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Competitiveness of Europe in comparison to US

Lessons from economic performance in the nineties

Central European Initiative (CE)
Prague, Parliament, 28. 4. 2005

Karl Aiginger
Austrian Institute of Economic Research
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The outline

- Superior US growth performance
- Performance across EU countries (EU15)
- Analysis of the top 3 countries
- Towards a new model?

The research line

Competitiveness studies for DG Enterprise Commission 1998 – 2002 (DG-Enterprise)

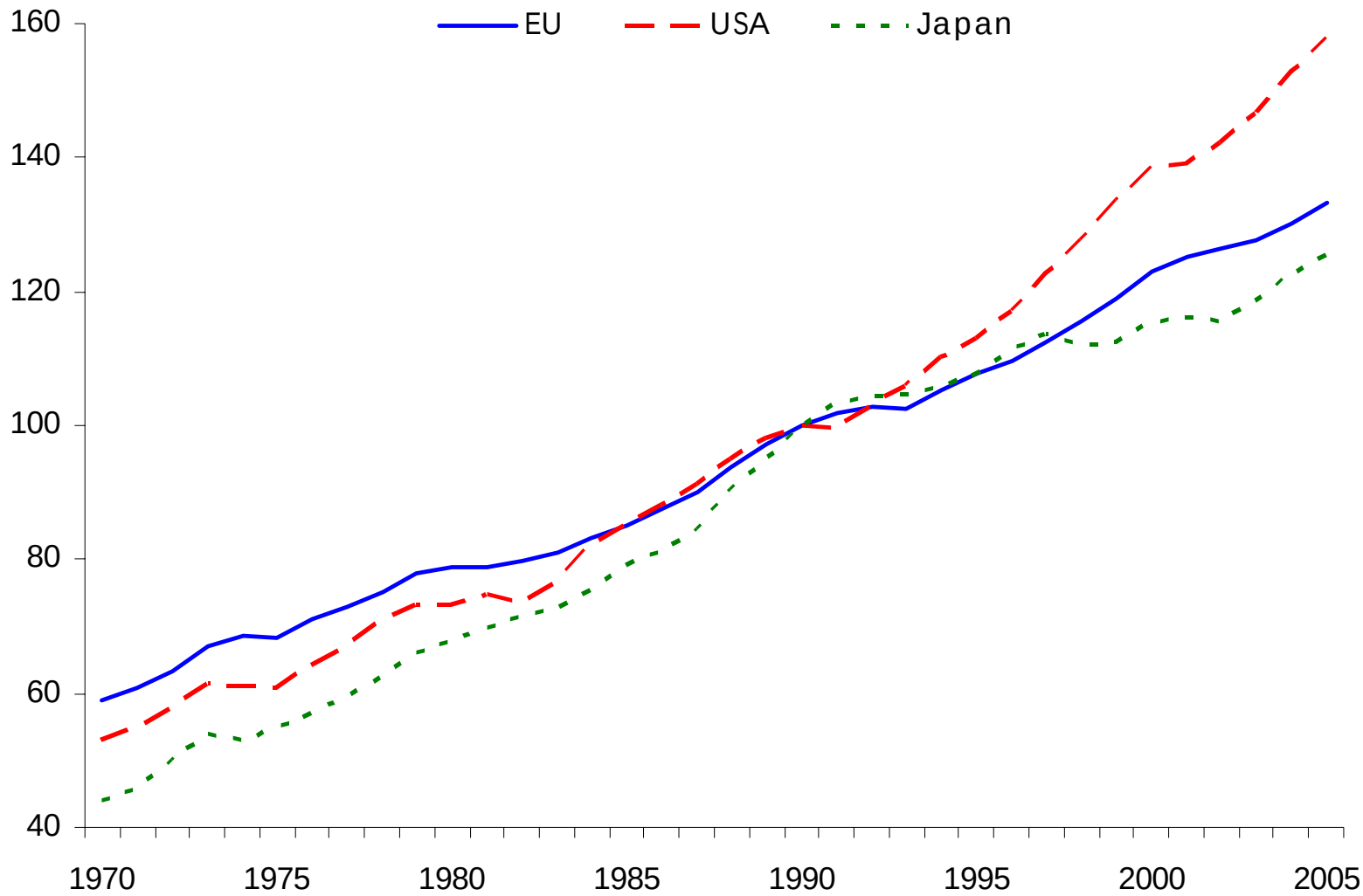
Research at European Forum at Stanford University

The Economic Agenda: A View from Europe
(Review of International Economics Vol. 12(2), 2004, pp. 187-206)

The three tier strategy followed by successful European countries in the nineties
(International Review of Applied Economics Vol. 18(4), 2004, pp. 399-422)

http://www.wifo.ac.at/Karl.Aiginger

Growth of real GDP (1990=100)



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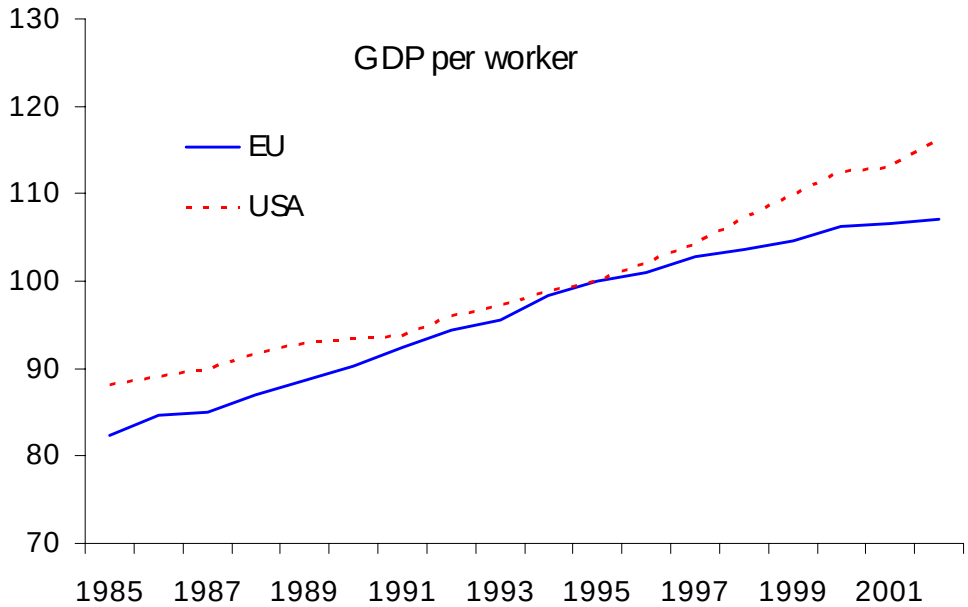
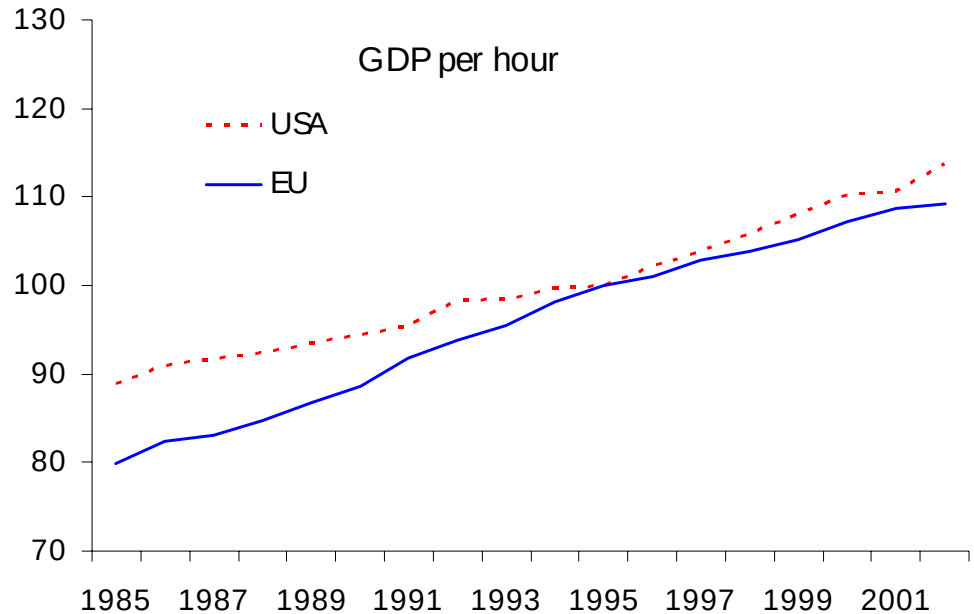
Growth difference US – Europe:

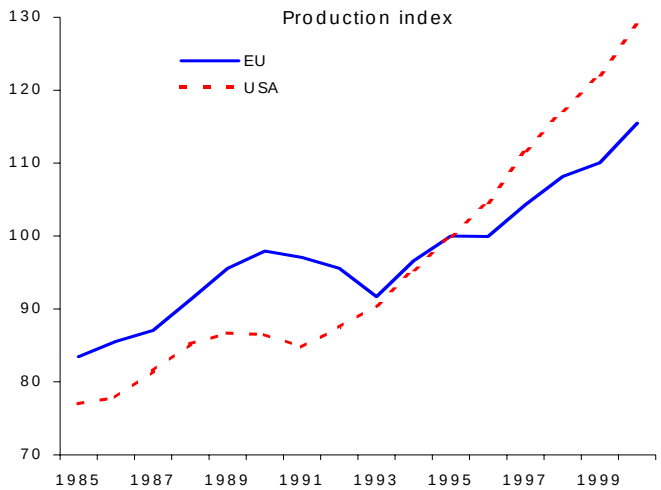
	Total economy				Manufacturing			
	Growth of real GDP		Labour productivity		Growth of output		Labour productivity	
	EU	USA	EU	USA	EU	USA	EU	USA
	Growth p.a. in %							
1993/2002	2.0	3.2	1.4	1.5	1.8	3.7	2.7	4.0
1994/2002	2.3	3.3	1.4	1.6	2.4	3.7	2.8	4.0
1995/2002	2.3	3.2	1.2	1.7	2.1	3.5	2.2	4.0
1996/2002	2.2	3.3	1.1	1.9	1.9	3.3	2.1	4.1
1997/2002	2.3	3.2	1.1	1.9	2.1	3.1	2.2	4.0
1998/2002	2.3	3.0	1.0	1.9	1.8	2.3	1.9	3.6
1999/2002	2.2	2.6	0.9	1.9	1.4	1.6	1.7	3.4
2000/2002	2.0	2.1	0.8	1.7	1.3	0.9	1.6	2.9
2001/2002	1.3	1.3	0.5	1.7	-0.5	-0.8	0.1	1.8

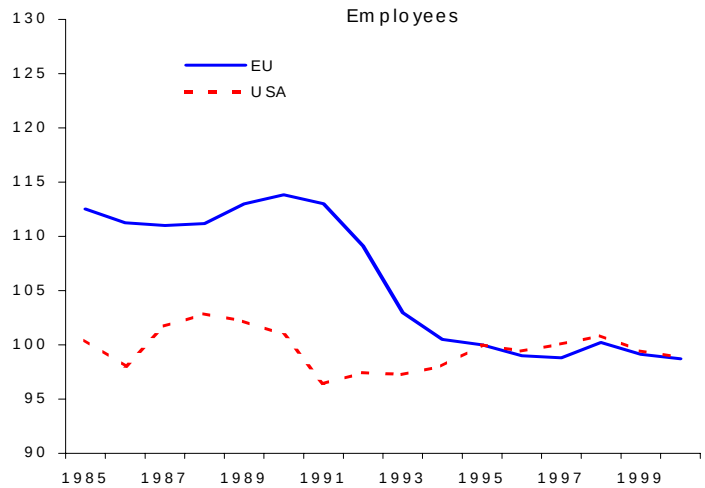
US growth in productivity

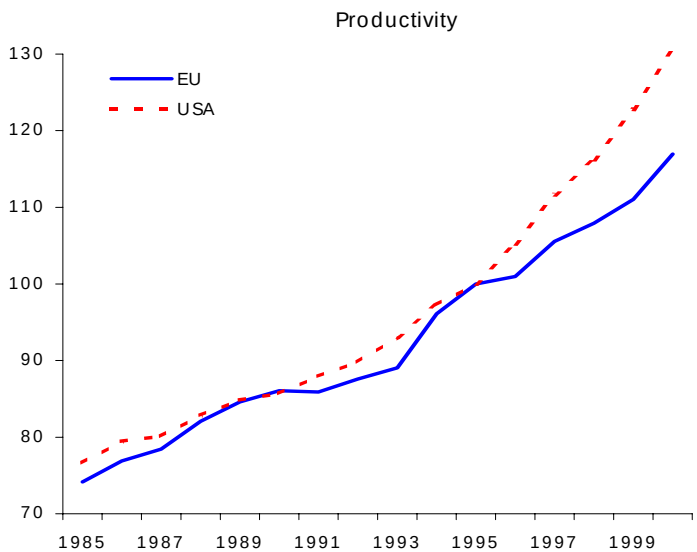




US forges ahead in productivity, esp. in manufacturing







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Caveats

- A few years of evidence: 1995 ff.
- Data corrections, prices in ICT sector
- Labour productivity (per worker)
- Total factor productivity
- Influence of business cycles
- Timing and prudence of fiscal & monetary policy

The US-European divide: Summary

- The US outperformed Europe in the nineties
- Higher growth in GDP, manufacturing, employment
- Acceleration of productivity vs. deceleration in EU
- Higher productivity growth in the US

The last point is the surprise:

The leader in productivity increased its lead

- Difference in per capita GDP declined from 40% to 30% (60/90)
- Stopped to decline or widened since that
- Difference per hour is smaller 10% (+4% 95/02)

US vs. Europe: The underlying causes

The main reasons:

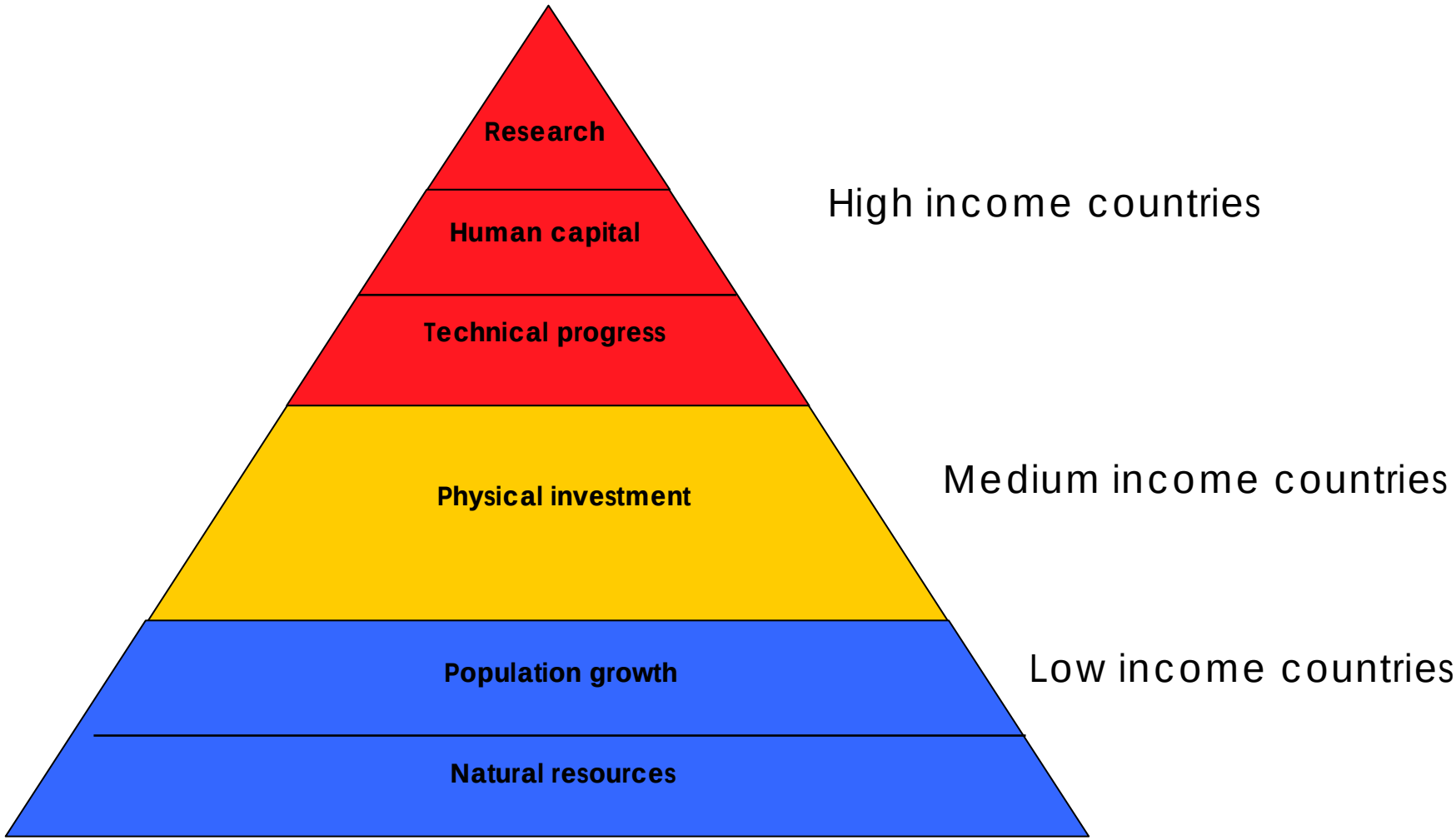
- The US invested more in drivers of growth
- The US innovation system is superior for a New General Purpose Technology (ICT)

The long run determinants (drivers) for growth

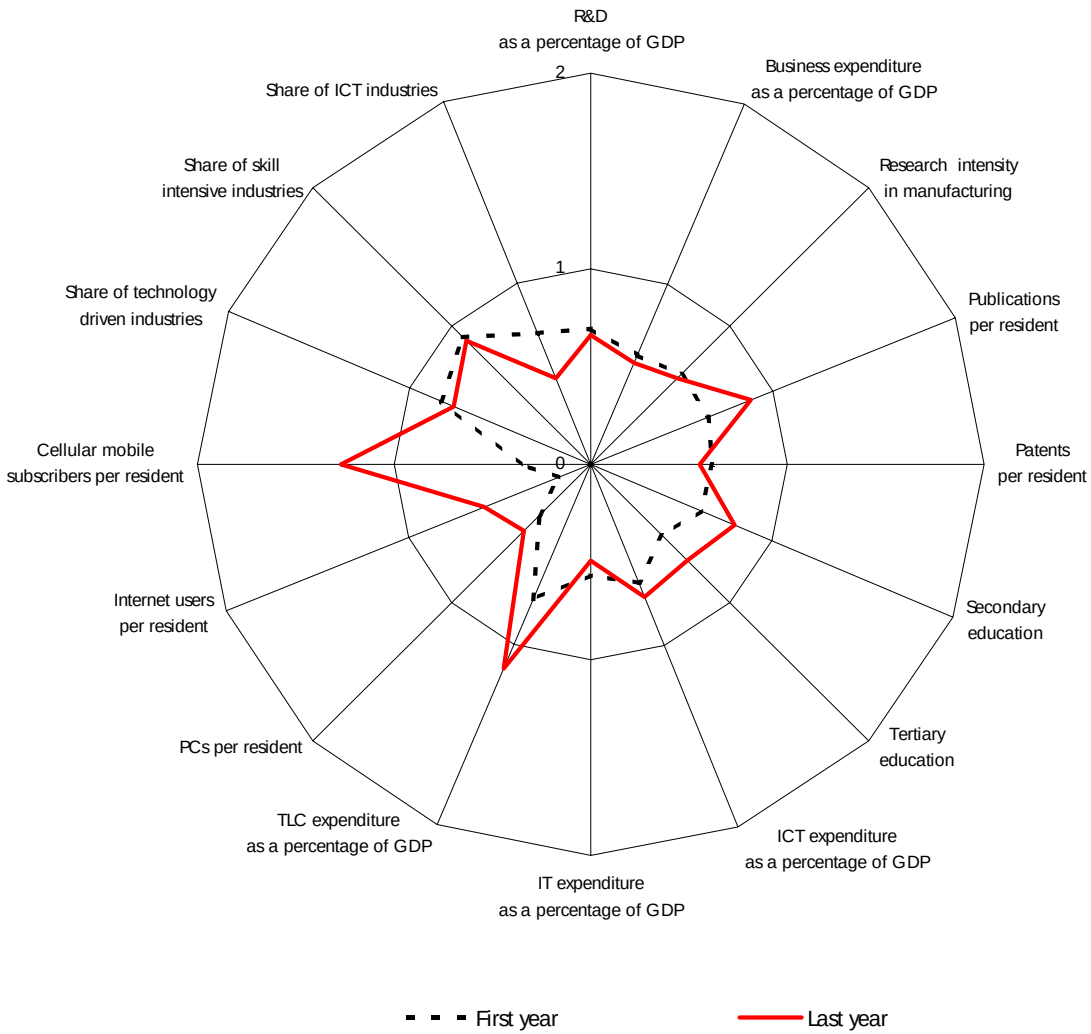
- Research and development
- Human Capital
- Diffusion of new technologies

System of 16 indicators

Growth triangle for long-run growth drivers



Growth drivers Europe vs. USA



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Facit US vs. Europe

1990: The US lead in all 16 growth drivers

End of 90s: EU catching up in 4 indicators

EU leading in 2

US lead in GDP and productivity is in line with growth theory in the 90s

Will the US lead in growth of output and productivity persist for another decade?

