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The Experiences of Portugal, Spain
and Greece in the Nineties**

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Abstract: Economic performance in developed economies diverged in the nineties, with some countries enjoying high growth in output and accelerating growth in productivity. Ireland excelled in many respects and some Nordic European countries recovered from a serious crisis and successfully regained strong growth rates. In general the nineties were a disappointing decade for Europe as compared to the eighties as well as to the USA. This article investigates the performances of the three southern peripheral economies, Spain, Portugal and Greece, over the long run but specifically in the nineties. It then relates performance to indicators of cost, regulation and investment into future growth. The convergence process is different in speed, scope and time pattern in the three countries. Long term growth is about one percentage point higher in all three countries than in the EU. Convergence had been strong in the sixties, disappointing and very different for the three countries in the seventies and eighties. In the difficult period of the nineties and including the crisis of 2000/2003 the three southern peripheral countries successfully resumed a catching-up strategy. The growth differential in the nineties is however much smaller than in Ireland, it is less for productivity than for real growth and per capita income.

Keywords: convergence, catching up, periphery, economic performance, growth determinants

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1. Introduction and plan of the paper

It is now well documented that the nineties were a disappointing decade for Europe. Macroeconomic growth decelerated, and catching up in productivity versus the US as measured by GDP per capita came to a halt, or was set into reverse if measured by GDP per worker and per hour (see Table 1)¹. The objective of this article is to investigate how the low income, peripheral countries in Europe performed throughout this difficult period. The performances of Spain, Portugal and Greece are compared to European development in general and to a certain extent also to Ireland's more successful performance.

Previous work has shown (Aiginger, 2002, 2003) that economic growth varied across EU member countries. A group of Nordic countries enjoyed high growth (after experiencing crises in the eighties or in the nineties), while the three big continental economies achieved disappointingly slow rates of growth. In this paper, we investigate the group of southern European countries with low income levels per capita, namely Portugal, Spain and Greece, and compare their performances with those of the top countries and the big continental countries. The first group includes Sweden, Finland and Denmark; the second group consists of Germany, France and Italy. The third group comprises the three southern European economies and started with a below-average level of income. Of the remaining countries, Ireland is specifically interesting, since despite the fact that its income per capita was among the lowest in Europe up to the eighties, it now enjoys now a top position in GDP per

¹ Aiginger et al. (2001), Aiginger (2002), Aiginger, Landesmann (2002), European Commission (2001, 2002), Gordon (2002), OECD (2001, 2003). See also Annex 1.1 for literature on European and US performance.

capita². The United Kingdom is difficult to categorise, since it lost its considerable advantage in GDP per capita over the course of the past decades, but regained some of the loss during the nineties. Belgium and Austria enjoy high productivity and per capita income, but appear to have lost momentum during the nineties. The Netherlands did perform quite well, but the old problem of dependence on price competition has lately recurred.

Table 1: Europe underperforms relative to the US

	Growth of real GDP		Productivity growth per worker		Employment growth	
	EU	USA	EU	USA	EU	USA
1991-1995	1.55	2.39	1.98	1.33	-0.42	1.05
1996-2000	2.65	4.06	1.27	2.03	1.36	1.99
2001-2002	1.33	1.35	0.51	1.81	0.82	-0.45
1996-2002	2.27	3.28	1.05	1.97	1.20	1.29
1993-2002	2.07	3.24	1.34	1.70	0.73	1.52

Source: WIFO calculations using AMECO.

The paper is structured as follows: in section 2 we briefly summarise the theoretical arguments in favour of convergence and look at the degree of catching up achieved by the three southern European countries over the past 42 years. First we examine income per capita (at purchasing power parity), followed by growth in output, productivity and employment for 1960 to 2002 and several subperiods. Section 3 assesses performance during the nineties according to a broader set of economic goals (employment, fiscal stability etc.), and compares the peripheral countries to the Nordic leaders, as well as to the three big continental economies, namely Germany, France and Italy. Section 4 investigates how wages, unit labour costs and taxes contributed to price competitiveness. Secondly we report on the degree of regulation, as well as on regulatory change in product and labour markets. Thirdly we analyse investment into those variables considered important to

² Gross National Product per capita is still below EU average.

growth and catching up in the theoretical and empirical literature (growth drivers). Section 5 concludes the article.

2. Catching up in theory and reality

Theory and stylised facts

Neo-classical growth theory suggests that economic growth depends on the starting level of income insofar as countries with lower income levels enjoy higher growth. The engine behind "convergence" in incomes is the international diffusion of technology, which allows low-income countries to increase productivity more dynamically. Empirical trends and more elaborated models caution that this convergence may be conditional on certain important factors, such as education, the availability of capital, or characteristics of the innovation system. Convergence can thus be restricted to "clubs", which are homogenous in income, institutions, regions or stages of development. Empirical estimates of the speed of convergence established the stylised fact that convergence usually does not exceed 2 % per annum, implying that only 2 % of any initial gap can be closed in one year. An initial income gap of 50 % would imply that half of this gap can be closed in 20 years.

Convergence in per capita GDP at purchasing power parity

Looking at the southern peripheral European countries, the gap in GDP per capita in 1960 relative to the EU average (and adjusted for price differences) was 60 % for Portugal, 55 % for Greece and 39 % for Spain. By 2002, Portugal and Spain had closed half of the gap with remaining 31 % for Portugal and 16 % for Spain. Greece managed to close astonishing 20 percentage points of the gap in the sixties, after that only marginally and with many ups and downs; income per capita is still 33 % lower than the EU average in 2002. For none of the three countries the convergence is near the 2 % rate which has been established in the convergence literature as "stylized fact". Taken the development since 1970 separately Spain has narrowed the difference by 10 percentage points, Portugal by 19 points, and Greece by only 2 points. These figures cover a 32 year span (see Table 2).

Table 2: Catching up by the peripheral countries in GDP per capita and per worker

	GDP per capita					EU = 100			
	in 1000 € at current PPS					Spain	Portugal	Greece	Ireland
	Spain	Portugal	Greece	Ireland	EU	Spain	Portugal	Greece	Ireland
1960	0.61	0.40	0.45	0.64	1.00	60.76	40.48	44.78	64.52
1970	1.69	1.17	1.46	1.42	2.26	74.89	51.97	64.50	62.97
1980	5.30	4.06	5.11	4.80	7.12	74.46	57.11	71.79	67.40
1990	11.51	9.30	8.77	11.12	14.76	77.94	62.97	59.41	75.30
2000	18.58	15.44	14.79	26.02	22.58	82.29	68.37	65.51	115.26
2002	20.22	16.57	15.94	29.26	23.93	84.48	69.23	66.59	122.26

