Industrial Policies in Europe in Historical Perspective

Working Paper no 15

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July 2013

EUROPEAN COMMISSION
European Research Area
SEVENTH FRAMEWORK PROGRAMME
Funded under Socio-economic Sciences & Humanities

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Reviewed by: Karl Aiginger (WIFO)

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Work Package 306

MS66 "Research paper on industrial policy in a historical perspective"

Working Paper no 15

THEME SSH.2011.1.2-1

Socio-economic Sciences and Humanities Europe moving towards a new path of economic growth and social development - Collaborative project

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Abstract

This research paper provides a solid historical overview of European industrial policy during the post-WWII era, extending the time horizon up to the 1990s. Our research focus is the EU 15. Unlike previous publications, this paper outlines the most important characteristics and drivers of European industrial policy in a comparative and transnational perspective in order to provide some conclusions about policy impacts, historical policy continuities and national policy convergence, looking at changing institutional settings especially in transition periods and asking finally how these historical lessons could be fruitful for further research on future effective political action.

This paper provides unequivocal evidence that state industrial policy in Europe after 1945 had been always one of the most controversial policy fields and that its scopes and instruments differed greatly between countries and changed over time. Industrial policy was not a novel phenomenon of the postwar era. Beyond the immediate goals, it was part of what can be considered the economic culture of every country. National traditions, historical legacies and path-dependencies did play an important role and may explain the enormous differences between nations and regions in Europe, even when they had to face similar challenges.

The paradigm shift towards an interventionist industrial policy approach implemented in most European countries after 1945, which persistently prevailed until the 1990s, fostered economic structural change and was partially very effective in supporting high economic growth during the prosperity years, but had often led to an inefficient allocation of national economic resources in many countries in the longer run. The more important and effective factors that enhanced industrial productivity in the long run, were, firstly, industrial policies establishing national and/or regional promising effective incentive structures for the private sector, and secondly industrial policies encouraging openness to trade and investment, by creating an international environment favourable to competition, innovation and technology transfer. For Western Europe, it was increasing trade and investment openness, largely, but not exclusively, under the heading of European integration.

Contribution to the Project

Conclusions on industrial policy impacts in Europe since World War II, historical policy continuities and national policy convergence, looking at changing institutional settings, and asking finally how these historical lessons could be fruitful for further research on future effective political action in Europe. Historical background for other working tasks of Area 3.

Keywords: Academic research, economic growth path, economic strategy, EU integration, European economic policy, industrial innovation, industrial policy, innovation, innovation policy, institutional reforms, new technologies, post-industrialisation

Jel codes: O25, O52, O57, N14, N44, F15, F55

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Industrial Policies in Europe in Historical Perspective

I Introduction

Europe experienced a period of extensive interventions in the industrial sector after World War II. Even though prominent intellectuals and scholars such as Jean Fourastié, Allan Fisher, or Colin Clark had already published their ideas of a new post-industrial age,[1] economic policy continued to foster industrial production. Nevertheless, there was no specific pattern or an overall strategy adopted in the same way by all countries. Rather, industrial policy was based on variety of mechanisms and directed towards different fields ranging from the promotion of specific technologies, the creation of infrastructures, energy policies or a distinctive protection of certain branches. Instruments ranged from tax incentives, direct subsidies, or financial credits conceded by public developmental banks. While in some countries (like France and Italy, for example) powerful and centralized agencies were created, in other countries (like West Germany, for example) regional or local initiatives were far more important.[2]

This period of strong industrial policy interventionism, initiated by post-war reconstruction and the reorganization of the European economies was terminated with the end of the Bretton Woods system, the oil crises of the 1970s, rising unemployment and accelerating inflation. From the late 1970s and early 1980s on, industrial policy and economic interventionism in general in most European countries came under severe attack and were stigmatized posterior as important hindrances of economic development and growth. Indeed, for a long time industrial policy appeared old-fashioned: something that belonged to a distant past when mercantilism ruled economic philosophy in Europe. The industrial sector seemed to fade away, marginalized by the Internet boom, the financial sector and other expanding branches of the knowledge economy. Moreover, the liberal reforms implemented in many countries since the 1980s strongly limited state interventions. According to this view, the market is more efficient to

[1] Allan G.B. Fisher, 'The Clash of Progress and Security', London: Macmillan 1935; Collin Clark, 'The Conditions of Economic Progress', London: Macmillan 1940; Lean Fourastié, 'Le Grand Espoir du XXe siècle. Progrès technique, progrès économique, progrès social', Paris: Presses Universitaires de France 1949.

[2] Christian Grabas and Alexander Nützenadel, 'Introduction', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p.13..

decide which sector should succeed. Industrial policy, in this view, was mainly an instrument to protect the old manufacturing sectors, which under market conditions were unable to survive.[3]

However, particularly in the wake of the global financial turmoil since the turn of the millennium, many of these assumptions have been thrown into question. Not only in Europe, but also in other parts of the world, there is a true renaissance of industrial policy. Nearly all of the new economic powerhouses of the past decade – Brazil, China, South Korea or India – implemented comprehensive strategies to promote the growth of the domestic manufacturing sector. Even countries such as Great Britain or the United States, which in the past sturdily rejected any form of state involvement in industrial development, are beginning to reconsider their economic philosophy.[4]

Even though industrial policy has played such a distinctive role in the course of European economic development after 1945, this topic has been fairly neglected by historical research. While there are several case studies based on national and regional experiences, there are hardly any attempts to measure the impact of industrial policy on the European level. One reason for the lack of comprehensive studies might be the definitional vagueness of this particular subarea of economic policy, since „definition and scope of industrial policy differs not only between European countries but also within their boundaries.“[5] On the other hand, a quantitative assessment has turned out to be rather difficult, not only because data bases are often insufficient, difficult to compare, or simply inexistent, but also because „industrial policy interplays with other governmental policies.“[6] Moreover, many archival sources are still not open to the public or have been made accessible only in recent years. A pioneering work in this field has been provided by Giovanni Federico and James Foreman-Peck[7] and they have definitely managed “to contribute to an understanding of European industrial policy, broadly interpreted, by introducing a historical perspective.”[8] Other literatur on industrial policy in

[3] Ibid., p. 12.

[4] Ibid.

[5] James Foreman-Peck and Giovanni Federico, ‘Preface’, in: Giovanni Federico and James Foreman-Peck (eds.), European Industrial Policy: The Twentieth Century Experience’, Oxford: Oxford University Press (1999), p. V.

[6] Pierre-André Buigues and Khalid Sekkat, ‘Industrial Policy in Europe, Japan and the USA. Amounts, Mechanisms and Effectiveness’, Basingstoke, Hampshire/ New York: Palgrave Macmillan (2009), p. 28.

[7] Foreman-Peck and Federico (1999), ‘European Industrial Policy’.

Europe, as for example a recently published study entitled 'Industrial Policy in Europe since the Second World War: what has been learnt?'[9] is limited only on a certain smaller selection of national case studies - here to the three largest economies in Europe: the UK, France and Germany. Other publications lack a true historical perspective. This goes not only for the books of Pierre-André Buigues and Khalid Sekkat,[10] or Keith Cowling,[11] but also for the collected volume edited by Thomas C. Lawton,[12] all of which provide a broad overview of different approaches of industrial policy from the 1980s to the present. However, there are obviously many good reasons, that justify a reconsideration of this issue, especially as since the 1990s, new archival material has been made available and new debates and methods have brought fresh insights into the history of economic policy and industrial development in Europe.

The purpose of the present paper is to provide a solid overview of European industrial policy after World War II in a historical perspective based on the newest research in this recently neglected field of study.[13] We will provide some conclusions about policy impacts, historical policy continuities and national policy convergence, looking at changing institutional settings especially in transition periods and asking finally how these historical lessons could be fruitful for further research on future effective political action. In doing so, this paper will hopefully contribute to a better understanding of the possible role of industrial policy in stimulating industrial productivity and modernization, economic development and sustainable growth in general. Moreover, it will provide some tentative indications of why an integrated and future oriented industrial policy approach, as it has been recently developed by the model of the "Systemic Industrial and Innovation Policy" (SIIP)[14] and which represents a core aspect of the

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[8] Foreman-Peck and Federico (1999), 'Preface', p. V.

[9] Geoffrey Owen, 'Industrial Policy in Europe since the Second World War. What has been learnt?', *ECIPE Occasional paper* , no. 1/2012, The European Centre for International Political Economy, Brussels (2012).

[10] Buigues and Sekkat (2009), 'Industrial Policy in Europe'.

[11] Keith Cowling (ed.), 'Industrial Policy in Europe. Theoretical Perspectives and Practical Proposals', London and New York: Routledge (1999).

[12] Thomas C. Lawton, 'European Industrial Policy and Competitiveness. Concepts and Instruments', Basingstoke, Hampshire and New York: Palgrave Macmillan (1999).

[13] Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming).

[14] The analytical concept of the „Systemic Industrial and Innovation Policy" (SIIP) has been elaborated by Karl Aiginger (WIFO) and represents the conceptual development of the "Matrix Approach to Industrial Policy" that describes the "new" European industrial policy initiatives after 2000 which emphasized the political "priority of

European Union´s new growth strategy "Europe 2020"[15], deems to be appropriate and necessary to help the European economies to emerge quickly from the current global financial crisis and to cope successfully with any future econonomic challenges.[16]

The present paper will particularly focus on industrial policies in Europe during the post-war era, extending the time horizon up to the 1990s. Our research focus will be the EU 15. Hence, the present paper inquires into differences and similarities, looks at transfers across national borders, and locates industrial policy in the context of the Cold War. Moreover, the paper analyzes the impact and power of supranational institutions on industrial policy.

Unlike previous publications, this paper will outline the most important characteristics and drivers of European industrial policy in a comparative and transnational perspective, in order to provide some answers to selected key questions: How successful were industrial policies after 1945? Did they substantially increase growth during the so-called Golden Age of growth? Or did they rather have a negative impact on the adjustment of the industrial structure? What were the long-term effects of these policies? In what ways have historical traditions and institutional legacies shaped industrial policies after 1945? Are there national path-dependencies based on different models of economic policy? Did European states exert mutual influence? Did supranational institution and ideological conflicts between East and West influence their policies? Was there a process of convergence that lead to a *European model* of industrial policy?

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horizontal measures, acknowledging however that all horizontal measures (…) have (…) to be complemented in specific industries by sector related measures." Karl Aiginger, 'A Systemic Industrial Policy to Pave a New Growth Path for Europe', *WIFO Working Papers*, No. 421 (February 2012), here, p. 10.. For the "Matrix Approach", see: Karl Aiginger and Susanne Sieber, 'The Matrix Approach to Industrial Policy', *International Review of Applied Economics*, Vol. 20, No. 5 (December 2006), pp. 573-601.

[15] "Europe 2020" is the EU's growth strategy for the coming decade. See: European Commission, 'Europe 2020 A Strategy for Smart, Sustainable and Inclusive Growth', Communication from the Commission, COM (2010) 2020 final, Brussels (March 2010).

[16] The present research paper on "Industrial policies in Europe in historical perspective" is the outcome of the workpackage 306, task 1 of the ambitious European research project, 'Welfare, Wealth and Work for Europe – WWWforEurope', which brings together researchers from 33 scientific institutions in 12 European countries with interdisciplinary expertise from economics and ecology to history, demography, political science and gender research. The objective of this project, which is coordinated by the Austrian Institute of Economic Research (WIFO), is to strengthen the analytical foundation of the Europe 2020 strategy, within which the SIIP approach represents an important core aspect. In this respect, the present paper will try to prepare a solid historical groundwork for the examination of the other promising workpackages of Area 3 within this framework project. For further information, see: http://www.foreurope.eu/index.php?id=56 (date accessed 24 February 2013).

In general, from a historical perspective, industrial policy covers a broad range of different policy fields.[17] The numerous understandings of what the term means, the over time varying diversity of approaches, institutions, measures and instruments of industrial policy, and their specific outcomes make every narrow definition obsolete.[18] Therefore, state industrial policy will be defined here very broadly: as the "targeted influence of the sectoral production structure of an economy executed by the legislative or executive authorities,"[19] which is in close keeping with Foreman-Peck´s broad definition of "industrial policy," as "every form of state intervention that affects industry as a distinct part of the economy."[20] Although the common distinction of these "targeted influence" between `horizontal´ policies affecting all firms and `vertical´ policies targeted on specific sectors or companies remains justifiable in theory anyway, those distinctions do not seem to be very helpful for our historical analysis, because of their overlapping in practice.

Due to the decision not to restrict the following historical analysis of industrial policies in Western Europe by any narrow superordinated definitions of 'industrial policy', the present paper rather focuses on quite different characteristics and fields of national and/or supranational industrial policy. Even if distinctive key features of industrial policy can be identified, it is important to stress that scopes and instruments of policy makers to influence the sectoral structural change differed greatly between Western European countries and changed over time. Given the diversity of policy approaches, measures and instruments, it seems not feasible and also not necessarily helpful to define any fixed categories or clusters of instruments of industrial policy for the entire studied period in Western Europe. Therefore, this paper will not provide a complete standardized analysis of industrial policy in Western Europe after WWII,

[17] Karl Aiginger and Susanne Sieber, 'Towards a Renewed Industrial Policy in Europe. Background Report of the Competitiveness of European Manufacturing', Prepared as Chapter 1 for the Background Report of the Competitiveness of European Manufacturing, European Commission, DG Enterprise, Vienna: WIFO (2005), pp. 32-78.

[18] For a short, but very pronounced overview on the over time varying different definitions of concepts and approaches of industrial policy, see: Karl Aiginger, 'Industrial Policy: A Dying Breed or a Reemerging Phoenix?', *Journal of Industry, Competition and Trade*, 7,3 (2007), p. 299 ff.

[19] (in translation) Michael J. Seitz, 'Staatliche Industriepolitik. Begründungen, Instrumente und Probleme', Baden-Baden: Nomos (2000), p. 38.

[20] James Foreman-Peck and Giovanni Federico, 'Industrial Policies in Europe: Introduction', in: Giovanni Federico and James Foreman-Peck (eds.), 'European Industrial Policy: The Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 3.

but rather an historical overview of most important selected dimensions of industrial policy, with many details and case studies.[21]

Because single effects of industrial policy measures are often difficult to assess, we will focus our analysis on rather general broad indicator areas suitable to be associated with these effects, hence with structural change between and within sectors, openness to trade and investment, competitiveness, industrial productivity, technological progress, and economic growth:

(1) General Economic Background + Convergence (e.g. GDP , general government gross debt, industrial production, employment, labour productivity, trade, prices, inflation;
(2) Industrial Policy + Innovation and Research (e.g. state aid, subsidies, tax incentives, military spending, government expenditure on R&D).

Most important data sources are National Statistical Offices and various OECD´s Historical Statistics. The main databases used for the analysis of recent developments are Eurostat SBS, and OECD.Stat.

This paper is structured into three parts, corresponding to the changing willingness on the part of governments in Europe of targeted state intervention for industrial development and economic growth.[22] All parts of this paper are dedicated to industrial policies in Europe both at a national and a European level: The first part analyzes industrial policies in Europe during a first phase after 1945 until the mid-seventies, which marked the heyday of belief in effectiveness of state intervention. The next part is dedicated to a second phase from the mid-seventies up into the 1990s, which saw the shift from the sectoral to a horizontal industrial policy approach and a greater reliance on competition. The third and final part of this paper provides an outlook about

[21] Karl Aiginger and Susanne Sieber identified four types of industrial policy instruments: subsidies, tax incentives, regulation/deregulation and fostering innovations. Moreover, Aiginger and Sieber identified six "building groups or clusters of countries according to the set of policy instruments used": A first group of "small northern countries", including Sweden, Finland and Denmark; a second group of "big continental countries" including Germany, France and Italy; a third group of "small continental countries" including Belgium, the Netherlands and Austria; a fourth group of "southern peripheral countries" including Spain, Portugal and Greece; and finally a sixth group with the United Kingdom and Ireland. Both these categorizations are definitely justifiable and helpful for the analysis of current and future European industrial policies. Instead, for a historical analysis of industrial policies in Western Europe after the Second World War, these categories remain insufficient. On the one hand, certain important instruments, such as state-owned enterprise or military spending for example, which played a major role in many Western European countries for a long time, would have to be excluded. On the other hand, there are too many similarities between the groups of countries and too many differences between individual countries within the suggested groups or clusters. See: Aiginger and Sieber (2006), 'The Matrix Approach to Industrial Policy', p. 579 ff.

[22] Ibid., p. 576 ff.

recent developments and draws some brief conclusions about how our critical historical assessment of the efficiency and economic performance of the over time varying different measures and control mechanisms of state industrial policy in Europe since the Second World War could be fruitful for further research on future effective political action.

II European Industrial Policies in the "Golden Age" of Economic Growth (1945/50-1973/75)

During the first three decades after 1945 until the mid 1970s, most European economies not only showed unprecedented industrial performance, but also underwent massive changes in their economic structure. Following the collective experience of the war and especially the immediate post-war period, which were characterized by mass unemployment, poverty and hunger, almost all European societies, in East and West, experienced now an exceptional economic growth period since the early 1950s, which – concerning Western Europe – had been referred to as the "Golden Age of European Growth"[23] or even the "Great Boom"[24]. The Post-war Boom covered most of Europe, although in different countries sometimes entirely different economic conceptions and regulatory structures constituted decisive institutional settings for economic growth. The 1950s and 1960s were characterized by the emergence of macro-economic planning and industrial policies aimed at fostering economic growth. All across Europe, but especially in the peripheries and rural areas, ambitious programs were launched to strengthen the industrial sector. Against the backdrop of the Cold War, increasing a country's industrial production became a political priority on both sides of the Iron Curtain. At the same time, however, many regions that were home to traditional industries, such as the Ruhr area in Germany or the Clydeside shipyards in Scotland, began to face severe economic problems. While governments continued to promote industrialization along traditional lines, they were already confronted with a deepening crisis in their industrial homelands.

[23] Peter Temin, 'The Golden Age of European Growth: A Review Essay', *European Review of Economic History*, vol. 1 (1997), pp. 127-149.