Arguments in favour of persistent differential:

- Higher level of research, education
- Higher efficiency in research and education
- New lead in biotech
- Taxes, welfare, labour flexibility, migration, administration persist

Arguments for European catching up:

- Budget deficits (structural component) closer to zero
- Common currency/policy reduces transaction costs and prevents permissive strategies
- High quality products and division of labour with accession countries
- Decreasing deficit in some growth drivers and ambitious goals
- Welfare reforms and moderate low cost strategies pursued now in EU
- Europe is better in diffusion of technologies than in starting phase

Problems dampening US growth

- Current account deficit (5 - 6% of GDP)
- Investors confidence in Corporate Governance
- The security costs (September 11 plus Iraq war)
- Impact and lead in biotech smaller than in ICT

The overall assessment:

The underlying forces, which created the differences, still should work, but lead should be smaller

And the cumulative dynamics of a trend change can never be forecast with precision

Performance across EU countries: Performance measurement

- Growth of output and productivity
- Unemployment/employment
- Price stability/fiscal discipline
- Productivity level

Combination of 13 indicators

1993 - 2002

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13 indicators finally chosen

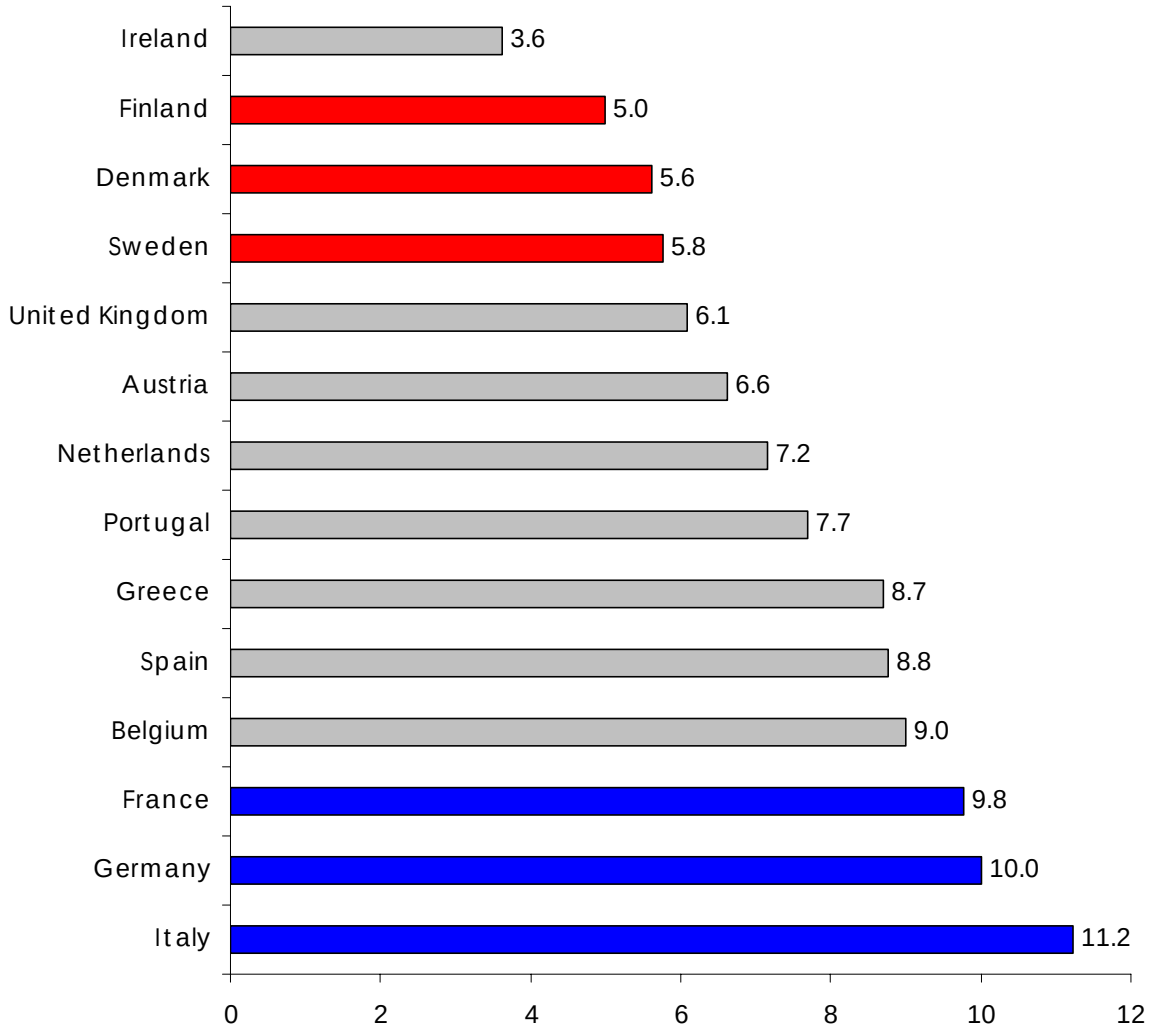
- Growth of real GDP 1993 - 2002
- Growth of productivity total economy
- Growth of potential output
- Growth in manufacturing
- Growth of productivity in manufacturing
- Employment rate: average 1993 - 2002
- Unemployment rate: average 1993 - 2002
- Inflation rate: average 1993 - 2002
- Share of public debt in GDP 2002
- Share of budget deficit in GDP 2002
- Share of taxes in GDP 2002
- Share of government expenditures in GDP 2002
- GDP per capita at PPP 2002

Main results according to 13 indicators

	Superrank Average rank	Performance ranking
Belgium	9.0	11
Denmark	5.6	3
Germany	10.0	13
Greece	8.7	9
Spain	8.8	10
France	9.8	12
Ireland	3.6	1
Italy	11.2	14
Netherlands	7.2	7
Austria	6.6	6
Portugal	7.7	8
Finland	5.0	2
Sweden	5.8	4
United Kingdom	6.1	5

Macro economic performance of European countries

Ranks according to 13 indicators



Results and decision to group countries

Growth is faster and productivity is accelerating in
S, SF, DK

These countries lead in a broader performance evaluation

Growth is slower in the big countries
D, F, I

UK and Ireland are special cases, not included

The overall divide is between small Nordic countries
and big continental European countries

Main results

	Belgium	Den-mark	Germany	Greece	Spain	France	Ireland	Italy	Nether-lands	Austria	Portugal	Finland	Sweden	United Kingdom
Real growth of GDP	11	9	14	6	5	12	1	13	7	10	8	2	3	4
Macro productivity growth	9	6	13	4	14	11	1	10	12	7	8	3	2	5
Manufacturing growth	10	5	13	9	7	8	1	12	11	3	6	2	4	14
Productivity growth in manufacturing	9	6	8	4	7	13	1	14	11	3	5	2	10	12
Potential output	11	9	13	6	2	12	1	14	4	10	3	5	8	7
Total Factor Productivity	12	5	14	6	13	8	1	9	7	10	11	2	3	4
Employment rate	11	1	7	13	14	9	10	12	5	4	6	8	3	2
Unemployment rate	8	4	7	10	14	11	9	12	2	1	3	13	6	5
Inflation rate	5	7	4	14	12	1	10	11	9	6	13	2	3	8
Budget deficit in % of GDP	4	2	13	10	5	14	9	11	8	6	12	1	3	7
Public debt in % of GDP	13	4	10	12	7	9	1	14	6	11	8	3	5	2
Taxes in % of GDP	9	13	7	5	2	10	1	6	8	11	4	12	14	3
GDP per capita at PPP 2002	5	2	7	14	12	9	1	8	3	4	13	10	11	6
Superrank comprehensive	9.0	5.6	10.0	8.7	8.8	9.8	3.6	11.2	7.2	6.6	7.7	5.0	5.8	6.1
Superrank ranked	11	3	13	9	10	12	1	14	7	6	8	2	4	5

Different roads to success: Sweden

- Success in ICT
- Leading country in European research
- Strong manufacturing growth, inc. Productivity
- Budget surplus (target +2 %)
- High growth after strong decline
- GDP per capita only average (after devaluation)

Different roads to success: Finland

- Specific success in ICT
- Clustering policy (forest/paper cluster)
- High growth in manufacturing
- Unprecedented acceleration in R&D
- Excellence in education (Pisa rating)
- Unemployment declining but still high

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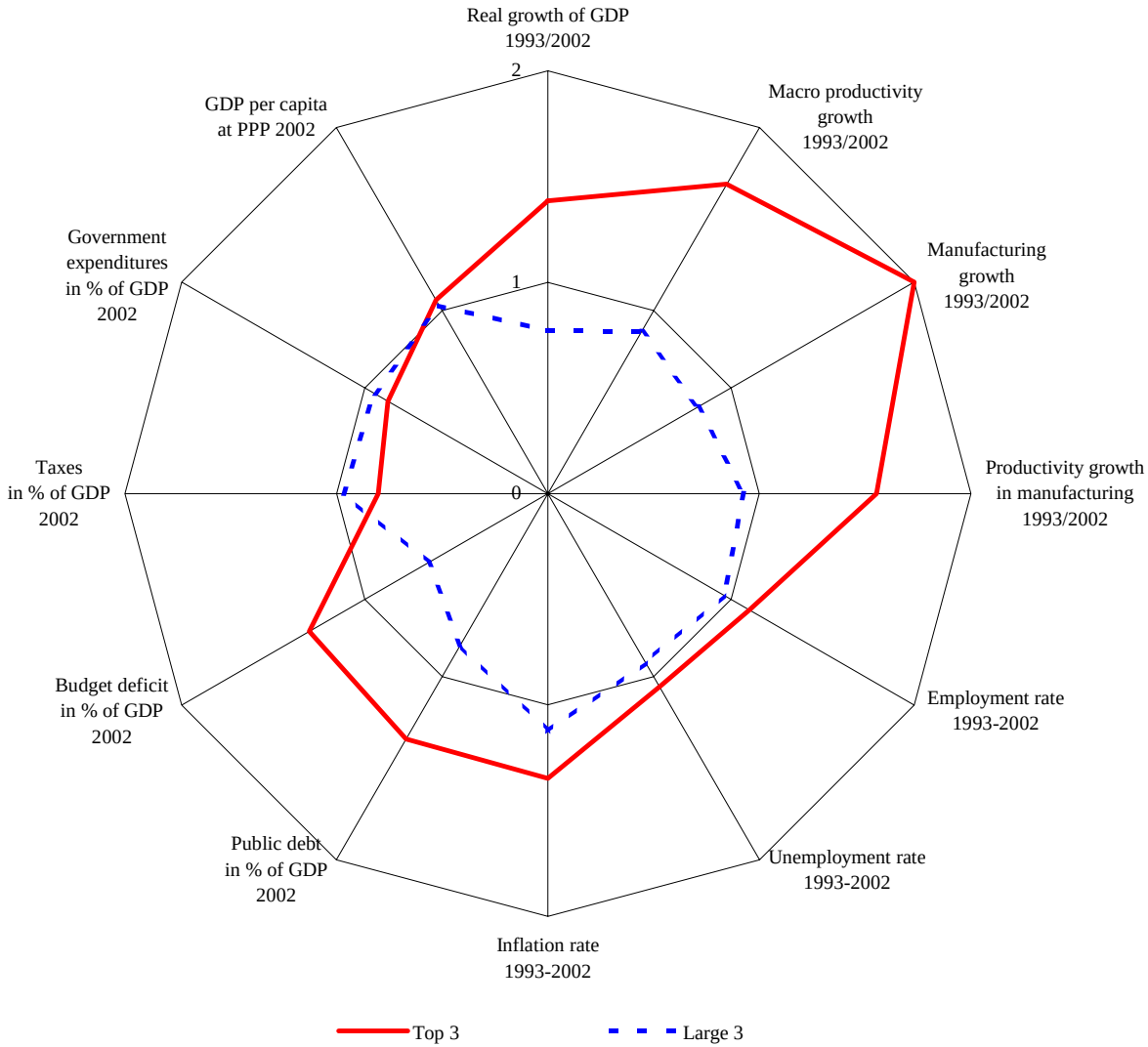
Different roads to success: Denmark

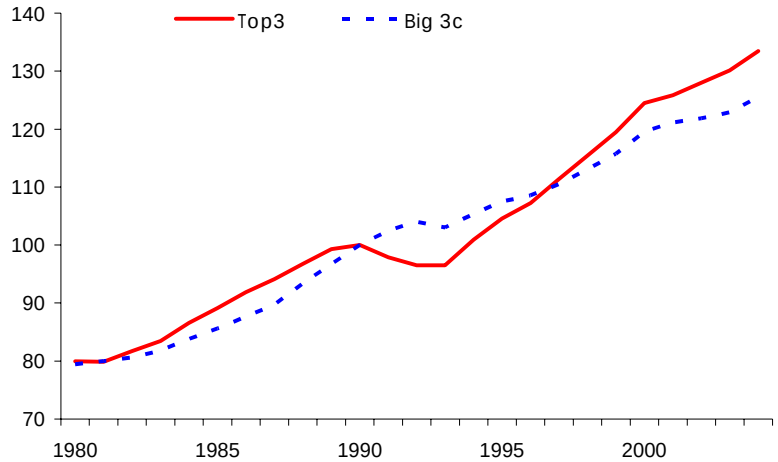
- Excellence in ICT use
- Excellence in education
- Highest per capita income, high productivity
- Leading in active labour market policy
- Inclusive, responsible, decentralised work activation scheme
- High replacement rate for low incomes only and based on obligation (after 2 years)
- Cluster policies (health, biotech, pharmaceuticals)

Performance Top 3 resp. Big 3c vs. EU

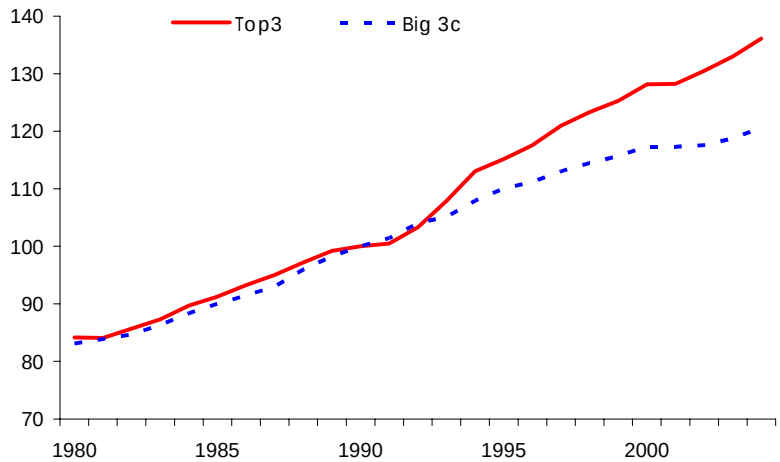


Differences between top 3 and big 3c

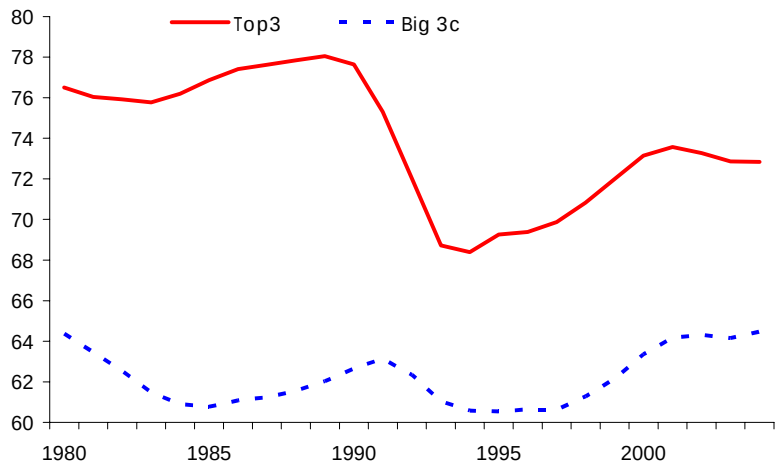
GDP real (1990=100)



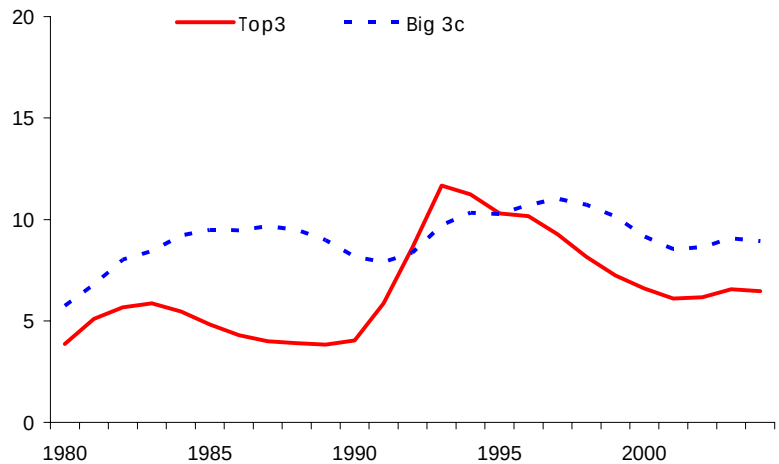
GDP per worker (1990=100)



Employment rate

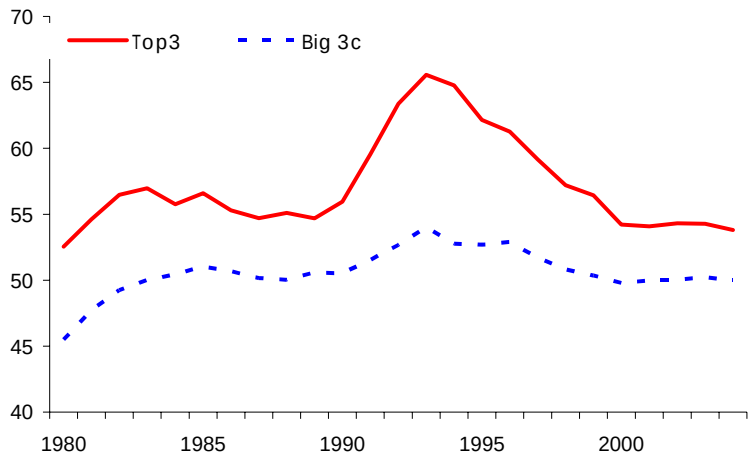


Unemployment rate

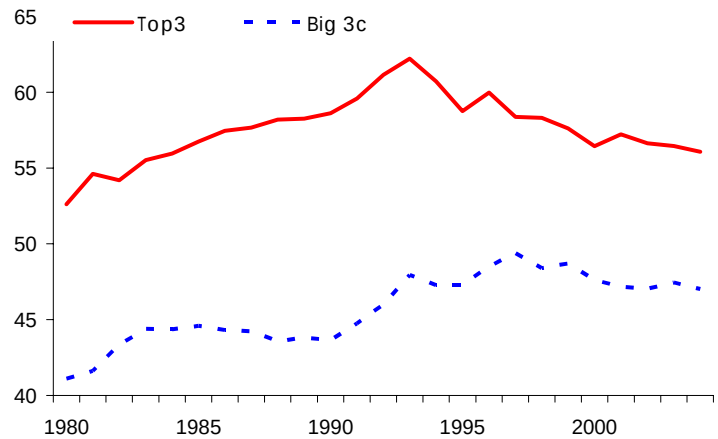


Differences between top 3 and big 3c

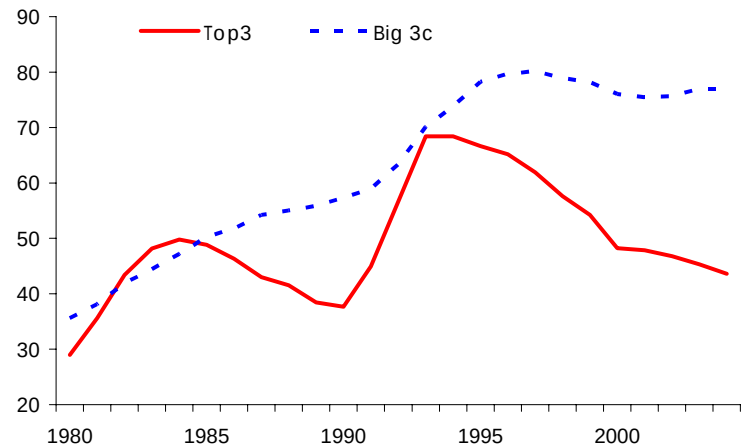
Government expenditures in % of GDP



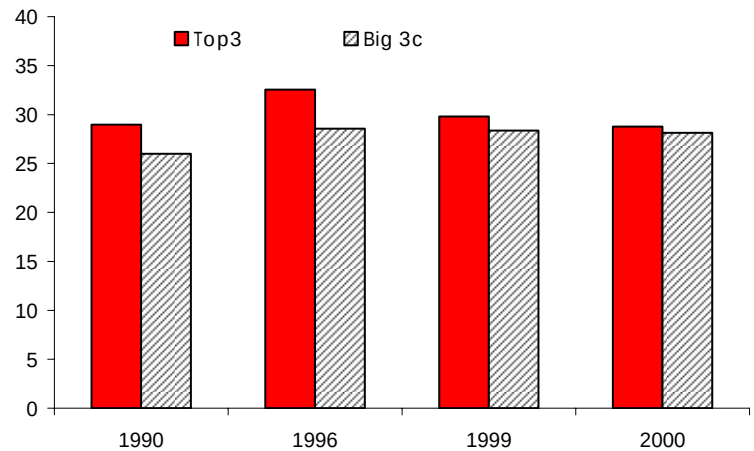
Taxes in % of GDP



Public debt in % of GDP



Social expenditure



The common characteristics of successful countries

Structural characteristics

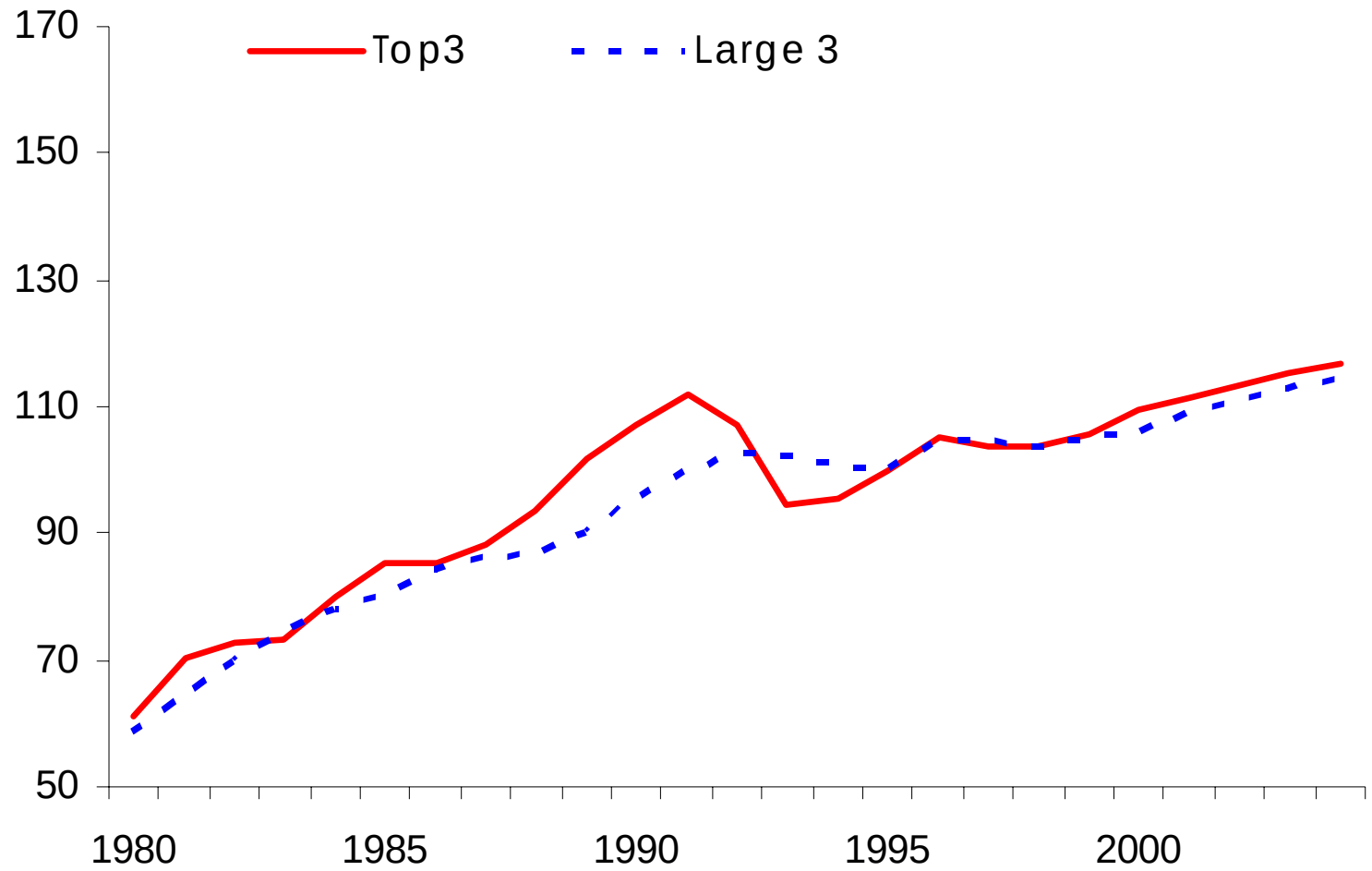
- Small countries
- Open economies
- Nordic countries
- Tripartite policy co-ordination
- Welfare States
- Large crisis in eighties and nineties

Three common elements of successful European countries

1. Bringing costs in line with achievements
   Private costs with productivity
   Government expenditures with taxes
2. Reforming institutions without changing the system
   Labour market reforms
   Product market reforms
   Incentives/social costs
3. Investing into the future
   Boosting growth
   Increasing productivity

The first and the second are necessary conditions,
the third is the sufficient condition