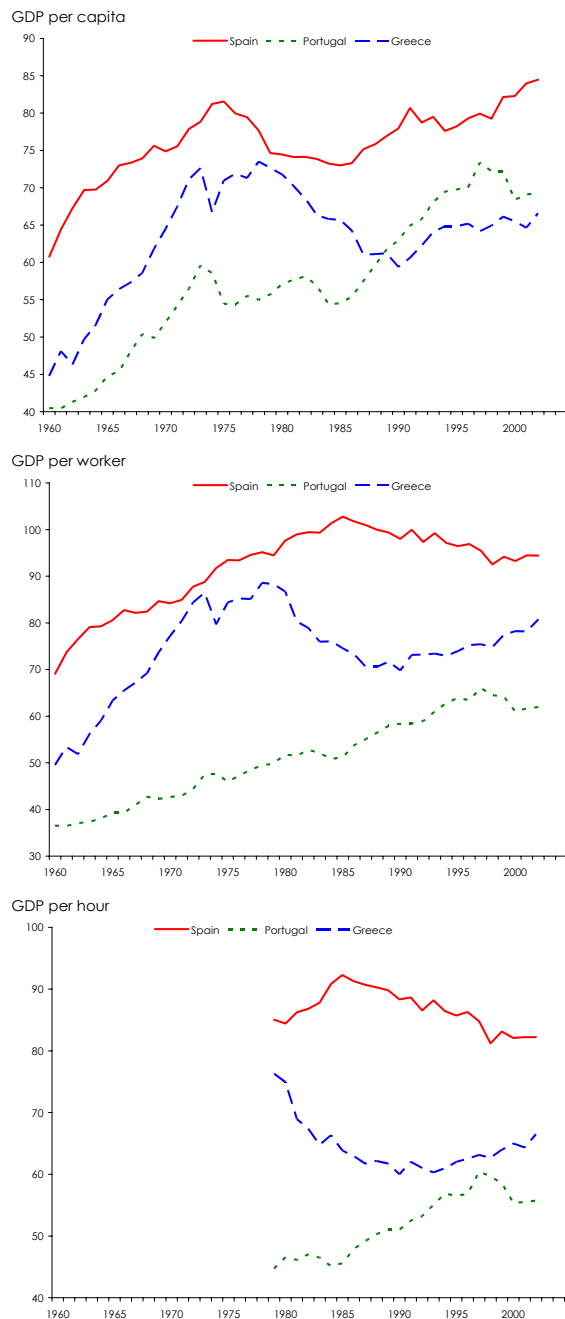
	GDP per worker					EU = 100			
	in 1000 € at current PPS					Spain	Portugal	Greece	Ireland
	Spain	Portugal	Greece	Ireland	EU	Spain	Portugal	Greece	Ireland
1960	1.54	0.82	1.11	1.68	2.23	69.08	36.52	49.53	75.39
1970	4.48	2.27	4.10	3.87	5.32	84.23	42.69	77.17	72.75
1980	16.61	8.81	14.75	13.72	17.01	97.61	51.77	86.70	80.62
1990	33.68	20.07	23.99	33.39	34.36	98.00	58.41	69.80	97.16
2000	48.95	31.99	41.04	58.42	52.48	93.27	60.97	78.21	111.32
2002	52.16	34.21	44.59	64.78	55.23	94.44	61.95	80.74	117.29

Source: WIFO calculations using AMECO.

The growth differentials reported refer to GDP per capita. If we calculate them per worker, today's gap is much smaller for Spain and Greece, since these countries have lower employment rates (approximately 55 % relative to 67 % in the EU). In Spain, productivity per worker in 2002 was then only 6 % lower than in the EU, with a corresponding figure of 19 % for Greece. However, when calculated per worker and at purchasing power parity, the gap had been even smaller in 1980 and Spain had reached the European average in GDP per worker for a few years in the eighties and has fallen below since that again. The reasons for the increasing difference in GDP per worker is the abundance of cheap labour, and last but not least, policies which distribute existing jobs among as many employees as possible e.g. by fixed contracts or part-time work. In Portugal, the employment rate is 5 points higher than the EU average, thus the difference in productivity per worker is larger than the gap in GDP

per capita. The gap decreased from 48 % in 1980 to 38 % in 2002. Catching up in productivity is strongest and smoothest over time (with an exception in the very last years).

Figure 1: Growth of GDP at PPP in periphery countries; EU = 100



Source: WIFO calculations using AMECO.

Summing up the convergence process was surprisingly strong in the sixties but came to a halt in the middle of the seventies. Over the whole period but specifically since 1970 the convergence of income per capita is much slower than predicted by the 2 % rule. Convergence nearly came to a halt in Greece for GDP per capita or was even put into reverse, for Spain GDP per worker declined relative to the EU average between the mid eighties and 2000. Portugal managed to converge according to all indicators, however starting from a very low position. In 1970, per capita income in Ireland amounted to 63 % of the European level, and was the second lowest of all EU member countries. Now it is 22 % higher than the EU average. Thus, in contrast to the low rate of catching up by the southern peripheral countries since 1970, Ireland not only caught up more strongly than demanded by the 2 % rule, but also continued to grow faster as it approached and finally surpassed the EU average in 1997. Remember that GDP and wages are still lower in Ireland, and the profits of multinational firms (in conjunction with the impact of transfer prices) open the difference between Gross Domestic Product and Net National Income.

Convergence in real growth rates

Another way of looking at convergence is to compare growth rates in real GDP, productivity and employment. To a certain extent, this repeats what was revealed by the PPP figures, although real GDP data (in contrast to PPP data) are less influenced by price convergence and we use this indicator to carve out the uneven phases of development in output productivity and employment over time (Table 3). At a first glance the long-term growth rate is about 4 % for all three southern EU countries, giving a one percentage point advantage over the EU average (3 %, 1960-2003). But the development has not been smooth but was different across countries over time and in its composition.

Spain split its 4 % growth rate over the past four decades into an increase of employment by 0.7 % per year and of productivity by 3.3 %. Though the lion's share of growth was used for productivity growth; thus is the most employment intensive growth path of the peripheral countries and productivity growth is less than in the other countries. The growth advantage was higher in the sixties, small in the seventies and eighties. It accelerated during the nineties, and specifically during the last three

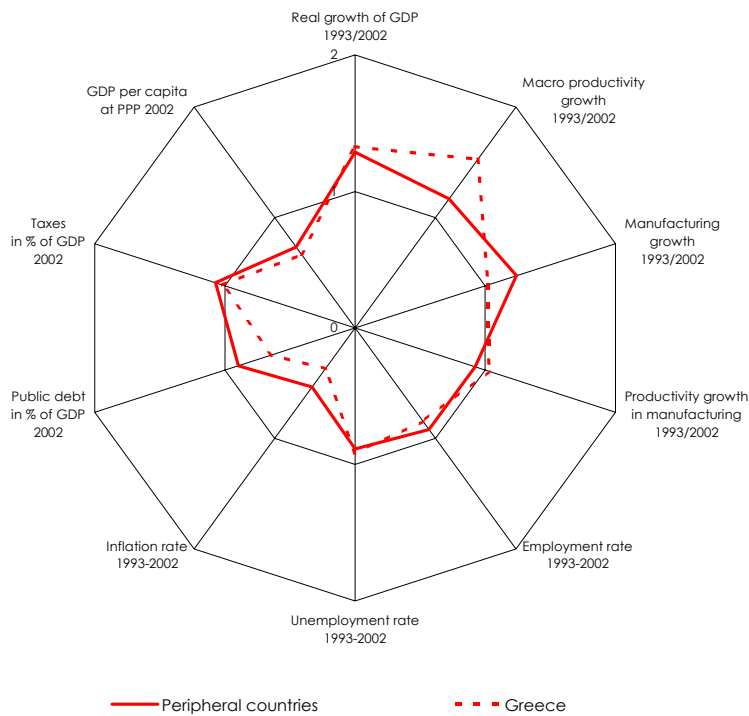
years of recession. Employment dynamics accelerated from period to period over the past thirty years, while productivity dynamics decreased, falling even slightly below the European average in the nineties.