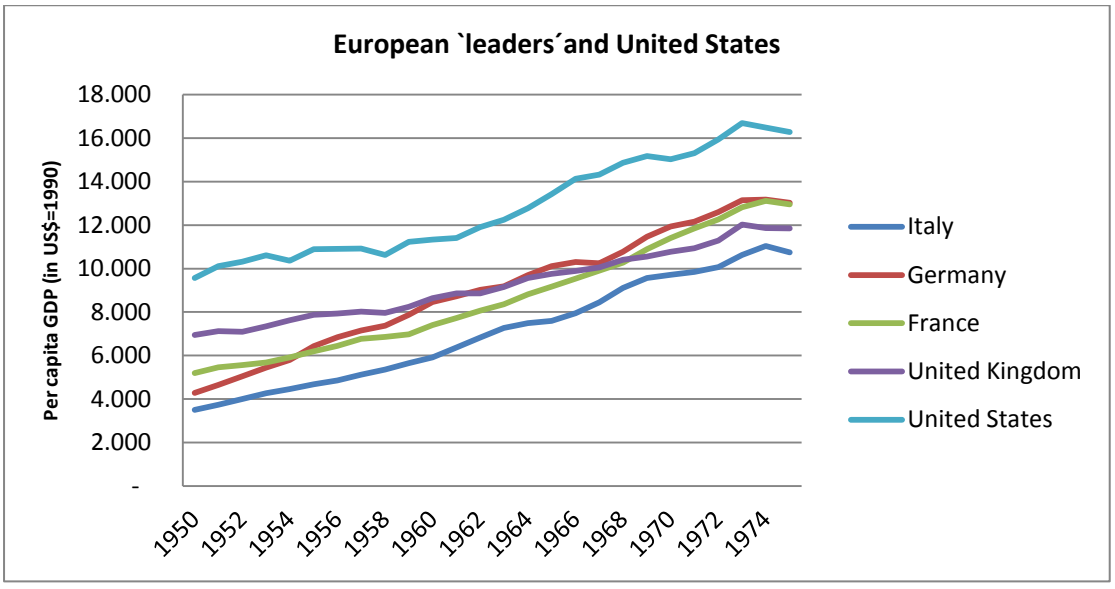
[24] Nicholas F. Crafts, 'The Great Boom: 1950-1973', in: Max-Stephan Schulze (ed.), 'Western Europe. Economic and Social Change Since 1945', London: Longman (1999), pp. 42-63.

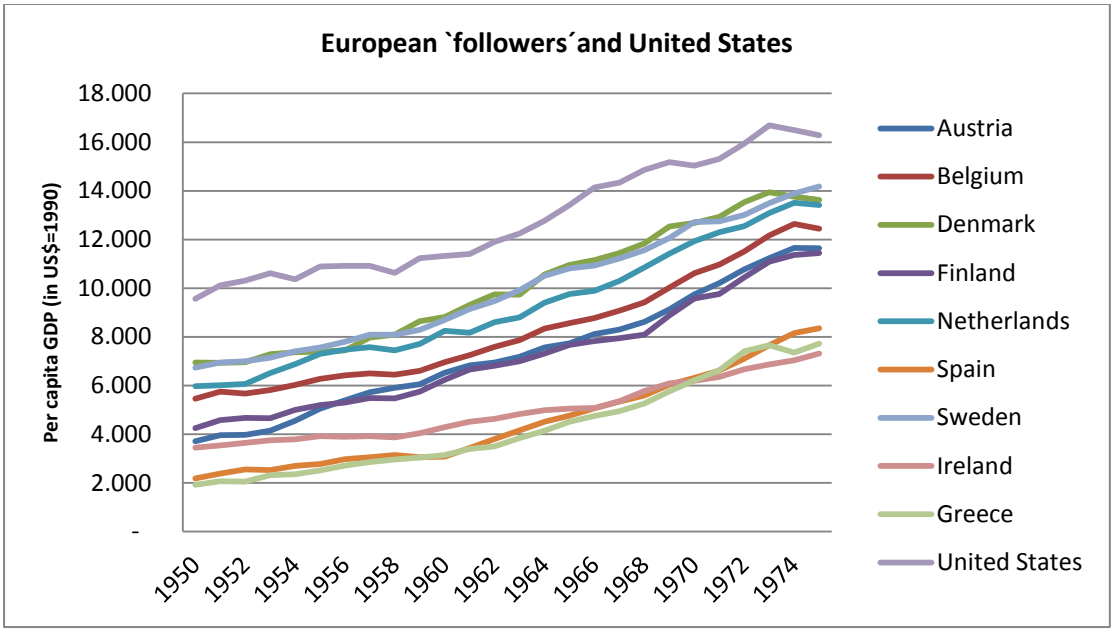
II.1 Initial Conditions, Integration and Convergence in Western Europe after WWII

By the end of the Second World War, due to the disastrous economic situation of many countries, the immediate task facing most European governments were the re-establishing of a peacetime economy and economic reconstruction. The longer-term challenge was to absorb and utilize the innovative techniques and organizations of the US economy, which, before and during the war, had been extending its productivity lead compared to Europe for decades. To raise productivity by "catching-up" with the US levels represented the key stimuli for European recovery and the later post-war boom.

European governments coped differently with these transnational challenges. Historical legacies, cultural traditions and path-dependencies were often responsible for national variations. But, in general, as figure 2.1 illustrates, Western Europe did well.

Figure 2.1: Growth of per capita GDP in Western Europe and in the United States, 1950-1975 (in US $=1990)





Source: GGDC, Total Economy Database (viewed 2013)

In fact, the growth and performance of the West European economies since 1945 during the period of Pan-European prosperity until the mid-1970s were exceedingly good. Cyclical fluctuations were relatively mild, rates of inflation were generally modest, unemployment was low and the experience of an ongoing promising structural transformation was, by historical standards, extraordinary.[25] As an Economic Survey of Europe of the United Nations Economic Commission for Europe stated, "it was the period with the fastest rate of output expansion since the beginning of 'modern growth' in 1870."[26]

Table 2.1: War damages and reconstruction in Western Europe after WWII

	Pre-war year when GDP was the same as in 1945 (1)	**Year when GDP recovered the highest pre-war level (2)**	**Annual rate of GDP growth during "reconstruction" in % (1945 to year in col. (2)) (3)**
Austria	1886	1951	15.2
Belgium	1924	1948	6.0
Denmark	1936	1946	13.5

[25] For illustration, see also table A-1 and table A-2 in the appendix of the present paper.

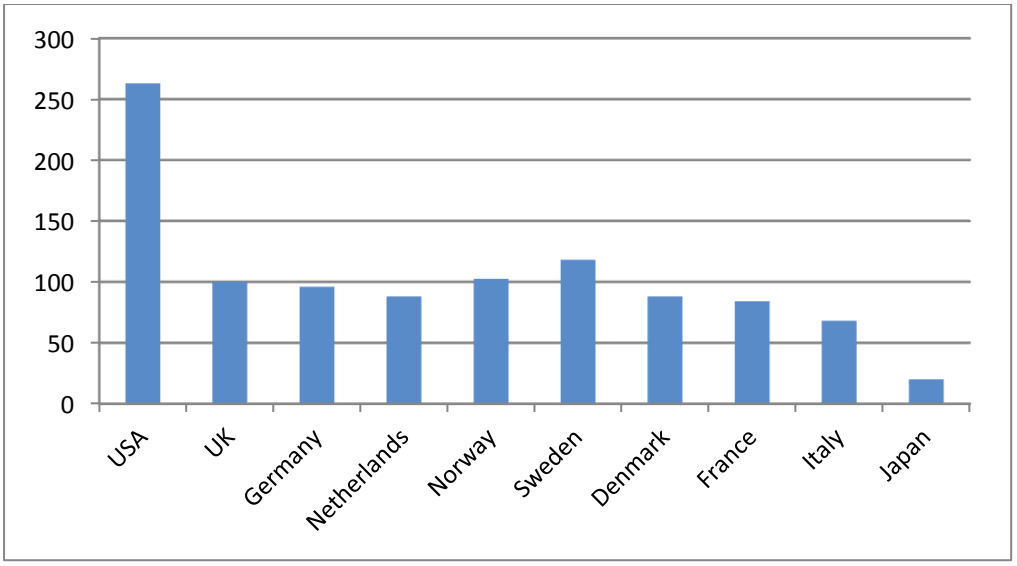
[26] United Nations Economic Commission for Europe (UN/ECE), 'Economic Survey of Europe 2000', No. 1, chapt. 5, "Catching Up and Falling Behind: Economic Convergence in Europe", Published: 03 May 2000, p. 160, http://www.unece.org/fileadmin/DAM/ead/pub/001/001_5.pdf (viewed on 06 March 2013).

Finland	1938	1945	
France	1891	1949	19.0
Germany	1908	1951	13.5
Italy	1909	1950	11.2
Netherlands	1912	1947	39.8
Norway	1937	1946	9.7
Sweden	never		
Switzerland	never		
United Kingdom	never		

Source: Nicholas F. Crafts and Gianni Toniolo, 'Post-war Growth: An Overview', in: Nicholas F. Crafts and Gianni Toniolo (eds.), 'Economic Growth in Europe since 1945', Cambridge: Cambridge University Press (1996), p. 4.

As table 2.1 shows, all countries (beside Germany and Austria = 1951) managed the recovery of their respective economic pre-war levels latest until 1950. Therefore, the year 1950 can be defined both as the end of recovery as well as the watershed opening up a new era in Western European economic history.

Figure 2.2 Labour productivity in manufacturing in selected countries, 1950 (UK=100)



Source: Stephen Broadberry, 'The Productivity Race. British Manufacturing in International Perspective 1850-1991', Cambridge: Cambridge University Press (1997), tables 4.3, 4.4, 4.5 and 4.6.

Both the productivity and the real income gap between Europe and the United States, the technological world leader, were remarkably large in 1950. Even West Germany and the UK,

which dominated European industrial production, were lagging behind.[27] As illustrated in figure 2.2, labour productivity in the United States more than doubled the levels of Britain and West Germany. The real income gap between both countries and the United States – illustrated in table 2.2 – was of 31 and 57 per cent respectively in 1950. For Western Europe, this real income gap in 1950, accounting for 55 per cent on average, simultaneously foreshadows the enormous scope and potential for a technological catch-up growth, which characterized the entire following period of European prosperity until the mid-seventies.

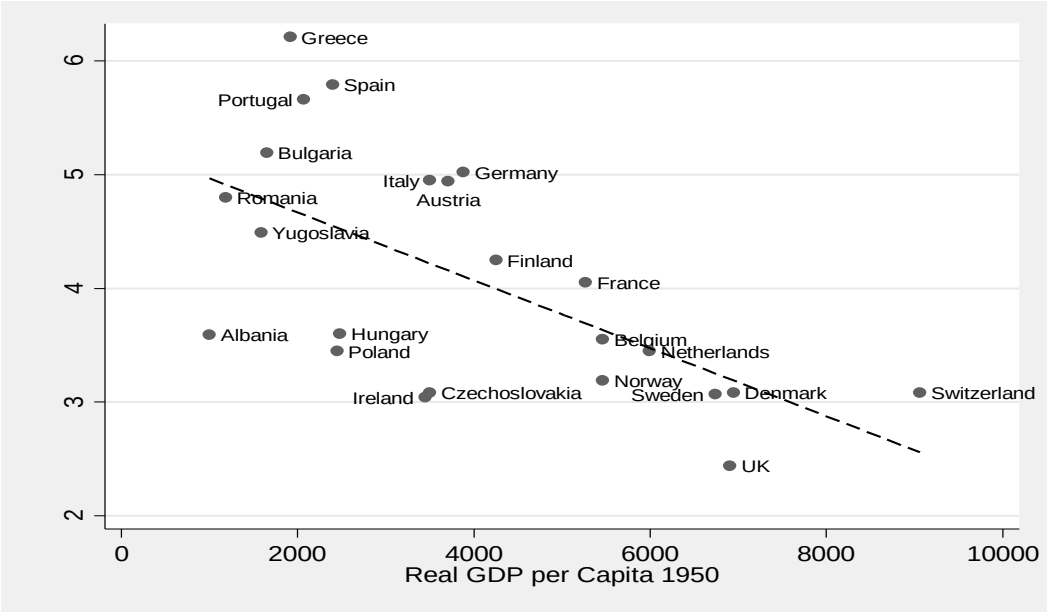
Table 2.2: Real GDP per capita in Western Europe compared to the United States, 1950-1973 (in %, US=100)

	1950	**1960**	**1973**
France	52	63	74
Germany	43	73	76
Italy	36	52	63
United Kingdom	69	73	69
Austria	38	57	66
Belgium	54	59	70
Denmark	66	72	77
Finland	42	53	63
Greece	18	25	42
Iceland	-	58	65
Ireland	34	36	39
Luxembourg	-	90	90
Netherlands	57	67	72
Norway	53	60	63
Portugal	19	24	37
Spain	28	34	50
Sweden	67	74	77
Switzerland	92	108	108
Turkey	17	20	19
Western Europe	**45**	**57**	**62**
United States	100	100	100

[27] For illustration, see also table A-3 and A-4 concerning the development of labour productivity growth in the appendix of the present paper.

Source*:* United Nations Economic Commission for Europe (UN/ECE), 'Economic Survey of Europe 2000', No. 1, chapt. 5, "Catching Up and Falling Behind: Economic Convergence in Europe", Published: 03 May 2000, p.161, http://www.unece.org/fileadmin/DAM/ead/pub/001/001_5.pdf (viewed on 06 March 2013).

Figure 2.3: European growth and convergence, 1950-1973



Source: Angus Maddison, 'The World Economy. A Millennial Perspective', Paris: OECD (2001), table A 1-d. Germany with 1991 frontiers.

In fact, it seemed that Western Europe fulfilled this prophecy to catch-up with the US and experienced a common European process of convergence (figure 2.3), with two exceptions. Generally, as tables 2.3 and 2.4 show, the less industrialized countries with the lowest real income had the largest scope for catch-up industrialization and therefore grew most rapidly.

Table 2.3: Sectoral employment shares in Western Europe, 1950

	Agriculture	Industry	Services
Belgium	12.2	48.9	38.9
UK	5.3	48.8	45.9
Switzerland	16.5	46.6	36.9
West Germany	23.2	42.9	33.9
Sweden	2.3	40.9	38.8
Netherlands	17.8	38.4	43.8
Austria	32.3	37.1	30.6
Norway	25.9	36.9	37.4
Denmark	25.1	33.3	41.6
Italy	42.2	32.1	25.7
France	31.5	31.8	36.7
Finland	46.0	27.7	26.3
Portugal	48.4	25.1	26.5
Spain	48.8	25.1	26.1
Ireland	39.6	24.4	36.0
Greece	48.2	19.3	32.5

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 316.

Table 2.4: Levels and compound annual growth rates of real GDP per capita in Western Europe, 1950-1973 (in US $= 1990 and in % per year)

	1950	**1973**	**1950-73**
Switzerland	9064	18204	3.08
Denmark	6943	13945	3.08
UK	6939	12025	**2.42**
Sweden	6739	12494	3.06
Netherlands	5971	13081	3.45
Belgium	5462	12170	3.54
Norway	5430	11324	3.24
France	5271	13114	4.04
West Germany	4281	13153	**5.02**
Finland	4253	11085	4.25

Austria	3706	11235	4.94
Italy	3502	10634	4.95
Ireland	3453	6867	**3.03**
Spain	2189	7661	**5.60**
Portugal	2086	7063	**5.45**
Greece	1915	7655	**6.21**

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 301.

During the period under consideration here, the star performers in Western Europe were Greece, Portugal and Spain. They succeeded well in terms of their initial conditions. The same holds true for the reverse case, and the UK economy was the slowest grower in Western Europe. West Germany and Ireland represented the two exceptions: West Germany, in significant opposite to the UK, succeeded in further developing modern industrial structures and consolidating its pre-war position as the industrial powerhouse of Western Europe with an extraordinary expansion of its industry and experienced a very pronounced recovery from the Second World War shock. Ireland, by contrast, lagged behind and did not follow the Western European pattern. The reasons lay in the decision by the Irish governments to follow the path of indiscriminate protectionism and import-substituting industrialization. However, the Irish sample already indicated the invalidity of the catch-up approach as the solely explanation for economic growth in Western Europe after 1945.

Table 2.5: Levels and compound annual growth rates of real GDP per capita in Western Europe and in the United States, 1820-2005 (in US $= 1990 and in % per year)

	Western Europe	**United States**		**Western Europe**	**United States**
1820	1205	1257	**1820-70**	0.98	1.34
1870	1962	2445	**1870-1913**	1.33	1.82
1913	3461	5301	**1913-50**	0.78	1.61
1950	4582	9561	**1950-73**	**4.06**	**2.45**
1973	11431	16689	**1973-2005**	1.86	1.91
2005	20589	30519			

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 299.