Unit labour costs
Top 3 vs. Big 3



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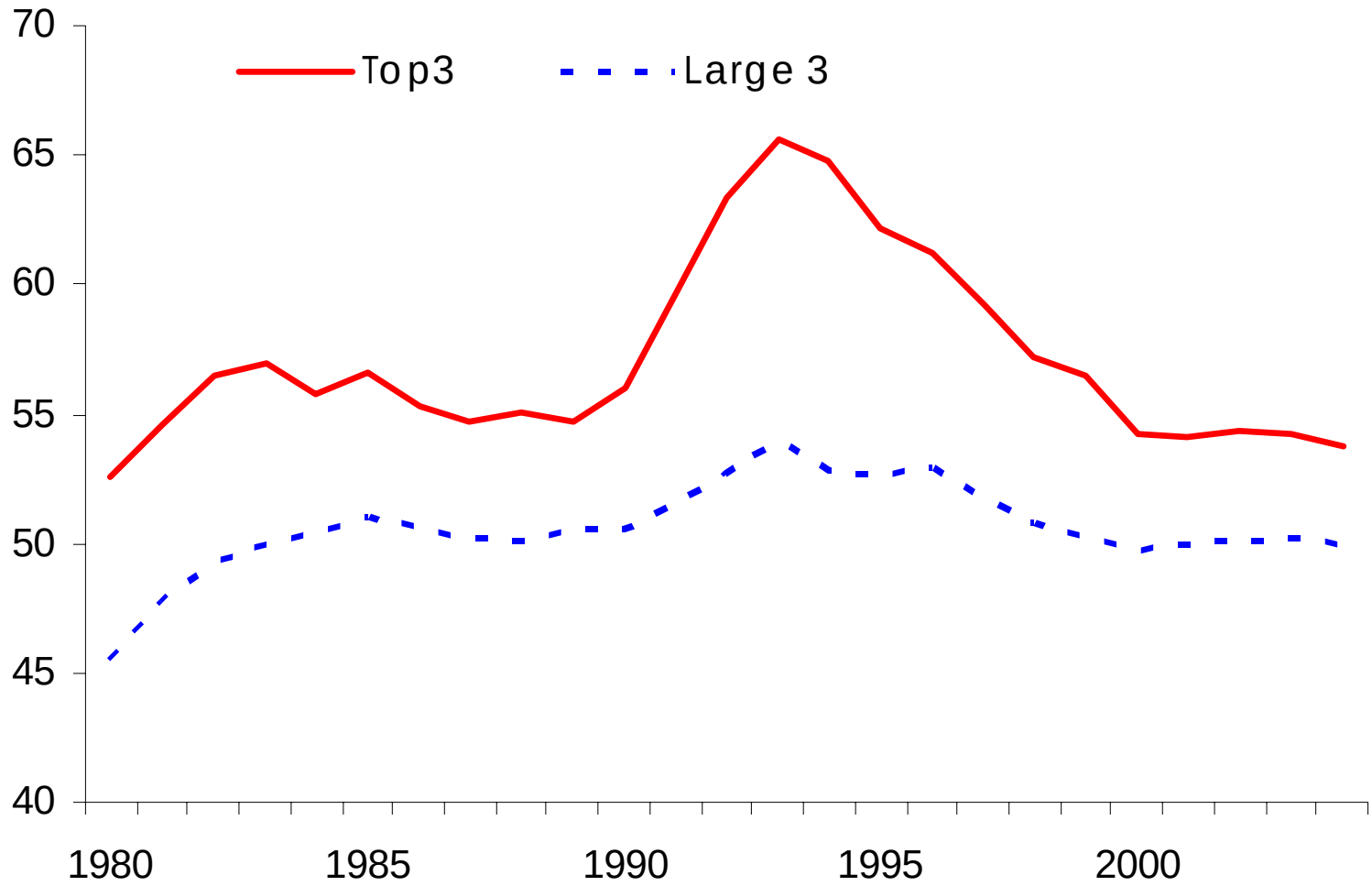
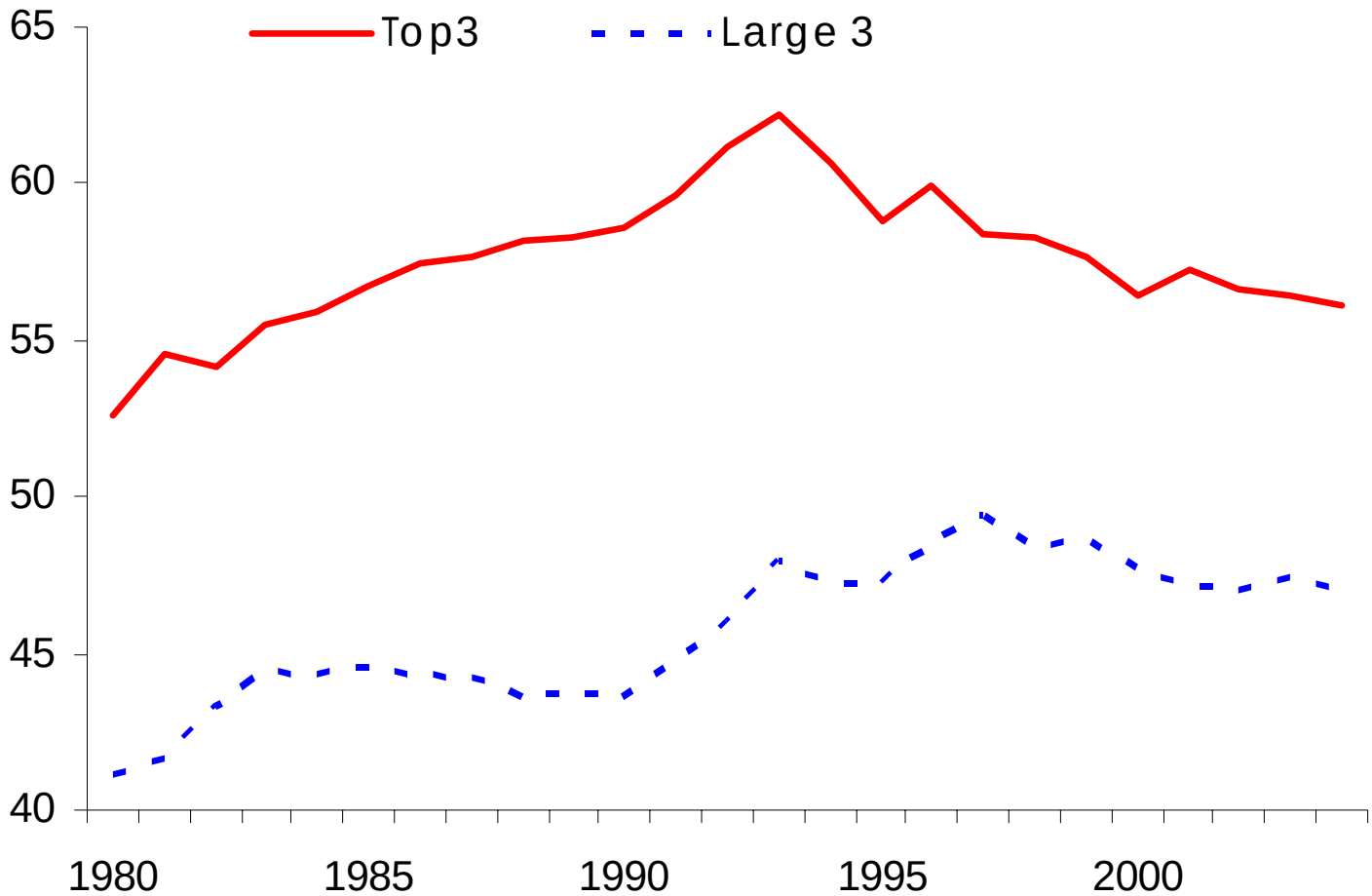
Costs

	Wages		Unit labour costs		Taxes in % of GDP		
	Growth 1983/1992	Growth 1993/2002	Growth 1983/1992	Growth 1993/2002	1990	1995	2002
EU	6.5	3.9	3.7	1.6	43.5	46.3	45.5
Japan	9.8	3.9	4.8	2.4	34.6	32.8	33.0
USA	3.6	8.5	0.2	4.9	31.1	31.9	31.6
Top3	6.0	3.7	4.0	0.7	58.6	58.8	56.6
Big 3	6.7	2.7	3.9	0.9	43.7	47.3	47.0

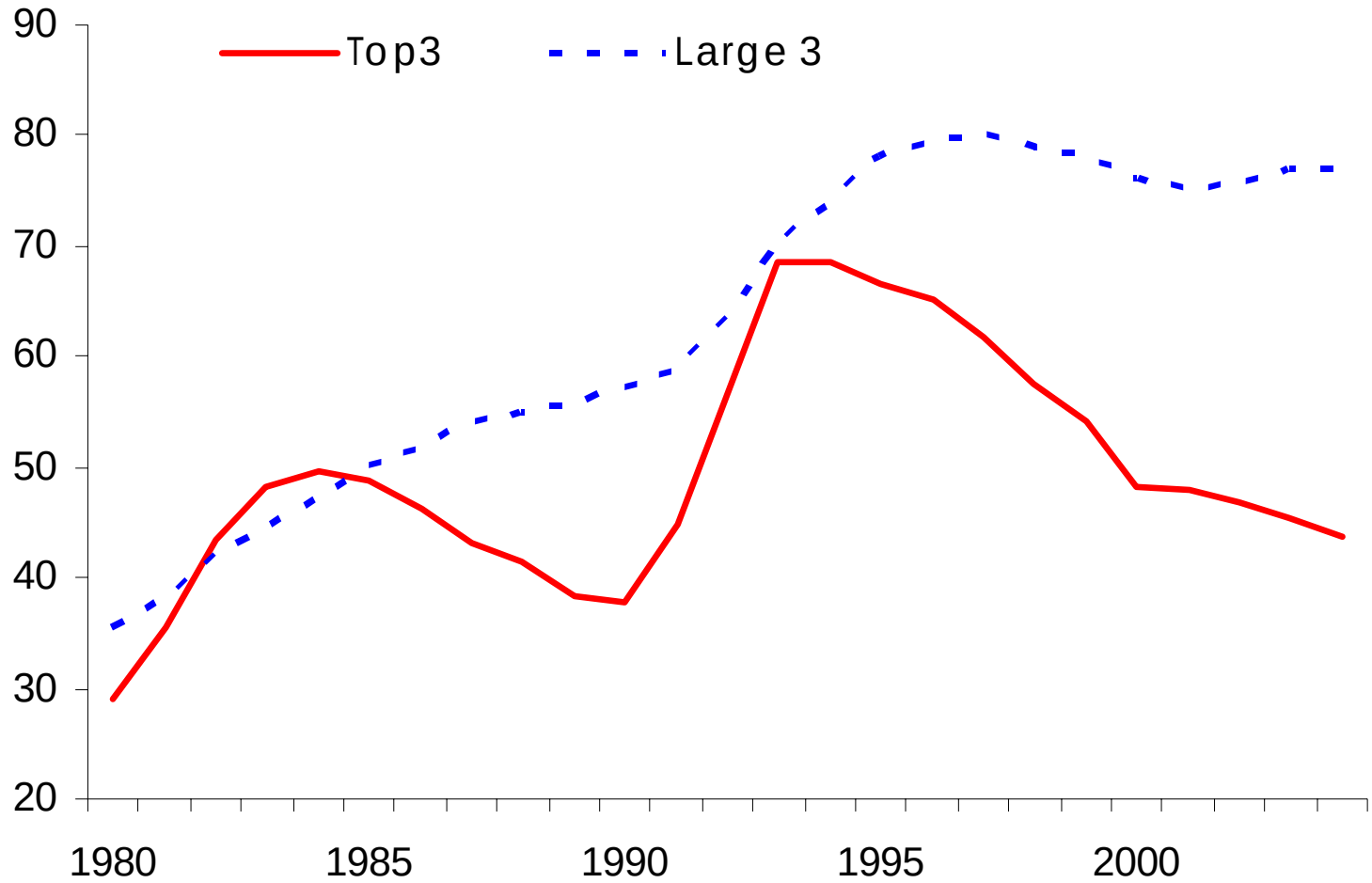
Government expenditures in % of GDP
Top 3 vs. Big 3



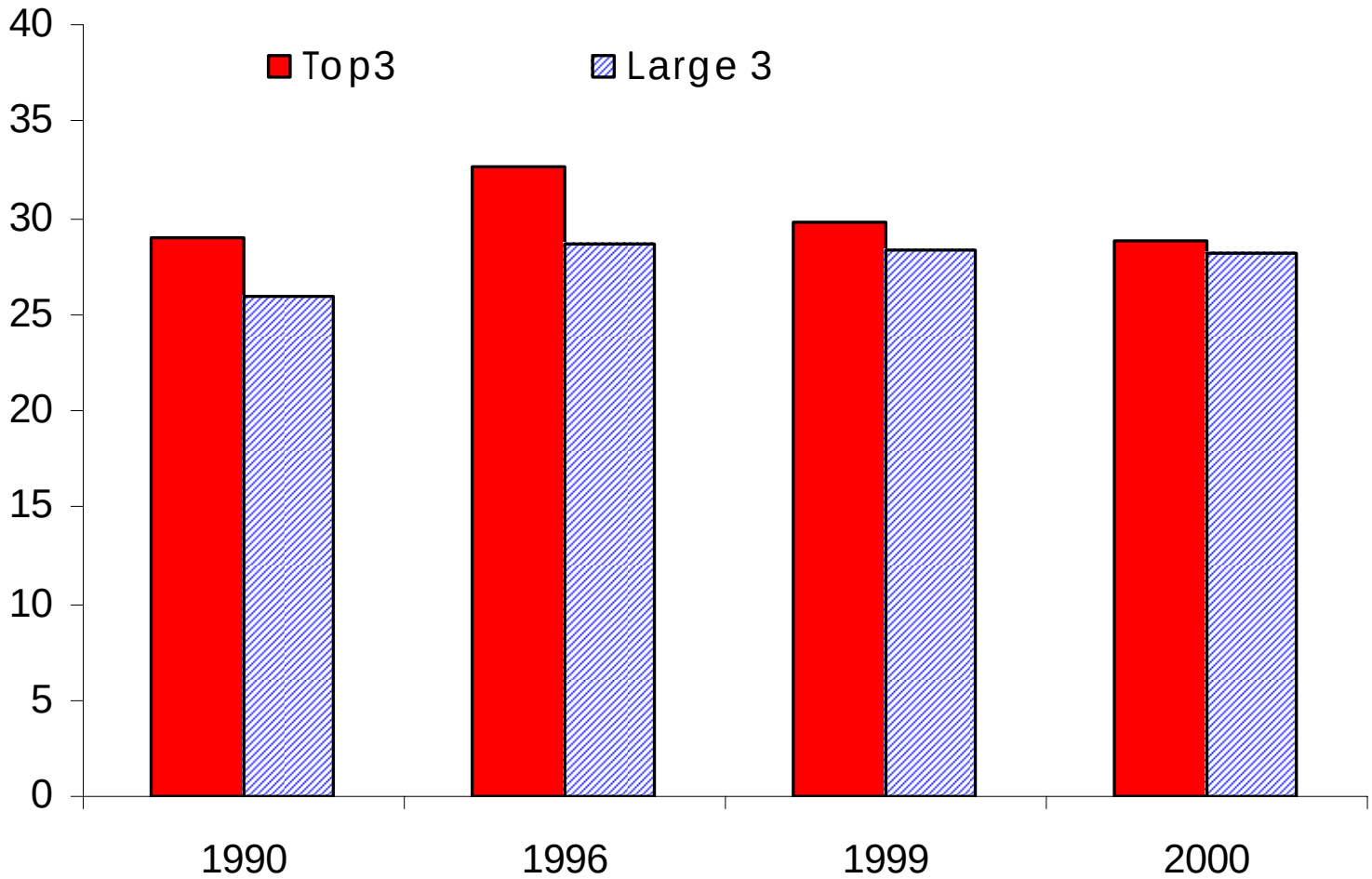
Taxes (total revenues) in % of GDP
Top 3 vs. Big 3



Public debt in % of GDP
Top 3 vs. Big 3



Social expenditures in % of GDP
Top 3 vs. Big 3



Social expenditures in % of GDP
Top 3 vs. Big 3

	1990	1996	1999	2000
EU	25.5	28.4	27.5	27.3
Top3	28.97	32.57	29.80	28.77
Large 3	26.00	28.57	28.37	28.13

Source: EUROSTAT, ESSOSS

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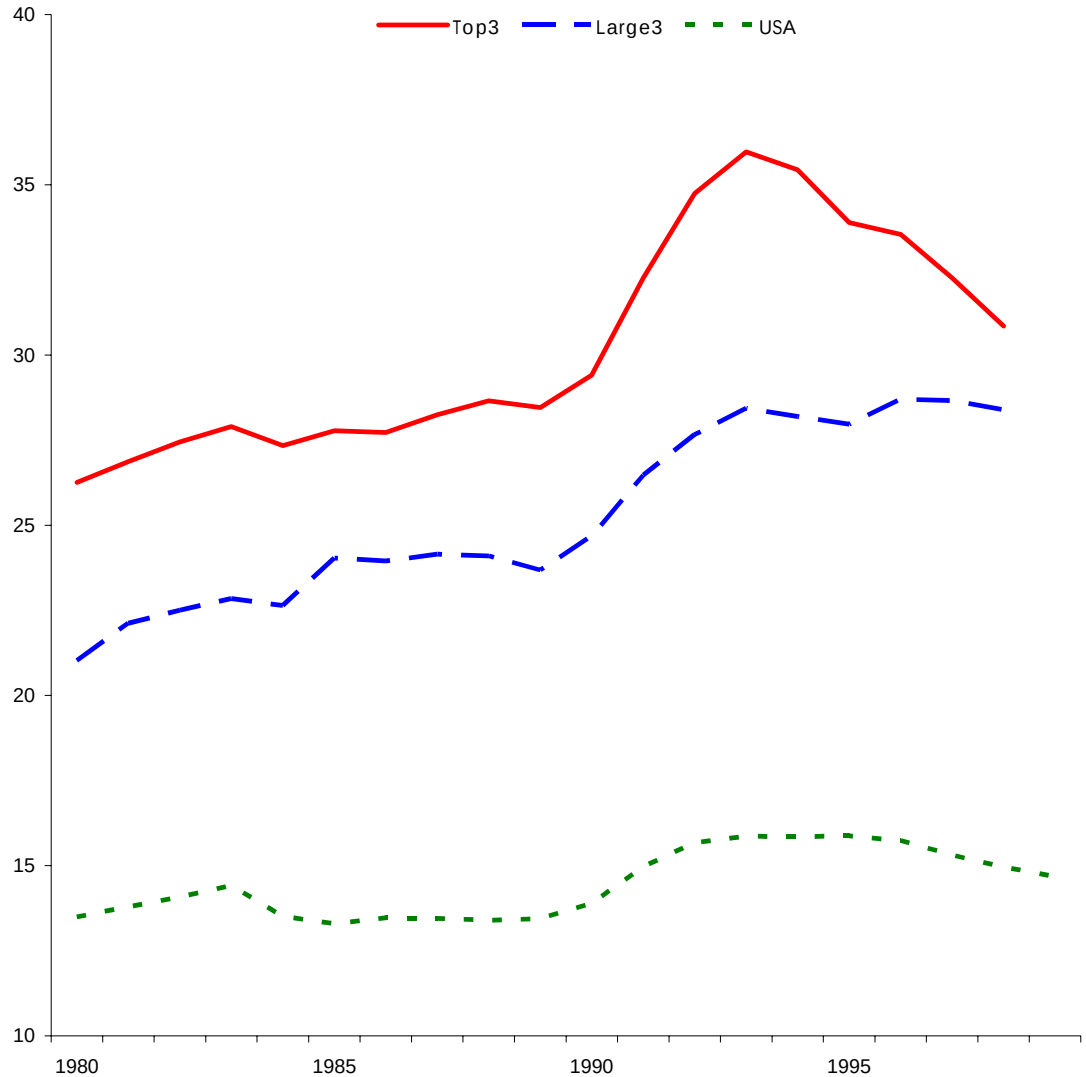
Social expenditures in % of GDP
Top 3 vs. Big 3

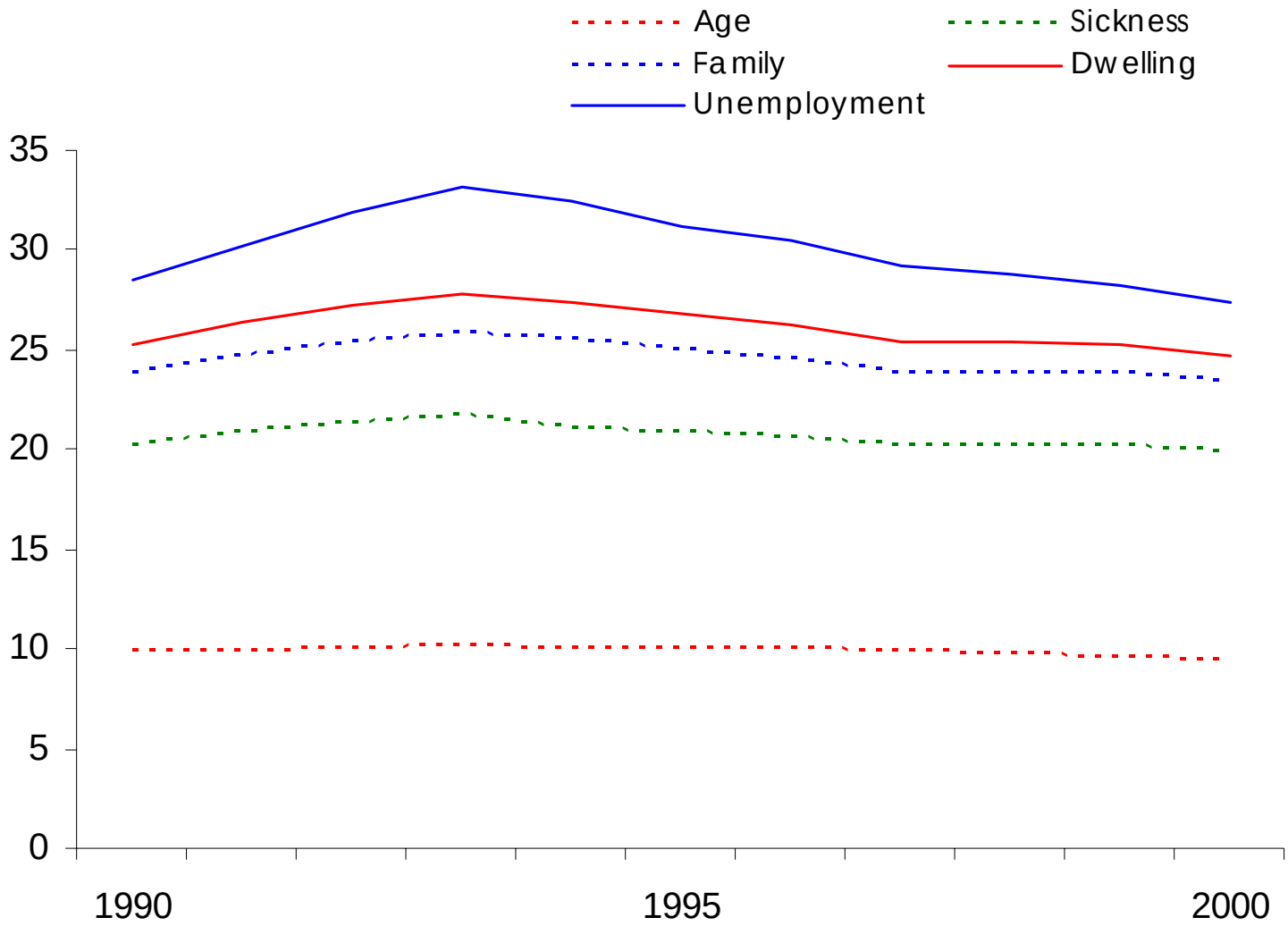
	Top3	Large3	EU average	USA	Austria
1980	26.3	21.0	21.3	13.5	24.8
1981	26.9	22.1	22.4	13.8	25.1
1982	27.4	22.5	23.0	14.1	25.4
1983	27.9	22.8	23.4	14.4	25.7
1984	27.3	22.6	23.1	13.5	26.0
1985	27.8	24.0	24.0	13.3	26.3
1986	27.7	24.0	24.0	13.5	26.3
1987	28.3	24.1	24.1	13.5	26.3
1988	28.7	24.1	23.9	13.4	26.2
1989	28.5	23.7	23.5	13.4	26.2
1990	29.4	24.7	24.4	13.9	26.2
1991	32.3	26.5	25.8	15.0	26.4
1992	34.7	27.7	26.9	15.7	27.1
1993	36.0	28.4	27.9	15.9	28.4
1994	35.4	28.2	27.6	15.9	29.1
1995	33.9	28.0	27.0	15.9	29.0
1996	33.5	28.7	27.2	15.7	29.0
1997	32.3	28.7	26.6	15.3	28.0
1998	30.9	28.4	26.1	15.0	27.8

Source: OECD.

