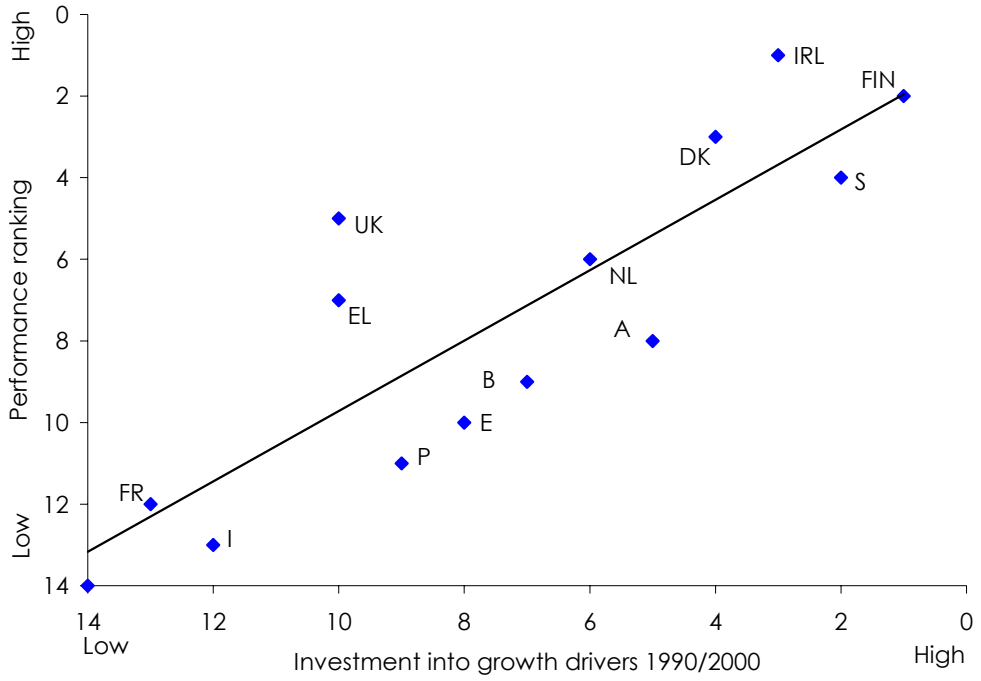


Figure 9: Performance and increasing investment in growth drivers



Remark: Performance ranking according to Table 5, ranking for growth drivers are derived from change in indicators in Table 7.

6. Summary

(1) Growth in output and productivity in Europe has fallen below that of the US in the nineties following decades of catching up. Disappointing growth rates have extended into the most recent years. Many analysts and specifically publications from the OECD, IMF and the European Commission single out inflexible labour markets and excessive welfare payments as the most important reason for European underperformance during the nineties.

(2) Structural or microeconomic policies, which influence the working of markets, are an important policy area. Stricter regulation of labour and product markets and higher welfare costs are major differences between the US and the EU. They lead to high costs, high tax rates and expensive labour in Europe. Our analyses confirms the impact of regulatory reforms on macroeconomic performance, but cast doubt on the hypothesis that this is the single most important difference between US and Europe and between good and bad performance casts out of at least three reasons:

- firstly the difference in labour market regulation between the US and the EU decreased in the nineties, while the difference in two other policy areas increased, namely in macro economic policy and in investment into growth drivers (research, education, ICT),
- secondly the most successful countries in Europe in the nineties were countries with comprehensive welfare systems. These countries had no excessive labour market regulation in the beginning but nevertheless fine tuned institutions and regulations at the same time keeping the core elements of the comprehensive welfare system.
- thirdly changes in regulation are weakly related to growth, while changes in investments into growth determinants are closely related to country growth in the nineties.

(3) US growth outperformed European growth in the nineties by about 1 percentage point per year. This higher growth of output was accompanied by a much higher growth in employment in the first part, and by accelerating productivity in the second. Productivity catching up of Europe – which had occurred for several decades – stopped and was reverted for output per worker and per hour.