Table 3: Growth in output, productivity and employment

Growth p.a.	Growth of real GDP					Productivity growth per worker					Employment growth				
	Spain	Portugal	Greece	Ireland	EU	Spain	Portugal	Greece	Ireland	EU	Spain	Portugal	Greece	Ireland	EU
1961-1970	7.3	6.4	8.5	4.2	4.9	6.7	6.2	9.3	4.2	4.5	0.6	0.2	-0.8	0.0	0.3
1971-1980	3.5	4.7	4.6	4.7	3.0	4.2	4.7	3.9	3.7	2.6	-0.6	0.1	0.7	0.9	0.3
1981-1990	2.9	3.3	0.7	3.6	2.4	1.9	3.1	-0.3	3.8	1.8	1.1	0.2	1.0	-0.2	0.6
1991-2000	2.7	2.8	2.3	7.2	2.1	1.3	2.1	1.7	3.3	1.7	1.3	0.7	0.6	3.8	0.5
2001-2003	2.2	0.9	3.9	5.0	1.3	0.7	0.4	4.0	3.4	0.8	1.6	0.4	-0.1	1.6	0.5
1961-2003	4.0	4.1	4.0	4.9	3.0	3.3	3.8	3.6	3.7	2.5	0.7	0.3	0.3	1.1	0.4
1971-2003	3.0	3.3	2.6	5.1	2.4	2.3	3.0	1.9	3.6	1.9	0.7	0.3	0.7	1.5	0.5
1981-2003	2.7	2.7	1.8	5.3	2.1	1.5	2.3	1.1	3.5	1.6	1.3	0.4	0.7	1.7	0.5

Source: WIFO calculations using AMECO.

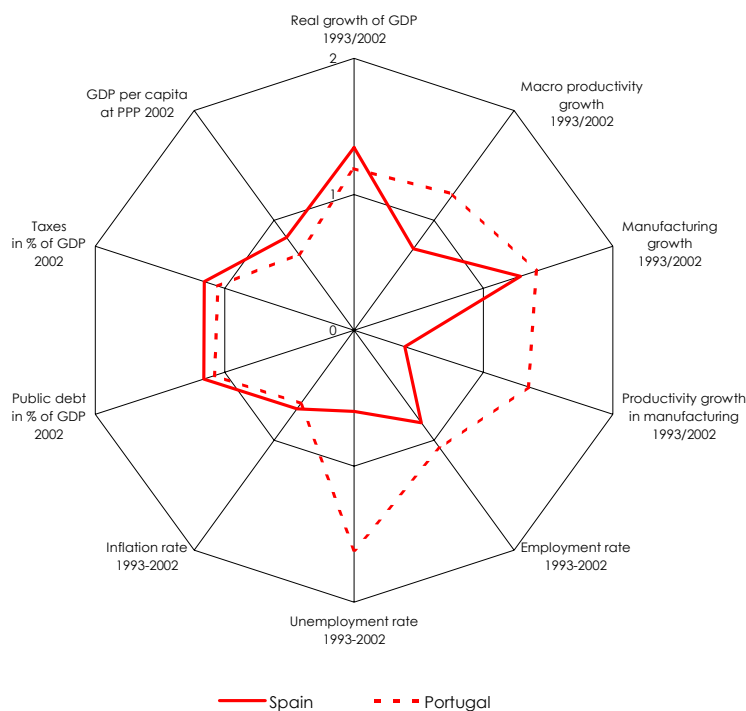
Figure 2a: Performance of peripheral countries and Greece vs. EU



Remark: Peripheral countries: Spain, Portugal, Greece; values outside the unit circle indicate more favourable results (higher growth, lower inflation, lower taxes) for a country relative to the benchmark.

Portugal enjoyed the highest rate of growth by a tiny margin if the comparison starts in 1960, by a wider margin for the past three decades. The growth differential is specifically large in the seventies and eighties; since then economic growth has been parallel to that of the EU. The growth advantage was devoted completely to improving productivity; employment grew at a meagre rate of 0.3 % over the four decades, what is slightly below the EU average. The employment rate was initially higher than in the EU, but is now converging with the EU average; unemployment is relatively low. In contrast to Spain, the growth advantage decreased and vanished in the nineties and double deficits of budget and trade balanced recurred.

Figure 2b: Performance of Spain and Portugal vs. EU



Remark: Values outside the unit circle indicate more favourable results (higher growth, lower inflation, lower taxes) for a country relative to the benchmark.

Greece increased real GDP also by 4 % p.a. since 1960. During the sixties and seventies, growth was much stronger than in the EU. It decelerated to a disappointing level of 0.7 % in the eighties. It recovered in the nineties, specifically during the second half, even including the last recession.

Let us compare this performance to that of Ireland, we see that average growth in GDP amounted to 4 % in the three southern peripheral countries versus 5 % in Ireland (1961-2003). The difference increased in the nineties, when the three southern countries enjoyed an average growth of 2.6 %, but growth in Ireland sky rocked to 7.2 %. Economic growth in Ireland was strong enough to support high productivity growth (3.7 %), as well as high employment growth (1.1 %). In the three southern peripheral countries, productivity increased by 3.5 % and employment by 0.6 %, the latter only two tenth of a percentage point above the EU average.

Speed, scope and time pattern of catching up

While economic theory predicts a rather smooth process of catching up, the empirical process is rather uneven and very different across countries and even according to indicators applied. The smoothest catching up over time and also the strongest is seen in Portugal. Catching up occurs for all four indicators (GDP at PPP per capita, worker, hour and real GDP). It happened in all periods, a little bumpy between 1970 and 1983 and endangered by the recurring double deficit in budget and trade since 1998. This speed and consistency can be explained by the large initial gap and high share of investment into GDP and its success in attracting inward investment (including large plant in car and chemicals), though not as strong as in Ireland and now endangered by investment possibilities in Eastern European and Asian countries. The middle position is taken by Spain, where catching up was again stronger up to 1974 then weak up to 1983 and accelerating since, including strong growth in the European recession as of 2001/3. Catching up has been boosted by investment and productivity first but low in employment, since mid eighties it is intensive in employment to an extent that per worker and per hour GDP are no longer catching up, in contrary the gap to European average is increasing. This has been partly a voluntary policy promoting employment creation and encouraging fixed term contracts and later also temporary contracts³, to combat unemployment which is the highest in EU member countries. Greece experienced the most uneven

³ Severance payments which are very high were reduced for regular contracts, but increased for fixed term contracts (to increase costs on the boosting fixed term contracts), the accumulation of pension rights for part time contracts were increased (OECD, Spain 2001, p. 68).

development, experiencing a period of increasing the difference to Europe, furthermore the speed of catching up is also shown as different in the indicators. Catching up in per capita income and productivity occurred between 1960 and 1987, then difference increased in income and productivity, before resuming catching up at the beginning of the nineties. The result is that the Greek position did not really change over the past three decades: per capita GDP increased relatively to the EU average only by 2 % in the last 32 years in per capita GDP and 4 % in GDP per worker at PPP. Taking real growth data shows 4 % growth for 1960 – 2003 and 2.6 % for the last 32 years, giving a one percentage lead for the whole period and a 0.2 % lead since 1970.

This picture of uneven catching up with differences as to per capita income, productivity and prices and phases of rapid catching up followed by phases of stagnation or reversal cannot be grasped by growth theory which predict a steady state growth rate, and in most models similar for per capita, per worker and total growth. Real data furthermore show a specific form of convergence: the lagging economy with the highest employment rate increased productivity fastest, that with low employment rates had a more employment rich growth. Thus productivity is converging faster than income per head and employment rates become more similar. As to the role of fiscal consolidation, Greece and Spain have accelerated convergence in a period of fiscal consolidation, having compensated the demand reducing effect of consolidation by making better use of the productive capacity. In Portugal this seemed to happen up to 1999, since that the fiscal deficit is growing and growth is decelerating. The better use of productive capacity could not compensate restrictive government expenditures.