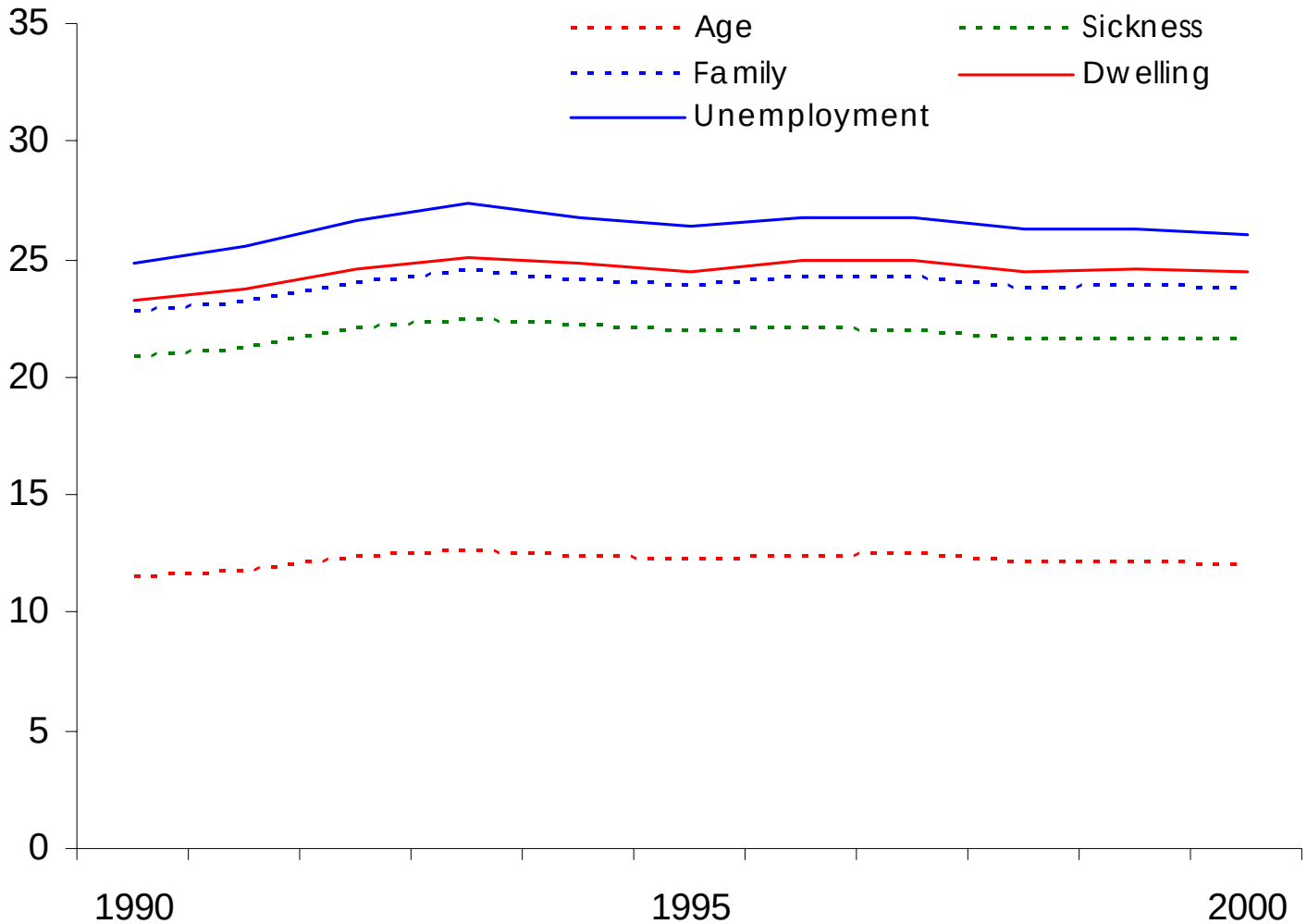
Social expenditures in % of GDP



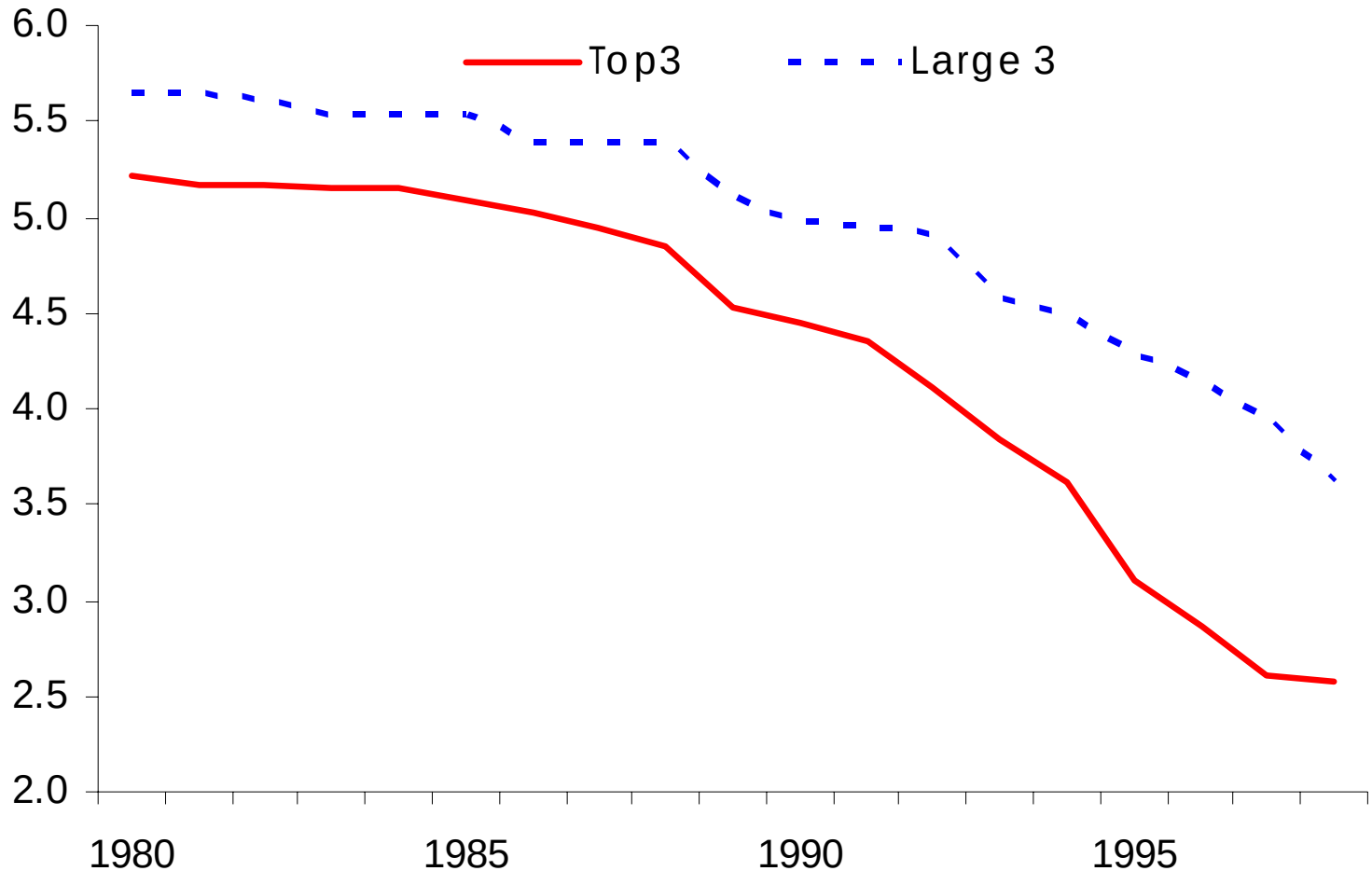
Social expenditures in % of GDP
Top 3



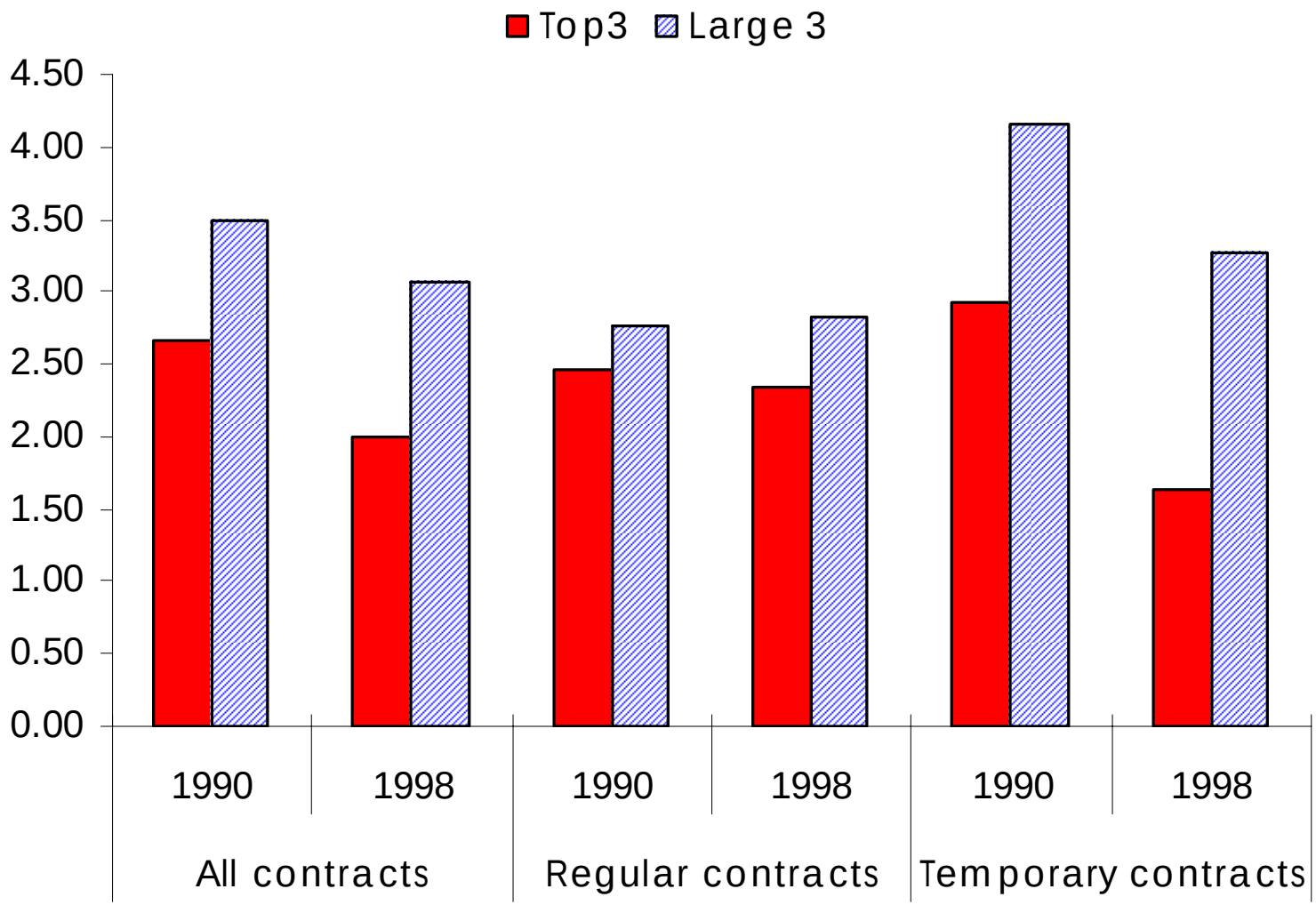
Social expenditures in % of GDP
Big 3



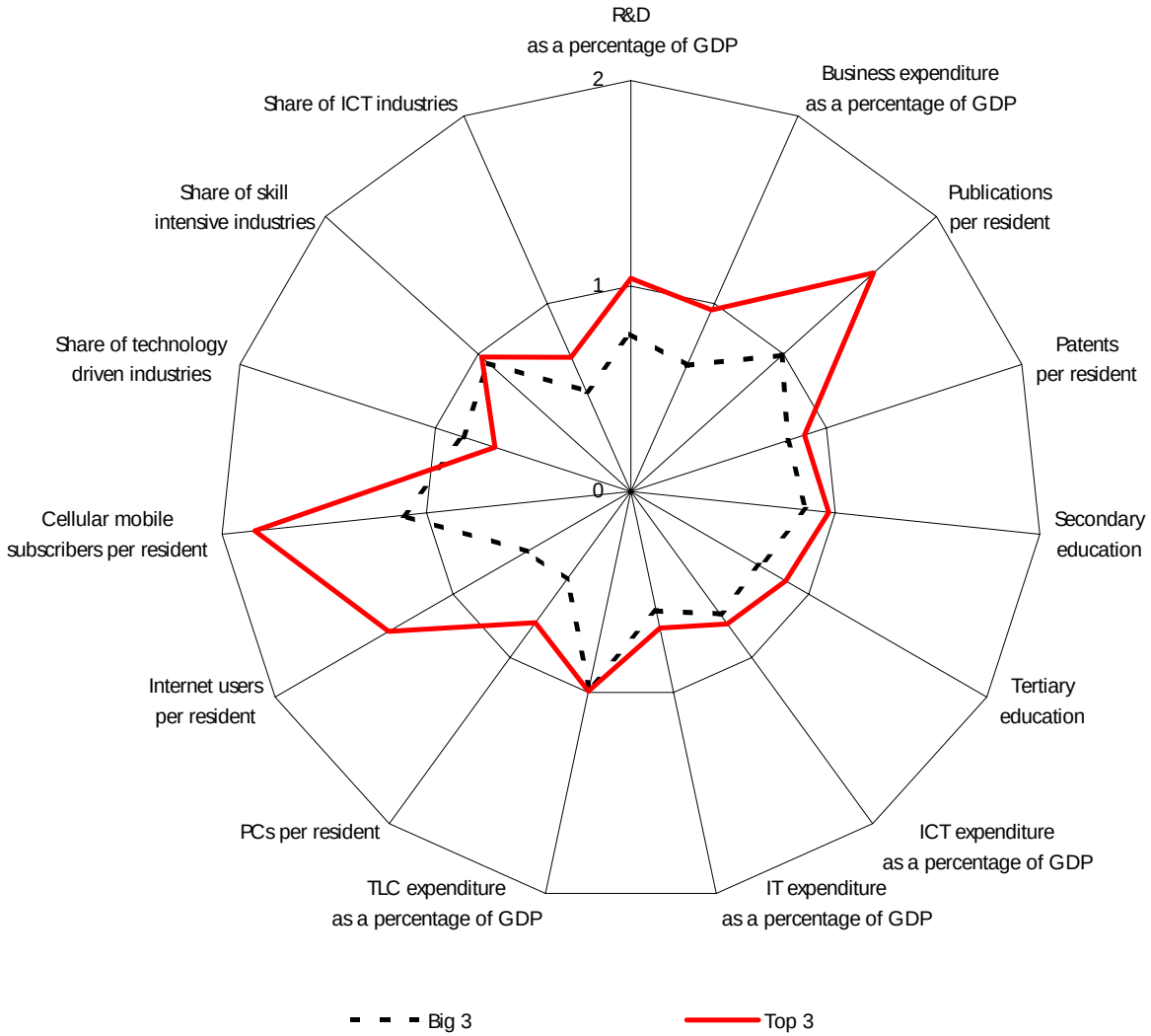
Product market regulation
Top 3 vs. Big 3



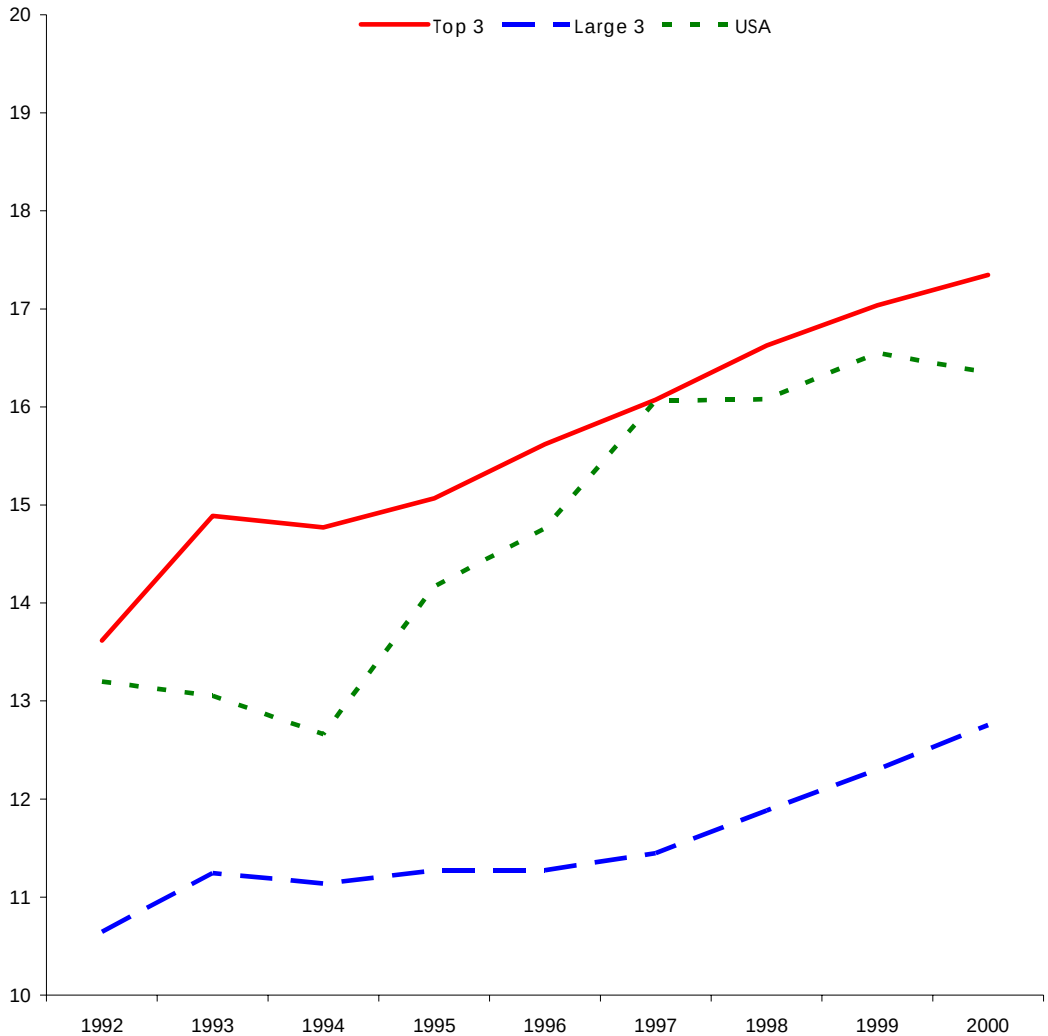
Labour market regulation
Top 3 vs. Big 3