To summarise, from 1950 to 1973 the US GDP per capita rose by only 2.45 per cent on average per year, whilst the GDP per capita in Western Europe grew at an impressive average of 4.06 per cent yearly (table 2.5). During the same period industry, in particular manufacturing was the strong engine of recovery and economic growth, with an averaged growth rate from 3.17 per cent in UK to 9.63 per cent in Spain. As table 2.6 illustrates, in some years West Germany's, Italy's and Spain's growth rates of manufacturing output miraculously peaked to 17, 15 and 18 per cent.[28]

Table 2.6: Growth rates of manufacturing output in Western Europe and in the United States, 1950-1973 (in %)

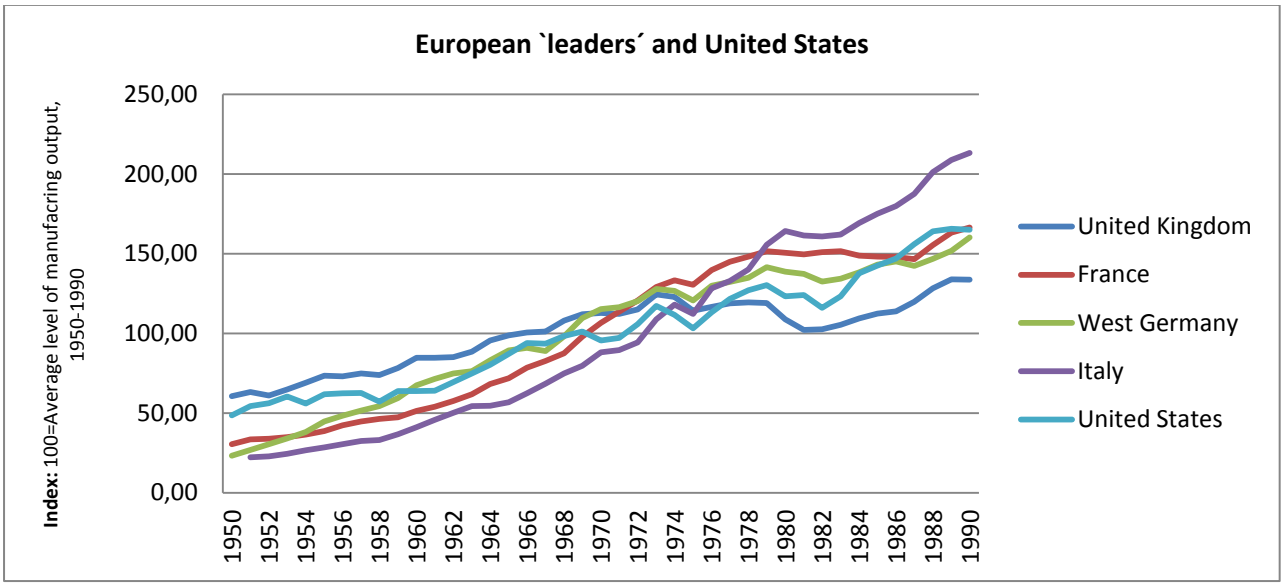
	United Kingdom	**France**	**West Germany**	**Italy**	**Netherlands**	**Denmark**	**Sweden**	**Spain**	**United States**
1950-51	4.26	9.46	15.08		-9.90	-1.14	5.74	6.34	**11.90**
1951-52	3.60	1.70	13.47	2.59	6.80	-3.10	-2.37	17.9	3.40
1952-53	6.17	2.80	11.80	7.56	15.73	4.12	1.95	2.20	3.28
1953-54	6.72	4.55	11.97	8.89	**17.27**	5.48	4.59	6.85	-7.3
1954-55	6.38	5.92	**17.28**	6.60	6.95	-0.90	4.60	10.45	10.49
1955-56	-0.50	9.44	8.08	7.62	8.26	0.19	4.54	7.74	0.90
1956-57	2.22	5.65	6.82	6.28	7.07	7.88	5.16	5.98	0.56
1957-58	-1.28	3.46	5.35	2.04	-0.47	3.95	1.62	6.77	-8.72
1958-59	6.01	2.20	9.46	10.97	10.82	**11.91**	4.53	0.97	11.38
1959-60	8.11	8.45	13.36	12.00	16.84	7.49	8.52	2.97	0.20
1960-61	0.17	5.16	6.00	10.94	4.00	6.73	7.10	**17.97**	0.22
1961-62	0.43	6.50	4.73	9.87	3.46	7.67	7.79	12.50	8.50
1962-63	4.09	7.45	1.97	8.31	4.27	0.36	5.07	5.68	7.92
1963-64	7.89	10.33	8.87	0.16	13.34	9.22	**12.17**	10.63	7.05
1964-65	3.32	5.46	7.61	4.34	10.04	5.04	7.61	15.29	8.70
1965-66	1.82	9.28	1.73	9.86	1.58	2.12	5.06	13.45	7.66
1966-67	0.67	5.15	-2.23	9.56	6.70	4.10	2.10	10.22	-0.27
1967-68	6.57	5.85	10.37	9.17	7.30	6.44	6.24	7.42	5.13

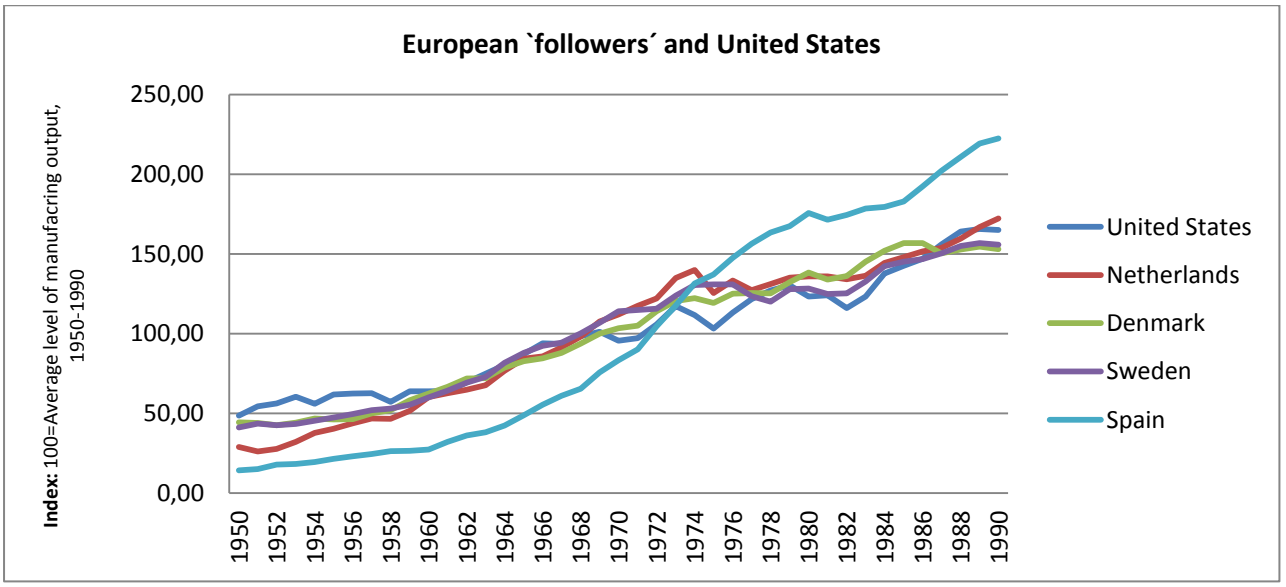
[28] For illustration, see also figure 2.4. For further information on the development of manufacturing output in selected Western European countries, see table A-17 and figure A-1 in the appendix of the present paper.

1968-69	3.87	**12.00**	11.70	6.68	9.68	6.77	6.60	15.62	2.80
1969-70	0.60	8.97	5.08	10.50	4.08	3.32	6.69	10.00	-5.57
1970-71	-0.40	6.42	1.06	1.56	4.96	1.67	0.49	8.23	1.72
1971-72	2.40	6.3	3.26	5.41	3.81	8.57	0.60	15.96	8.88
1972-73	8.14	6.97	6.39	**15.26**	10.55	5.53	7.08	12.55	10.70
1950-1973	**3.17**	**6.47**	**7.68**	**7.49**	**6.93**	**4.44**	**4.90**	**9.63**	**3.89**

Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Figure 2.4: Growth of manufacturing output in Western Europe and in the United States, 1950-1990 (Index = average level of manufacturing output, 1950-1990)





Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

II.2 Perspectives of European Industrial Policy during the Golden Age of Economic Growth

What role was played by industrial policies for this flourishing and extraordinary economic growth and industrial development in Western Europe? Such a question is impossible to answer precisely and it is not the purpose of this paper to attempt the impossible. Rapid industrial growth performance was surely the result of a broad variety of influences, national and international conditional factors. However, it is a matter of fact, that since the early 1950s, the state itself became again increasingly involved within the economy in all Western European countries. Compared with the pre-war period, the state experienced a much larger share in economic activities after 1945, not like before during wartimes for military mobilization, but for the achievement of national security, equity, and stability objectives and to promote industrial and economic development in general. State intervention was essentially important and became particularly apparent within the field of industrial policies. As Pedro Fraile Balbin stated: "State intervention in industrial markets was a common feature of almost all European countries after the Second World War."[29] Therefore, it seems undeniable that the impact of state industrial policies has to be considered at least as one important factor for Western European economic growth after 1945. We will now present a brief overview of the most important industrial policy approaches, measures and instruments from the macro perspective and from the micro perspective as well. Of course, not all Western European countries are covered with an explicit explanation, although there were certainly more interesting national samples of state industrial policy beside our selection. Moreover, we cannot describe all industrial policies in all countries in its entirety; only brief examples will be presented. Here, however, the authors had to decide in favour of a certain selection.

[29] Pedro Fraile Balbin, 'Spain: Authoritarian Industrial Policy', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth-Century Experience', Oxford: Oxford University Press (1999), p. 256.

II.2.1 The macro perspective: Trade liberalization and macroeconomic planning

It is important to stress, that "national policy designs, measures and instruments differed much, but more in presentation than in practice".[30] From the macro-perspective, two more general features of industrial policy in Western Europe during the post-war period must be emphasized: A first common feature was that in 1947/48 most Western European governments (except Finland and Spain) applied for admission to the European Recovery Program, the US American aid program for economic recovery in Western Europe after WWII. These admissions implicated simultaneously a commitment to step-by-step, gradual and progressive trade liberalization and an incremental integration within the Western world, which were the implicit core principles of the Marshall Plan. In this new environment, European industries thrived, and for many countries – illustrated in table 2.7 – intra-Western European trade became increasingly important.[31]

Table 2.7: The importance of intra-Western European trade, 1938-2008. Share of intra-trade of total trade (in %)

	Intra-Western Europe	Intra-Total Europe[a]
1938	52.2	61.4
1950	49.3	58.7
1970	67.3	73.9
1990	72.2	75.2
2008	n.a.	76.6

Note: [a] Including Eastern Europe and Soviet Union

Source: Barry Eichengreen and Andrea Boltho, 'The Economic Impact of European Integration', in: Stephen Broadberry and Kevin H. O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambgridge: Cambridge University Press (2010), p. 270.

Furthermore, apart from the reduction and progressive elimination of trade barriers, firstly, through the membership of the OEEC, that was created in 1948 to administer the European

[30] James Foreman-Peck, 'European Industrial Policies in the Post-war Boom: Planning the Economic Miracle', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 21.

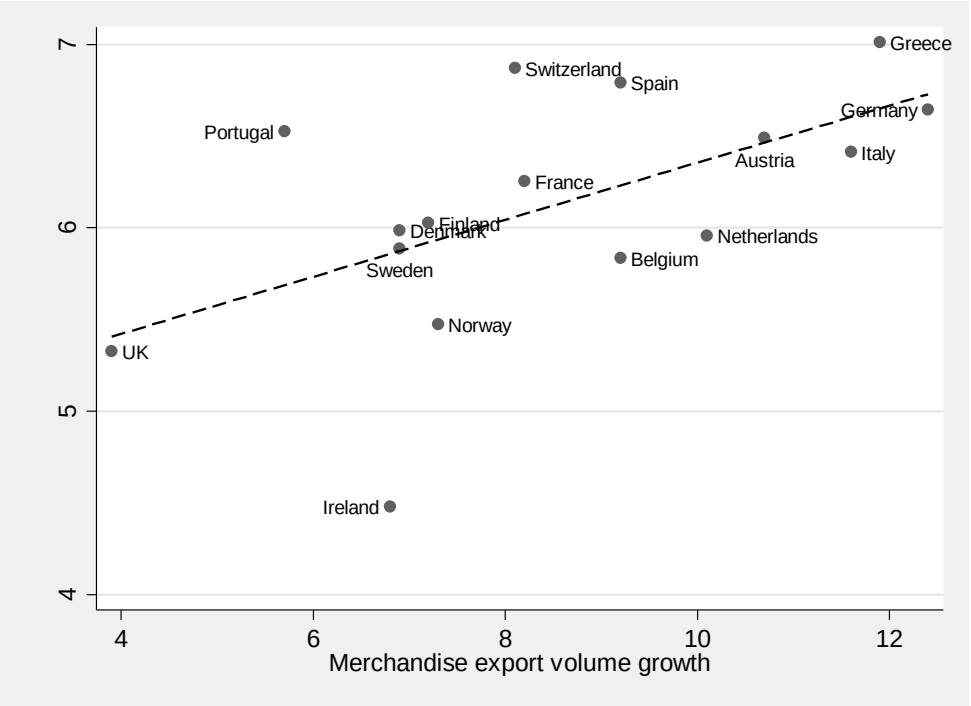
[31] For illustration see as well figure 2.5 and table A-5 in the appendix of the present paper.

Recovery Program, and secondly, through the later establishment of the European Coal and Steel Community in 1951, the European Economic Community (EEC) in 1957 and the European Free Trade Association (EFTA) in 1960, Western European trade liberalization and integration had strong additional "positive impacts from greater investment, more technology transfer, intensified competition, and the realization of both internal and external economies of scale."[32] Therefore, the applications of all Western European governments for admission to the European Recovery Program have to be considered as pro-market, pro-trade liberalization and pro-European integration decisions. Though increasing international trade and investment openness, which had a far-reaching impact on long-term growth throughout the entire period studied and beyond, were not usually thought of as industrial policy in contemporary approaches, instead were important decisions of industrial policy consistent with its present definition. As Nicholas Crafts and Gianni Toniolo put it: "External trade liberalization and the increased integration of the European market were factors that speeded up technology transfer and helped Europe to reduce the technology gap with the United States."[33]

[32] Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin H. O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambgridge: Cambridge University Press (2010), p. 310.

[33] Crafts and Toniolo (2010), 'Aggregate Growth', p. 311.

Figure 2.5: Averaged export growth and GDP per capita growth, controlled for catch-up and convergence in Western Europe, 1950-1973 (in %)



***Source*:** James Foreman-Peck, 'European Industrial Policies in the Post-war Boom: Planning the Economic Miracle', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 59.

With the adoption of the Marshall-Plan-conditions, the national governments had committed themselves to elaborate respective long-term investment-plans for national recovery for the years from 1949 to 1952, with the intent to obtain international economic aid. This task of drawing up investment plans, producing an enormous amount of data on the national industries and, moreover, suggesting the possibility to centralize and to plan the process of national economic reconstruction in general, contributed not at least to an increasing belief in the ability of indicative planning tools for growth management.

Planning was the second feature, which characterized industrial policies in Western Europe after WWII. Macroeconomic planning was considered suitable and beneficial for economic development. Due "to the apparent successes of the Soviet Union in the 1930s and perceived superiority of state resource allocation compared to the market, boosted by wartime experiences, planning was in vogue throughout Europe."[34] Many Western European countries

[34] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 21.

implemented far-reaching national economic programs, and, within its planning frameworks, industrial policies should assume key positions. In other countries, Keynesianism reconciled the ideas of free markets and economic planning, while new techniques of macroeconomic forecast and industrial programming where implemented in the political process.

In 1946, the Commissariat Général au Plan (CGP), was created in France, which had a long tradition of state intervention that dates back to 17th century Colbertism. For the next thirty years, the modernization of France according to social-economic principles became a prominent national goal that met with consent from many sides after 1945. This wide consent also resulted from a collectively perceived severe developmental delay of France's industrial sector, which in turn served as legitimization for a strategy of renewal in industrial development. Every five years or so, the CGP set up specialized committees focusing on issues between and within individual sectors of the economy with micro- and macroeconomic targets for the medium term. Large-scale industrial projects initiated by the state, guided measures of restructuring the industrial sector, and wide-spread nationalization of companies were accepted instruments of French industrial policies within its indicative planning frameworks to reach these targets. The institutionally innovative and informal organization of the CGP and French indicative planning in general seemed to be highly successful and suitable, ensuring adequate long-term investment and a high level of economic growth.[35] The French governments succeeded in the promotion of modernizing the economy, the CGP enjoyed considerable international credibility, and many other Western European governments decided to imitate and to adopt the French `model´.[36]

In Sweden, for example, even if global macroeconomic programmes like the French indicative planning approach were never implemented, there were, however, official investigations on long-term economic development (långtidsutredningar). The first of these initiatives was published in 1948 after a request from OECD in connection with the European Recovery Program; the next one in 1960, and every fifth year thereafter. "These official, long-term forecasts provided broad prognoses of future economic development, and tried to assess the

[35] William J. Adams, 'Restructuring the French Economy. Government and the Rise of Market Competition since World War II', Washington D.C.: The Brookings Institution Washington (1989), p. 4 ff.

[36] Sima Liebermann, 'The Growth of European Mixed Economies, 1945-1970. A Concise Study of the Economic Evolution of Six Countries', Cambridge (US): Schenkmann Pub. Co. (1977), p. 176 ff.

mutual feasibility of expansion plans in the various sectors of the economy. (…) They did not, however, set any goals for output in the various sectors of the economy."[37]

In the United Kingdom, the National Economic Development Office (NEDO) was created in 1961/62, followed by industry-level National Economic Development Commitees. A corporatist economic planning forum – the National Economic Development Council (NEDC) – was set up in 1962 to support the consultation process between private industrialists, academic experts, trade unions and the government and to design feasible programms for the modernization of the British industry. The UK was growing more slowly than any other European economy. Moreover, as a non-member of the Common Market, the British industry could not benefit from the accelerating expansion of intra-European trade and was increasingly loosing ground in export markets. Impressed by French economic performance and in an attempt to address Britain's relative slow growth and economic decline, both the creation of the "Neddy" and the "little Neddies" were modelled on French indicative planning. But their practical achievements and the results obtained remained rather poor during the period under consideration here.[38]

In Italy, the economic slowdown in 1963/64 finally terminated the boom-period of the so-called Italian economic miracle, after which Italy passed through a long lasting period of structural destabilization. From 1963–1973, the Italian government set macroeconomic planning at the centre of their political agenda and macroeconomic planning "acquired the role of panacea for all shortcomings and distortions."[39] Various public planning commissions were created to elaborate global mid- and long-term national economic programes. However, the fierce political opposition and the conceptional weakness of policy design, as well as the vast difficulties of its implementation, finally led to the failure of all long-term macroeconomic planning in Italy on a national level.[40]

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[37] Jan Bohlin, 'Swedish Industrial Policy: From General Policies to Crisis Management, 1950-1980', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 152 f.

[38] Owen (2012), 'Industrial Policy in Europe´, p. 7.

[39] Giovanni Federico, 'Harmful or Irrelevant? Italian Industrial Policy, 1945–1973', in: Hideaki Miyajima, Takeo Kikkawa and Takashi Hikino (eds.), 'Policies for Competitiveness. Comparing Business-Government Relationships in the Golden Age of Capitalism', Oxford: Oxford University Press (1999), p. 313.