3. Performance in the nineties, as measured by a larger set of indicators

Ranking performance for Spain, Portugal and Greece

Measuring performance, welfare and the competitiveness of countries has been the subject of intensive and controversial discussion in economic literature, including the question whether these notions exist at the level of an aggregate or a country. We pragmatically decided to measure economic performance according to the

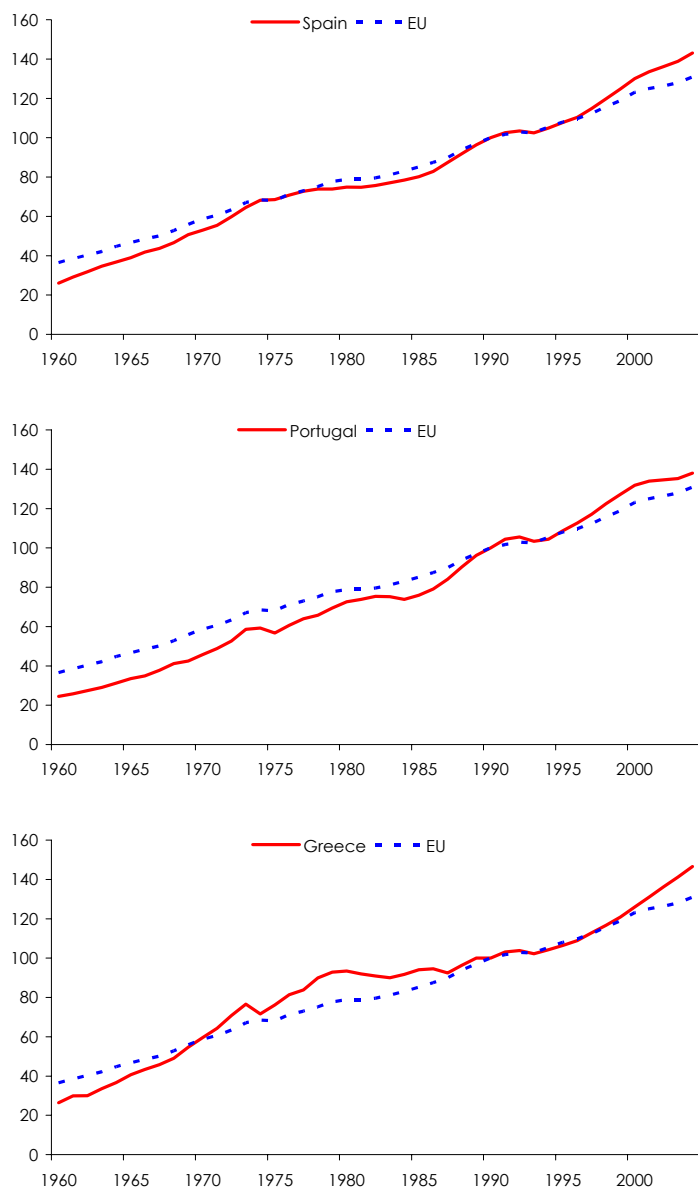
dynamics of GDP, the ability to increase productivity, to create employment, and to provide stability. The indicators of dynamics include data on manufacturing, since in this sector, output can be measured better than in services. It includes data on the rate of growth, on acceleration, and on the starting level. It contains an indicator that corrects growth for cycles (potential output). Employment is measured by unemployment and employment rates (levels and changes); stability by price and fiscal prudence (deficits, debts, taxes). We chose the last ten years up to 2002 as the period under investigation (see Table 4). Changing the exact number of indicators, their weights and the timing influences some positions, but the overall ranking is rather stable.

In this ranking for the nineties, Greece places seventh among the 14 EU countries. It achieves top 3 positions in acceleration of output growth, productivity and potential output, as well as for the reduction of its budget deficit. Greece achieves a moderate position for most growth indicators, negative ratings for the level of and change in employment and unemployment rates, and also for rising taxes.

Spain ranks tenth, with top positions for changes in employment, unemployment, and inflation and taxes. The growth of potential output is second highest, due to employment growth and investment expenditures. Portugal follows closely in 11th place, still ahead of Germany, France and Italy. Inflation is decreasing, unemployment low and productivity in manufacturing increasing.

Ireland is leading in this ranking, followed by Sweden, Finland and Denmark (which we will henceforth call the top countries, since they outperformed the rest of Europe from good starting positions in per capita income). The weak performers are the three big continental economies. Sweden excels in productivity growth, employment level and fiscal stability; it was not possible for employment to increase rapidly from its already high initial position. Finland also excels in productivity, but still has a high unemployment rate. Denmark enjoys the second highest level of GDP; per capita income, as well as the employment rate and output growth are accelerating.

Figure 3: Real GDP (1990=100)



The three big continental economies (Germany, France and Italy) rank in the bottom third. All have below-average growth, high and rising unemployment and fiscal deficits at or beyond the criteria specified by the European Stability Pact.⁴

⁴ The remaining six countries constitute a heterogeneous group, due to the excellence of Ireland on the one hand, while Greece, Spain and Portugal are ranked close together as 7th, 10th and 11th. Belgium

Table 4: Economic performance across countries: 25 indicators

	Greece		Spain		Portugal		Peripheral 3	Top 3	Large 3	EU
	Rank		Rank		Rank					
Real growth of GDP										
Growth 1993/2002	2,8	6	2,8	5	2,5	8	2,7	2,9	1,6	2,1
Acceleration*	1,4	3	-0,4	9	-1,0	13	0,0	1,2	-1,0	-0,5
Macro productivity growth										
Growth 1993/2002	2,1	4	1,0	14	1,7	8	1,6	2,4	1,2	1,4
Acceleration*	1,3	1	-0,8	11	-1,3	14	-0,3	0,5	-0,8	-0,6
Manufacturing growth										
Growth 1993/2002	1,7	9	2,4	7	2,5	6	2,2	4,4	1,4	1,7
Acceleration*	1,1	5	0,7	6	-0,9	11	0,3	2,2	-0,7	-1,1
Productivity growth in manufacturing										
Growth 1993/2002	3,7	4	3,4	7	3,6	5	3,6	4,5	1,2	2,7
Acceleration*	3,4	3	0,1	8	-0,7	9	1,0	0,9	-1,3	0,1
Potential output										
Growth 1993/2002	2,6	6	2,9	2	2,8	3	2,8	2,4	1,8	2,2
Acceleration*	1,4	2	0,2	7	-0,3	12	0,5	0,5	-0,5	-0,2
Total Factor Productivity										
Growth 1993/2002	1,4	6	0,4	13	0,7	11	0,9	2,2	0,7	0,9
Acceleration*	1,4	2	-0,7	11	-1,2	13	-0,2	1,1	-0,7	-0,5
Employment rate										
Average 1993-2002	54,3	13	54,1	14	69,0	6	59,1	70,8	61,9	64,4
Absolute change 1993/2002	1,6	10	6,5	3	1,6	11	3,2	1,2	2,0	3,0
Unemployment rate										
Average 1993-2002	10,0	10	15,4	14	5,7	3	10,4	8,7	9,9	9,2
Absolute change 1993/2002	2,0	14	-3,5	4	0,8	11	-0,2	-2,5	0,3	-1,0
Inflation rate										
Average 1993-2002	6,6	14	3,4	12	3,7	13	4,6	1,8	2,2	2,4
Absolute change 1993/2002	-12,3	1	-2,4	5	-5,4	2	-6,7	-0,3	-1,9	-2,1
Budget deficit in % of GDP										
2002	1,7	10	0,4	5	3,0	12	1,7	-2,3	3,0	2,0
Absolute change 1993/2002	-6,8	3	-5,9	6	-2,8	9	-5,2	-5,0	-3,7	-3,9
Public debt in % of GDP										
2002	97,8	0	54,0	0	58,1	0	70,0	46,8	75,7	62,7
Absolute change 1993/2002	17,1	12	7,1	10	3,7	9	9,3	-9,9	12,3	3,7
Taxes in % of GDP										
2002	44,7	0	39,3	0	43,2	0	42,4	56,6	47,0	45,5
Absolute change 1993/2002	8,7	14	-2,8	5	2,6	12	2,9	-4,5	1,0	-0,1
GDP per capita at PPP 2002										
1000 EURO	15,9	14	20,2	12	16,6	13	17,6	25,3	24,5	23,9

* Acceleration: growth p.a. 1993/2002 minus growth p.a. 1983/1992. – Rank: position among EU countries. – Top 3: Sweden, Finland, Denmark. – Large 3: Germany, France, Italy. – Peripheral 3: Spain, Portugal, Greece.