Different performance can be explained by three policy areas: differences in market regulation, in macroeconomic policy and in investment into determinants of long run growth. Product markets and even more significantly labour markets were higher regulated in Europe at the beginning of the nineties. Europe deregulated in both areas in the nineties, narrowing the gap in labour market regulation towards the US. Macroeconomic policy was more growth oriented in the US. The emphasis on growth and the willingness to counteract the private business cycle increased in the US, while it decreased in Europe due to persistent deficits, Maastricht criteria and rules of the growth and stability pact. Investment into future

growth was higher for all 16 indicators at the beginning of the period in the US, the difference decreased for five and increased for 11 indicators.

(4) The evidence that market regulation is important, but may not be the sole culprit for low growth is accentuated if we look at performance differences in Europe. Defining performance according to a broad set of indicators of output growth, productivity, employment and stability, reveals that Sweden, Finland and Denmark are Europe's top performers aside with Ireland which we consider as a special case a successful catching-up story. In contrast economic dynamics in the large continental economies of Germany, France, and Italy were particularly disappointing. The top countries achieved higher growth in output and productivity, have higher employment and lower unemployment rates. They enjoy budget surpluses, while the three large continental economies have high deficits.

(5) Looking at regulation and market flexibility, the first surprise is that the top countries – which are usually considered as comprehensive welfare countries – had a higher share of social expenditures to GDP, but had a lower labour market regulation already at the start of the nineties, and then deregulated faster than the big continental economies. The top countries deregulated temporary contracts, while maintaining by and large their strict regulation for regular contracts. Replacement rates for unemployment were reduced somewhat, but remained high; obligations to the unemployed were increased and combined with training offers. The top countries deregulated product markets, specifically for network industries, more strongly than the large countries. Two of the large continental countries are lagging behind in labour as well as in product market reforms, the third in labour markets. Social costs relative to GDP decreased in the top countries, while they increased in the big continental countries, narrowing the difference in social expenditures from 3.5 percentage points to 1.5 percentage points

These differences between successful and slow growing countries are supportive for the claim that careful fine tuning of incentives and enforcement of competition is important for growth. However the remaining regulation and welfare outlays are considerably above the level in US, while performance is rather close. There is a weak correlation between performance and overall regulation in 1990, but not for changes in regulation.

(6) The difference between top and large countries in investment in growth drivers is large and increasing. The top countries outperform the large countries in 14 of 16 determinants of long-run growth. The data set contains data regarding research input and output, education expenditures and educational attainment of the workforce, expenditures on information technologies and the diffusion of PCs and the Internet. The difference increased in the nineties. Specifically telling is the dynamics of research input. The large countries had a research ratio of 1.7 % of GDP in 1981, while the top 3 lagged at 1.5 %. These lines crossed at some time around 1988 and today the top countries have a research ratio of 3 %, which is larger than in the US. Research expenditures in the large countries increased up to 1993; since then, they have been decreasing slightly. According to the latest figures they amounted to

2 %, or one third lower than the top group. The top three surpass the US in four indicators: telecom expenditures, publications, Internet, and cellular phone use. The correlation between the performance ranking and the ranking for increasing investment in growth drivers is highly significant.

(7) Analysing the differences in performance and in strategies, first, between the US and Europe and secondly, between the best performing countries in the EU versus the big economies shows that success depends on all three strategy sets. The liberalisation of product markets and the flexibilisation of labour markets are important parts of the strategy. The Northern European welfare states demonstrated that this can be achieved by means of consensual strategies, combining the advantage of flexibility for firms with security and training for the employees, maintaining the core elements of the welfare state while improving incentives. But increasing the flexibility of markets is only a necessary part of the strategy. Increasing investment into future growth is the sufficient condition for boasting economic growth and increasing productivity. For this set of variables, the difference between the US and Europe as well as that between the top and the low EU member countries is large and increasing. A growth-oriented macroeconomic policy is supportive, specifically in the period during which flexibility is being increased and investment in future growth has not yet started or is not yet showing results. A one-sided policy which focuses exclusively on making the labour market more flexible is risky and will at least take a very long time before it can boost growth.

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