[40] Fabio Lavista, 'Business Elites in Italy and the Failure of the National Planning Policies as a Vision of Development', in: Fredrike Sattler und Christoph Boyer (eds.), 'European Economic Elites. Between a New Spirit of

Spain also imitated an extreme-form of indicative planning and implemented specific development plans (Planes de desarrollo) from 1963 onwards.[41] A special Development Planning Commission, centrally organized by the Ministry of the Presidency, was set up in order to coordinate the individual public spending policies of the various economic ministries – in particular tax breaks and subsidies – and to elaborate feasible plans to promote industrial growth in backward regions. The development plans included "specific industrial investment incentive schemes (growth poles, concerted action, decongestion zones, etcetera), subsidies for factories oriented towards exporting manufactured goods, and incentives to encourage mergers between large enterprises."[42] In conjunction with the step-by-step re-establishment of its foreign diplomatic relations, these development plans characterized Spain´s incipient reform period during the latter years of Franco´s dictatorship. Even if the industrial development policies were not without shortcomings and errors, the implementation of these policies was largely a success and the results obtained merit the description of `economic miracle´. Spain almost qunitupled its industrial output from 1950 to 1973, the manufacturing output grew by an impressive averaged rate of 9.63 per cent yearly, and the averaged GDP per capita growth of 5.60 per cent yearly during the same period was second best in Europe.[43]

Summing up, the belief in the government´s capacity to shape economic trends, to smooth out or even eliminate the business cycle by means of Keynesian demand management and macroeconomic planning was very popular in Western Europe, even if practical achievements were sometimes rather meagre. At its peak during the 1960s, national and/or regional economic plans or programmes were implemented in France, the UK, Netherlands Belgium, Norway, Sweden, Spain, Greece, Turkey and Portugal.[44] Only the Federal Republic of Germany, because of the traumatic experiences with a controlled economy during the Nazi regime, and

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Capitalism and the Erosion of State Socialism', Schriften zur Wirtschafts- und Sozialgeschichte, vol. 84, Berlin: Duncker & Humblot (2009), p. 146 f.

[41] A first macroeconomic planning approach was implemented by the Spanish government already in 1959, when the so-called Plan for Economic Stabilization and Liberalization came into force.

[42]Joseba Dela Torre and Mario García-Zúñiga, 'Was it a Spanish Miracle? Development Plans and Regional Industrialization, 1950-1975´, in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 152 f.

[43] Albert Carreras, 'Industrialización española. Estudios de historia cuantitativa', Madrid: Espasa Calpe (1990), p. 162 f.

[44] Ivan T. Berend, 'Markt und Wirtschaft. Ökonomische Ordnungen und Wirtschaftliche Entwicklung in Europa seit dem 18. Jahrhundert', Göttingen: Vandenhoeck & Ruprecht (2007), p. 174 ff.

the German Democratic Republic's competing model of a planned economy, ideologically refused any political planning approach that gave the impression of a controlled economy. In fact, even if the Federal government continued to defend strongly its highly successful `model´ of a social market economy, it was in 1967, that West Germany adopted Keynesian demand management for the first time and passed a "Law for Promoting Stability and Growth", that permitted five-year-planning and deficit spending to overcome the economic recession of 1966/67.[45]

II.2.2 The micro perspective: State owned enterprises and state subsidies

The most important instruments of industrial policy in Western Europe after WWII from a micro perspective were represented, firstly, by the formation of state holdings and enterprises as well as public direct investments in selected branches, and, secondly, by the massive subsidization of industries or enterprises that were of national interest.

State ownership

State ownership in some countries had a longer history often originating in private firm's bankruptcy during the global depression in the decade preceding the war as well as in the nationalization of selected industries for wartime needs. But it was only after 1945 that state ownership became the common pattern in Western Europe because governments believed that it provided an appropriate and necessary means of an active investment policy in order to promote economic growth especially in key strategic industries – like steel, coal, the energy sector, metallurgy, manufacturing, chemical industries – or other industries with a presumed natural state monopol character, like utilities.

By the end of World War II, the French state, for example, owned only a very few important enterprises directly engaged in industrial production.[46] Nevertheless, the French government already controlled important companies that were absolutely essential in indirectly promoting industrial mordernization and economic growth, including SNCF (rail transport), PTT (postal service, telegraphy, telephony, retail banking), Crédit Agricole (retail banking), and Caisse des

[45] Alexander Nützenadel, 'Stunde der Ökonomen. Wissenschaft, Politik und Expertenkultur in der Bundesrepublik 1949–1974', Göttingen: Vandenhoeck & Ruprecht (2005), p. 308 ff.

[46] Adams (1989), 'Restructuring the French Economy', p. 59 ff.

Dépôts et Consignations (an important financial intermediary). During the next three decades, however, the state expanded its portfolio of industrial enterprises dramatically, particularly in the domestic supply of coal, steel, electricity, gas, insurance, and commercial banking. Renault, a leading domestic car producer, was expropriated and nationalized in 1945 and the state also took control of important enterprises engaged in maritime shipping, air transport, nuclear power generation, petroleum exploitation, refining and distribution, as well as chemicals production. All in all, one fifth of total industrial production came under state control already during the period of the first National Economic Plan (1947- 1952).[47]

In Italy, which had a long tradition of state intervention to promote industrial development, post-war governments inherited a large number of state-owned enterprises from fascism and controlled about 80 per cent of shipbuilding, 40 per cent of rolling stock production, 60 per cent of pig iron, and 43 per cent of steel production.[48] Moreover, the extent of public ownership in manufacturing and utility companies was by far the largest in the western world. Also the credit sector was almost entirely under direct or indirect governmental control and represented an important means for direct state control for industrial investments. From the early 1950s, the Istituto per la Ricostruzione Industriale (IRI) and the Ente Nazionale Idrocarburi (ENI) were the most powerful and successful industrial state holdings, investing enormous sums in the modernization and structural development of the national industrial sector. Their share of total investments in industry increased from almost 16 per cent in 1951 to 27 per cent in 1962.[49] The state-holding IRI invested large sums in the modernization of Italy´s infrastructure – notably transport- and road-systems, and telecomunication networks – but particularly in the steel and manufacturing industries. Perhaps the best-known success story is represented by the restructuring of the Italian steel industry: FINSIDER – the steel sub-holding of IRI – after the rebuilding of the old steel factories, seriously damaged during the war, decided to set up a new large steel plant near Cornigliano to be equipped with American technology.[50] This plan was

[47] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 58.

[48] Fabrizio Barca and Sandro Trento, 'La parabola delle partecipazioni statali. Una missione tradita', in: Fabrizio Barca (ed.), 'Storia del capitalismo italiano dal dopoguerra a oggi', Rome: Donizelli Editore (1997), p. 192 ff.

[49] C.f. Table IX b) in: Michael V. Posner and Stuart J. Woolf, 'Italian Public Enterprise', Cambridge (US): Harvard University Press (1967), p. 147.

[50] See for an in-depth analysis of FINSIDER, Ruggero Ranieri, 'Storia delle acciaierie di Cornigliano dal 1929 ad oggi', in: Istituto Franco Momigliano (ICSIM), *Steelmaster* (2007). See also Ulrike Wachtler, 'Il Piano Sinigaglia. Il progetto

approved by the Italian government in 1948 and funded by Marshall-Plan loans. After the completion in 1952 of the new factory in Cornigliano, FINSIDER acquired an undisputed price-leadership in the national steel production and forced the private sector to modernize. FINSIDER went on investing heavily in the steel industry, and in 1960 another new large and fully-integrated state owned plant in Taranto in the Southern Apulia was built. Again, the gamble succeeded and Italy went on to become even a net exporter of steel for some time. More importantly, FINSIDER´s factories could work at full capacity thus reducing the prices of steel products. Already from 1954 to 1956, prices decreased by over 40%, thereby stimulating the total national industrial production, particularly the manufacturing industries.[51]

In the 1950s, however, another public holding in Italy assumed a leading role in the energy industry under the guidance of its first president, Enrico Mattei. The National Hydrocarbon Agency (ENI) was a post-war creation established in 1953, but it had incorporated different state-owned companies from the energy sector, like the AGIP, which had been established under the fascist regime.[52] ENI expanded within a few years and became the most successful industrial state holding in Italy which could claim a decisive role for the whole strong economic growth period in Italy beginning in the mid-1950s.[53]

In most other Western European countries, even if not to the extent of Italy or France, the state had nationalised selected enterprises or entire industries and held substantial stakes in different industries of national interest. In particular, it was the nationalization of basic industries that marked these similar trend for almost all Western European countries.[54]

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di rifondazione e ristrutturazione dell'industria siderurgica italiana nel periodo 1948–1952', in: Istituto Franco Momigliano (ICSIM), *Steelmaster* (1999).

[51] Christian Grabas, 'Planning the Economic Miracle? Industrial Policy in Italy between Boom and Crisis, 1950-1975', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 180 f.

[52] Daniele Pozzi, 'Techno-Managerial Competences in Enrico Mattei´s AGIP. A Prolonged Accumulation Process in an International Network, 1936-1965', *Business and Economic History On-line* 1 (2003), pp. 1-32.

[53] Francesca Carnevali, 'State Enterprise and Italy´s `Economic Miracle". The Ente Nazionale Idrocarburi, 1945-1962', *Enterprise & Society* 1 (June 2000), pp. 249-278.

[54] Berend (2007), 'Markt und Wirtschaft', p. 168 ff.

Table 2.8: Public sector share of steel output in Western Europe, 1978 (in million tons and in %)

	Total output (Mt) **(A)**	**State-controlled output** (Mt) **(B)**	**B/A in %**
Ireland	0.1	0.1	100.0
Austria	4.3	4.3	100.0
Portugal	0.6	0.6	100.0
Great Britain	20.3	16.0	78.8
Norway	0.8	0.6	75.0
France	22.8	15.8	69.3
Finland	*2.3*	1.5	65.2
Sweden	4.3	2.5	58.1
Italy	24.3	13.9	57.2
Spain	11.3	4.4	40.0
Belgium/ Luxembourg	17.4	6.0	34.5
Netherlands	5.6	1.8	30.5
Germany	41.2	4.5	9.6
Denmark	0.9	0.0	0.0
EEC	132.5	58.14	43.9
Western Europe	156.2	72.00	46.1

Source: Pedro Fraile Balbin, 'Spain: Authoritarian Industrial Policy', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 257.

As table 2.8 illustrates, until 1978, with the exception of Denmark and West Germany, most Western European governments had nationalized substantial proportions of the national steel sector or even controlled the total steel output in Ireland, Austria and Portugal. The state had become the major national steel producer in three of the four leading steel producing countries in Western Europe: in Italy (57.2 %), France (69.3 %), and in the United Kingdom (78.8 %). In West Germany, the largest European steel producer, only the Peine Salzgitter AG was under state control and private companies such as Thyssen, Krupp, Mannesmann, Hoesch and Saarstahl accounted for more than 90 per cent of national steel production.

Table 2.9: Public sector share of coal output in Western Europe, 1960 (in million tons and in %)

	Total output (Mt) **(A)**	**State-controlled output** (Mt) **(B)**	**B/A in %**
ECSC			
Germany	131.8	21.6	16
France	55.3	54.3	98
Belgium	30.0	----	----
Netherlands	11.9	7.5	63
Italy	1.1	0.9	94
Britain	225.1	225.1	100
Spain (1960)	14.5	0.5	4
Spain (1970)	10.3	5.4	52

Source: Pedro Fraile Balbin, 'Spain: Authoritarian Industrial Policy', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 257.

Tables 2.9 and 2.10 show the degree of state ownership and indirect public participation in the coal production as well as both in the generation and distribution of electricity in Western Europe for selected years. Even if the state ownership in coal production in most Western European economies dates back to the nineteenth century, it was after WWII that many major coal producers again nationalized or re-nationalized coal mining; as in the case of French and British coal mines, up to almost 100 per cent of total production. But also in West Germany, first with the Hibernia AG as well as, after the return of the Saar Protectorate to West Germany in 1956/59, with the creation of the state owned Saarbergwerke AG the state again became a direct entrepreneur and produced 16 per cent of the national coal production.[55]

[55] Balbin (1999), 'Spain', p. 257 f.

Table 2.10: Public sector share of electricity output in Western Europe as a percentage of total production (P) and distribution (D), 1953

	State enterprises		Mixed enterprises		Private enterprises		Total output (10^6 kwh)
	P	D	P	D	P	D	
Germany	40	52	54	42	6	6	57.750
Austria	90	93	---	---	10	7	8.764
Belgium	7	19	---	14	93	67	9.806
France	81	86	10	---	9	14	41.531
Greece	16	16	---	---	84	84	1.141
Ireland	100	100	---	---	---	---	1.235
Italy	10	10	30	---	60	90	32.618
Netherlands	100	100	---	---	---	---	9.104
Portugal	---	---	51	7	49	93	1.354
Norway	50	51	---	---	50	49	19.620
Sweden	46	25	---	---	54	75	22.434
Switzerland	53	62	9	7	38	31	13.465
Britain	100	100	---	---	---	---	74.100
Spain (1963)	6	---	9	---	85	100	25.959

Source: Pedro Fraile Balbin, 'Spain: Authoritarian Industrial Policy', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 258.

The same applies to the generation and the distribution of electricity. Already in 1953, as table 2.11 shows, the degree of state control in most Western European countries after nationalizations or re-nationalizations during the immediate post-war years was very high. The United Kingdom, Ireland and the Netherlands controlled the total national production and distribution of electricity, but even in France or West Germany, the governments had a prevalent or, at least, a decisive influence on the national electrical power supply. In other countries, where after WWII private enterprises still held predominant positions in the national market, the control on the generation and distribution of electricity by means of nationalization(s) often became a prime objective of governmental policy in later years and shows its perceived importance as an effective policy instrument supposed to support industry or to subsidize consumers. Italy, for example, nationalized the electrical industry to break up the traditional monopoly of private electrical power supply in 1962. Through nationalising the

generation and distribution of electrical power and the creation of a new agency – Ente Nazionale per l´Energia Elettrica, ENEL – the Italian government succeeded in increasing productivity and expanding the distribution network, rationalized the production and distribution of energy, thereby lowering the consumer energy-prices. But the government's decision to lower tariffs had generated a constant deficit in the ENEL budget beginning in the late 1960s – a deficit which was shouldered by the state. In short: cheap energy supply for private households as well as for industry was strongly subsidized.[56]

Table 2.11: Rounded estimates on the extent of state ownership in Western Europe in selected countries, 1978 (in %)

	Austria	Belgium	France	United Kingdom	Italy	Netherlands	Portugal	Spain	Sweden	West Germany
Posts	100	100	100	100	100	100	100	100	100	100
Telecommunications	100	100	100	100	100	100	100	50	100	100
Electricity	100	25	100	100	75	75	25	0	50	75
Gas	100	25	100	100	100	75	100	75	100	50
Oil Production	100	n.a	n.a.	25	n.a.	n.a.	100	n.a.	n.a.	25
Coal	100	0	100	100	n.a.	n.a.	50	50	n.a.	50
Railways	100	100	100	100	100	100	100	100	100	100
Airlines	100	100	75	75	100	75	100	100	50	100
Motor industry	100	0	50	50	25	50	0	0	0	25
Steel	100	50	75	75	75	25	100	50	75	0
Shipbuilding	n.a.	0	0	100	75	0	100	75	75	25

Source: James Foreman-Peck and Giovanni Federico, 'European Industrial Policy: An Overview', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 442.

Table 2.11 is an attempt, elaborated by James Foreman-Peck and Giovanni Federico, to cluster at a rough estimate the extent of state ownership in Western Europe in 1978. During the first three decades after WWII, that marked the "high tide of interventionism"[57] in most of Western Europe the state became a direct entrepreneur in many important industries or industry-linked

[56] Giovanni Federico and Renato Gianetti, 'Italy. Stalling and Surpassing', in: Giovanni Federico and James Foreman-Peck (eds.), 'European Industrial Policy. The Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 138 f.

[57] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 441.

economic sectors. The postal services as well as the telecommunication sectors, with the exemption of Spain, were state owned in all countries. The control of energy supply and steel production became a prominent goal for all European governments: electricity, oil, gas and coal production were almost entirely in public ownership, and only the Netherlands and West Germany broke the European pattern in the steel market. Moreover, European states exerted a strong influence on the national transport and automobile industries: state ownership was complete in the rail industries and the railway systems, it was predominant in the airline industries, and the state held even strong stakes in the motor and shipbuilding industries in many countries.

It is not possible to assess quantitatively the success or the effectiveness of state owned enterprises as the most prominent instrument of state intervention and industrial policy in Western Europe for the period under conideration once and for all. Nevertheless, some overall descriptive results are obvious: On the one hand, state owned telecomunication or electricity supply were profitable in most countries, also national airlines, with the exemption of the German Lufthansa. Oil and gas exploitation, production and refining or state owned steel production in Italy until the mid 1960s have been a surrounding success. On the other hand, the performance of state entrepreneurship within the same industries during the same period in the United Kingdom had been rather poor, and state ownership generally could prove very expensive. In many cases, state ownership as the result of the nationalization of certain industries, sectors or private enterprises as well as of bailouts and take-overs of loss-making private industrial enterprises in order to protect employment represented – ex post facto – very costly failures. Product development in the computer and/or the aerospace industries for example, required enormous fixed costs and absorbed vast sums of state aid, which could never be repayed from subsequent commercialisation or product sales. The British-French Concorde project, that begun in 1960, as well as the German VFW 614 project, started in 1961, were the most prominent examples of commercially misconceived public ventures in the aerospace industry which generated enormous financial losses in both cases, that had to be shoulderd by the state. Finally, state railways, had to be heavily subsidized in West Germany, in Italy, the United Kingdom, in France or even in Sweden. The same applies for shipbuilding to achieve social and political objectives.[58]

[58] Foreman-Peck and Federico (1999), 'An Overview', p. 442 f.

In general, state owned industrial enterprises were most successful, when operated in sectors with a substantial potential for technological and organisational "catch-up". However, in many cases, this potential for "catch-up" was left unused or underexploited, when state owned companies had to follow political directives and when additionally incentives for economic efficiency were reduced, because of the absence of external competition. State owned enterprises performed best, when they were efficiently managed and "were run as if they were separate private business and priced accordingly"[59], as in the case of Italy until the mid 1960s.

State subsidies

In addition to state ownership, state aid and public support policies by means of direct or indirect subsidization of industrial firms, branches or industries that were of national interest represented the second most prominent instrument of state intervention to promote industrial development and structural change in Western Europe. This important subarea included various types of subsidies for the industrial sector: "cash subsidies" (direct payments to consumers or producers); "credit subsidies" (guarantees, interest subsidies and soft loans); "tax subsidies" (reduction of specific taxes); "equity subsidies" (equity participation by government); "in-hand subsidies" (provision of goods or services at below market prices), "procurement subsidies" (purchases of goods and services at above-market prices), and finally "regulation subsidies" (regulatory actions that change market prices).[60] The ulterior motives why a distinctive firm, sector or industry had been selected to be of "national interest" were bi-directional: On the one hand governments supported massively declining industries or loss-making firms in order to protect employment; on the other hand state subsidies were targeted, firstly, at an accelerated and sustained industrialization and modernization of structurally weak regions and, secondly, at strengthening selective key industries to create "national champions". In other words, firms or industries have been subsidized following the principles of "helping the loser" or "picking the winner" strategies.