Source: WIFO calculations using AMECO.

and Austria are ranked as 8th and 9th, stuck in moderate positions as far as dynamics are concerned, although they are enjoying high incomes due to past growth.

Peripheral countries vs. top 3 and big 3

The top three countries have been enjoying average growth of 2.9 % (1993/2002), as compared to 1.6 % for the large three countries. As far as growth is concerned the three peripheral countries can nearly match the performance of the top 3 countries with an average of 2.7 %. For manufacturing growth alone, the difference to the top countries is large, even if growth is definitely faster in the peripheral countries if compared to the three big continental economies (2.2 % versus 1.4 %). Per capita income is 25,300 EURO for the top 3 and 24,500 EURO for the large 3, but only 17,600 for the peripheral countries.

The employment rate is 71 % (2003) in the top economies and has increased by 1.2 points since 1993. For the big countries, the employment rate is 9 points lower and it has increased by only 2 % during the past decade. In the periphery countries, the employment rate ranges between 54 % in Spain and Greece and 69 % in Portugal; it increased strongly in Spain, but in Portugal and Greece the increase was less. Unemployment is highest in the peripheral countries and did decrease over the past 10 years only very slowly. It is highest and persistent in the big economies, the top countries successfully lowered unemployment.

Inflation had been a severe problem in the peripheral countries, it declined however from two digit levels at the start of the nineties to 3.6 % in 2002, about 1½ % more than in the other groups. Budget deficits declined steeply too, being now smaller than in the big continental economies.

Table 5: Economic growth in the nineties in three performance groups

	1993/2002	2000/2002
Spain	2,8	3,0
Portugal	2,5	1,9
Greece	2,8	4,1
Peripheral countries	2,7	3,0
Ireland	7,9	7,2
Denmark	2,5	1,9
Finland	3,3	2,6
Sweden	2,9	2,4
Top 3 countries	2,9	2,3
Germany	1,3	1,2
France	1,9	2,3
Italy	1,6	1,8
Large 3 countries	1,6	1,7
EU	2,1	2,0
US	3,2	2,2

Source: WIFO calculations using AMECO.

4. Strategy differences in and across the peripheral countries

In this section we analyse the difference between the strategies in the peripheral countries and the EU, as well as differences across the three southern peripheral countries. We present indicators of price competitiveness, as well as of product and labour market regulation and investment into future growth.

Differences in cost reduction strategies

Wages, as well as unit labour costs, are increasing more strongly in peripheral countries (see Table 6). The wage increase differential is higher, mirroring the catching up of wages, but wage dynamics is also relatively high, particularly compared to productivity, namely 0.8 % in the eighties and 0.5 % in the nineties. Both wages and unit labour costs have been increasing strongly in the Iberian countries, less in Greece. All three currencies were devaluated: in Greece by 40 %, in Portugal by 10 %, and in Spain by 22 %.

Table 6: Indicators of cost dynamics

	Spain	Portugal	Greece	3 peripheral countries	EU
Wages					
Growth 1983/1992	9,3	9,6	4,0	7,7	6,5
Growth 1993/2002	3,8	5,1	6,7	5,2	3,9
Unit labour costs					
Growth 1983/1992	5,5	5,9	2,0	4,5	3,7
Growth 1993/2002	0,5	3,0	2,9	2,1	1,6
Currency					
1990	100,0	100,0	100,0	100,0	0,0
2002	77,9	90,5	59,1	75,8	0,0
Taxes in % of GDP					
1990	39,6	34,4	34,2	36,0	43,5
1995	39,1	40,3	40,0	39,8	46,3
2002	39,3	43,2	44,7	42,4	45,5
Corporate tax in % of GDP					
1990	35,0	40,2	46,0	40,4	37,7
2002	35,0	30,0	37,5	34,2	30,6
Government expenditures in % of GDP					
1990	45,5	42,2	42,2	43,3	48,9
1995	45,0	45,0	49,4	46,4	51,2
2002	39,7	46,2	46,3	44,1	47,4
Public debt in % of GDP					
1990	43,6	58,3	79,6	60,5	53,1
1995	63,9	64,3	108,7	79,0	70,2
2002	54,0	58,1	104,9	72,3	62,7
Social costs in % of GDP					
1990	19,9	15,2	22,9	19,3	25,5
2000	20,1	22,7	26,4	23,1	27,3
Budget deficit in % of GDP					
1990	-5,9	-7,8	-8,1	-7,3	-4,8
1995	-5,9	-4,6	-9,4	-6,7	-4,9
2002	-0,4	-3,0	-1,7	-1,7	-2,0

Source: WIFO calculations using AMECO.

Taxes relative to GDP are stable in Spain, but increased by 10 percentage points in Portugal and Greece, approaching the EU average in 2002 (see Table 6). Spain is the outsider, maintaining a constant tax rate and increasing this type of cost advantage versus the EU to 6 percentage points. The corporate tax rate decreased parallel to that of the EU; with the exception of Portugal, it is still higher than the EU average. Public expenditures are decreasing and are below the EU average in Spain, while they are increasing and approaching the high but constant EU rate in Portugal and Greece. Public debt is higher in Greece, lower than the EU average in Portugal, and lowest in Spain, at 54 % of GDP. Social expenditures are 4 % lower than the EU average (23 % vs. 27 %), increasing in Portugal and Greece more strongly than in the EU, while in Spain they are remaining practically constant and 7 percentage points

below the EU average. Spain has a nearly balanced budget, while Portugal is fighting with the maximum deficit allowed by the Stability and Growth Pact; Greece has established a relatively sound fiscal position. In summary, relative to the other countries, Spain has achieved the best cost position with practically constant unit labour costs, the lowest overall tax rate (with the partial exception of corporate taxes, which are lower in Portugal), the lowest amount of debt and the best budget balance. This position is partly financed by lower coverage of social risks.

Differences in regulation and liberalisation

The three peripheral countries have slightly stronger product market regulation and considerably stronger labour market regulation. Changes in regulation were below the EU average in all three peripheral countries.

For product market regulation, the difference is not large as far as openness and state ownership are concerned (see the static indicator of product market regulation in Table 7). The difference is larger in the liberalisation of network industries. In this respect, Greece is the laggard as far as level and change are concerned; Spain has traditionally liberalised network industries and liberalisation is presently in line with the EU average. Portugal has also liberalised, but not to the extent of other European countries.

Portugal and Greece have the most highly regulated labour markets and did not deregulate strongly in the nineties. Greece today has the tightest regulation of temporary contracts. Spain drastically changed the rules for regular contracts and is approaching the EU average, although temporary contracts are strictly regulated (and regulation has been increased). Nevertheless, today, most new employees are only hired under temporary contracts. The strategy seems to be making labour more flexible for firms, while giving some security to employees, who are now accustomed to only being offered contracts with time limits. To a certain extent, regulatory rules are substituting financial payments (low social security expenditures as mentioned above).