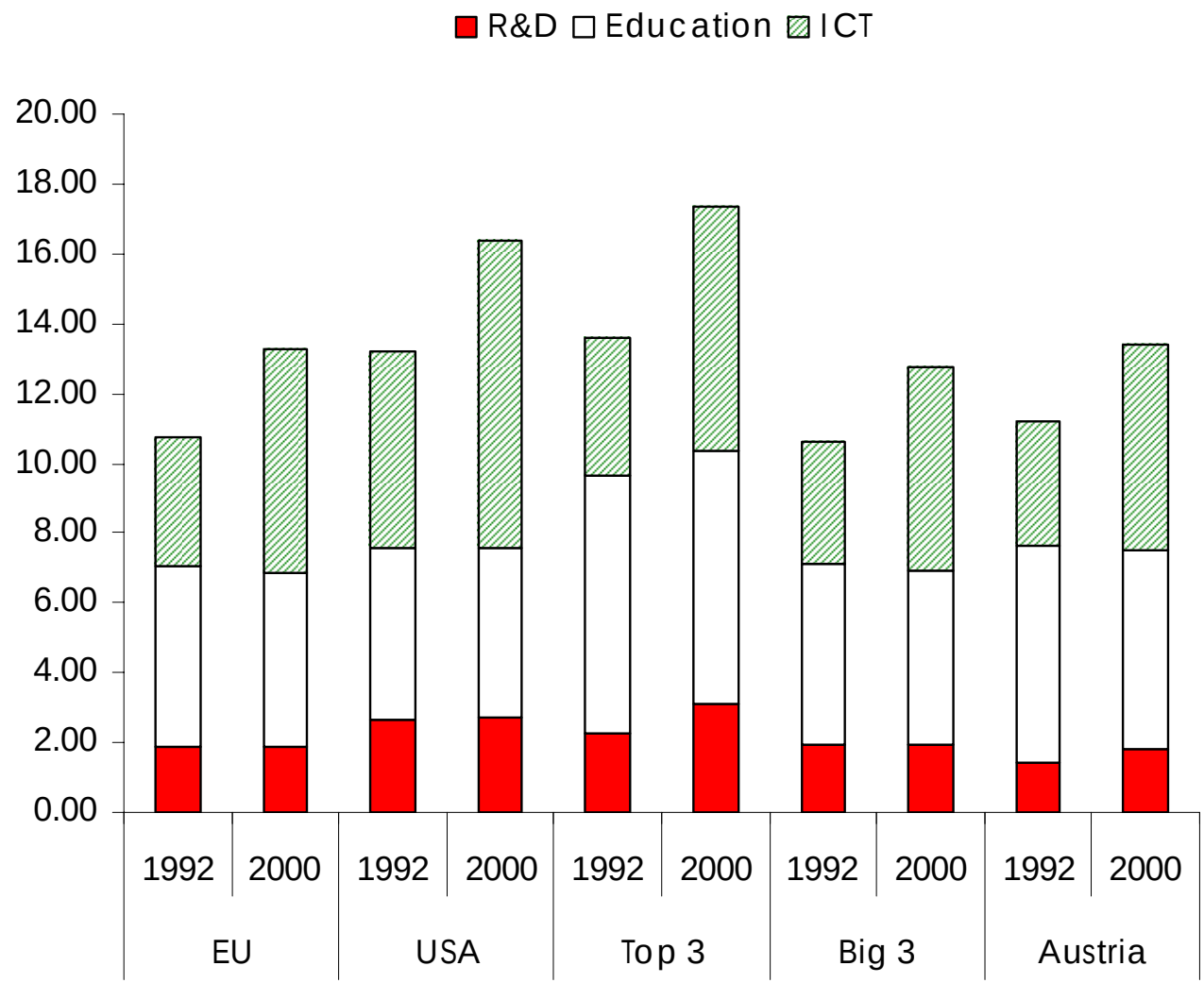
Growth drivers Top 3 and Big 3 vs. USA



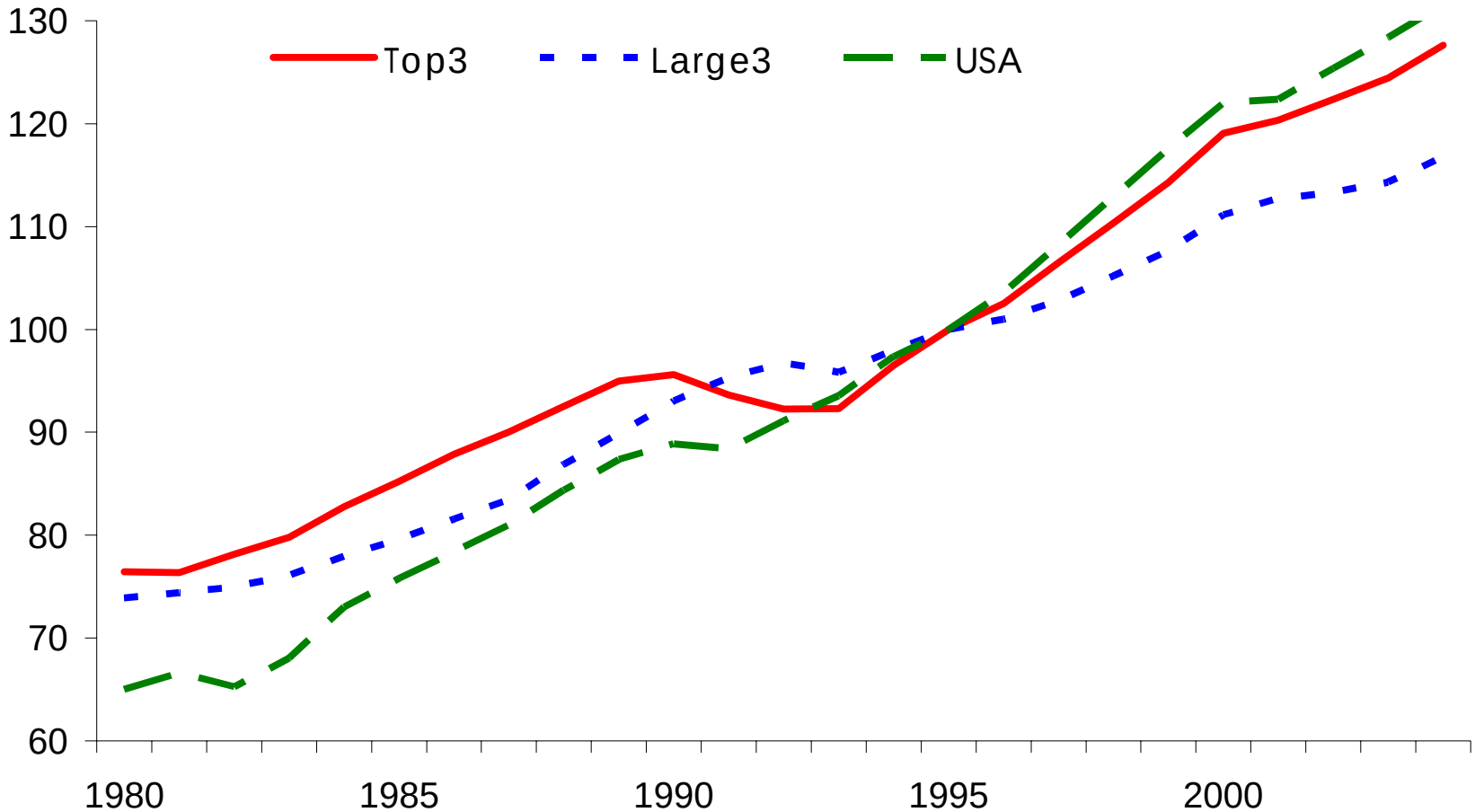
Investment into the future



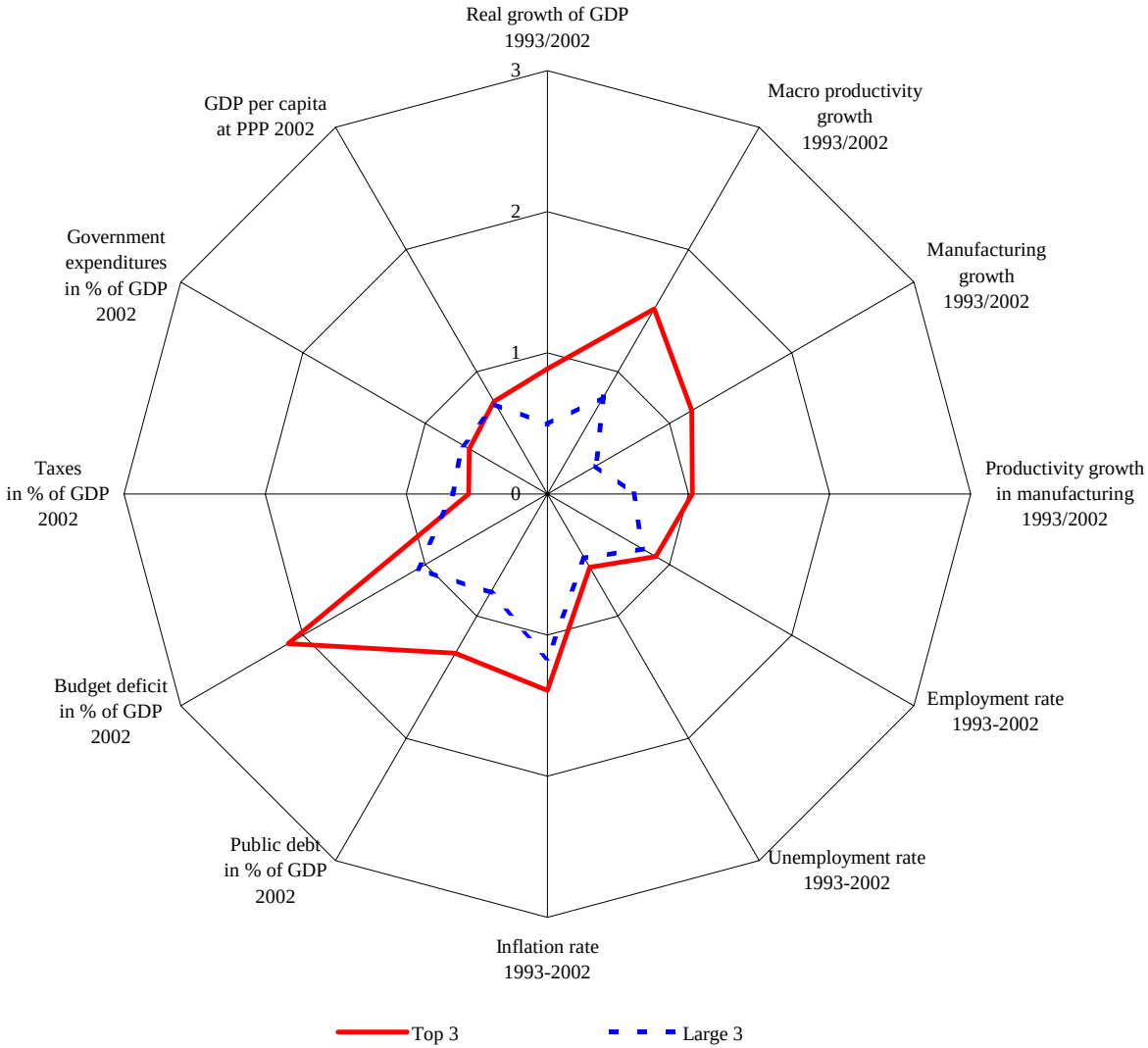
Investment into the future



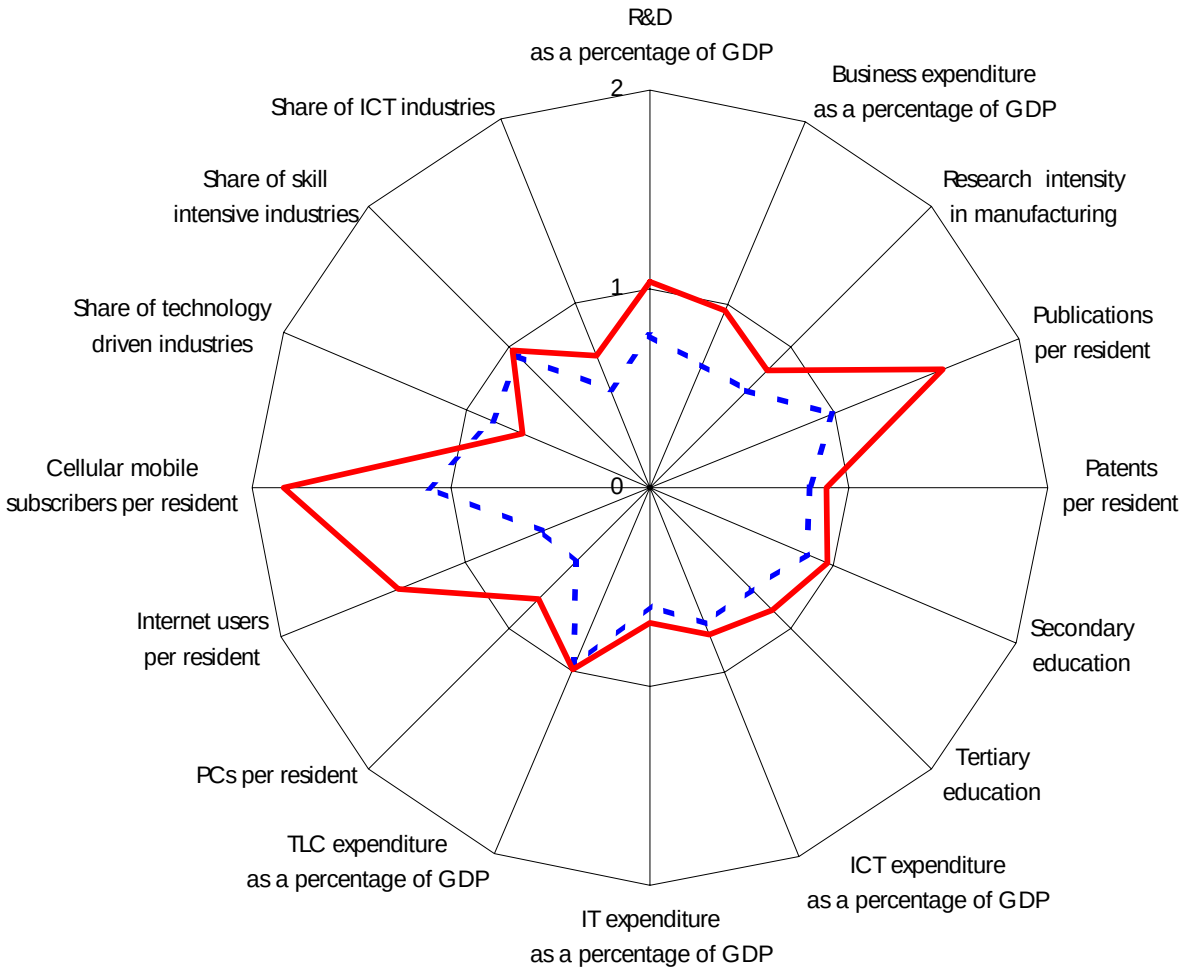
Differences between the top 3, the big 3c and the USA in real GDP



Performance Top 3 resp. Big 3c vs. USA



Growth drivers Top 3 resp. Big 3c vs. USA



Differences in growth drivers between high and low performers

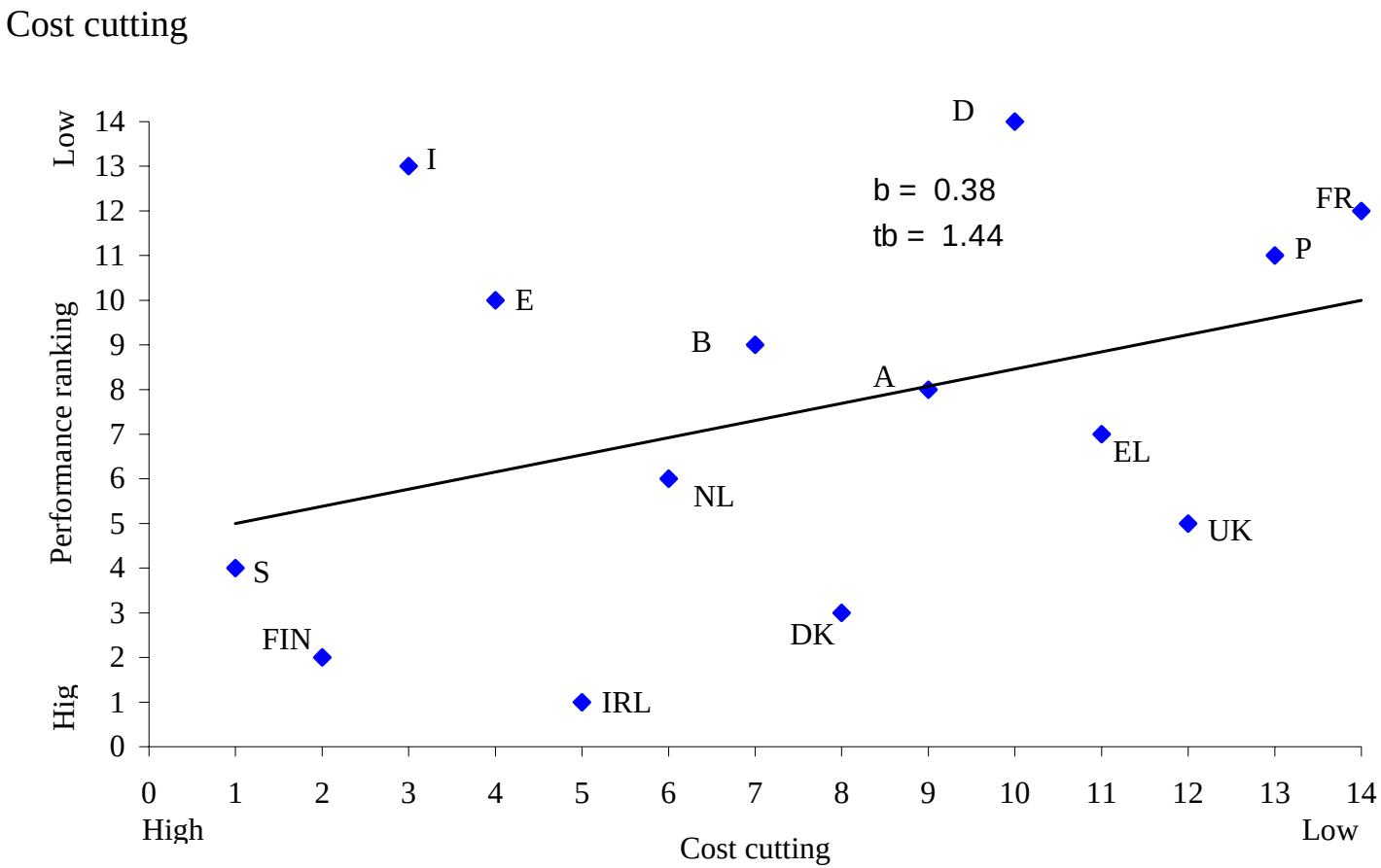
	First year				Last year			
	Top 3	Big 3c	EU	USA	Top 3	Big 3c	EU	USA
Indicators on R&D: input and output								
Total expenditure on R&D in % of GDP 1992/98	2.277	1.943	1.880	2.650	3.030	1.943	1.880	2.650
Business Enterprise Expenditure on R&D (BERD) in % of GDP 1992/98	1.490	1.270	1.200	1.980	1.973	1.150	1.150	2.040
Research intensity in manufacturing 1990/98	1.953	1.848	2.004	3.074	2.694	1.823	2.012	3.231
Publications per inhabitant 1992/99	11.024	5.335	6.149	9.517	14.728	7.000	8.139	9.270
Patents per resident 1990/97	3.460	2.817	2.240	3.630	3.977	2.973	2.480	4.480
Indicators on education system: input and output								
Percentage of the population that has attained at least upper secondary education by age group (1998)	71.000	58.333	53.000	87.000	85.333	72.667	70.000	88.000
Percentage of the population that has attained at least tertiary education, by age group (1998)	27.667	17.000	19.000	37.000	31.333	21.000	25.000	36.000
Indicators on ICT: production and use								
ICT expenditure in % of GDP 1992/2000	3.973	3.503	3.693	5.650	6.967	5.807	6.397	8.750
Information technology (IT) expenditure in % of GDP 1992/2000	2.023	1.737	1.688	2.970	3.740	2.583	2.711	5.500
Telecommunication (TLC) expenditure in % of GDP 1992/2000	1.950	1.760	2.000	2.670	3.227	3.220	3.687	3.250
PCs per inhabitant 1992/99	1.405	0.824	0.931	2.526	4.085	2.369	2.486	5.171
Internet users per inhabitant 1992/99	0.125	0.023	0.031	0.176	3.703	1.296	1.587	2.717
Cellular Mobile Subscribers per 100 capita 1992/99	6.214	1.115	1.516	4.253	57.368	38.530	39.586	31.156
Indicators on share of "progressive" industries								
Share of technology driven industries in nominal value added 1990/98	14.837	23.745	21.854	26.460	21.068	23.719	22.923	30.269
Share of skill intensive industries in nominal value added 1990/98	17.903	18.163	16.812	18.274	18.198	17.798	16.674	18.638
Share of ICT industries in nominal value added 1990/98	6.326	8.033	7.283	10.071	10.233	6.675	6.804	14.315

WIFO

Top countries invest into growth drivers nearly as fast as the USA

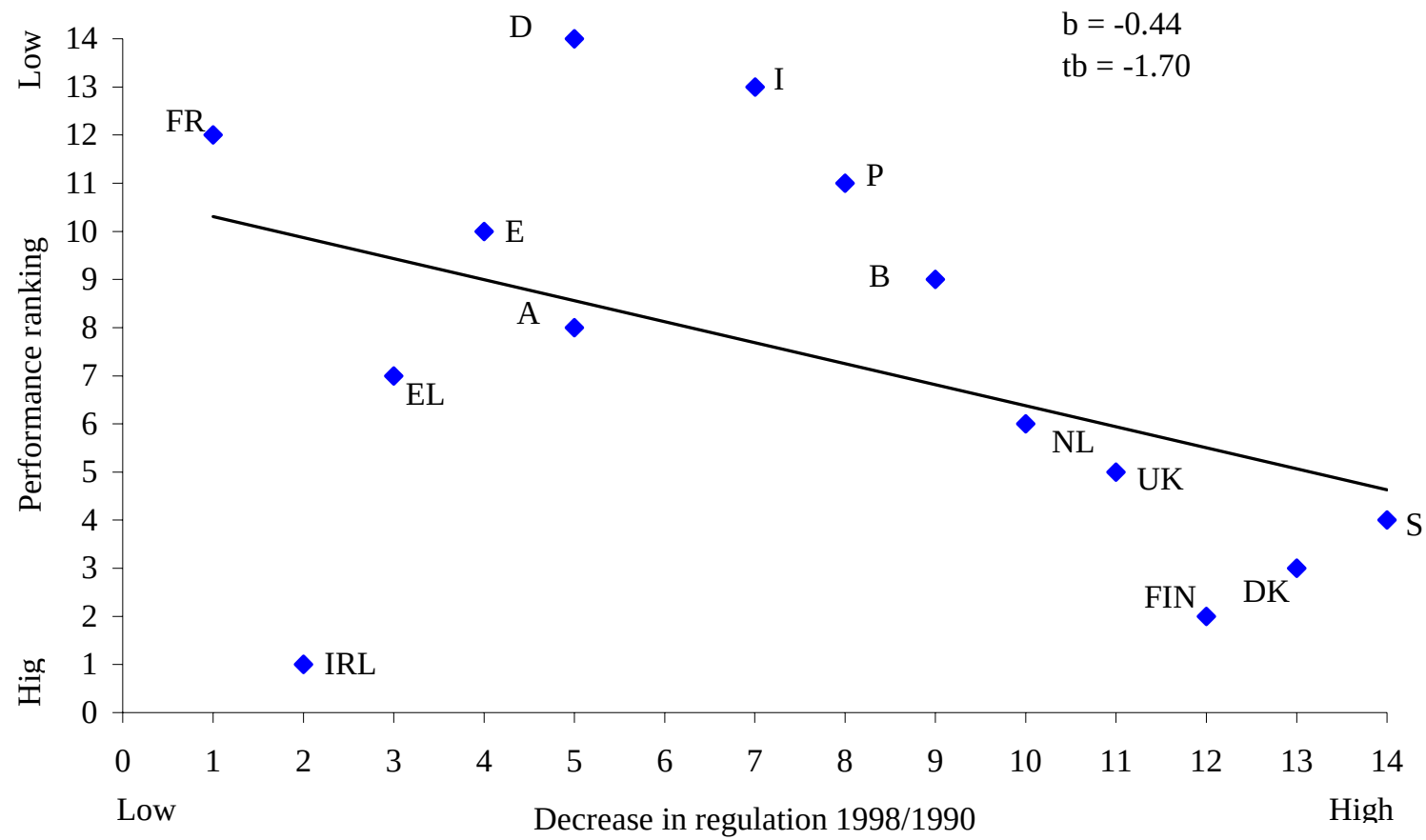
	Top 3 vs. USA		Big 3 vs. USA		EU vs. USA	
	First year	Last year	First year	Last year	First year	Last year
Indicators on R&D: input and output						
Total expenditure on R&D in % of GDP 1992/98	0.859	1.143	0.733	0.733	0.709	0.709
Business Enterprise Expenditure on R&D (BERD) in % of GDP 1992/98	0.753	0.967	0.641	0.564	0.606	0.564
Research intensity in manufacturing 1990/98	0.636	0.834	0.601	0.564	0.652	0.623
Publications per inhabitant 1992/99	1.158	1.589	0.561	0.755	0.646	0.878
Patents per resident 1990/97	0.953	0.888	0.776	0.664	0.617	0.554
Indicators on education system: input and output						
Percentage of the population that has attained at least upper secondary education by age group (1998)	0.816	0.970	0.670	0.826	0.609	0.795
Percentage of the population that has attained at least tertiary education, by age group (1998)	0.748	0.870	0.459	0.583	0.514	0.694
Indicators on ICT: production and use						
ICT expenditure in % of GDP 1992/2000	0.703	0.796	0.620	0.664	0.654	0.731
Information technology (IT) expenditure in % of GDP 1992/2000	0.681	0.680	0.585	0.470	0.568	0.493
Telecommunication (TLC) expenditure in % of GDP 1992/2000	0.730	0.993	0.659	0.991	0.749	1.135
PCs per inhabitant 1992/99	0.556	0.790	0.326	0.458	0.369	0.481
Internet users per inhabitant 1992/99	0.712	1.363	0.133	0.477	0.178	0.584
Cellular Mobile Subscribers per 100 capita 1992/99	1.461	1.841	0.262	1.237	0.356	1.271
Indicators on share of "progressive" industries						
Share of technology driven industries in nominal value added 1990/98	0.561	0.696	0.897	0.784	0.826	0.757
Share of skill intensive industries in nominal value added 1990/98	0.980	0.976	0.994	0.955	0.920	0.895
Share of ICT industries in nominal value added 1990/98	0.628	0.715	0.798	0.466	0.723	0.475