Support for declining industries was widespread since the early 1960s and most of Western European governments decided to massively subsidize major employers in economic difficulties, in attempts to prevent their closure and to avoid unemployment. "This reflected the

[59] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 51.

[60] Buigues and Sekkat (2009), 'Industrial Policy in Europe', p.7.

concern of industrial policy not only with productivity and competitiveness, but also with stability"[61], social equity and cohesion.

In West Germany, officially, the self-regulating free market constituted the common economic order as well as the basis for all industrial policy in the Federal Republic.[62] In fact, industrial policy in Germany was characterized by an ambivalent dual approach just as in most other Western European countries. On the one hand, the government generally protected the freedom of all market participants, protected private interests and property rights and had granted private companies the maximum freedom to achieve their operational growth. On the other hand, despite all official statements claiming the opposite, both federal authorities and authorities of the Länder intervened directly in markets and did exert a substantial influence on the development of the industrial sector not at least by means of an active support policy in response to economic crisis or slumps that became apparent since the late 1950s. These interventions were often intended as direct short-term reactions to the decline of `old´ industries and to resulting regional emergencies and were at first implemented in a case by case manner only. However, in many cases these short term measures turned into permanent measures.[63]

Particularly, state aid in West Germany focused on hard coal mining and ship-building, both were severely struck by structural change. Between 1958 and 1967, West German hard coal mining was massively subsidized with a total sum of more than 17,1 billion deutschmarks including subsidies for transport and sales, tax privileges, and import restrictions for cheaper coal imports. But soon direct cash subsidies to the producers constituted the lion´s share of total state aid. These measures, however, with the aim of keeping West German hard coal competitive compared to oil or gas and to cheaper hard coal imports did not prove successful because hard coal continuously became less important in energy production. This resulted in a

[61] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 56.

[62] Organisation for Economic Cooperation and Development (OECD), 'The industrial Policies of 14 Member Countries', Paris: OECD (1971), p. 11.

[63] Stefan Grüner, 'Ensuring Economic Growth and Socio-Economic Stabilization: Industrial Policy in West Germany, 1950-1975', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 120 ff.

further wave of subsidization from 1970 to 1981, and the state paid another 13,4 billion marks.[64]

The subsidization of the West German ship building industry began in the early 1960s as a reaction to an Europe-wide structural crisis within this sector and a decreasing international competitiveness of German shipyards particularly compared to Japanese or Southern Korean producers. The federal government launched a series of various financial aid programmes (Werfthilfeprogramme) for the German ship building industry that were based on targeted subsidies (like tax incentives or soft loans) for ship owners, the subsidization of building costs for shipyards, as well as cash subsidies and direct public investment for the German Federal Marine. Even if the rate of subsidization for shipbuilding in Germany remained below the average rates in other West European countries, from 1966 to 1975, subsidization of the West German ship-building industry accounted for about 2.44 billion deutschmark strongly benefitting the German ship building industry with the continuous flow of state aid.[65]

A quantitative assessment on the total amount of state aid in West Germany from 1950 to 1975 remains rather difficult because the federal government initiated to publish reports on subsidization annually only from 1967 onwards. However, for the years from 1966 to 1970, the financial public support for German industries accounted for an average rate of the federal budget of about 9 per cent, hence still being much lower compared to France or Great Britain. But in 1975, West Germany was spending almost the same proportion on financial industrial support as for example France. By far the lion´s share of all subsidies, were allotted to German mining industries. But there were other noteworthy recipients of subsidization beside the already mentioned ship-building industry, namely textiles and clothing, the food industry, machine engineering, as well as the chemical industry, electrical engineering, the iron and steel industry, and finally airplane construction and aeronautics. But the majority of these industries received only a relatively small amount of state subsidization.[66]

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[64] Zoltán Jákli, 'Vom Marshallplan zum Kohlepfennig. Grundrisse der Subventionspolitik in der Bundesrepublik Deutschland 1948-1982', Opladen: Westdeutscher Verlag (1990), p. 109.

[65] From 1966 to 1990 the total sum of 9.9 billion deutschmark were allotted to the German ship building industry by the federal government. See Grüner (forthcoming), 'Industrial Policy in West Germany', p. 128 ff..

[66] Ulla Schwarze, 'Subventionen – Spürbare Beeinflussung des Wirtschaftsgefüges? Die sektorale Verteilung der Subventionen in der Bundesrepublik im Zeitraum 1970 bis 1977', *Mitteilungen des Rheinisch-Westfälischen Instituts für Wirtschaftsforschung* 31 (1980), pp. 135-156.

In Sweden, to sketch briefly another example, the massive subsidization of shipbuilding, steel and some other industries became a prominent tool to manage the restructuring of these crisis-ridden industries since the late 1960s. In most cases, the application of subsidy programmes went hand in hand with previous take-overs of loss-making firms and the nationalization of entire decling industries.

The Swedish shipbuilding industry that was specialized to a great extent in the building of large oil tankers, since the late 1960s had to face the fierce competition from Japanese producers. Production and sales increasingly stalled, profitability fell rapidly and Swedish shipbuilding firms lost ground in the world markets. These developments were just accelertated by the oil crisis in 1973–75 and all major firms suffered huge losses. As a result, between 1975 and 1978, all large Swedish shipbuilding firms were taken over by the state to avoid further unemployment and were incorporated into the public AB Svenska Varv holding company, a subsidiary of AB Statsföretag, which has been established in 1970 as a state-owned super-holding for all nationalized manufacturing companies in crisis. In addition to manufacturing, the Swedish government decided to restructure the steel industry as well as taking over the two largest private steel producers that were harshly hit by a deepening crisis of national steel production in the 1970s. Both companies merged with the state-owned NJA, and in 1978 a new state-owned steel company, AB Svenska Stål, was created.[67]

Since the 1970s, state ownership and the subsidization of declining industries generally grew rapidly in Sweden. In the late 1970s Industrial subsidies amounted to more than 5 per cent of the value added in the manufacturing, steel and mining industry. During the early 1980s, these ratios increased up to almost 8 per cent. By far the major part of all state subsidies – about 70-80 per cent – were dedicated to firms and industries in crisis and only the minor part was invested in prospective industrial restructuring and R&D to foster industrial innovations.[68]

It rather seems difficult to assess Swedish industrial support policy and the widespread use of financial aid for declining industries in Sweden since the 1970s. On the one hand, from a economic point of view, it must be considered as a real disaster, because the Swedish shipbuilding industry, which received the lion´s share of state aid, did not survive. Even the restructuring of the steel industry, which was the second largest recipient of industrial

[67] Bohlin (forthcoming), 'Swedish Industrial Policy', p. 160 ff.

[68] Jan Bohlin, 'Sweden. The Rise and Fall of the Swedish Model', in: James Foreman-Peck and Giovanni Federico (eds.), 'A Century of European Industrial Policy', Oxford: Oxford University Press (1999), p. 168 f.

subsidies, was only partly successful. The national steel market had to be downsized, employment had to be reduced and production had to be specialized in niches where they could stay competitive in the world market. On the other hand, however, taking into account social and regional effects, "the industrial subsidization of crisis industries in the 1970's contributed to the alleviation of social costs for those employed by these industries."[69] These effects in terms of a socio-economic stabilization of regions in crisis as well as of the maintenance of social peace, should not be underestimated. Therefore, the 'industrial policy offensive' of the late 1960s and early 1970s in Sweden must be considered at least as a partial success, even if it was bought at very high price.

The same holds true for public support policies by means of subsidies in other Western European countries often targeted at slowing economic structural change and absorbing its socio-economic implications. As already menitioned above, support for declining industries and the massive use of financial state aid were widespread throughout Western Europe as a short-term means to avoid crisis. However, the history of crisis-ridden industries and structural change in Western Europe during the period under consideration has shown clearly that the subsidization of specific industries in most cases had been rather counter-productive in the long run and did not contibute substantially to industrial innovations, modernization and economic development. Even if several positive results in terms of socio-economic stability, equity and social cohesion can not be denied, these results often could have been accomplished much faster and in a less costly way if politicians had recognized sooner that downsizing and plant closures in specific industries were often necessary, useful and more effective. In hindsight, public support policies by means of public subsidies, bailouts and take-overs of loss-making private firms, were in most cases very costly failures and altogether led to a rather inefficient allocation of national economic resources in the long run. This massive waste of public resources, largely inspired by purely political interests, created not only a continual increase in public deficits, but also a very heavy burden for future economic development.

Even if the major part of financial state aid was dedicated to declining industries and `helping losers´, however, substantial proportions of state subsidies originally had been devised by most Western European governments for R & D spending to support `national champions´ by `picking winners´. The already mentioned state spending on product development in the aerospace

[69] Bohlin (forthcoming), 'Swedish Industrial Policy', p. 164.

industries in France and in the United Kingdom for the supersonic passenger aircraft Concorde (1960) and in West Germany for the VFW 614 jet aircraft (1961) were prominent examples, which had absorbed a huge share of national R & D budgets.

Table 2.12: Sectoral distribution of R&D in manufacturing in selected Western European countries; govt. financed as % of total govt. R&D, 1967 and 1975

		France	W Germany	UK	US
Electrical/Electronics	**1967**	25.6	29.8	27.9	28.8
	1975	35.7	31	34.5	30.4
Aerospace	**1967**	66.1	24.9	61	56.3
	1975	57.8	40.9	58.8	54.7
Machinery	**1967**	2.4	37.1	7.4	6.4
	1975	1.4	20.7	1.9	6.7
Total R & D in Manufacturing	**1967**	94.1	92.8	96.3	91.5
	1975	94.9	92.6	95.2	91.8

Source: James Foreman-Peck, 'European Industrial Policies in the Post-war Boom: Planning the Economic Miracle', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 39.

In France and in the United Kingdom, despite all ideological and rethoric differences, the distribution of state R & D spending and support was widely similar for the years 1967 and 1975, as table 2.12 illustrates. Only West Germany was spending much more on the support for mechanical engineering compared to France and the United Kingdom. In general, these three countries, as well as the United States, were spending by far the major part of all subsidies for R & D on the massive support of manufacturing focusing high-technology industries, namely the aircraft, the computer and the nuclear power industries.[70]

Apart from state spending on R & D, large sums of public money were spent on the subsidization of private investment. Since the mid-1960s, the favourable financing of promising private firms or entire industries by means of tax incentives for savings or investment,

[70] Owen (2012), 'Industrial Policy in Europe´, p. 5 ff.

contributions, soft loans and cash subsidies represented a further very prominent tool of state industrial policies in Western Europe.

In many Western European countries, the application of these public subsidies was strongly related to national and/or regional planning policies. In France, the percentage of state subsidies in total investment was highest in Western Europe at this time. The Ministry of Finance — in concertation with the Commissariat Général au Plan (CGP) and the Ministry of Industry both of which in charge for the payout of other direct and indirect subsidies — was responsible within the French national planning framework for the allocation of "credit subsidies" for private investments in plant, equipment, and knowledge. During the period from 1950 to 1975 the Treasury arm of the Ministry used its ownership of many financial institutions to promote economic growth and industrial modernization ensuring that industrial investment flowed to promising industries and/or companies preferred by the state. Since General De Gaulle returned to the presidency in 1958 and started his twelve-year-mission "to lift France into the front rank of industrial nations"[71] by far the major part of all "credit subsidies" had been applied to the massive support for "national champions" and "grand projects". The French government, not at least driven by De Gaulle´s personal determination, increasingly tended to focus the application of state subsidies as well as other policy measures on selected promising industries and/or companies considered to be associated with the as soon as possible and durable achievement of the triple goal of "military indipendence", "economic indipendence" and "technological revolution".[72] As in the case of public direct investment by means of state owned enterprises as well as state spending for R & D, since the early 1960s even the "credit subsidies" were targeted first and foremost towards the aerospace industry, the computer industry, from 1969 onwards also to the nuclear power industry and since the early 1970s with the beginning of the TGV high-speed-train project to the rail industry as well.[73] All in all, the allocation of favourable credits to private and public "big projects" and "national champions" in post-war France, based on a strategy what has been called "high-tech-Colbertism"[74], "was surely the most important expression of nominal industrial policy."[75]

[71] Ibid, p. 12.

[72] Ibid, p. 13.

[73] Elie Cohen, 'Industrial Policies in France: The Old and the New', *Journal of Industry, Competition and Trade*, vol. 7, 3 (2007), p. 219 ff.

In Italy, to sketch briefly another example, the state claimed the orchestration of an active investment policy for the modernization of underdeveloped regions in Southern Italy in the belief that they could catch up with the more developed North only by means of a vigorous industrialization process.[76] Already by the end of 1946, SVIMEZ had been founded in Rome in order "to study the economic conditions of the Southern parts of the peninsula and to design feasible regional plans to modernize those regions."[77] In August of 1950, the Italian government implemented a twelve-year project providing credit subsidies and tax advantages to support public and private investment with the aim to foster economic development in Southern Italy. From 1951 to 1962 this project, which was to be administrated and managed by the (in short) Cassa per il Mezzogiorno, provided by law to the Mezzogiorno the total sum of 1.280 billion Lire for social infrastructure ventures and, particularly, for the industrialization of this structurally weak regions.[78] In addition, since the late 1940s the Italian state begun to establish a proper network of public financial institutions for medium and long term credits supporting the policies of the "Cassa" like the Mediocredito Centrale and its regional branch offices and subsidiaries, the Irfis, ISVEIMER and various other banks.[79] During the 1960s and 1970s the demand for subsidised grants and loans by private industrial enterprises reached an all time peak, and state subsidies accounted for about one quarter of total fixed investment, and for more than two-thirds of the long-term credits for investments.[80] More than 80 per cent of the total national state subsidies to industrial investment during this period were distributed to Southern

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[74] Elie Cohen, 'France: National Champions in Search of a Mission', in: Jack Hayward (ed.), 'Industrial Enterprise and European Integration. From National to International Champions in Western Europe', Oxford: Oxford University Press (1995), p. 30 ff.

[75] Adams (forthcoming), 'French Industrial Policy', p. 95.

[76] Paolo Baratta, 'Pasquale Saraceno, La questione meridionale e la questione industriale in Italia secondo Pasquale Saraceno', *Quaderno* no. 25 di *Informazioni SVIMEZ*. Collana Pasquale Saraceno, no. 7, Lezioni sul Mezzogiorno (2004), p. 13 f.

[77] Grabas (forthcoming), 'Industrial Policy in Italy', p. 176.

[78] Giancarlo Morcaldo, 'Intervento pubblico e crescita economica. Un equilibrio da ricostruire', Milan: FrancoAngeli (2007), p. 136 ff.

[79] Andrea Leonardi, 'Industrial Credit and Special Banks in Relaunching the Italian Banking System after World War II', in: Andrea Bonoldi and Andrea Leonardi (eds.), 'Recovery and Development in the European Periphery (1945–1960)', Bologna and Berlin: Il Mulino and Duncker & Humblot (2009), pp. 201–240.

[80] Federico and Gianetti (1999), 'Italy', p. 139 f.

projects.[81] However, compared with the initial intention within the regional planning frameworks, it were the largest private industrial groups from Northern Italy – such as Fiat, SIR-Rumianca and Montedison – which collected the majority of subsidized loans and cash subsidies to set up giant industrial plants in the South with the support of public funds, but often with limited success. "Moreover, these large-scale projects, which have focused their investments largely on the capital-intensive industries, attracted only in very few cases further local small- and medium-sized processing enterprises. This means that their settlement had little or no diffusion effect on the local entrepreneurship and therefore only inadequately stimulated modernization and development of industrial infrastructure in Southern Italy as it was originally intended by the state."[82] Hence, the large refineries (Porto Torres) and the giant petrochemical (Ottana/Arbatax), car (Pomigliano d´Arco) or steel plants (Bagnoli/Taranto) were frequently nicknamed 'cathedrals in the desert'. Even if the outcome of regional planning and the massive application of state subsidies for the development of regional industrial structures in Southern Italy might not have been as successful as originally planned, however, it did seem to have at least a positive impact, especially on the tense labour market situation. The number of industrial workers in the Southern regions increased significantly[83] during the post-war era until the mid 1970s and the per capita GDP in the South from 1950 to 1975 rose on an average at 4.8 per cent yearly, a rate of growth that nearly equalled the national one.[84]

Both the French and particularly the Italian `model´ inspired largely the implementation by Franco´s authorities of the already mentioned regional development plans in Spain from 1963 onwards, representing perhaps the most prominent example in Western Europe for transnational learning and transfer processes for the elaboration of national industrial policy designs. Already in 1941, with the creation of the state-owned financing and industrial super holding company Instituto Nacional de Industria (INI)[85], which soon became the biggest industrial conglomerate in Spain, the Franco regime attempted to imitate the Italian economic `model´ of state-run industrialization by means of state owned industrial enterprises. Since the

[81] Federico (1999), 'Italian Industrial Policy', p. 318, see table 11.1 (6).

[82] Grabas (forthcoming), 'Industrial Policy in Italy ', p. 189.

[83] From 5.803.000 in 1951 up to 8.230.000 workers in 1976. See SVIMEZ, 'Un Quarto di Secolo nelle Statistiche Nord-Sud, 1951–1976', Milan: Giuffrè Editore (1978), p. 530, table 155.

[84] SVIMEZ (1978), 'Statistiche', pp. 575–577, table 164.

[85] In translation: National Institute of Industry

mid-1950s, when Italy enjoyed economic expansion during the years of the so-called `Italian economic miracle´, the Franco regime also attempted to duplicate in Spain a great part of other policy instruments elaborated by the Italian post-war governments for state intervention targeting a catching-up and state-run industrialization in less developed regions of the country. Additionally to the enlargement of public ownership, these instruments included the massive application of state subsidies as well as the implementation of development plans and the following creation of specific centrally organized agencies, commissions and committees for planning and managing state-run industrialization and modernization in Spain.[86]

Within the planning framework, seven provinces had been selected by the Planning commission for an intense industrialization policy. These were Burgos, Valladolid and Zaragoza in inland Spain; Huelva and Seville in the South; Coruña and Pontevedra on the Cantabrian coast of Spain; and the Northern provinces of Álava and Navarre. It was intended, that the public direct investment in those regions by means of state owned industrial enterprises should have been oriented mainly on basic industries. Further private investment for certain government-selected manufacturing industries, especially for car makers, should have been attracted by means of "credit subisides". In 1963, claimed by the new Minister for Industry Gregorio López-Bravo, the Spanish banking system had been reformed in order to fascilitate credit purchasing and public credit banks had been massivgely subsidized by public funds to provide favourable loans for promising industrial projects. Additionally, "firms setting up in the government-designated regions were entitled to special temporary tax benefits and exemptions (…). They were also eligible to claim back from the government 10 to 20 per cent of their investment in the form of direct subsidies and received preferential treatment when applying for official credit."[87]

However, the economic outcome of the increasing allocation of "credit subsidies" as the success of the develoment plans in general were better in some regions than in others. But at the end of the Franco regime's decade of economic developmentalism, the economic structure in all regions had changed completely as a result of government-led industrialization and the intensity of this structural change was indeed exceptional. The regional impact of the development plans was, first, the strengthening of the already highly industrialized regions and,

[86] Berend (2007), 'Markt und Wirtschaft', p. 177 f.