Table 7: Regulation in product and labour markets

	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
Greece	2.2	5.67	5.08	-0.59	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	-1.08	3.7	3.2	-13.5	3.8	2.8	-26.3	3.5	3.7	5.7
Portugal	1.7	5.29	4.13	-1.16	4.2	3.7	-11.9	5.0	4.3	-14.0	3.5	3.2	-8.6
3 peripheral countries	1.8	5.09	4.15	-0.94	3.8	3.5	-9.4	3.9	3.2	-15.8	3.8	3.8	-1.0
Top 3	1.5	4.45	2.58	-1.87	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	-1.36	3.5	3.1	-12.4	2.8	2.8	2.4	4.2	3.3	-21.6
EU	1.6	4.73	3.26	-1.46	2.9	2.4	-15.0	2.7	2.5	-5.4	3.1	2.3	-23.4

PMR = Product market regulation
 STAT = Static indicator (1998 only)
 DYN = Dynamic indicator for network industries
 EPL = Employment regulation

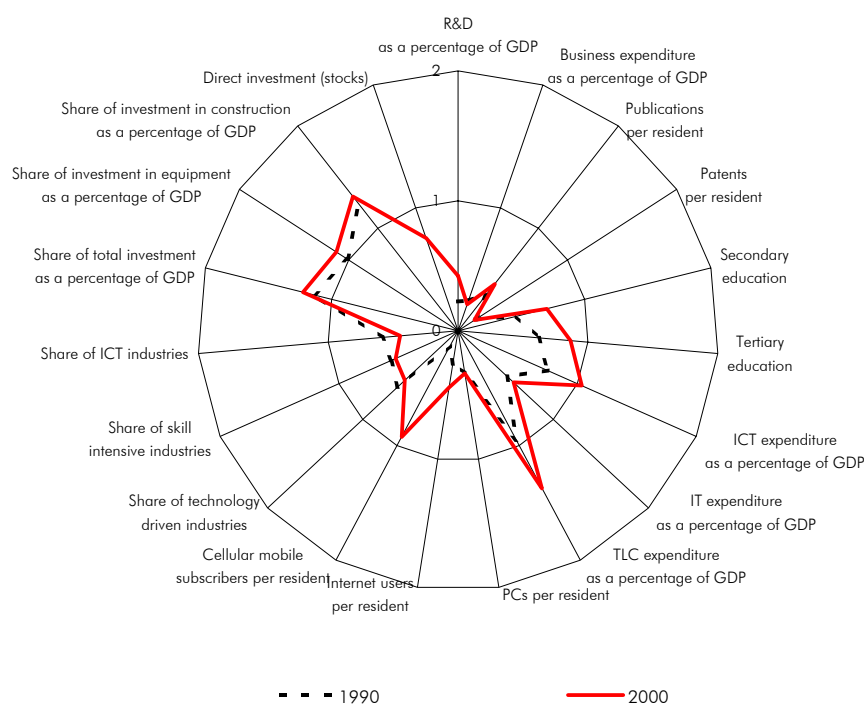
Source: OECD Regulatory Indicators.

Differences in investment into future growth (growth drivers)

For medium-income countries, the most important growth drivers are physical investment into plant and machinery and the ability to attract foreign capital. Secondary education is an important aspect of the skills needed in this stage of development. Investment into ICT becomes increasingly relevant to catching up. Tertiary education and research are growth drivers more important to leading countries than to catching up economies (Aiginger, 2003).

The three peripheral economies outperform the EU average in five out of 19 growth drivers (see Table 8 and Figures 4-7). As expected, the largest advantage is in the share of construction investment in GDP. The investment share of machinery is higher too, but not to the same extent; the overall investment ratio (which is considered by traditional economic theory – the Harrod-Domar Model – to be an important growth driver in medium-income economies) is also higher than the EU average. ICT expenditures are slightly above the EU average, mainly since investment into infrastructure is high in all three economies; investment into software is definitely lower; together, these factors result in the moderately or slightly better position of total ICT expenditures. Economic theory warns that high investment can be also a sign of inefficiency, which may be true to a certain extent for ICT infrastructure.

Figure 4: Growth drivers in peripheral countries vs. Europe



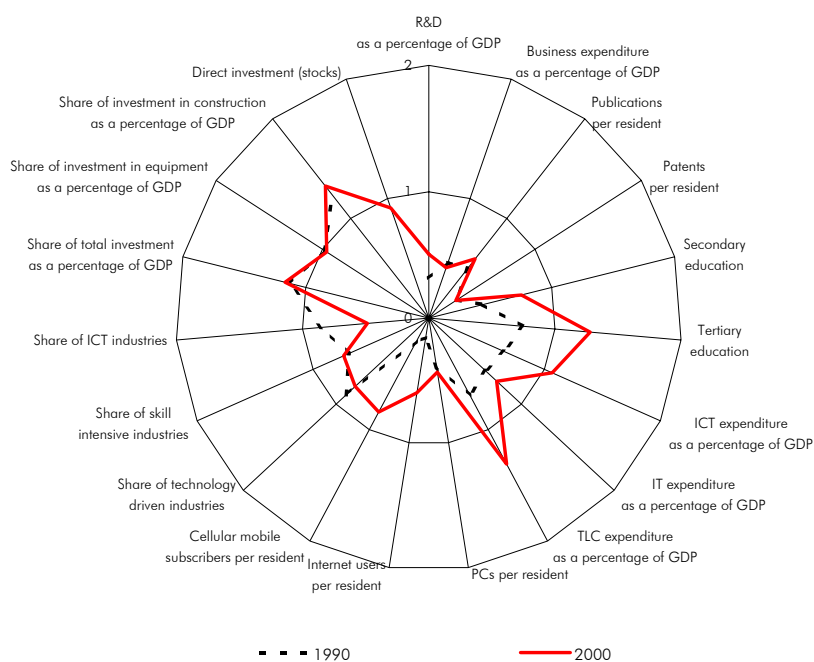
Remark: Values within the unit circle indicate less favourable results (higher growth, lower inflation) for a country relative to the benchmark. Investment stock is low in peripheral countries related to unweighted mean, but higher related to overall weighted mean.

Table 8: Investment into future growth

	Spain		Portugal		Greece		3 peripheral countries		EU		3 periperal vs. EU	
	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000
R&D in % of GDP	0.4	0.9	0.3	0.8	0.2	0.7	0.3	0.8	1.3	1.9	0.226	0.422
Business expenditure in % of GDP	0.5	0.5	0.1	0.1	0.1	0.1	0.2	0.2	1.0	1.1	0.245	0.215
Publications per resident	3.2	5.3	1.1	2.8	2.5	4.1	2.3	4.1	6.6	9.0	0.349	0.457
Patents per resident	0.6	0.6	0.1	0.1	0.4	0.4	0.4	0.3	2.2	2.3	0.161	0.149
Secondary education (share of employment)	23.0	53.0	14.0	29.0	36.0	66.0	24.3	49.3	52.5	70.2	0.463	0.703
Tertiary education (share of employment)	14.0	32.0	8.0	11.0	13.0	22.0	11.7	21.7	18.8	25.0	0.621	0.867
ICT expenditure in % of GDP	2.4	6.8	3.2	7.0	2.8	6.1	2.8	6.6	3.7	6.4	0.753	1.037
IT expenditure in % of GDP	1.0	2.0	1.0	1.7	0.6	1.1	0.9	1.6	1.7	2.7	0.515	0.581
TLC expenditure in % of GDP	1.4	4.8	2.2	5.3	2.1	5.0	1.9	5.1	2.0	3.7	0.950	1.373
PCs per 100 residents	3.8	11.9	3.5	9.3	2.2	6.0	3.2	9.1	9.8	27.5	0.329	0.331
Internet users per 100 resident	0.1	11.6	0.3	7.0	0.0	7.1	0.1	8.5	49.0	1929.9	0.003	0.004
Cellular mobile subscribers per resident	0.5	37.4	0.4	47.7	0.0	37.7	0.3	40.9	2.2	44.4	0.128	0.923
Share of technology driven industries/value added	15.4	15.5	9.6	10.5	7.8	6.7	10.9	10.9	17.2	19.6	0.634	0.559
Share of skill intensive industries/value added	9.8	10.7	6.9	7.4	7.2	4.8	8.0	7.6	14.2	14.5	0.561	0.525
Share of ICT industries/value added	5.6	3.5	3.7	4.0	2.3	2.2	3.9	3.2	6.6	7.3	0.584	0.447
Share of total investment in % of GDP	22.2	21.2	23.3	24.3	22.1	21.3	22.5	22.3	19.7	18.1	1.144	1.227
Share of investment in equipment in % of GDP	8.1	7.5	10.4	10.2	6.6	8.3	8.4	8.7	8.3	7.8	1.012	1.115
Share of investment in construction in % of GDP	14.1	13.8	12.8	14.0	15.5	13.0	14.1	13.6	11.4	10.4	1.239	1.310
Direct investment (stocks) in % of GDP		25.8		26.4		11.0		21.1	1.6	6.9		3.034