Performance and cost cutting



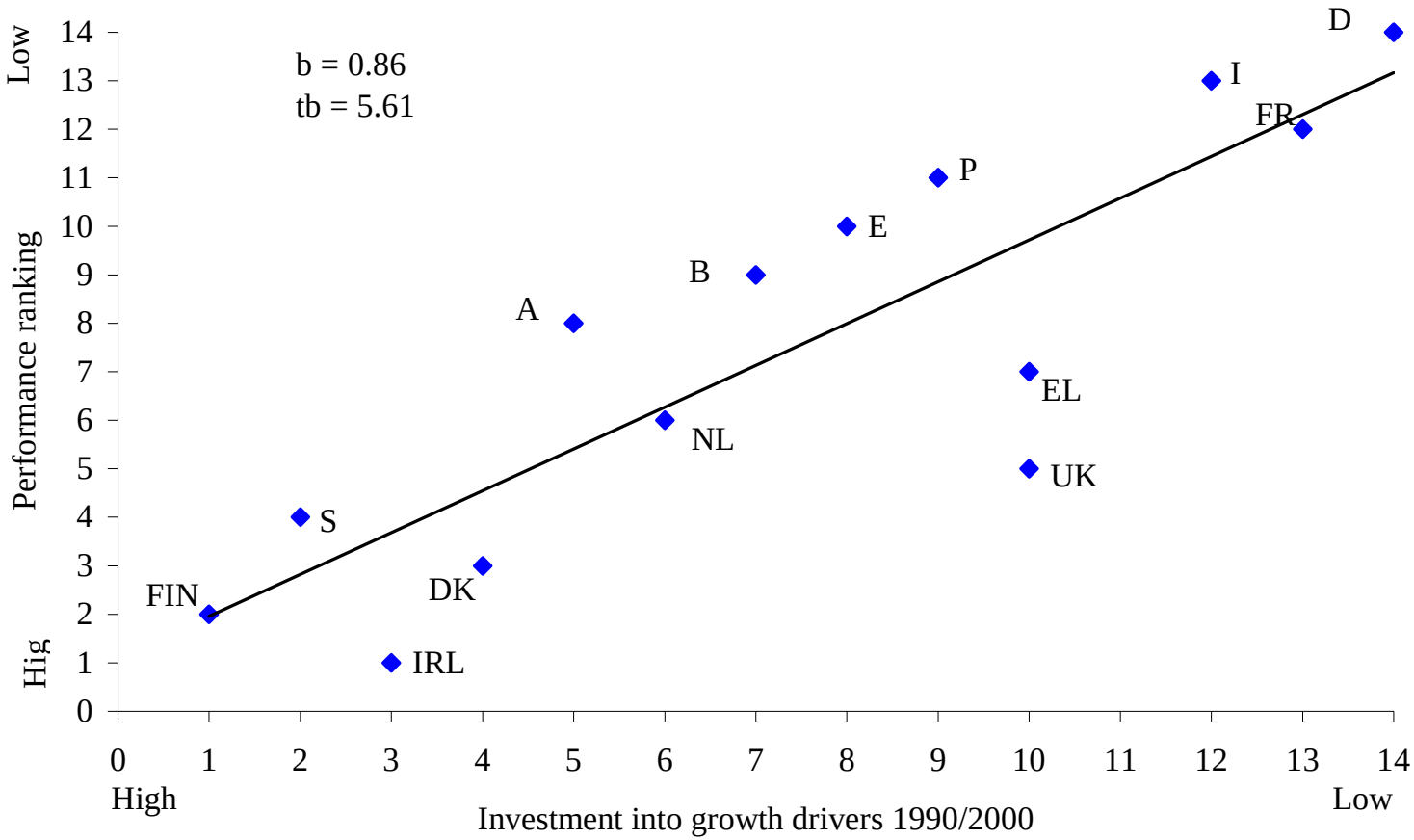
Performance and regulatory change

Regulatory change



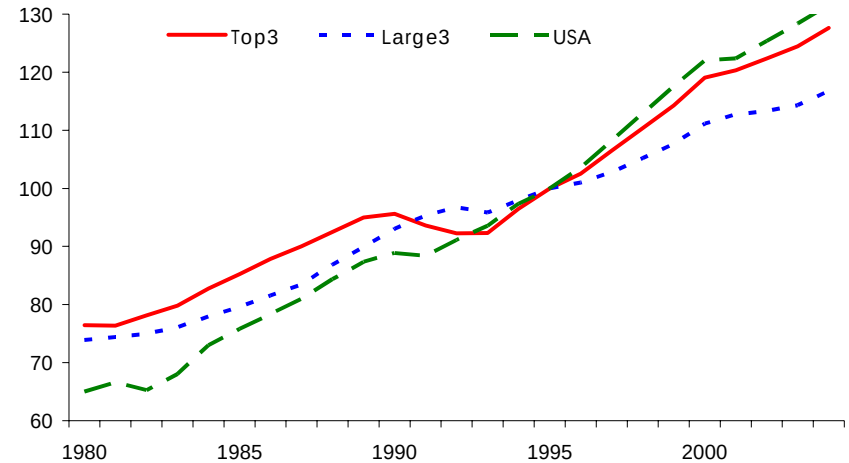
Performance and increasing investment into growth drivers

Increasing investment into growth drivers

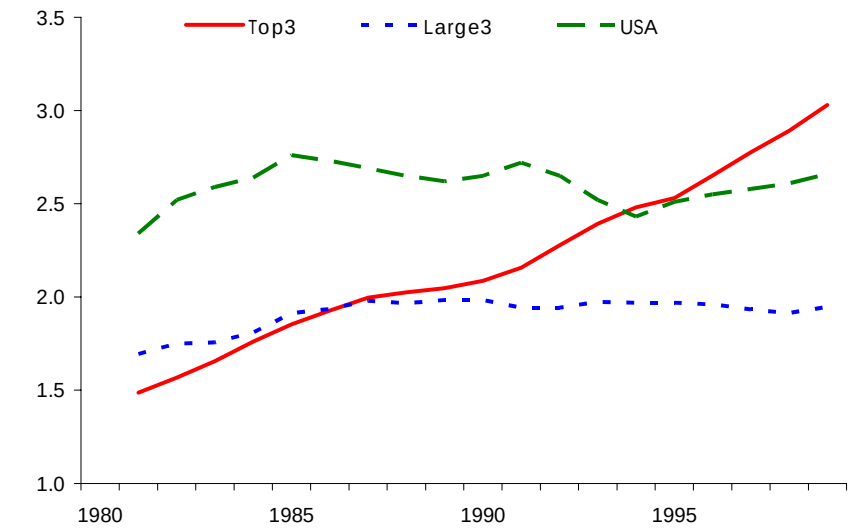


Differences between the top3, the big 3 and the USA in real GDP and research

GDP



R&D



Old Model vs. New European Model (NEM)?

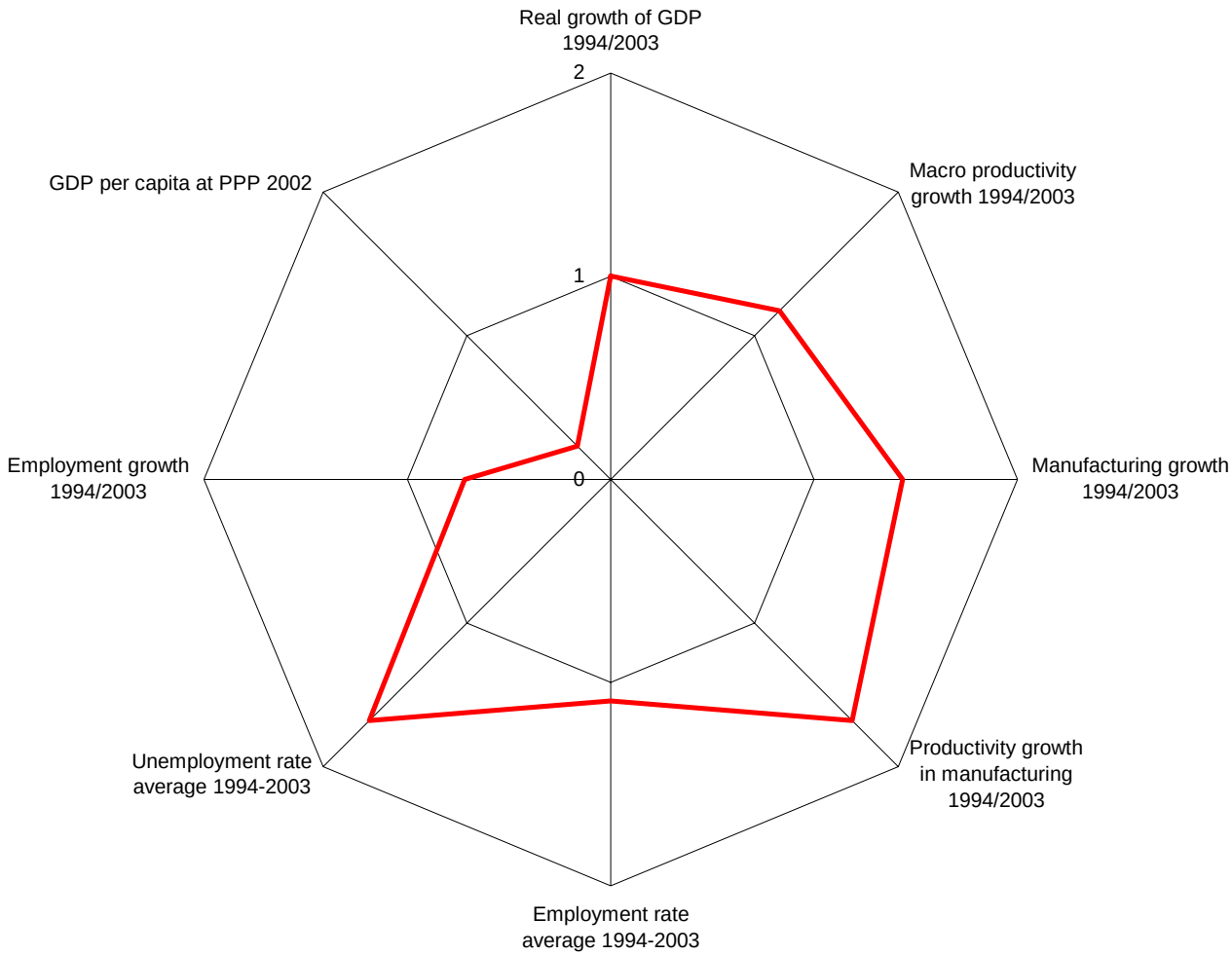
Old European welfare model	New model of the reformed welfare state
Welfare pillar	
Security in existing jobs	Assistance in finding a new job
High replacement ratios	Incentives to accept new jobs (return to labour force)
Structural change in existing firms (often large firms)	Job creation in new firms, service, self employment
Comprehensive health coverage, pensions, education	Coverage dependent on personal obligations
Regulation of labour & product markets	Flexibility as a strategy for firms and as a right for employees
Focus on stable, full-time jobs	Part-time work as individual choice (softened by some rules)

Old Model vs. New European Model (NEM)?

Policy pillar

Focus on (price) stability	Focus on growth and new technologies
Asymmetric fiscal policy (deficits)	Fiscal prudence (but flexible in crisis)
Incentives for physical investment	Research, education, and new technologies are the basis
Subsidies for ailing firms (public ownership)	Industrial areas, university nexus
Industrial policy for large firms	Start ups, venture capital, services
Local champions, permissive competition policy	Enforce current strengths (cluster and regional policy) and competition

Performance Czech Republic vs. EU



Performance Czech Republic vs. EU

	Czech	Hungary	Poland	Average	EU	Czech	Hungary	Poland	Average
						vs. EU			
Real growth of GDP 1994/2003	2.2	3.5	4.4	3.4	2.2	1.001	1.570	1.985	1.519
Macro productivity growth 1994/2003	1.5	3.3	4.3	3.0	1.3	1.174	2.539	3.358	2.357
Manufacturing growth 1994/2003	2.9	8.4	7.2	6.2	2.0	1.436	4.170	3.570	3.058
Productivity growth in manufacturing 1994/2003	4.6	6.0	9.5	6.7	2.7	1.680	2.226	3.486	2.464
Employment rate average 1994-2003	70.5	53.9	56.1	60.2	64.7	1.091	0.833	0.868	0.931
Unemployment rate average 1994-2003	5.4	8.1	14.9	9.5	9.1	1.679	1.116	0.610	0.958
Employment growth 1994/2003	0.7	0.2	-0.9	0.0	1.0	0.718	0.170	-0.915	-0.009
GDP per capita at PPP 2003	15.5	13.4	10.4	13.1	24.3	0.232	0.552	0.333	0.963

Summary (1)

1. The US outperformed Europe due to higher investment into the future
   - R & D
   - Education
   - Diffusion of new technologies

And because of an innovation system better suitable for a new general purpose technology

Summary (2)

2. There are 3 EU countries which are quite successful in the last decade:
   S, SF, DK

3. These main characteristics are

   Small, open, nordic economies
   Social, environmental responsiveness, policy coordination
   High emphasis on efficiency and technology

Summary (3)

4. There are differences in structure, history, type of crisis and response but there are three common policy strategies
   * cutting costs plus regaining fiscal stability
   * reform of incentives, institutions, labour markets
   * investment in long run drivers of growth

The third one is the sufficient condition for high performance and for persistent success in employment generation and fiscal stability

Summary (4)

5. The success of S, SF and DK contradicts neo liberal claims that

High taxes
Comprehensive welfare
Environmental policy
Large governments

are the main reasons of slow growth in Europe

Summary (5)

6. The policy strategies of the successful countries were however also not "passive", but responsive to problems and forward looking

   boosting economic growth

   fostering technologies

   fine tuning incentives (work, sickness)

   flexibilisation of temporary contracts

   setting ceilings to government expenditures

   reforming welfare, but not dismantling

Summary (6)

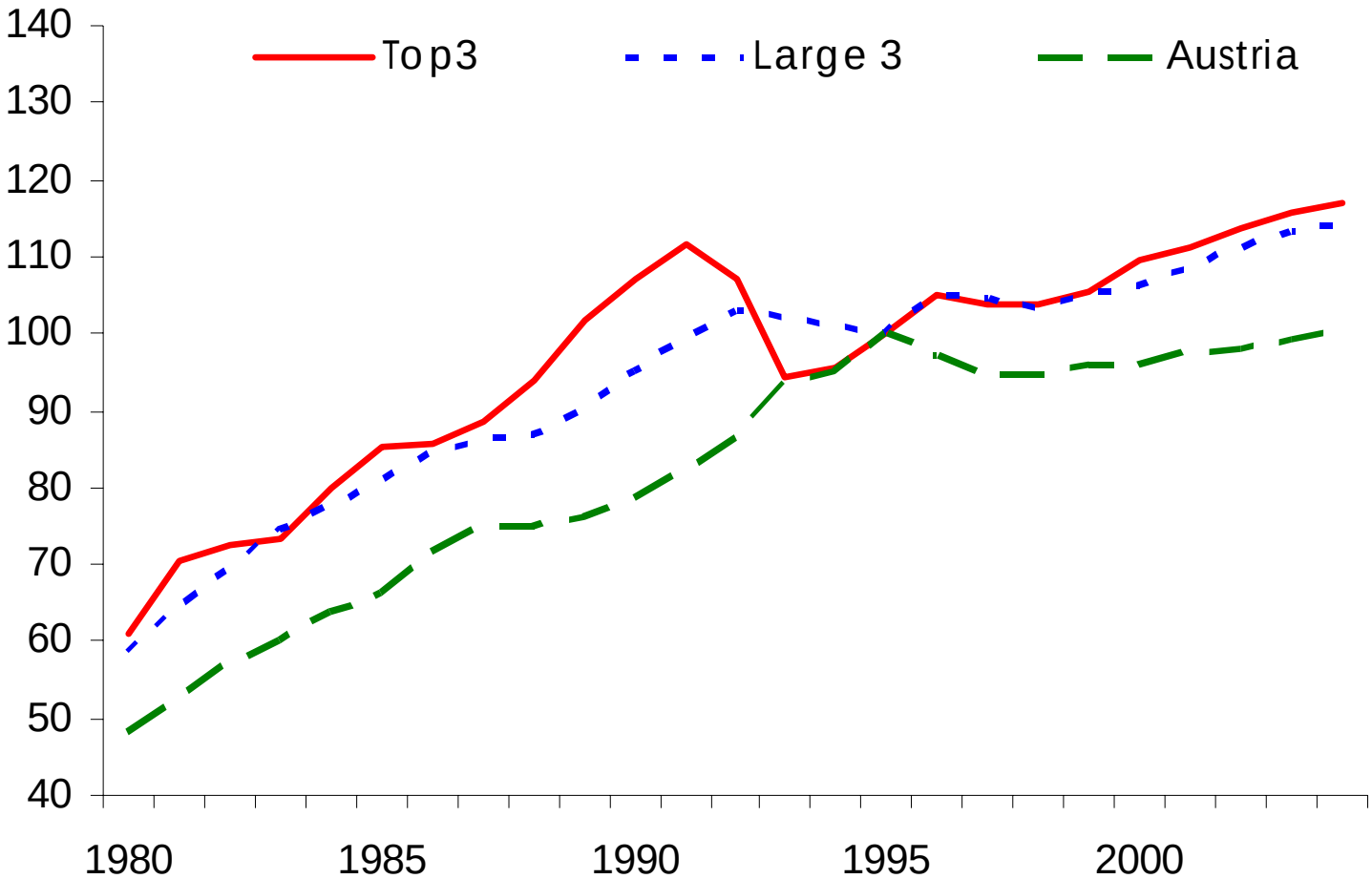
7. The New European Model, is still different from the US model

- active labour market policy (activation, flexicurity)
- incentives + public institutions for research, ICT, education
- mainly public schools, comprehensive health sector

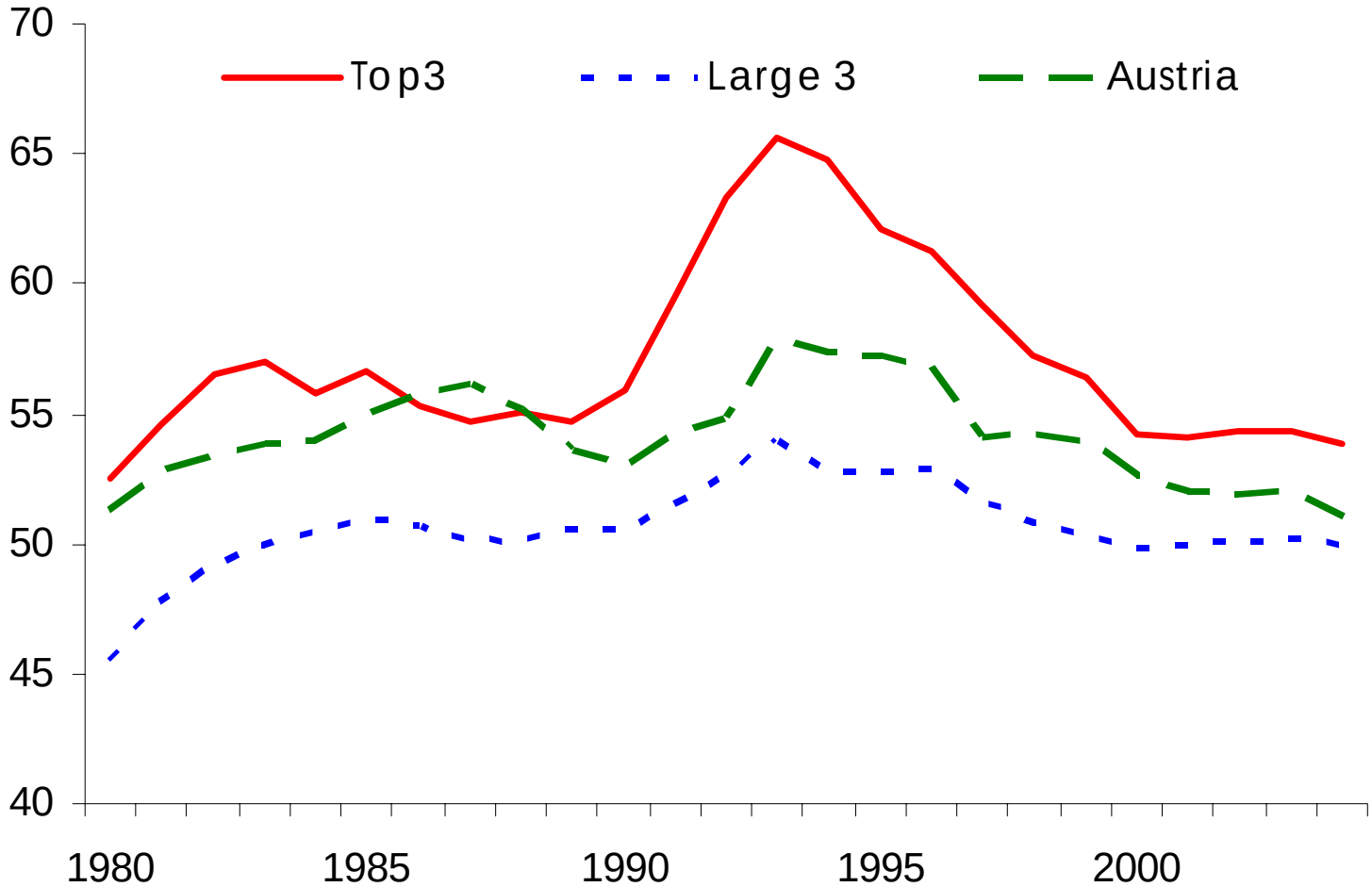
But differs from the old one

- reliance on market forces plus personal obligations
- higher value on flexibility, choice, incentives
- lower value on existing positions, inherited rights, full time jobs
- fiscal prudence, world wide competition, innovation, productivity