[87] Dela Torre and García-Zúñiga (forthcoming), 'Spanish Miracle ', p. 204.

secondly, the spread of manufacturing production in former underdeveloped provinces. As Joseba Dela Torre put it: "The plans helped these provinces to establish a solid manufacturing sector with strong potential to generate employment and create industrial know-how and markets."[88] In employment terms as well as concerning industrial growth, the allocation of state subsidies following the guidelines of the three development plans was largely a success: From 1965 to 1975, Spain enjoyed the highest growth rate of manufacturing output in Western Europe and finally became the ninth largest economy in the world. On a regional level, Álava and Navarre were the most successful regions. Private and state owned firms in these two provinces attracted the lion´s share of state subsidies, particularly in the metal-mechanical and automotive branches. The industrial output grew most rapidly, the largest number of new firms had been founded with the greatest impact on the generation of new jobs and therefore laying a solid groundwork to support further medium-to-long-term regional development. Valladolid, Burgos, and Huelva followed at a medium pace and only in Seville and Zaragoza, the government´s attempts to promote industrial development failed. In 1975, both provinces were still lagging behind the Spanish average.[89]

Military spending

One last important feature of industrial policy should be mentioned here briefly at the end of the present chapter: State spending targeted at military and security objectives. It is true, as James Foreman-Peck and Giovanni Federico emphasized, that military spending and "the desire to enhance military capabilities" represented "the most important historical motivation for promoting industry (…) from the seventeenth century onwards" and particularly in times of war. Furthermore, it seems undeniable that even after the end of WWII "defence and nationalism remained powerful justifications for interventionist industrial policy".[90] And indeed, even if the proportionate share of GDP had been increasingly reduced during the period under consideration here, for most West European countries defence expenditure still accounted for a substantial percentage of their domestic resources, firstly, because of the growing impact of the Cold War and the achievement of security objectives, and secondly, because of the common belief at the time that military spending on R & D projects for military technologies would

[88] Ibid, p. 210.

[89] Ibid, p. 206 ff.

[90] Foreman-Peck and Federico (1999), 'Introduction´, p. 3.

provide beneficial consequences for the industrial and economic development in general by means of spillovers and technology transfers and higher demand.[91]

Table 2.13: Defence expenditure in Western Europe, 1950-1975 (in % of GDP)

	1950	1951	1966	1975
Austria	1.2	0.9	n.a.	1
Belgium	2.7	4.6	3.5	3
Luxembourg	n.a.	n.a.	1.4	n.a
Denmark	2.1	2.9	2.6	2.6
France	6.4	9.3	4.8	4
W. Germany	6.4	9.5	5.7	3.6
Greece	n.a.	n.a.	3.6	6.3
Ireland	1.1	n.a.	n.a.	n.a.
Italy	6.4	7	3.3	2.8
Netherlands	7	9.7	4.3	3.5
Norway	3.6	4.9	3.9	3.3
Portugal	n.a.	n.a.	6.5	7.6
Spain	4.3	4.4	2.4	3
Sweden	3.4	4.1	4.6	3.2
Switzerland	3	4.1	2.5	1.9
Turkey	6.2	n.a.	4.3	4.5
U.K.	7.6	13.4	6.8	5

Source: James Foreman-Peck, 'European Industrial Policies in the Post-war Boom: Planning the Economic Miracle', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 46.

At the end of the period from 1945 to 1975 – as table 2.13 illustrates – Portugal, Greece, the United Kingdom, Turkey, and France spent proportionately more on defence and military purposes in Western Europe. In the Portuguese case, the Colonial War(s) between Portugal's military and the emerging nationalist movements in Portugal's African colonies from 1961 to

[91] Ronald P. Smith, 'Military Expenditure and Investment in OECD Countries 1954–1973', *Journal of Comparative Economics,* 4, no. 1 (1980), p. 19-32.

1974 led to the rising percentage of military expenditure. In Greece and Turkey, the proportionately high military expenditure resulted from the Turkish military invasion in response to the Greek military junta backed coup in Cyprus in summer 1974 which ended in a total fiasco for the Greek troops and finally led to the political collapse of the military junta as a government after seven years of dictatorship in Greece. The United Kingdom and France, according to their self-definition as economic and military superpowers always spent proportionately more of GDP than other West European countries. This was caused by growing security and defence needs, not exclusively (e.g. Northern Ireland) but primarily in the context of the Cold war to protect their homelands as well as by Britain's and France´s military commitments in other parts of the world (e.g. Suez Crisis, Indochina Wars, Algerian War), and finally by the rising military support of international missions under the auspices of the United Nations or NATO (e.g. Korean War).

In all these five cases, the determining reasons for proportional high military spending were first of all the support and protection of national military interests and the achievement of security objectives. If at all, the support for R & D, technological progress and the enhancement of industrial and economic development, were certainly subordinated to those military and security objectives. For all Western European countries, it generally remains rather difficult to assess the real impact of military spending on technological progress, industrial development and economic growth. Firstly, it remains problematic to estimate the definite share of all total national defence expenditure for military-industrial projects for all countries. Secondly, it seems even more problematic to figure out the effects of military spending on promising industrial innovations that may have been transferred later to the consumer industry for valuable civilian uses, because diffusion channels are not traceable or assessable in most cases as the diffusion timeframes as well.

By contrast, it seems reasonable to ask, whether military spending for security objectives may have crowded out productive investments in Western Europe after WWII at all, hence suppressing rather than stimulating economic development because it drew off available domestic resources from more productive activities?

Proceeding from Adam Smith’s view of “military spending as an unproductive expenditure that detracts from the wealth of a nation since it uses resources that could be employed in

productive activities"[92], there are several highly interesting studies questioning the alleged positive impact of defence expenditures on investment and economic growth.[93] For most of the fourteen largest OECD economies, Roland Smith in 1980 provided clear evidence for an only very weak and limited correlation between military spending and private and public investment during the period from 1954 to 1971 and even for a significant negative one from 1971 to 1973, implying the absence of any positive impact of military spending on investment and economic growth. The limited positive correlation during the early 1950s may have been the result of the "large buildups and subsequent drawdowns" in connection with the Korean War "when large shifts in military outlays first crowded out, and then crowded in, all other spending."[94] If these results are accepted, "then Western European growth would have accelerated in the 1960s compared to the 1950s (as it did) because of the reduction of 'wasteful' defence spending as a proportion of GDP." In addition, following his argument, the highest proportionate defence expenditure in the United Kingdom compared with every other Western European country "must have diverted resources from valuable civilian uses" and therefore could be used "as a possible contributory explanation for relatively slow British economic growth."[95] Conversely, Greece and Portugal enjoyed the highest and the third highest rates of growth of real GDP per capita in Western Europe during the same period and were spending, as mentioned above, a certain percentage of GDP for military purposes that nearly equaled or even exceeded that of the United Kingdom. The same holds true for example for France or West Germany, which spent substantial proportions of GDP for defence expenditure, but where the economic performance, and in particular manufacturing growth had been exceedingly good.

[92] David Gold, 'Does Military Spending Stimulate or Retard Economic Performance? Revisiting an Old Debate´, The New School University (Philadelphia/New York), *International Affairs Working Paper* 2005-01, January 2005, https:mercury.ethz.ch/.../Files/.../Gold_2005-01.pdf (viewed on 24th April 2013), p. 3.

[93] See for example Hsin-Chen Chang et al., 'Military Expenditure and Economic Growth across Different Groups. A Dynamic Panel Granger-Causality Approach', *Economic Modelling* 28, no. 6 (2011), pp. 2416–23. See as well Gold (2005), 'Military Spending´ or Michael Dee Oden, 'The costs of U.S. Hegemony: Military Power, Military Spending, and U.S. Trade Performance´, *Review of Radical Political Economics,* 31, no. 4, (1999), pp. 32-60. These sample studies cover mainly a later period or do not focus Western Europe, but the United States instead. The only study, which focuses explicitly the relation between military expenditure, investment and economic growth in post-war Western Europe, is presented by Smith (1980), 'Military Expenditure'.

[94] Gold (2005), 'Military Spending´, p. 5.

[95] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 41 f.

Up to now, the question whether military spending had a positive or negative impact on investment, industrial development and economic growth in Western Europe after WWII cannot be answered definitely, just as there cannot be drawn any final conclusions at this point as to whether or not military spending can be considered as an effective instrument of industrial policy at all. By all means, it seems undeniable that the conventional wisdom concerning a promising positive correlation between military spending on the one hand and technological progress, industrial development and economic stimulation on the other hand was widespread in Western Europe at the time after WWII. There are many arguments from the present perspective against this common tenet. But at the same time, there are many good arguments for successful transfer processes of military investment in product development activities, particularly in high-tech manufacturing, which in turn support this contemporary doctrine. Further historical and economic research in this field would be desirable to provide more information, which will be helpful for a better understanding of this distinctive inter-relation between military spending, industrial policy and economic stimulation.

II.3 Transnational Perspectives of European Industrial Policy, 1945-1973/75

The renaissance of industrial policy after 1945 was closely linked to the successful experience of European reconstruction, the growing impact of the Cold War, and accelerating economic integration. The Marshall Plan as well as many similar national programs of economic reconstruction had focused on the industrial sector. For economic, political and military reasons, both super-powers, the United States and the Soviet Union, had a vital interest to promote industrial development in their respective zones of influence. Cold war competition moved industrial policy at the heart of economic policy in East and West.

When the Soviet Bloc was established in 1947/48, the Communist Central and Eastern European countries followed the Soviet `model´ of on extensive industrialization and copied the state-owned, state-run, non-market, planned economic regime of the Soviet Union. Already in January 1949, forced by Stalin, the Council for Mutual Economic Assistance (COMECON), an autarchic regional economic bloc-organization based on bilateral agreements and barter trade, was founded as a reply to the formation of the Organization for European Economic Co-operation (OEEC) in non-communist Europe. After Stalin´s death in 1953, the COMECON countries began to discuss developing complementary specialties as well as facilitating trade

and economic coordination between the member countries. The Soviet Union continually claimed a tighter economic integration and cooperation between the bloc countries and particularly from 1957 onwards, the COMECON launched a series of "principles" toward increased trade and economic integration, including the elimination of all trade barriers, the facilitation of technology transfers, the introduction of the "transferable rouble", efforts of transnational planning and national production specialization.[96]

While in the socialist countries, economic integration and supranational cooperation strongly focused the enlargement of the industrial sector, this issue gained increasingly in importance in Western Europe as well in the post-1945 era. Already in April 1948, the Organization of European Economic Cooperation (OEEC) had been set up to administer and to coordinate the US American Marshall Plan aid for the economic reconstruction in Western Europe (European Recovery Programm) based entirely on free-market policy. Its primary aim, apart from the targeted allocation and supervision of the Marshall Plan aid, was to eliminate specific hindrances to the exchange of goods and the circulation of payments. Even if the OEEC did not explicitely focus on the industrial sector, its creation surely provided an essential prerequisite to a common industrial policy in Western Europe for the following decades.

The first step towards supranational industrial policies is represented by the Treaty of Paris establishing the European Coal and Steel Community (ECSC) in April 1951 for the regulation of both the coal and the steel industries in France, West Germany, Italy and the three Benelux states, the six founder countries of the ECSC.[97] The ECSC was set up with the intention of supporting industrial and economic growth in Western Europe and to maintain the peace between the historic enemies, France and Germany. Pooling such vital resources as coal and steel between these enemies, was seen as essential to prevent further war between France and Germany and other States. The Treaty of Paris granted large competences to the supranational independent executive of the ECSC, the 'High Authority', to regulate the future development within coal and steel industries in terms of market regulation (ability to ban mergers, to set

[96] Ivan T. Berend, 'Industrial Policy and its Failure in the Soviet Bloc', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), pp. 317-341.

[97] Manfred Rasch and Kurt Düwell (ed.), 'Anfänge und Auswirkungen der Montanunion auf Europa : die Stahlindustrie in Politik und Wirtschaft - Origins and Impacts of the European Coal and Steel Community on Europe: The Steel Industry in Politics and Economics', Essen: Klartext Verlag (2007).

maximum and minimum prices) and of structure (through direct loans to companies, but also via the possibility to influence the companies' investment programs).[98] The overall achievements of the ECSC during the period under consideration were mostly positive: The High Authority granted more than 280 modernization loans to coal and steel projects within the Community, totalling 725 million US$, from which 265 million US$ were dedicated for coal mines and 460 million US$ for steelworks and iron mines.[99] These subsidized loans, granted at cheap rates, contributed to the promotion of process innovations and therefore supported both the coal and steel industry to raise output and reduce costs facilitating successfully the necessary industrial restructuring and redevelopment during the post-war period. Intra-Community trade in steel and coal did increase notably. In terms of production, the Community´ output in steel increased more than threetimes from 1952 to 1974 and steel products became far better, cheaper and cleaner in Western Europe. Coal production, however, after a short but intense initial growth period until 1956, declined by more than a quarter from 1957 onwards as did the number of people employed in the sector, because oil, gas and electricity increased in importance as more efficient energy sources.

However, apart from these positive achievements which certainly contributed to the modernisation of production, economic expansion and growth of employment within the Community, the ECSC impressively failed to achieve several other initial basic objectives underlying the Treaty of Paris and the High Authority was not able to exert its powers very boldly. This was particularly true concerning the supervision of free competition. One of the fundamental objectives of the ECSC had been to ensure that free competition was respected in the coal and steel markets. Therefore, it was intended that the ECSC would use best efforts to prevent any emergence of larger agreements or concentrations and the abuse of dominant positions which could generate unfair competitive practices and discriminatory price fixing as in the case of the German iron and steel "Kartelle" before and during the war.[100] Since the mid-1950s, the German iron and steel industry began again to piece together the large groups which

[98] Laurent Warlouzet, 'Towards a European Industrial Policy? The European Economic Community (EEC) Debates, 1957-1975', in: Christian Grabas and Alexander Nützenadel (eds.), 'Industrial Policy in Europe after 1945. Wealth, Power and Economic Development in the Cold War'. Basingstoke: Palgrave Macmillan (forthcoming), p. 242.

[99] Mathieu Gilbert, 'The History of the ECSC: Good Times and Bad', in: Le Monde, 09 May 1970, http://www.cvce.eu/viewer/-/content/54f09b32-1b0c-4060-afb3-5e475dcafda8/en, (viewed on 28th April 2013).

[100] European Commission, 'Treaty Establishing the European Coal and Steel Community, ECSC Treaty', http://europa.eu/legislation_summaries/institutional_affairs/treaties/treaties_ecsc_en.htm (viewed on 28th April 2013).

the Allies had attempted to break up after the German defeat. The cartels and major companies re-emerged and finally became far more powerful steel empires than before, leading again to apparent price fixing and other unfair monopolistic practicies. The tremendous resurgence of the German iron and steel 'Konzerne' Thyssen, Hoesch, Kloeckner and others represented the most prominent failure of the ECSC taking in account the original objectives of the Community.[101]

Even the international expectations regarding the supervision of the Community´s coal market proved to be too optimistic. However, although the annual growth of coal production and intra-Community trade during the first three or four years after the founding of the ECSC was more than respectable, already in 1957, the first signs of crisis became evident and during the following decades, the Western European coal industry passed through a long lasting period of structural decline. Due to increasing competition from the United States and the increasing importance of oil and gas as more effective energy sources for industrial production, each major producer country in Western Europe had to suffer a sharp decline in the demand for coal. The result was that the ECSC members, instead of pursuing free trade, (as originally intended in the Treaty of Paris) were trying to protect national coal mining as much as possible by means of subsidies, import quotas and other instruments. Instead of seeking a way to design a common energy policy for the restructuring of the European coal industry, in 1965/66 the ECSC authorised each member country to subsidise their coal mines and even approved further regulations to support protectionist national policy.[102]

Finally, the ECSC failed in providing, implementing and monitoring any coherent supranational strategy for the reorganization and restructuring of both the coal and steel industries in Western Europe which were harshly hit by deepening structural crises. Even if the Treaty of Paris had formally curtailed industrial powers of the national governments, all major decisions concerning direct or indirect state intervention in the iron, steel and coal industries still continued to remain within the framework of national industrial policy. Therefore, it appears at least questionable whether even the performance in terms of increasing production and intra-Community trade was in hindsight rather the result of national undertakings and national

[101] Tobias Witschke, 'Gefahr für den Wettbewerb? Die Fusionskontrolle der Europäischen Gemeinschaft für Kohle und Stahl und die "Rekonzentration" der Ruhrstahlindustrie, 1950–1963', Berlin: Akademie Verlag (2009).

[102] Gilbert (1970), 'ECSC'

industrial policies than the result of a coherent supranational industrial policy decision-making process within the framework of the ECSC.

However, the greatest achievements of the European Coal and Steel Community certainly lie in its innovative institutional organization and its democratic concept of a supranational European Community and in its fundamental role for the steady development of following supranational economic institutions in Europe.[103] In 1957, the Treaties of Rome were signed by the six ECSC members, founding the European Economic Community (EEC) and the European Atomic Energy Community (EURATOM) that were institutionally based, with some adjustments, on the supranational governmental ECSC institutions: a judicial branch (the European Court of Justice), an executive branch (the Commission), and a legislative branch (the Council of Ministers). The two new Communities firstly aimed at creating a customs union and a common market among its six founding members (Belgium, France, Italy, Luxembourg, the Netherlands and West Germany) and, secondly, at establishing a nuclear power community as a coordinating framework for nuclear research.

The treaty that set up EURATOM provided for the step-by-step building-up of a sectoral organization endowed with numerous tools for the design, the implementation and the monitoring of a common vertical industrial policy for civil nuclear energy. Its aim was, firstly, to foster research in the nuclear field via common research centres and regular publications, secondly, to provide feasible investment plans for public and private projects, thirdly, to support specific projects by means of subsidies and, finally, to implement a common policy on uranium imports. However, as Laurent Warlouzet put it, "the low cost of petrol during the 1960s and the lack of interest of France, the main promoter of Euratom in 1956–57, condemned this organization to failure."[104] Even if a few research centres were set up by EURATOM – the main centre being located in Ispra (Italy) – they had only marginal activity during the following decades, and soon all important European nuclear research was again carried out outside the EURATOM framework by national governments.