Direct investment is high and increasing in Spain and Portugal, but lower than in Ireland and not well connected to endogenous firms⁶. It is disappointing in Greece. In all three countries, the investment stocks of foreign firms are higher relative to GDP than the EU average, with the highest share in Spain (28 %), followed by Portugal (26 %), while Greece's share is lagging at only 11 %. The relative size of inward stocks has doubled in Spain over the past 10 years, and has also increased in Portugal (where data are available only from 1995 on). Inward investments flows in Greece were lower in 2001 (1.4 %) than in 1990 (2.0 %; stocks are not available). In contrast, inward investment flows in Ireland were between 15 % and 28 % during the last four years, and were below 1 % of GDP in the early nineties.

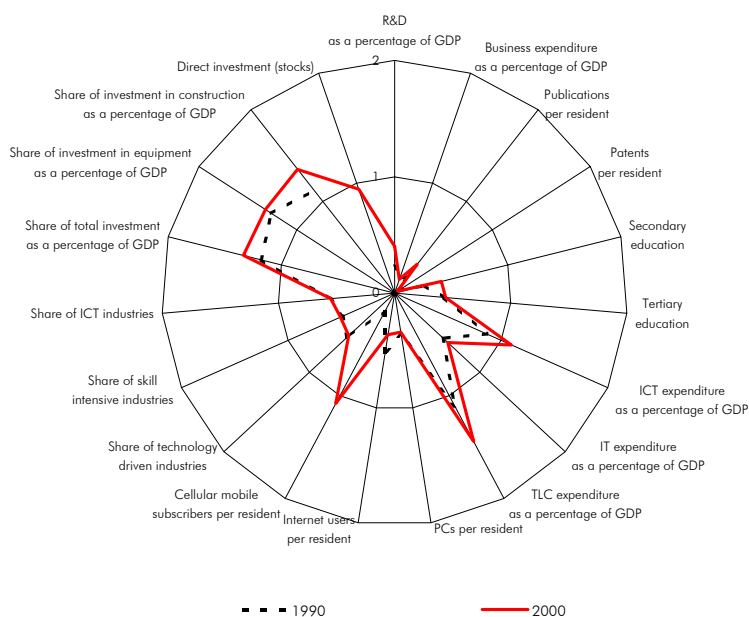
Figure 5: Growth drivers: Spain vs. Europe



Remark: Values within the unit circle indicate less favourable results (lower investment, lower share of technology driven industries) for a country relative to the benchmark.

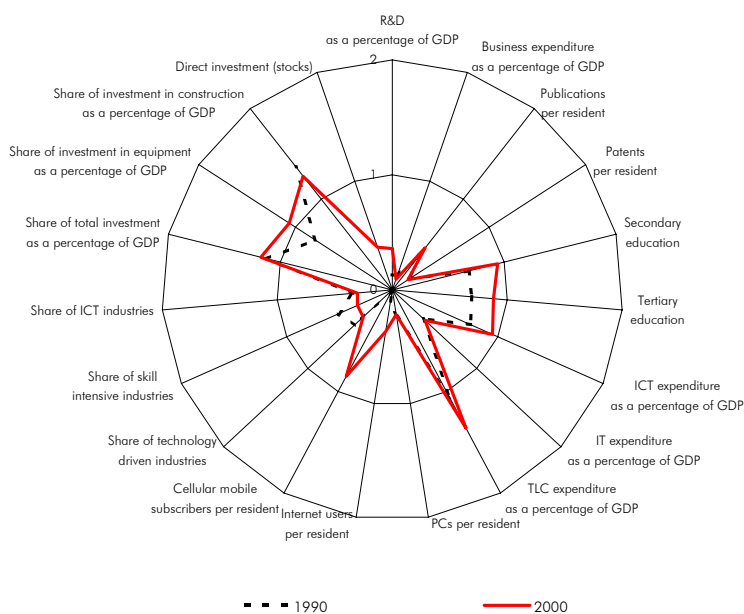
⁶ Tavares (2002).

Figure 6: Growth drivers: Portugal vs. Europe



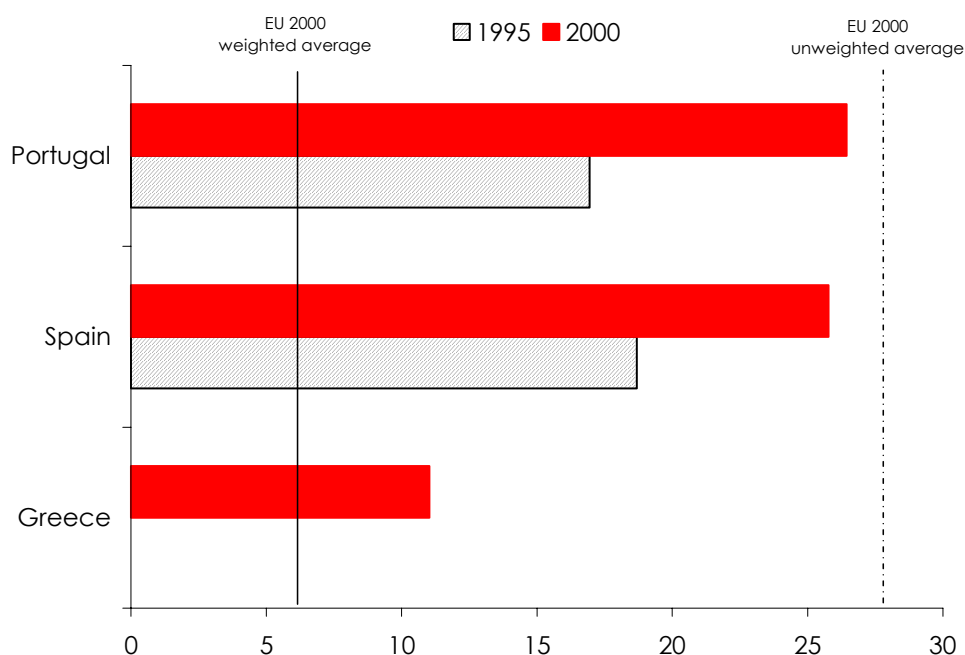
Remark: Values within the unit circle indicate less favourable results (lower investment, lower share of technology driven industries) for a country relative to the benchmark.

Figure 7: Growth drivers: Greece vs. Europe



Remark: Values within the unit circle indicate less favourable results (lower investment, lower share of technology driven industries) for a country relative to the benchmark.

Figure 8: Direct investment as a percentage of GDP



Source: OECD.

Of the growth determinants which gain relevance as income rises, the share of tertiary education in Spain is high. Tertiary, as well as secondary educations are well represented in Greece, but not above the European average, while Spain lags a little in secondary education. The corresponding levels in Portugal are less than half of the European average, with a larger deficit in secondary education. However, expenditures on education are above the European average in Portugal (5.7 % vs. 5.4 %). In Greece, these expenditures are rising, although they are still lower than in Spain. In all three countries, research expenditures are catching up slightly. The highest rate is presently in Spain (0.9 %), while Portugal invests 0.75 % and Greece takes last place (0.67 %), in the EU R&D expenditures amount to 2 % of GDP. Skill intensive industries enjoy a relatively large share in Spain, partly reflecting the investments of multinational firms.