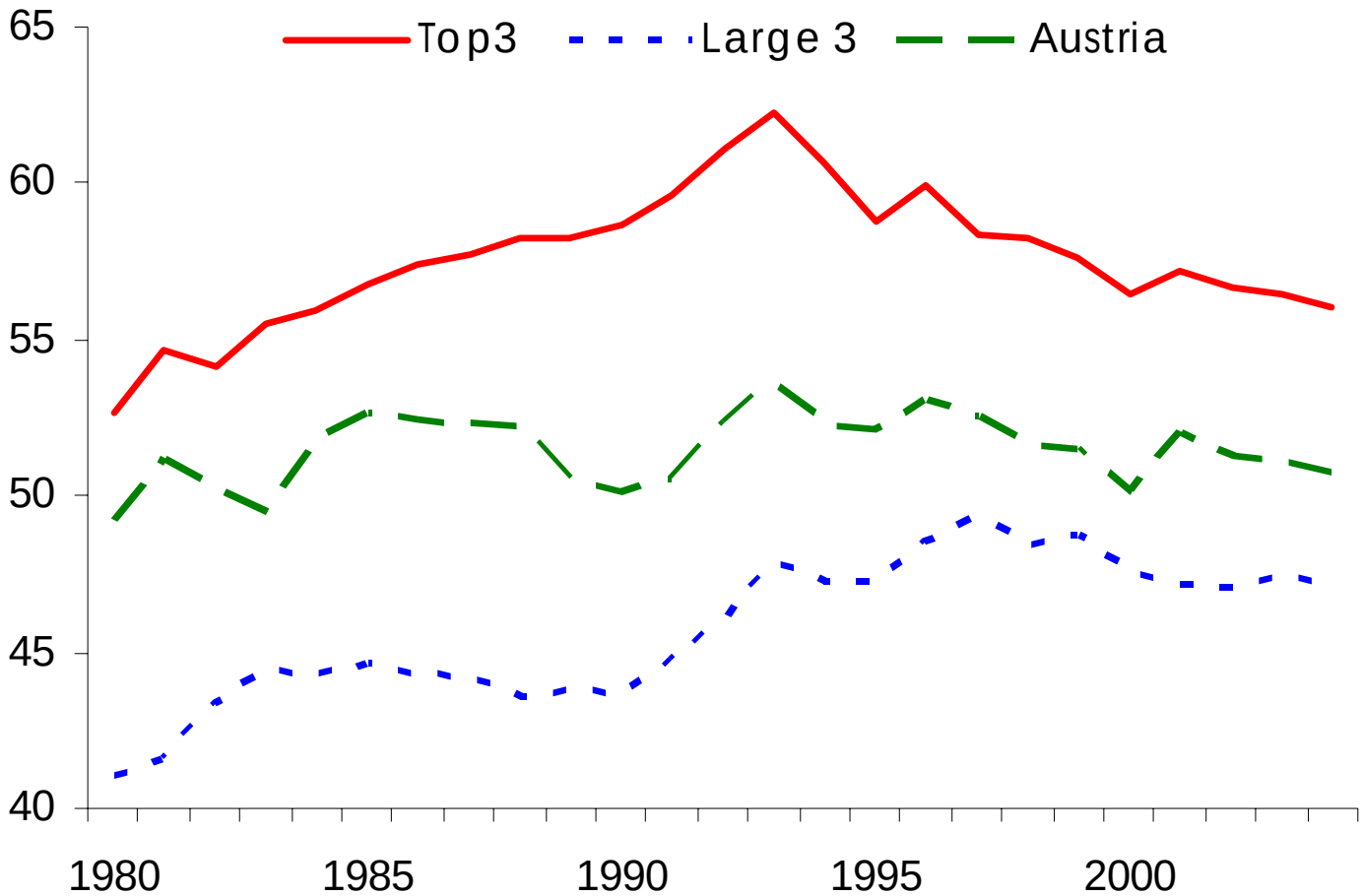
Unit labour costs
Top 3 vs. Big 3



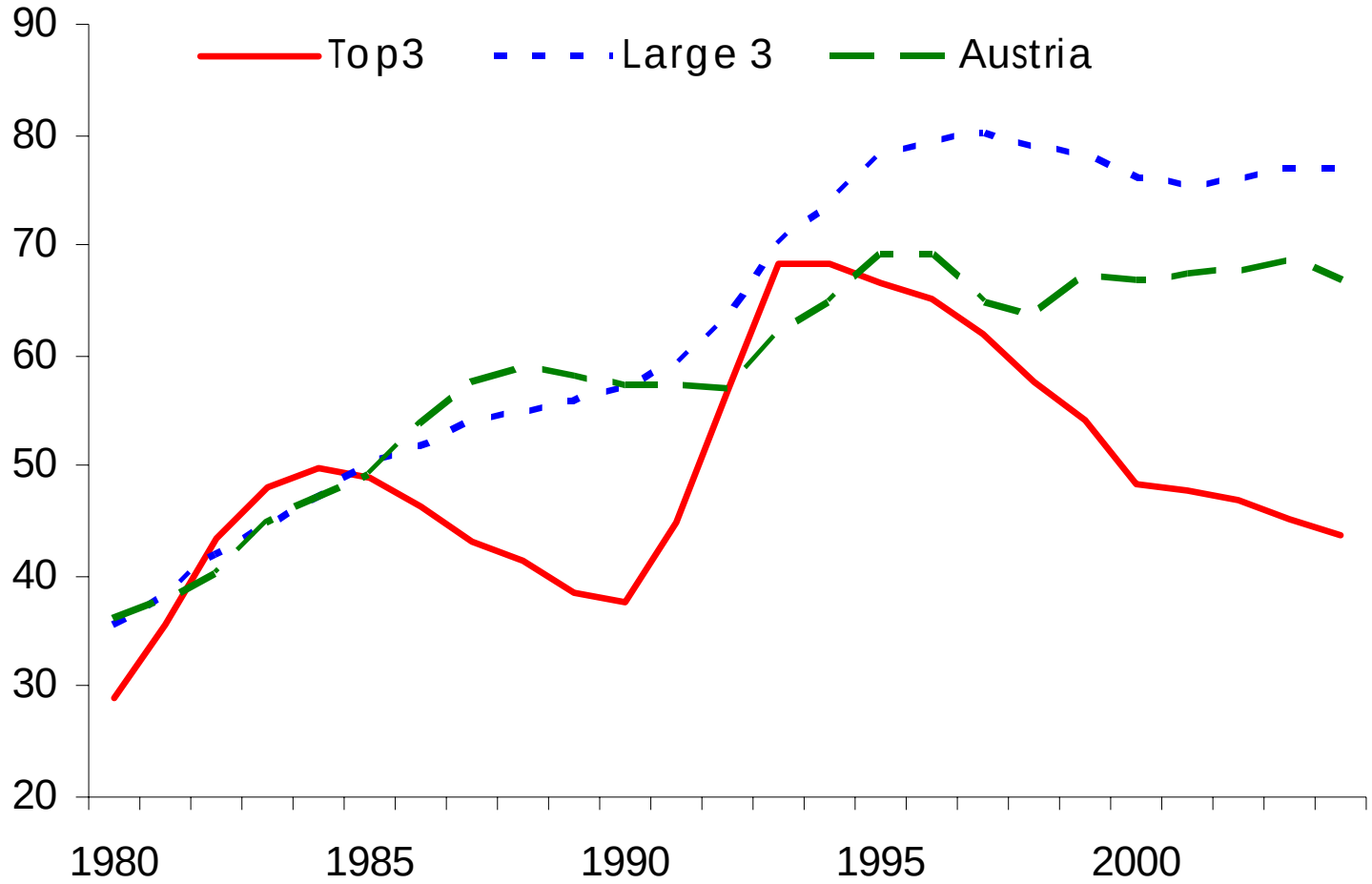
Government expenditures in % of GDP
Top 3 vs. Big 3



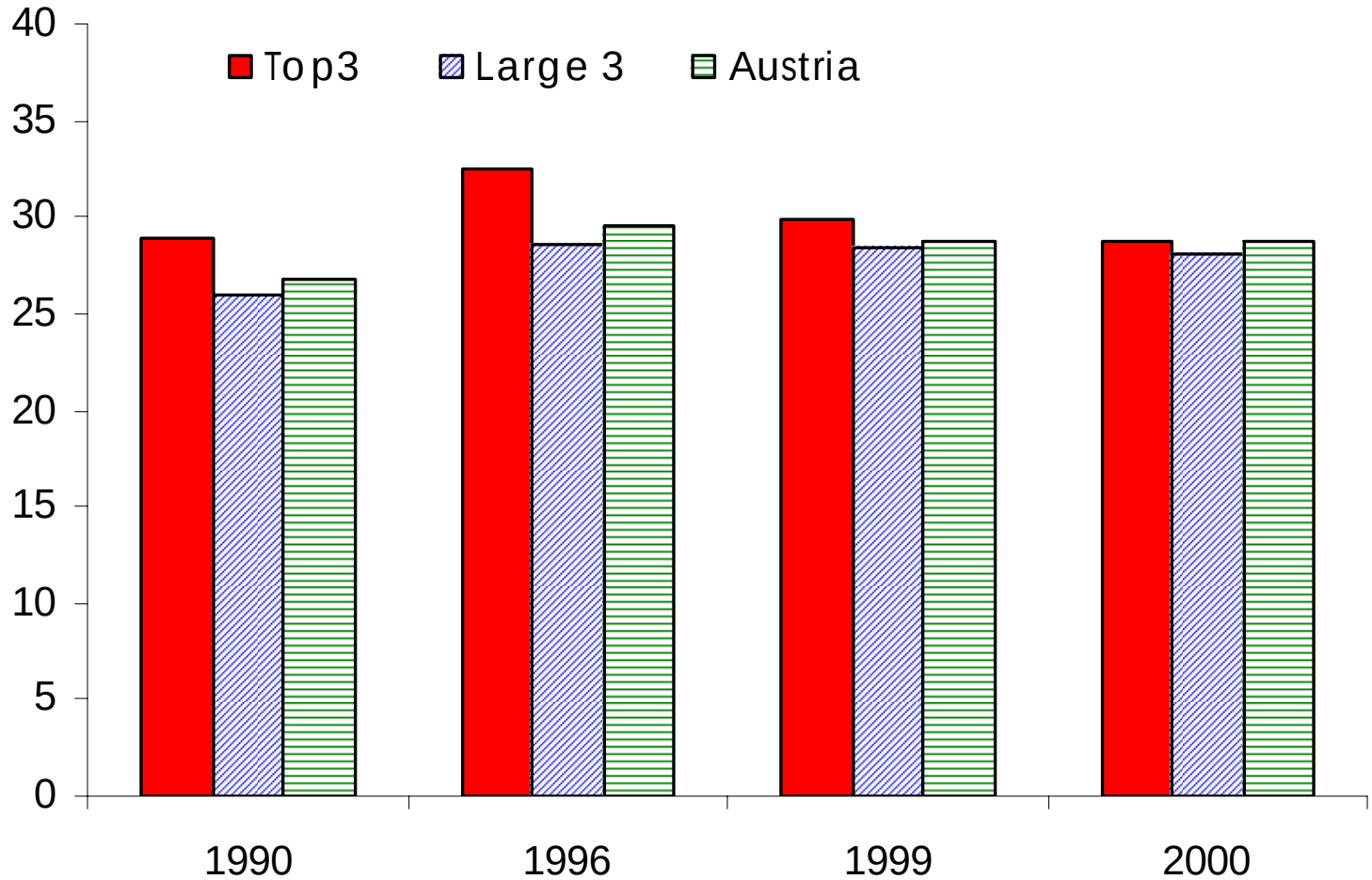
Taxes (total revenues) in % of GDP
Top 3 vs. Big 3



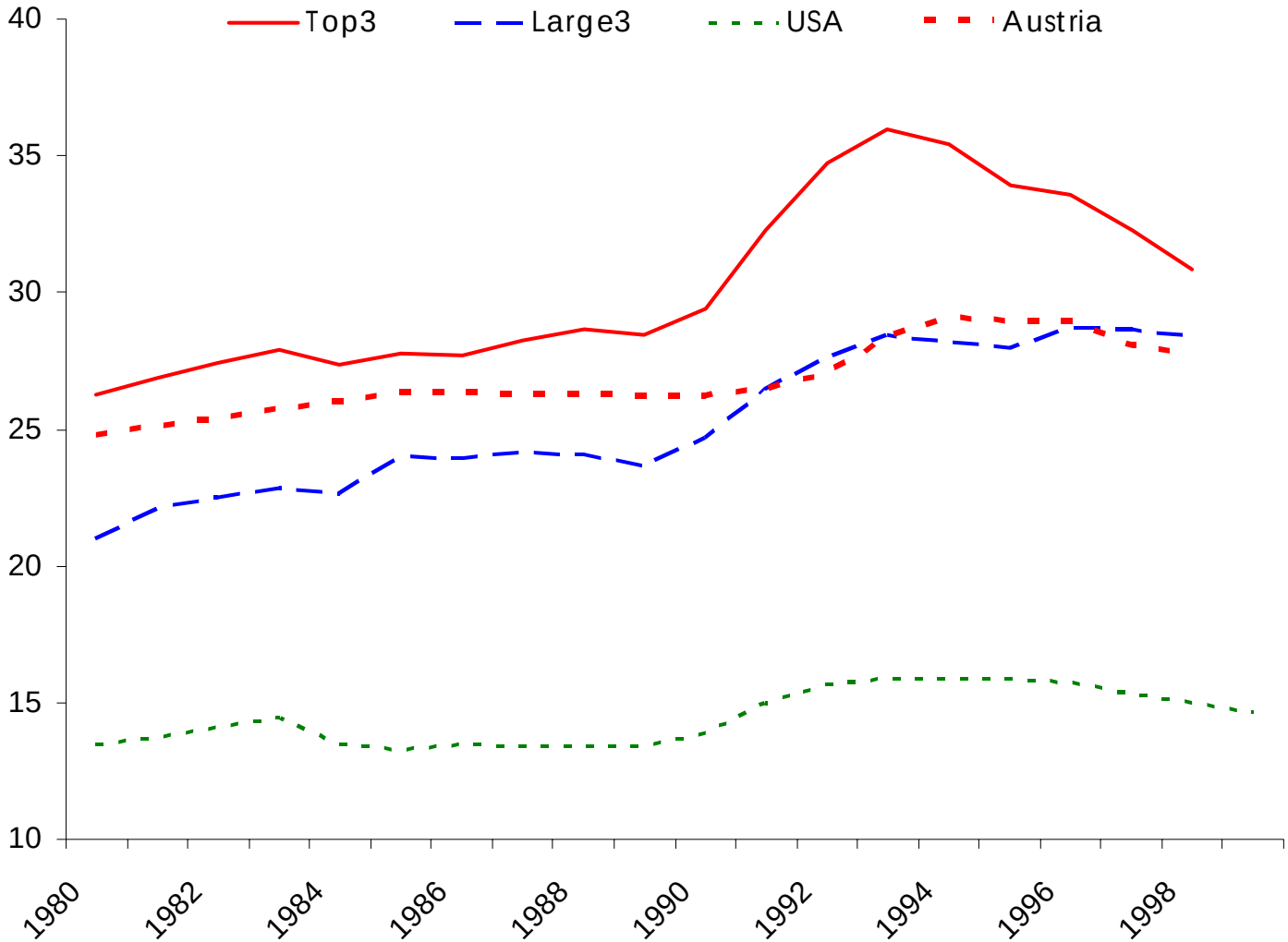
Public debt in % of GDP
Top 3 vs. Big 3



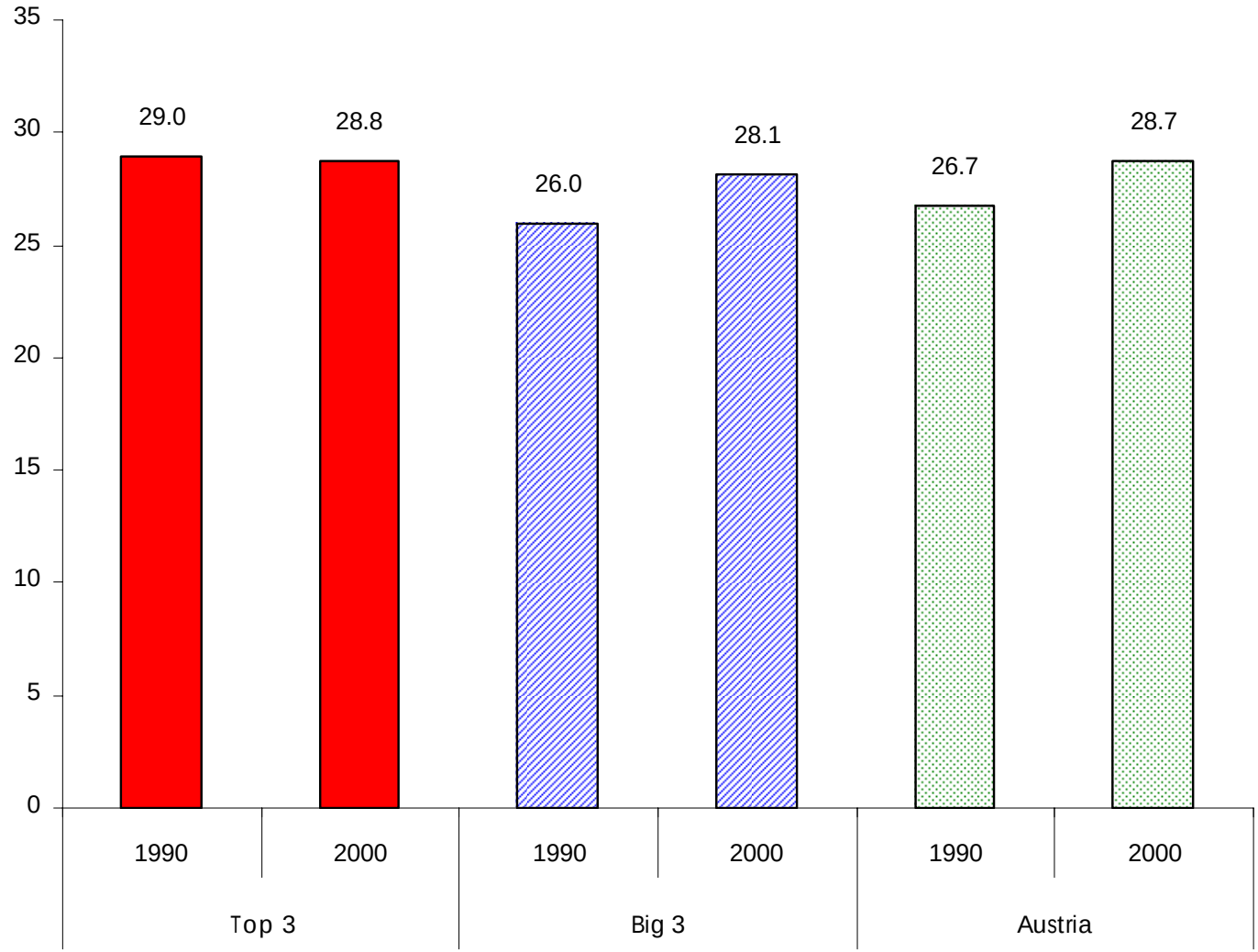
Social expenditures in % of GDP
Top 3 vs. Big 3