[103] Barry Eichengreen and Andrea Boltho, 'The Economic Impact of European Integration', in: Stephen Broadberry and Kevin H. O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambgridge: Cambridge University Press (2010), p. 281.

[104] Warlouzet (forthcoming), 'European Industrial Policy', p. 247.

The treaty that set up the European Economic Community provided for the realization of a single market based on the as soon as possible achievement of the free movement of goods, services, and factors within the Community. In addition, the Treaty of Rome envisaged the harmonization of the external trade tariffs, and of some legal and fiscal rules as well as the design of common policies in selected areas (agriculture, transport and overseas territories). But the Treaty of Rome had said nothing about the elaboration of common industrial or technological policies and had covered only a very few elements of industrial policy. The only explicit provisions regarding industries were linked to competition policy, especially the monitoring of state aid (articles 92 to 94). The only industrial sector mentioned was shipbuilding (article 92 C), but here too, the emphasis was put on the limitation of state aid.[105]

It is undeniable that the EEC soon became the most important tool for political unification and economic integration in Western Europe and its major achievement of the early years of the Community was certainly the gradual reduction of formal trade barriers between the member states as well as the harmonization of the external tarrifs between the Community and other OEEC members which both – as table 2.14 illustrates – had strong impact on industrial development and economic growth in Western Europe. However, during the first six or seven years after its founding, the EEC had no significant impact on the implementation of a common industrial policy. Therefore, industrial policies remained national tools. The vast majority of Western European states retained strongly interventionist national industrial policies, which were characterized by very different, and sometimes opposed, economic models and sectoral aims.

Table 2.14: Rates of growth in volume of merchandise exports and in per capita GDP in selected Western European Countries, 1950-1973 (compound annual growth rates, in %)

	Merchandise Exports	**GDP per capita**
Austria	10.7	4.94
Belgium	9.2	3.54
Denmark	6.9	3.08
Finland	7.2	4.25

[105] European Commission, 'Treaty Establishing the European Economic Community (Rome, 25 March 1957) ', http://www.cvce.eu/viewer/-/content/cca6ba28-0bf3-4ce6-8a76-6b0b3252696e/en, (viewed on 28th April 2013), p. 34 ff.

France	8.2	4.04
West Germany	12.4	5.02
Greece	11.9	6.21
Ireland	6.8	3.03
Italy	11.6	4.95
Netherlands	10.4	3.45
Norway	7.3	3.24
Portugal	5.7	5.45
Spain	9.2	5.60
Sweden	6.9	3.06
Switzerland	8.1	3.08
United Kingdom	3.9	2.42

Source: For the rates of growth in volume of merchandise exports: Angus Maddison, 'Monitoring the World Economy 1820-1992', Paris: OECD (1995), p. 74. For Rates of growth in per capita GDP: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (eds.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 301.

European supranational industrial policy became fashionable only from 1965 onwards. Important EEC industrial policy projects were devised, firstly, to develop a common policy in science and technology, secondly, to fascilitate cross-border mergers, thirdly, to promote high-tech sunrise sectors, and finally, to support declining industries. Due to continuing conflicts within the Commission´s administration and among member-states on the one hand, and to the huge conceptional and institutional difficulties of setting up such ambitious policies on the other hand, only the support for declining industries experienced some success in the late 1970s.

The EEC industrial policy projects emanated from a group of mainly French and Italian officials at the European Commission, who were sometimes influenced by non-EEC examples, such as that of the UK. In April 1965, a special committee known as PREST (Politique de Recherche Scientifique et Technologique) was set up by the Commission to elaborate a common research policy among the member states. The underlying argument for the creation of PREST was the "growing concern over the failure of European countries to fund scientific and technical

research on the same scale as the US."[106] To promote a common European research and technology policy was considered a means to face the 'American Challenge'[107], hence the supposed threat of unfair competition by US companies because of their huge size and higher efficiency. This threat was especially present in high-technology sectors (aerospace and electronics), for which huge R&D investment were required. During the following years, various ambitiuous plans and programms were put forward, including a proposal from outside the Community framework, presented by the British Prime Minister Harold Wilson for a European technological community to which the United Kingdom could promisingly contribute its technological know-how in the aerospace and computer industries. However, his proposal as all other plans and programmes were vetoed by the EEC member countries because most initiatives involved a higher degree of centralization and a lower degree of national power in this field, therefore appearing non acceptable to member states. Some first substantial progress was made in the PREST committee only in th early 1970s, when Ralf Dahrendorf, the new Commissioner responsible for industry and for research and technology, supposed a more pragamatic approach, which finally led to the creation of a new framework in the form of COST (European Cooperation in the Field of Scientific and Technical Research) and the funding of some larger collaborative research projects by the member states together with the Commission.

From the mid-1960s onwards, increasing emphasis was put on international competitiveness and the EEC tried to support the development of a semi-liberal industrial policy whose aim would have been to promote intra-European mergers so as to enable European companies to compete with the bigger US firms. It is true that European companies had to face growing international competition especially from the US. The problem was that European companies were often far smaller than their American counterparts.[108] To face the 'American Challenge' became a growing concern on the company level as well at this time. The main business association for European industrial companies – the Union des industries de la Communauté européenne (UNICE) – even supported those Community´s efforts for enhancing competition.

[106] Owen (2012), 'Industrial Policy in Europe´, p. 20.

[107] The "American Challenge" is the title of a widely known book by the French journalist – and later politician – Jean-Jacques Servan-Schreiber.published in 1967. Jean-Jacques Servan-Schreiber, 'Le défi américain', Paris, Denoël, (1967).

[108] Among the 500 biggest companies, 306 were American and only 33 German, and 25 French. See Warlouzet (forthcoming), 'European Industrial Policy', p. 249 f.

Already in March 1965, the UNICE issued a memorandum, which compared the size of the most important enterprises and called for measures to facilitate intra-European mergers. However, the UNICE strongly vetoed any overall state-led industrial policy approaches, and exclusively claimed for fiscal and legal provisions particularly for changes in company law supposed to facilitating a consolidation of the European industrial base in general. Finally, beyond this 'semi-liberal' industrial policy concerning intra-European mergers, some EEC officials wanted to support the establishment of a more interventionist policy to promote high-tech sunrise sectors, and to support declining industries.

These three subjects were pointed out by two memorandums issued in 1967 and 1970, by the Italian Commissioner, Guido Colonna di Paliano, including many concrete proposals for various projects among the member states. But both memorandums did not resulted in any concrete activites. The projects proposed had been vetoed and all efforts of coordinated supranational European industrial policies largely failed again. Nevertheless, it was not a complete failure, because the memorandums paved the way for important projects to be realised in following years. Already at the time of the “Colonna memorandum”, a relative consensus existed on the ‘American Challenge’ problem and the promotion of high-tech industries as well as on the increasing neccessity of supranational efforts to support ailing industries. After the first enlargement (Denmark, Ireland, United Kingdom) of the EEC in 1973, not only the support for declining industries, but also the establishment of new frameworks for technological cooperation and, finally, changes in the field of competition regulation became the key aspects of industrial policy of the European Community and took shape in various cooperations and new industrial projects from the mid-1970s onwards.

III Industrial Policies in Europe during the `long´ 1980s

The paralysis of the international monetary management system – the Bretton Woods regime – 1971/1973, the price shocks to world economy in the wake of the first oil crisis from October 1973 onwards and the subsequent deep recession of 1974-76 altogether marked the end of the "Golden" and the "Silver Age" of European growth on both sides of the Iron curtain.[109] After the impressive growth period during the first three post-war decades, industrial expansion and economic growth in general slowed considerably both in Western and Eastern European countries. The following sub period up to the early 1990 can be described as an ambivalent period of `critical transition´, which was characterized for Western Europe, firstly, by liberal reforms implemented in many countries since the 1980s, that strongly limited state interventions into the private sector, secondly, by a further deepening of economic integration within the European Union, and thirdly – for Eastern Europe – by deepening economic crises and the collapse of the Soviet bloc countries. During that period, economic growth increasingly lost its dynamics, particularly in Eastern Europe.[110] The Soviet-type extensive industrialization model based on forced capital accumulation, technological import (instead of domestic innovation) and massive labour input had generated high economic growth in Eastern Europe in the short run after 1945. However, its longer-term effects and structural impacts were disastrous, because it caused misdevelopment and reproduced backwardness. Economic structure and technology remained obsolete compared to structural and technological standards in the Western world. Nevertheless, dictated by the Soviet regime, industrial policy in Eastern Europe remained mostly unchanged during the structural crisis of the 1970s and 1980s and the Soviet bloc economies failed to adjust to the modern economic requirements, which finally led to a deepening economic crisis, further lagging behind, and, at the end to the economic and political collapse of Soviet bloc.[111]

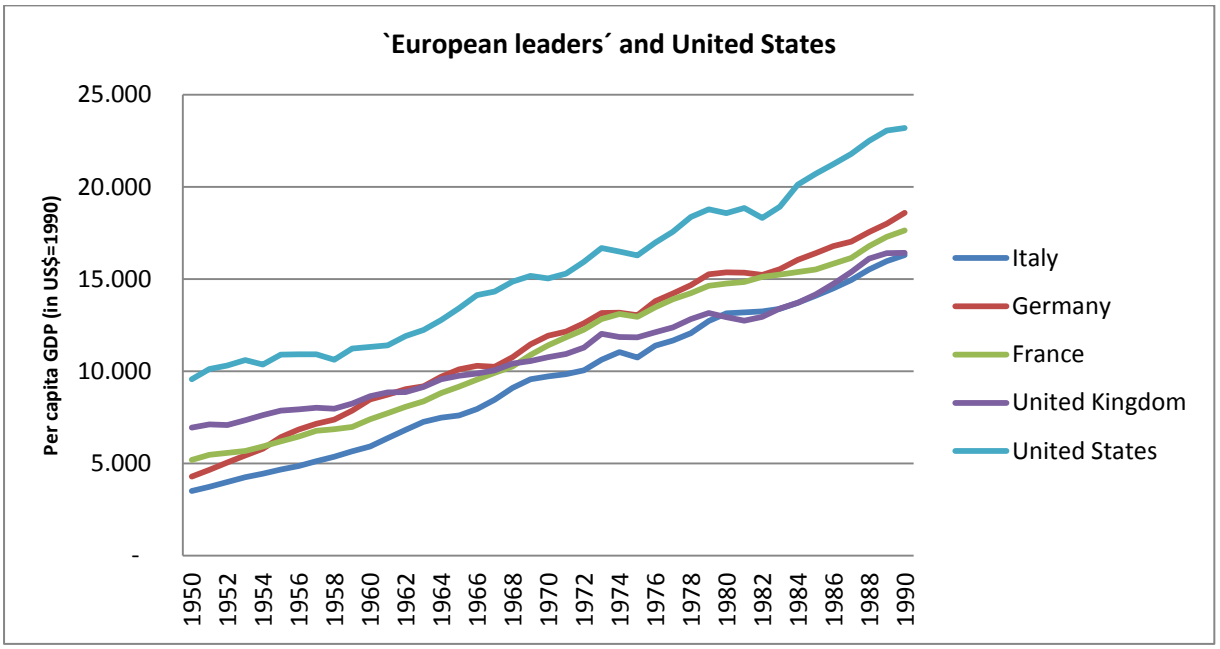
[109] Crafts and Toniolo (2010), 'Aggregate Growth', p. 297.

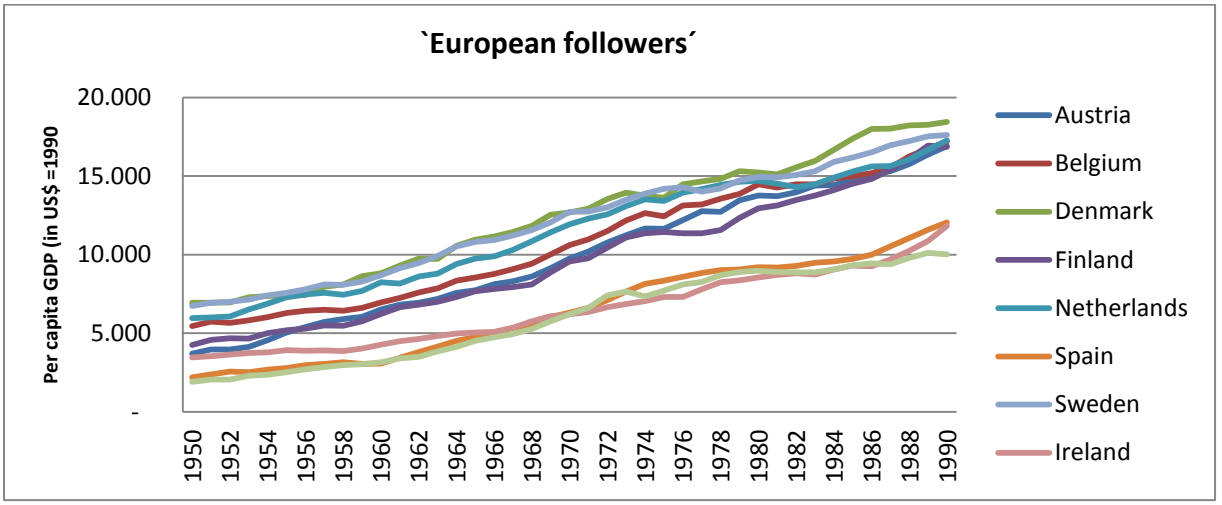
[110] Berend (forthcoming), 'Industrial Policy and its Failure in the Soviet Bloc'. See as well James F. Brown, 'Surge to Freedom. The End of Communist Rule in Eastern Europe', Durham: Duke University Press (1991).

[111] For further information, see tables A-18 – A-23 and figures A-2 and A-3 in the appendix of the present paper.

III.1 Structural Destabilization and the Emergence of Competition Policies in Western Europe

Figure 3.1: Growth of per capita GDP in Western Europe and in the United States, 1950-1990 (in US $=1990)





Source: GGDC, Total Economy Database (viewed 2013).

During the period following the "Great Boom" most Western European countries experienced a long lasting general slowdown in economic expansion. Naturally, some countries had to face earlier economic crises and slumps of certain industries (shipbuilding, steel, coal, textiles), but only from 1973/74 onwards, an overall structural destabilization became the common pattern of economic development across Western Europe. From 1973 to 1990, the development of GDP

per capita – illustrated in figure 3.1 – was mainly characterized by a general deterioration in economic performance compared with the previous period as well as by two severe recessions in the wake of the two oil shocks from 1974-76 and from 1980-83. During the period under consideration, as table 3.1 shows, the GDP per capita in Western Europe rose by only 1.91 per cent yearly on an average, slightly faster than in the United States, but only less than half as fast as during the post-war boom.[112]

Table 3.1: Levels and compound annual rates of growth of real GDP per capita in Western Europe, 1973-1990 (in US $= 1990 and in % per year)

	1973	**1990**	**1973-1990**
Switzerland	18204	21482	**0.94**
Denmark	13945	18452	1.71
Sweden	13494	17695	1.58
Germany	13153	15929	2.06
France	13114	18093	1.90
Netherlands	13081	17262	1.55
Belgium	12170	17197	2.08
UK	12025	16430	1.57
Norway	11324	18466	2.96
Austria	11235	16905	2.39
Finland	11085	16866	2.46
Italy	10634	16313	2.43
Spain	7661	12055	2.01
Greece	7655	9988	1.54
Portugal	7063	10826	2.58
Ireland	6867	11818	**3.24**
Western Europe	11417	15965	**1.91**
United States	16689	23201	**1.72**

Source: Angus Maddison, 'The World Economy. Historical Statistics', Paris: OECD (2003), pp. 64-69 and own calculations for the compound annual growth rates based on GGDC, Total Economy Database (viewed 28th April 2013).

[112] See also table 2.5, p. 15.

Apart from the pervasive and persistent decline in economic performance relatively to the previous boom, from 1973 until the early 1990s, accelerating inflation, rising public debt as well as rising unemployment, became the other common features of this transitional period.

Table 3.2: Inflation, compound annual growth rates of changes in consumer price index in Western Europe and in the United States, 1950-1998

	1950-1973	**1973-1983**	**1983-1993**	**1994-1998**
Belgium	2.9	8.1	3.1	1.8
Finland	5.6	10.5	4.6	1.0
France	5.0	11.2	3.7	1.5
Germany	2.7	4.9	2.4	1.7
Ireland	4.3	15.7	3.8	2.1
Italy	3.9	16.7	6.4	3.5
Netherlands	4.1	6.5	1.8	2.2
Spain	4.6	16.4	6.9	3.4
Sweden	4.7	10.2	6.4	1.5
United Kingdom	4.6	13.5	5.2	3.0
European average	**4.3**	**11.2**	**4.5**	**2.2**
United States	2.7	8.2	3.8	2.4

Source: Angus Maddison, 'The World Economy. A Millennial Perspective', Paris: OECD (2001), p. 134.

Particularly during the years from 1973 to 1983 – as table 3.2 illustrates – the average levels of consumer prices increased dramatically, partly as a result of the sharp increase in energy prices in the wake of the first oil shock as well as a lagged consequence of the wage explosions in the late 1960s and the following efforts of the employers to pass the two-fold increasing factor costs on the consumer prices.

Table 3.3: Total central government debt in Western Europe, the United States and in Japan, 1980-2010 (in % of GDP)

	1980	1990	2000	2010
Austria	24.78	45.97	61.19	65.75
Belgium	53.48	106.73	99.54	96.79
Denmark	34.64	62.39	54.80	39.59
Finland	n.a.	10.18	48.02	41.68
France	n.a.	n.a.	47.42	67.42
Germany	13.03	19.73	38.36	44.40
Greece	n.a.	n.a.	108.93	147.84
Ireland	81.77 (1981)	86.81	34.77	60.70
Italy	52.68	92.77	103.57	109.02
Luxembourg	n.a.	1.82	3.17	12.58
Netherlands	25.69	58.42	44.09	51.85
Norway	n.a.	22.40	19.30	26.08
Portugal	29.24	51.74	52.10	87.96
Spain	14.30	36.54	49.87	51.69
Sweden	38.21	39.56	56.89	33.78
United Kingdom	n.a.	n.a.	42.15	85.54
United States	25.73	41.47	33.90	61.27
Japan	37.13	47.00	106.19	183.53 (2009)

Source: OECD.Stat (viewed on 06 May 2013).