5. Conclusions

(1) The three southern peripheral countries are growing faster than the European Union, the differential has been about one percentage point in real growth since 1960 (4 % versus 3 %). Catching up was steeper in the sixties, specifically week since mid seventies but reoccured in the nineties. Starting from the position in 1970, Spain reduced its gap in GDP per capita at purchasing power parity from 25 % to 15 %, Portugal from 50 % to 31 %, and Greece from 35 % to 33 %. These reductions of 10, 19 and 2 percentage points over 32 years are disappointing even from the perspective of empirical growth literature, which suggests as a stylised fact that a gap can be closed at a rate of 2 % per year. The speed of catching up is quite different from that of Ireland, which starting from a gap of 37 % in 1970 surpassed the EU average in per capita GDP.

(2) As far as the degree of convergence achieved in 2002 is concerned, Spain comes nearest to the EU average in GDP per capita, the difference is even smaller for GDP per worker. The employment rate is low but increasing, this has limited catching up in productivity (in fact the GDP per worker had reached the EU average in the mid eighties and is now again a little bit below). Greece has achieved the lowest convergence in terms of GDP per capita, but enjoys higher productivity per worker than Portugal. In Portugal, the employment rate is high and unemployment low, especially for a southern peripheral country.

(3) Long-run real growth has been strongest in Portugal, specifically if we take into account the somewhat later start of its convergence process. After very strong performance in the seventies, growth of GDP decelerated, but is still higher than in the EU average in the nineties. Convergence is specifically strong for productivity. Spain follows, with its highest growth in the seventies and a growth advantage of more than half a point in the nineties. The growth advantage extended into the second half of the nineties and the following recession. Real growth in Greece was strong in the seventies; it then came to a halt – with the difference in per capita income and productivity widening relative to the EU average. Catching up was resumed in the mid nineties, with a very good performance specifically during the last years, spearheaded by - but not only due to - the upcoming Olympic Games. In all three countries, higher growth was mainly attributable to the catching up of

productivity to an extent of more than 1 percentage point per year. Employment increased by 0.7 % p.a. in Spain, and by 0.3 % in Portugal and Greece (1960/2002), the first rate being a little above, the later one a little bit below EU performance. In the nineties economic growth of peripheral countries has nearly matched that of the top countries (Sweden, Finland, Denmark) and has been at least one third higher than in Germany, France and Italy.

(4) Policy attention to the importance of price competitiveness and to long-run fiscal stability increased in the peripheral countries. All finally fulfilled the Maastricht criteria; wages as well as unit labour costs are increasing faster than the EU average, but to a small degree. Nevertheless, all three peripheral countries had to depreciate their currencies in order to regain competitiveness: Greece devaluated by 40 %, Spain by 22 % and Portugal by 10 %. Taxes are stable in relation to GDP in Spain and below the EU average, mirroring a lower coverage of social risks. In Portugal, as well as in Greece, taxes are rising, as social expenditures are approaching the EU level from below. Spain and Greece have regained rather sound fiscal positions, partly since growth has been accelerating. Spain enjoys a low tax rate at the expense of low social expenditures. Portugal's budget deficit is increasing as is the deficit in trade balance. Social expenditures are catching up. All three countries have slightly stricter product market regulation than other European countries, and a definitely tighter regulation of the labour market. Regulatory change is less than in the other economies. Contrary to the European trend, Spain increased the regulation of temporary contracts in an effort to supply some security to this rapidly increasing segment of its labour market.

(5) The peripheral countries invest a rather large share of their GDP - as necessary for catching up - and all attract foreign direct investment. The highest investment ratio is in Spain and Greece, where it increased during the second half of the nineties. There is a high amount of construction in infrastructure, specifically telecommunications, with the goal of shortening the large distances within Spain and providing facilities for the Olympic Games in Greece. Direct inward investment is high relative to GDP as compared with EU average, but lower than in Ireland. It is increasing strongly in Spain, somewhat less in Portugal. As far as the scarce data indicate, inward investment decreased in Greece between the beginning and end

of the nineties. Spain and Greece are very active in outward investment. Secondary, as well as tertiary education is high in Greece, rather low in Portugal, Spain excels in tertiary education. Research is considerably below the EU average, but is catching up. The position of Spain for R&D is nearest to the EU average, that of Greece is farthest away.

(6) The overall picture is that the southern peripheral countries have been catching up strongly in the sixties and up to the mid seventies. After that catching up occurred at a disappointing rate and a varying speed across countries and indicators. Convergence specifically stopped or was put in reverse for Greece in general and for productivity per worker in Spain. Fortunately, convergence or re-occurred in the nineties - a period of disappointing growth in Europe in general- and seem to have accelerated in the period of slow growth between 2000 and 2003, specifically in Spain and Greece. The conditions for continued catching up are given in the higher awareness for cost consciousness in the private as well as public sectors. Increasing investment into physical and intangible infrastructure, increasing internal competition and providing the stability as well as incentives for inward investment will enable the continuation and hopefully the acceleration of the convergence process, even if the new members of the European Union make competition much tougher in the markets relevant to the southern peripheral countries. The least favourable prospects are given for Portugal, with toughest competition from EU enlargement, least educated work force and the double deficit in budget and trade.

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Annex 1.1: Recent studies on cross-country differences in economic growth

Author/Institution	Title	Scope	Additional features
Aiginger, K., European Forum at Stanford University, Working Paper 2/2002	The New European Model of the Reformed Welfare State	Analysing performance differences in Europe & determinants	Excellent performance of reformed welfare states with specific innovation policy
Aiginger, K., Landesmann, M., WIFO Working Papers 179/2002	Competitive Economic Performance: The European View	Productivity comparison EU vs. US: determinants on prospect	Impact of differences in industry structure
Ark Van, B., et al., GGCG 2003	ICT Investments and Growth Accounts for the European Union 1980-2000	Contribution of ICT or growth in EU and US	Structural impact in product and labour markets may limit growth
European Commission, 2003	Choosing to grow: Knowledge, innovation and jobs in a cohesive society	Progress of Lisbon Strategy	Role of knowledge, innovation and jobs
European Commission, European Economy 6/2002	The EU Economy 2002 Review	Macroeconomic Development	Convergence of Accession countries
European Commission, European Economy 71/2000	The EU Economy 2000 Review	Is there a new pattern of growth emerging?	Prospects and challenges for Europe
European Commission, 2002	The competitiveness Report 2002	Productivity growth in services	Human capital, environmental performance
European Commission, 2001	The competitiveness Report 2001	Productivity and innovation	Increasing gap to USA; industry study on biotechnology
European Commission, 2000	The competitiveness Report 2000	Competition in quality	Industry study on service inputs, pharmaceuticals
Gordon, R.J., North-western University, 2002	Two Centuries of Economic Growth: Europe Chasing the American Frontier	Performance Europe vs. US in the long and short run	Specific differences in per capita and per hour performance
McMorrow, K., Roeger, W., European Commission, Economic papers no 150, 2001	Potential Output: Measurement Methods	New Economy effect on potential growth	Growth scenarios for the EU and the USA
OECD, 2003	The Sources of Economic Growth in OECD Countries	Econometric evidence and growth determinants	Impact of regulation and public sector human capital
OECD, 2001	The New Economy: beyond the hype, Final report on the OECD Growth Project	Explaining differences in growth performance of OECD countries	Policy conclusions
Pichelmann, K., Roeger, W., Review of International Economics 2003	The EU Growth Strategy and the Impact of Ageing	Impact of ageing on growth and stability pact	Changes in work incentives needed

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