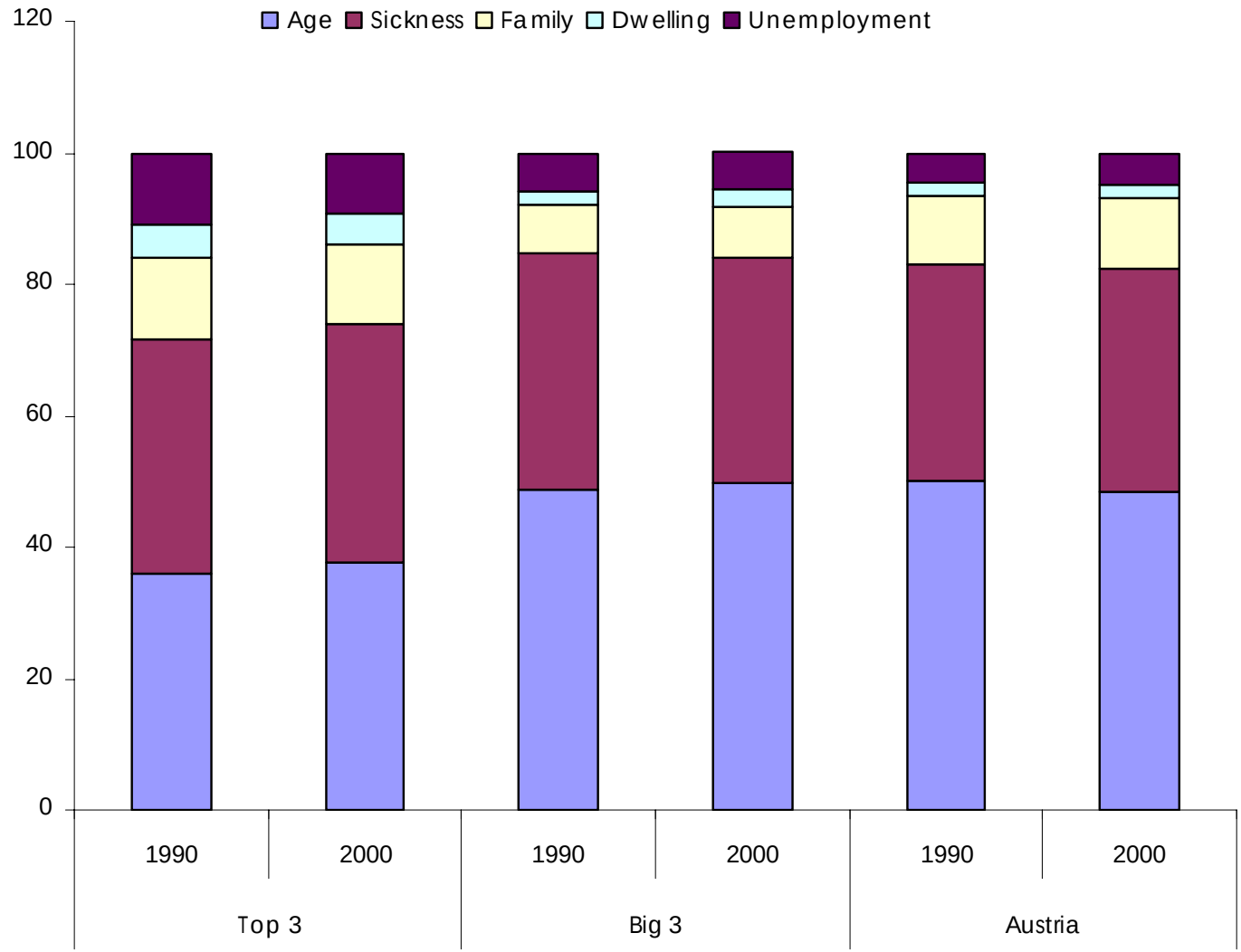
Social expenditures in % of GDP



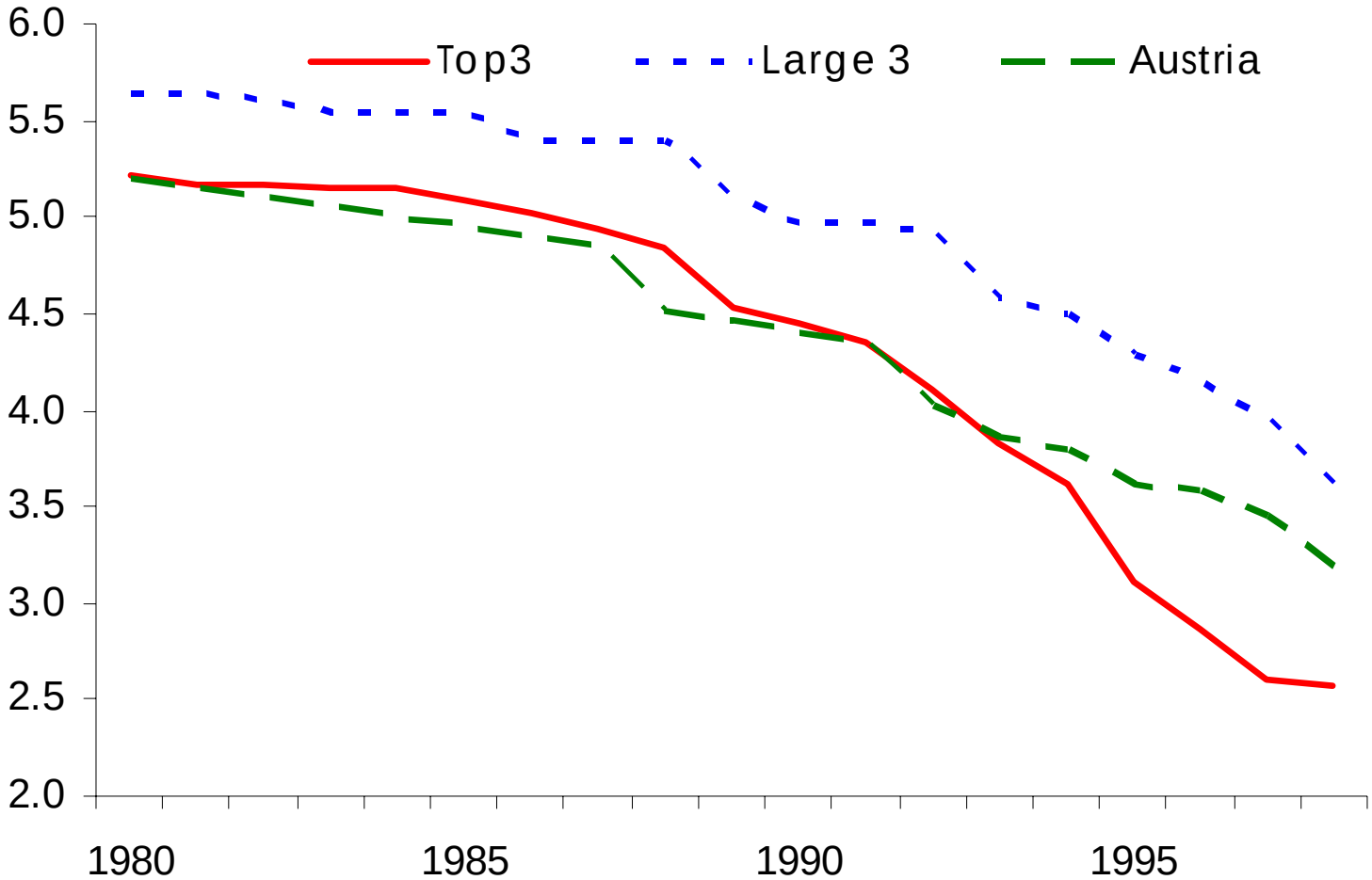
Social expenditures in % of GDP



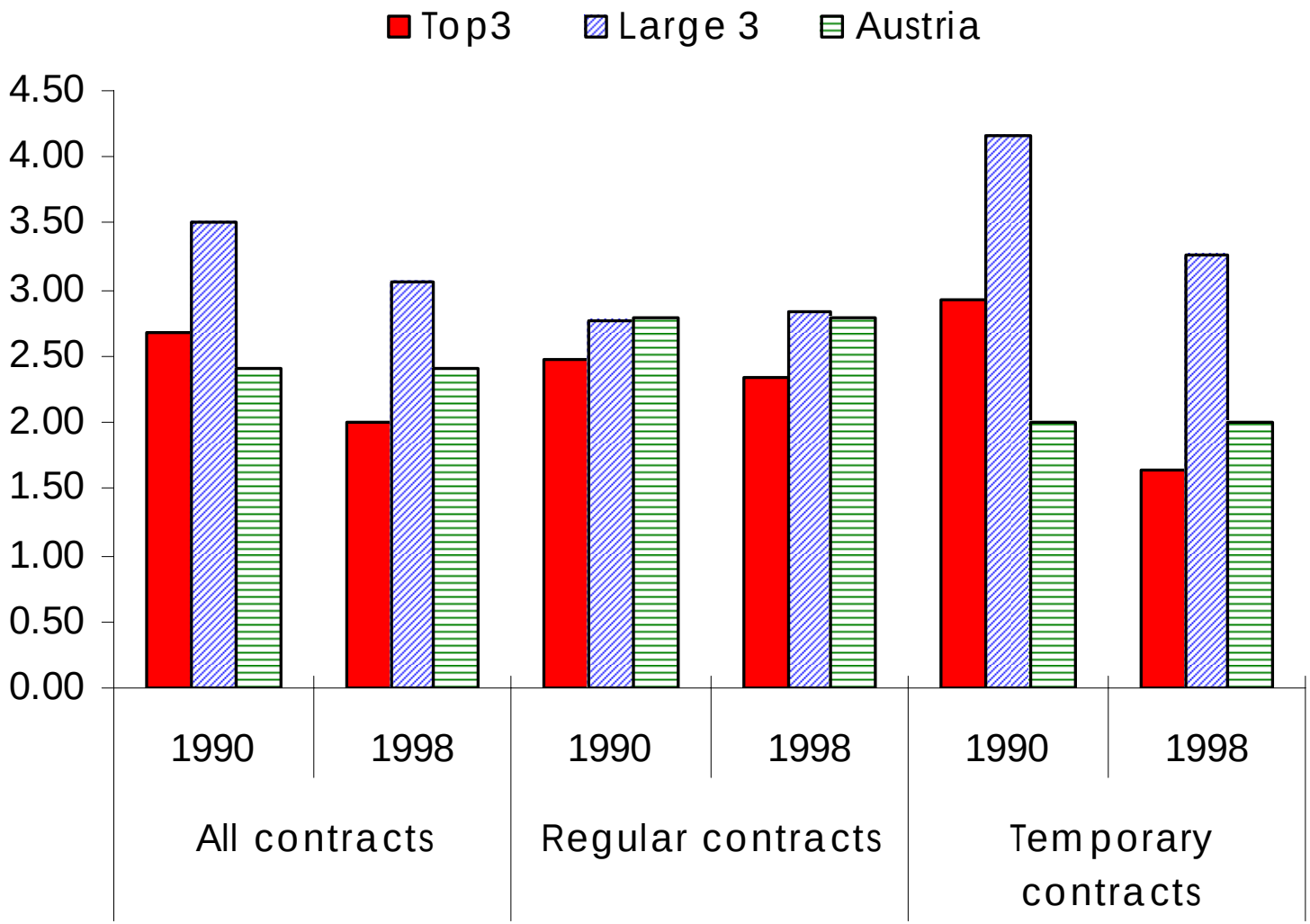
Social expenditures in % of GDP



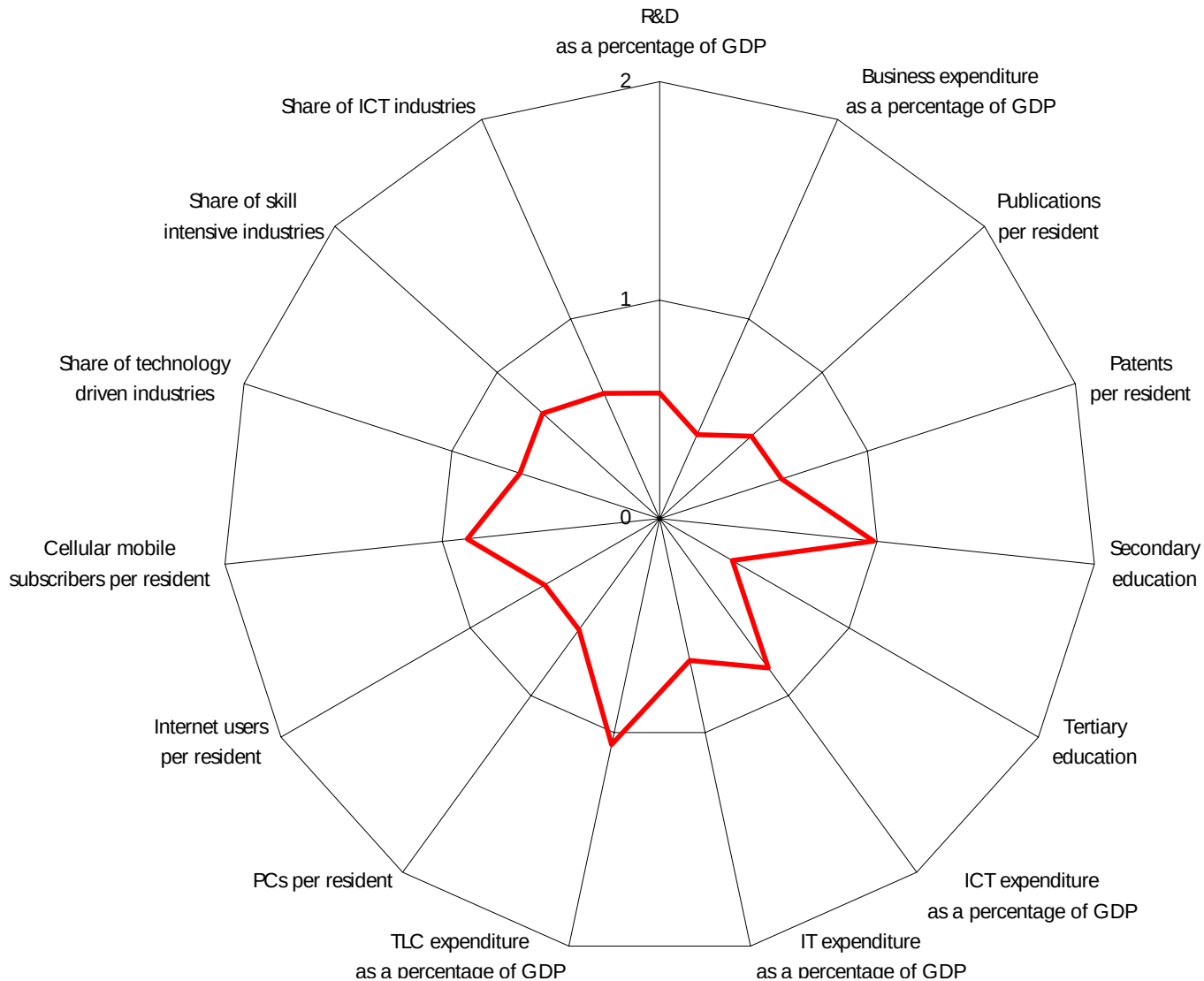
Product market regulation
Top 3 vs. Big 3



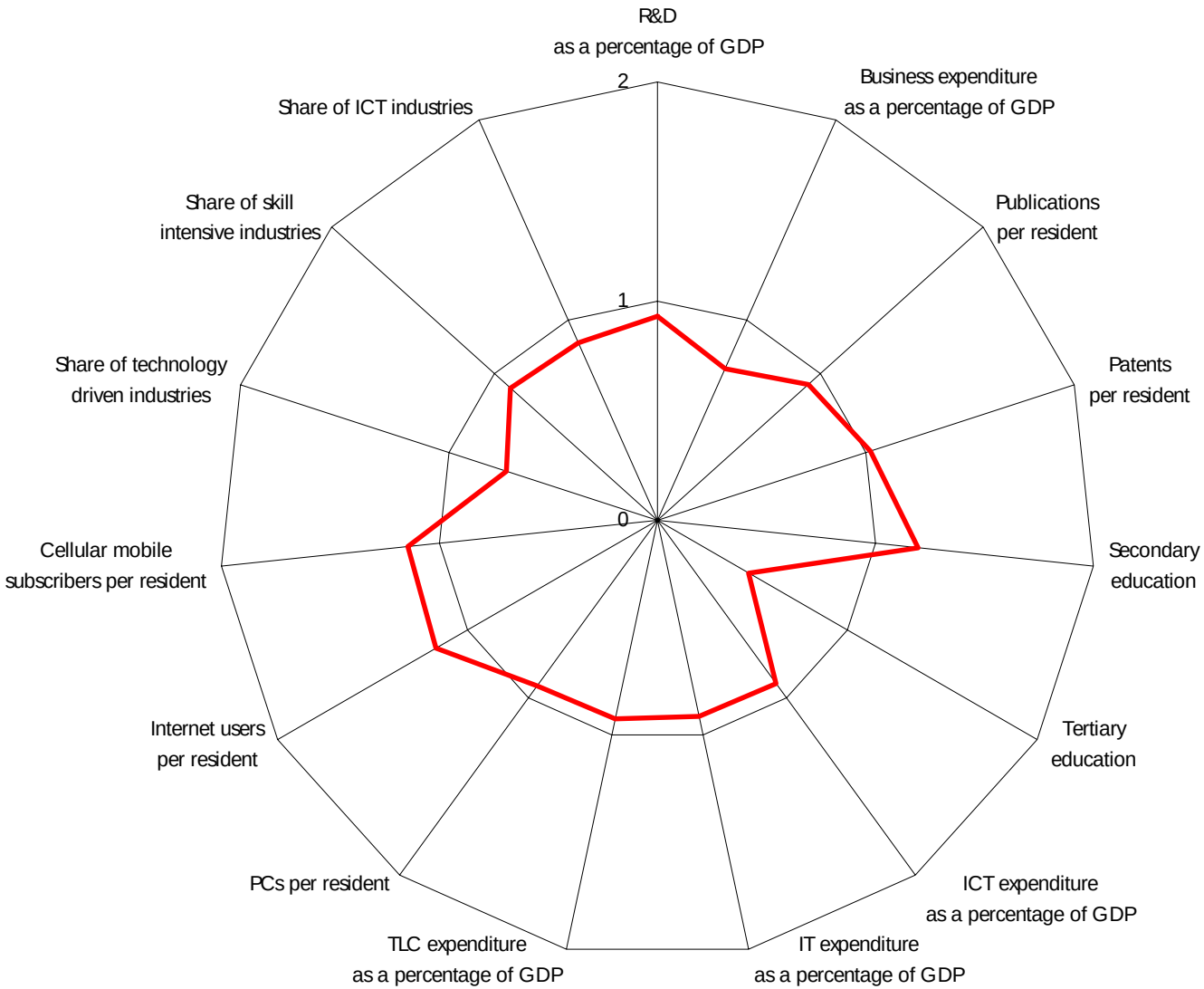
Labour market regulation
Top 3 vs. Big 3



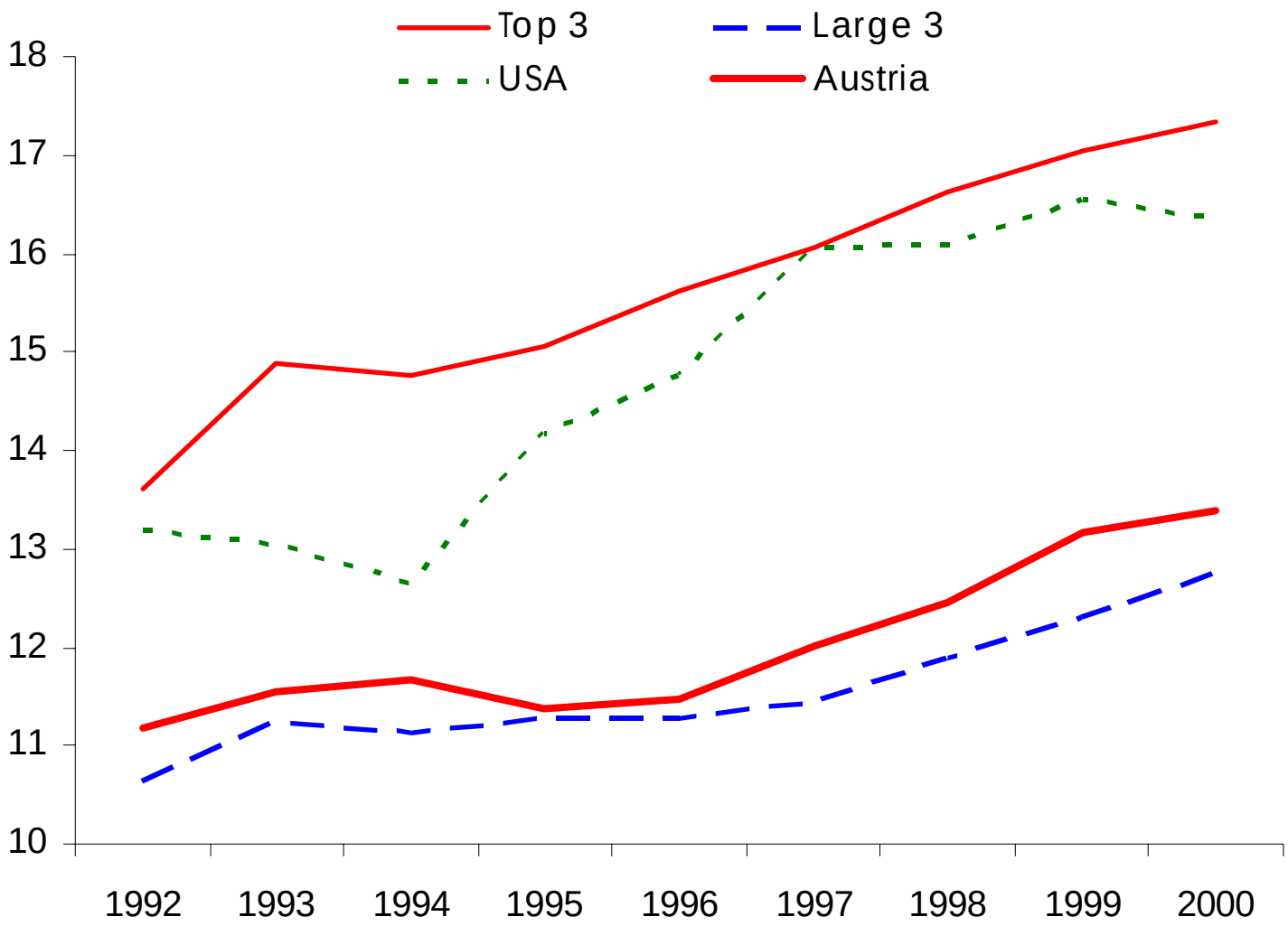
Growth drivers Austria vs. Top 3



Growth drivers Austria vs. EU



Investment into the future



WIFO

Investment into the future in % of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Belgium	10.60	11.06	10.97	10.92	11.33	11.71	12.04	12.87	12.91
Denmark	13.62	14.11	14.13	14.49	15.15	15.40	15.88	16.09	16.59
Germany	11.32	11.54	11.44	11.26	11.24	11.49	11.97	12.36	12.79
Greece	6.01	6.52	7.04	7.09	7.50	7.91	8.93	9.86	10.55
Spain	7.98	8.66	8.64	8.90	9.22	10.32	10.92	11.59	12.16
France	12.20	12.49	12.45	12.66	12.70	13.04	13.32	13.79	14.17
Ireland	10.94	11.83	11.58	11.85	11.94	11.91	11.42	10.79	10.89
Italy	8.42	9.70	9.52	9.89	9.88	9.81	10.35	10.75	11.30
Netherlands	11.54	12.15	12.06	12.08	12.46	12.69	12.94	13.38	13.76
Austria	11.17	11.55	11.66	11.38	11.47	12.02	12.46	13.17	13.39
Portugal	9.20	10.06	10.34	10.35	10.55	11.61	12.44	12.88	13.46
Finland	12.68	13.98	13.49	13.87	14.51	14.76	14.92	15.71	15.70
Sweden	14.55	16.57	16.69	16.84	17.19	18.06	19.08	19.31	19.75
United Kingdom	11.54	12.48	12.44	12.68	12.73	12.88	12.78	13.09	13.66
EU	10.77	11.40	11.37	11.52	11.72	12.08	12.37	12.86	13.28
Japan	10.35	9.74	9.76	10.44	10.86	12.04	12.48	12.63	13.12
USA	13.20	13.05	12.66	14.17	14.76	16.06	16.08	16.55	16.35
Top 3	13.62	14.89	14.77	15.07	15.62	16.07	16.63	17.04	17.35
Large 3	10.65	11.24	11.14	11.27	11.27	11.45	11.88	12.30	12.75

WIFO

Investment into the future
R&D expenditures in % of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Belgium	1.61	1.70	1.71	1.71	1.80	1.87	1.89	1.96	1.96
Denmark	1.68	1.74	1.79	1.84	1.85	1.94	2.06	2.09	2.09
Germany	2.41	2.35	2.26	2.26	2.26	2.29	2.31	2.44	2.48
Greece	0.36	0.47	0.48	0.49	0.50	0.51	0.59	0.67	0.67
Spain	0.88	0.88	0.81	0.81	0.83	0.82	0.89	0.88	0.94
France	2.38	2.40	2.34	2.31	2.30	2.22	2.17	2.19	2.15
Ireland	1.18	1.13	1.05	1.00	1.01	1.05	1.07	1.04	1.04
Italy	1.04	1.17	1.31	1.34	1.32	1.29	1.26	1.21	1.21
Netherlands	1.90	1.93	1.97	1.99	2.01	2.04	1.94	2.02	2.02
Austria	1.45	1.47	1.54	1.56	1.60	1.69	1.79	1.83	1.80
Portugal	0.61	0.60	0.58	0.57	0.59	0.62	0.68	0.75	0.75
Finland	2.13	2.17	2.29	2.29	2.54	2.72	2.89	3.22	3.37
Sweden	3.02	3.27	3.36	3.46	3.56	3.67	3.72	3.78	3.78
United Kingdom	2.02	2.05	2.01	1.95	1.88	1.81	1.80	1.88	1.86
EU	1.88	1.87	1.82	1.80	1.80	1.80	1.81	1.86	1.88
Japan	2.70	2.62	2.57	2.69	2.80	2.89	3.03	3.03	3.03
USA	2.65	2.52	2.43	2.51	2.55	2.58	2.61	2.66	2.70
Top 3	2.28	2.39	2.48	2.53	2.65	2.78	2.89	3.03	3.08
Large 3	1.94	1.97	1.97	1.97	1.96	1.93	1.91	1.95	1.95

WIFO

Investment into the future
Education expenditures in % of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Belgium	5.00	5.00	5.00	5.00	5.00	4.90	5.20	5.50	5.20
Denmark	7.70	7.70	7.70	7.70	8.10	7.90	8.20	8.10	8.30
Germany	4.70	4.70	4.70	4.70	4.80	4.70	4.70	4.60	4.60
Greece	2.90	2.70	3.00	2.90	3.10	3.40	3.50	3.60	3.80
Spain	4.70	4.90	4.70	4.70	4.70	4.50	4.50	4.50	4.40
France	6.00	5.90	5.90	6.00	5.90	6.00	5.90	5.90	5.80
Ireland	5.50	5.90	5.90	5.50	5.30	5.20	4.90	4.30	4.50
Italy	4.90	5.40	5.00	4.90	4.90	4.60	4.60	4.50	4.60
Netherlands	5.00	5.20	5.10	5.00	5.00	4.80	4.90	4.80	4.80
Austria	6.20	6.20	6.20	6.20	6.00	5.90	5.80	5.90	5.70
Portugal	5.40	5.40	5.40	5.40	5.50	5.60	5.60	5.70	5.70
Finland	6.90	6.90	6.70	6.90	7.00	6.50	6.20	6.20	5.90
Sweden	7.50	7.60	7.50	7.50	7.60	7.90	8.00	7.70	7.70
United Kingdom	5.00	5.20	5.20	5.00	4.80	4.70	4.60	4.40	4.40
EU	5.20	5.20	5.20	5.20	5.20	5.10	5.00	5.00	5.00
Japan	3.50	3.50	3.70	3.50	3.50	3.50	3.50	3.50	3.60
USA	4.90	4.90	4.60	4.90	5.10	5.20	5.00	5.20	4.90
Top 3	7.37	7.40	7.30	7.37	7.57	7.43	7.47	7.33	7.30
Large 3	5.20	5.33	5.20	5.20	5.20	5.10	5.07	5.00	5.00

WIFO

Investment into the future
ICT expenditures in % of GDP

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Belgium	3.99	4.36	4.26	4.21	4.53	4.94	4.95	5.41	5.75
Denmark	4.24	4.67	4.64	4.95	5.20	5.56	5.62	5.90	6.20
Germany	4.21	4.49	4.48	4.30	4.18	4.50	4.96	5.32	5.71
Greece	2.75	3.35	3.56	3.70	3.90	4.00	4.84	5.59	6.08
Spain	2.40	2.88	3.13	3.39	3.69	5.00	5.53	6.21	6.82
France	3.82	4.19	4.21	4.35	4.50	4.82	5.25	5.70	6.22
Ireland	4.26	4.80	4.63	5.35	5.63	5.66	5.45	5.45	5.35
Italy	2.48	3.13	3.21	3.65	3.66	3.92	4.49	5.04	5.49
Netherlands	4.64	5.02	4.99	5.09	5.45	5.85	6.10	6.56	6.94
Austria	3.52	3.88	3.92	3.62	3.87	4.43	4.87	5.44	5.89
Portugal	3.19	4.06	4.36	4.38	4.46	5.39	6.16	6.43	7.01
Finland	3.65	4.91	4.50	4.68	4.97	5.54	5.83	6.29	6.43
Sweden	4.03	5.70	5.83	5.88	6.03	6.49	7.36	7.83	8.27
United Kingdom	4.52	5.23	5.23	5.73	6.05	6.37	6.38	6.81	7.40
EU	3.69	4.33	4.35	4.52	4.72	5.18	5.56	6.00	6.40
Japan	4.15	3.62	3.49	4.25	4.56	5.65	5.95	6.10	6.49
USA	5.65	5.63	5.63	6.76	7.11	8.28	8.47	8.69	8.75
Top 3	3.97	5.09	4.99	5.17	5.40	5.86	6.27	6.67	6.97
Large 3	3.50	3.94	3.97	4.10	4.11	4.41	4.90	5.35	5.81