Accelerating inflation during the 1970s had been strongly correlated with expansionary policies by means of which some governments in Western Europe tried to deal with economic stagnation and rising unemployment, and which – as shown in table 3.3 – additionally

contributed to increasing gross general government debt throughout Western Europe.[113] However, in most cases, highly expansive monetary policies had only little impact on labour markets, if at all. Unemployment – illustrated in table 3.4 – rose from relatively moderate unemployment rates in 1973 – apart from Ireland and Italy – up to 9.7 per cent on average across Western Europe in 1992 with peaks up to more than 18 per cent in Spain and almost 16 per cent in Ireland.

Table 3.4: Unemployment rates in Western Europe and in the United States, 1973 and 1992 (in % of labour force)

	1973	**1992**
Belgium	2.4	10.3
France	2.7	10.2
West Germany	1.0	5.8
Ireland	5.7	15.7 (1991)
Italy	6.2	11.4
Netherlands	3.0	6.7
Portugal	2.5	4.0
Spain	2.5	18.1
Sweden	2.5	5.3
United Kingdom	2.2	9.5
European average	3.1	9.7
United States	4.8	7.3

Source*:* Angus Maddison, 'Macroeconomic Accounts for European Countries, in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth, Cambridge: Cambridge University Press (1996), p. 43.

Compared with the previous strong growth period, in Western Europe only Ireland´s economic performance increased dramatically, mainly as a result of the implementation of supply-side policies since the mid-1980s that have attracted large inflows of foreign direct investment (FDI)

[113]Carlo Cottarelli, 'Challenges of Budgetary and Financial Crisis in Europe'. Speech by Carlo Cottarelli, Director of the Fiscal Affairs Department of the London School of Economics and Political Science on November 18, 2011, p. 6 f., http://www.imf.org/external/np/speeches/2011/pdfs/111811.pdf (viewed on 28th April 2013).

particularly from the US multinationals to develop successful clusters in the information and communication technology (ICT) in Ireland.[114] In fact, from 1973 to 1990 Ireland achieved the highest rate of GDP per capita growth on average in Western Europe and almost doubled the European average. However, even if this impressive achievements actually sustained itself during the period leading to the early 2000s, all political efforts could not improve the tense labour market as successful as it had been originally intended by the Irish government. In 1992 for example, Ireland still experienced the second highest rate of unemployment in Western Europe.

In comparison with the previous boom period, the former stars on the growth firmament Greece, Protugal and Spain performed most poorly and could not succeed in terms of using their still persistent potential for technological and organisational catch-up with the United States or with their more developed European neighbours as before. Especially Greece, which fell back the most significantly with a rate of GDP per capita growth considerably below the European average during this period and more than four times slower as during the Golden Age. Even Portugal and Spain fell back in terms of growth performance, but to a lesser extent than Greece. Per capita GDP grew on average at a rate of 2.58 per cent in Portugal and 2.01 per cent in Spain making both countries exceeding respectively the European average as well as the growth performance of the US.

Among the four largest economies in Western Europe, Italy still outperformed the others as during most of the previous period after WWII. France and West Germany experienced a sharp decline in the rate of growth by more than half, but still narrowed the income gap with the United States – although at a much slower pace than before.[115]

Table 3.5 (2.2): Real GDP per capita in Western Europe compared to the United States, 1950-1990 (in %, US=100)

	1950	**1973**	**1990**
France	52	74	77
Germany	43	76	81
Italy	36	63	72

[114] Crafts and Toniolo (2010), 'Aggregate Growth', p. 326 f.

[115] See table 2.2, p. 10.

United Kingdom	69	69	70
Austria	38	66	74
Belgium	54	70	74
Denmark	66	77	76
Finland	42	63	72
Greece	18	42	40
Iceland	-	65	77
Ireland	34	39	50
Luxembourg	-	90	105
Netherlands	57	72	71
Norway	53	63	77
Portugal	19	37	43
Spain	28	50	52
Sweden	67	77	75
Switzerland	92	108	93
Turkey	17	19	21
Western Europe	**45**	**62**	**65**
United States	100	100	100

Source*:* United Nations Economic Commission for Europe (UN/ECE), 'Economic Survey of Europe 2000', No. 1, chapt. 5, "Catching Up and Falling Behind: Economic Convergence in Europe", Published: 03 May 2000, p. 161, http://www.unece.org/fileadmin/DAM/ead/pub/001/001_5.pdf (viewed on 06 March 2013).

In general, as table 3.5 and table 3.7 illustrate, catching-up with the United States considered as a key momentum of post-war European economic development, slowed remarkably since the mid-1970s, although some countries further continued to make considerable progress. Apart from Italy, also in Austria, Finland and Norway for example, the total economic performance proved to be relatively sturdy, even if it could not reach the earlier dynamism. However, those countries succeeded relatively well in further catching-up with the United States in terms of narrowing the real income gap as well as the technological and organisational gap measured in labour productivity growth.[116] The real income gap with the United States during the period under consideration still remained significant for almost all Western European economies, and only Luxembourg surpassed the American real income level. On average, the real incomes in Western Europe in 1990 were still 35 per cent lower than in the United States.

[116] See table A-3, A-4 and A-9 in the appendix of the present paper.

By contrast with the first post-war decades, that were characterized to a large extent by a spectacular expansion of the basic industries in most Western European countries, the fastest growing economic sectors from the early 1970s onwards "were services, led by financial services, and technologically sophisticated manufacturing, particularly computers, telecommunications, and semiconductor equipment."[117] By 1973, most Western European economies had to face the rising challenge of a general deindustrialization process that became a common feature of economic development in Western Europe during the period under consideration.[118]

Table 3.6: Gross value added of manufacturing in per cent of GDP in Western Europe and in the United States, 1950-1990 (in %)

	1950	**1960**	**1970**	**1980**	**1990**
United Kingdom	26.85	30.00	30.15	25.93	24.57
France	18.17	20.31	25.49	25.47	22.35
West Germany	25.38	33.59	36.99	33.74	31.00
Italy	12.08	13.74	17.08	22.02	22.79
Netherlands	13.01	17.80	19.69	17.45	18.23
Denmark	18.98	18.87	19.09	19.73	17.40
Sweden	19.90	21.11	25.59	23.24	22.39
Spain	11.59	13.30	20.18	26.10	24.53
United States	22.29	20.83	21.66	21.56	21.74

Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

As table 3.6 illustrates, the gross value added of manufacturing in per cent of the national GDP in almost all larger Western European economies decreased considerably from 1970 to 1990, particularly in West Germany and the United Kingdom. The two exceptions within this sample

[117] Foreman-Peck and Federico (1999), 'An Overview', p. 446 f.

[118] For the development of sectoral employment shares in Western Europe from 1950-2004, see table A-6, A-7 and A-8 in the appendix of the present paper.

are represented by Italy and Spain, where manufacturing´ growth performance still contributed most significantly to the national total output.

Table 3.7: Relative levels of labour productivity in Western Europe compared to the United States, 1950-1992 (US-level = 100 in year specified)

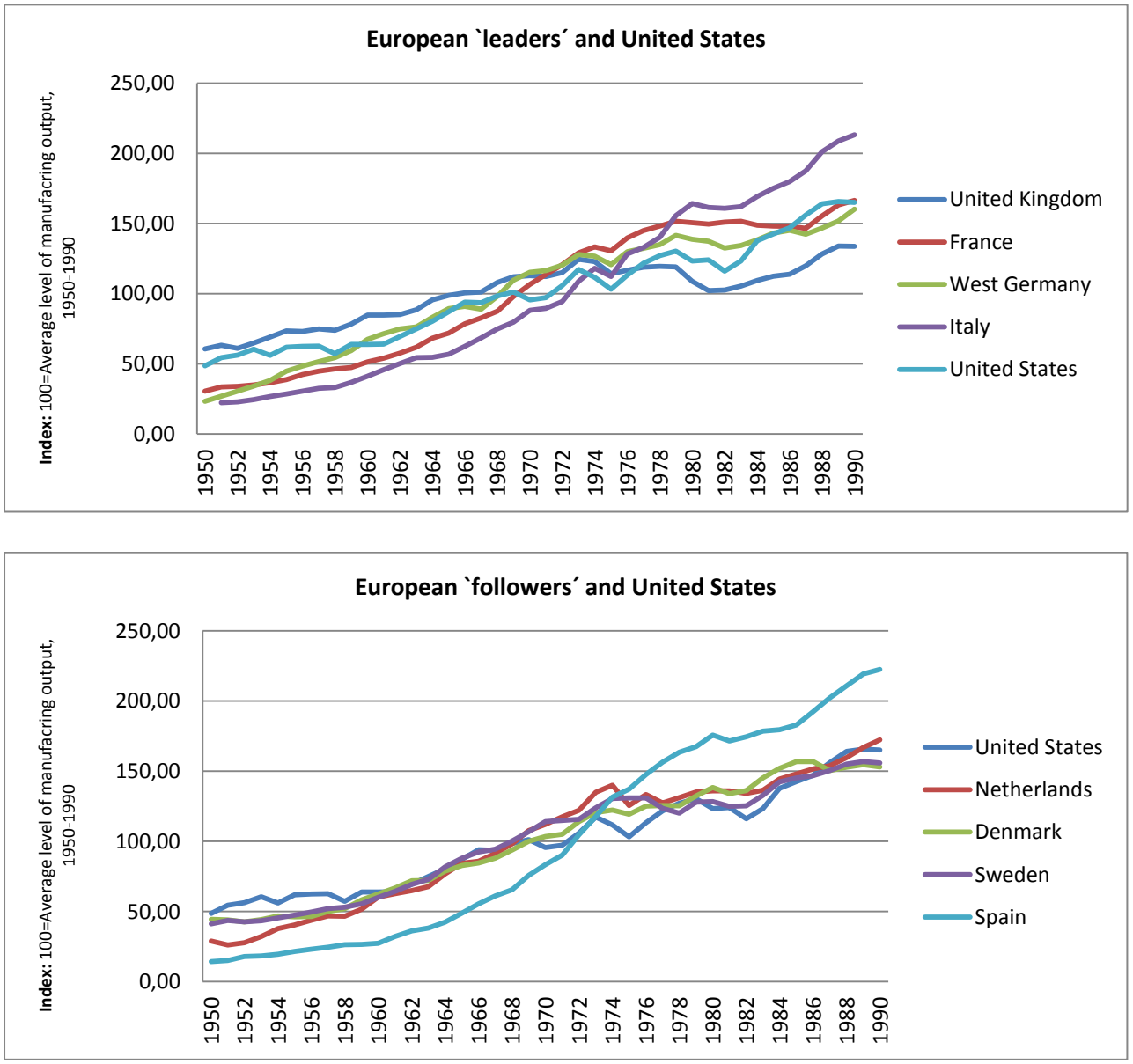
	1950	**1973**	**1992**
Belgium	48	70	98
France	45	76	102
West Germany	35	71	95
Ireland	30	43	71 (1991)
Italy	34	66	85
Netherlands	51	81	99
Portugal	20	42	45 (1990)
Spain	21	46	69
Sweden	56	77	79
United Kingdom	62	68	82
European average	40	64	83

Source: Angus Maddison, 'Macroeconomic Accounts for European Countries', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), p. 45.

As illustrated in table 3.7 and figure 3.2, mainly due to the still existing enormous potential for technological and organizational catch-up in terms of productivity growth, manufacturing output in Spain and Italy grew much faster compared with the other larger Western Europen economies, even if not as fast and continuous as during the post-war decades.[119] This is worth noting, because both countries in comparison with the Western European average achieved much better results in terms of economic growth in general from 1973 to 1990. Therefore, it seems undeniable that the continuously strong growing manufacturing output has to be considered at least as an explanatory reason for this better performance.

[119] For further information, see table A-10, A-11 and A-17 in the appendix of the present paper.

Figure 3.2 (2.4): Growth of manufacturing output in Western Europe and in the United States, 1950-1990 (Index = Average level of manufacturing output, 1950-1990)



Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

In general, as table 3.8 shows, the growth performance of manufacturing from 1973 to 1990 has been much lower in all larger Western European economies than during the Golden Age.[120] By contrast with the previous period, the United States considerably outperformed the European average – except from Italy and Spain –, strengthening its world industrial leadership in the ensuing decades.

[120] For further information, see table A-10 in the appendix of the present paper. For subsuming illustration on growth of GDP, industrial GDP (IDP) and manufacturing GDP (MGDP) in Western Europe and in the United States from 1950-1990, see table A-11.

Table 3.8: Compound annual growth rates of manufacturing output in Western Europe and in the United States for selected periods, 1950-1990 (in %)

	United Kingdom	France	West Germany	Italy	Netherlands	Denmark	Sweden	Spain	United States
1950-1973	**3.17**	**6.47**	**7.68**	**7.49**	**6.93**	**4.44**	**4.90**	**9.63**	**3.89**
1973-1990	**0.43**	**1.50**	**1.33**	**4.04**	**1.45**	**1.42**	**1.36**	**3.81**	**2.03**
1950-1990	**1.99**	**4.33**	**4.94**	**5.97**	**4.57**	**3.14**	**3.38**	**7.12**	**3.10**

Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (eds.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Thereby, the US American firms particularly focused the ICT sector, the most strongly expanding industries at this time. Simultaneously, large Japanese companies and other new competitors in the Far East moved rapidly into these "sunrise sectors". However, only very few of the largest industrial firms in Europe were truly competitive in the world markets concerning these high-technology industries and it seemed that Western European economies in general would fall behind those international market developments. To face the "American challenge" and the "rise of Japan"[121] became the growing concern of almost all Western European governments from the mid-1970s onwards, which therefore increasingly moved competition policy at the core of state industrial policy on the national level and at the same time on the supranational level of the European Economic Community.

III.2 New Perspectives of European Industrial Policy during the Post-Golden Age Slowdown

From the time of the deep recession of 1974 to 1976 that followed the first oil shock, many Western European governments began to have doubts about the suitability of the "European industrial policy model" of the post-war decades that was characterized mainly by strong state intervention and national protection. Many politicians as well as economists at this time harshly attacked all previous sectoral industrial policy approaches and economic interventionism in general claiming a radical revision of this old-fashioned "European model". Actually, the main

[121] Owen (2012), 'Industrial Policy in Europe´, p. 21.

objective of this revision would have to be the gradual withdrawal of the state from the economy in general and from industrial production in particular, or at least, the shift from sectoral exclusively to horizontal industrial policy approaches and a greater reliance on the free market and fair competition. Their criticism was mainly focused on direct state intervention by means of state-owned enterprises, on public support polices for declining industries as well as on "national champions" policies, which – according to their view – represented important hindrances of economic development and growth.

In hindsight, however, as we have highlighted in chapter II of the present paper, it turned out to be true, that pure reactive short-term industrial policies by means of bailouts and take-overs of loss-making private firms or even public support policies by means of public subsidies for declining industries or "national champions" were in most cases very costly failures and altogether led to a rather inefficient allocation of national economic resources in the long run and hampered innovations and structural change. Therefore, as Geoffrey Owen put it, "the clear lesson from European industrial policy in the 1960s and 1970s was that governments had overrated the risks and costs of market failures and underestimated those associated with government failures."[122] By contrast, at the same time there were several smaller and bigger state-led projects often within the framwork of proactive national or regional planning policies – for example in the case of Italy, Spain or to a lesser extent in France as well – that definitely turned out to be very successful in the longer run and which obviously made an important contribution to stabilising and strengthening the spectacular growth development during the post-war Golden Age in those countries. Although it can be assumed, that trade liberalization and a generally favourable environment had probably the most significant impact on high productivity growth after WWII, however, Geoffrey Owen´s thesis that this "productivity growth (…) owed (…) little if anything to interventionist industrial policy"[123], must be revised at least partially.

Contemporary support for those critics of the "European industrial policy model" during the post-war decades was widespread in Western Europe and beyond. From the late 1970s onwards, most Western European governments favoured a paradigm shift towards the free market approach, and the liberal reforms implemented in many countries strongly limited state

[122] Ibid, p. 22.
[123] Ibid.

interventions. For the moment, it seemed as if the liberal ideology of free markets, deregulation, and re-privatization would finally prevail.

Once the gradual abolition of the regulated market, of state intervention, and of the mixed economy in general began, in many Western European economies a proper deregulation race commenced. In the United Kingdom for example, following the election of Margaret Thatcher in May 1979, former state-owned companies were privatized or re-privatized immediately. Germany and Italy, even at a significant distance, followed the United Kingdom, and from the mid-1980s, also France. Within just 18 months, almost all French companies formerly nationalized by the socialist governments were re-privatized following the election of Jacques Chirac. Post-Franco Spain followed the mid-1980s the same paradigm. Another example of that apparent triumphant success of the liberal free market ideology is represented by the abolition of all capital controls in the financial markets at the end of this period, in 1990.

Although many studies mostly hide these historical facts and rather highlighted the achievements of neoliberal policies during this period, it is important to stress, that on a national level in most Western European countries strong interventionist industrial policies still prevailed. Despite all official proclamation for the free market, for gradual deregulation and re-privatization, the paradigm shift towards the free market approach in the field of industrial policies was anything but dramatic. In fact, even from the mid-1970s onwards up to the early 1990s, national industrial policies remained strongly interventionist and rather reactive in order to protect home industries.

During the first three decades after WWII, as highlighted in chapter II.2 of the present paper, in most of Western Europe the state became a direct entrepreneur in many important industries or industry-linked economic sectors: the postal services, telecommunication, coal and steel production, electricity, oil, gas, the national transport and automobile industries, shipbuilding as well as the airline industries. Even if the performance of a considerable part of all state owned enterprises in these industries was rather poor or at least not very profitable, they still continued to account for a fairly large proportion of national GDP.[124] Moreover, they still represented an important controlling tool for the governments to exert targeted influence on the national economic development in general, what certainly provides an additional

[124] State owned industries in Portugal and Greece produced over 20 per cent of GDP, and France and Italy were not far behind. For illustration, see Foreman-Peck and Federico (1999), 'An Overview', p. 449, figure 15.6.

explanatory reason for the persistent unwillingness of many Western European governments to follow the British "model" in terms of the radical re-privatization of state owned enterprises. It is a matter of fact that even if "most European governments disposed of some State assets in the 1980s, (…) only Britain and France (at a considerable distance) shifted the private-public boundaries. The West German programme was essentially 'symbolic', and the Italians moved a labour force of only 100.000 into the private sector."[125]

In addition to state ownership, even during the period since the mid-1970s, direct or indirect subsidization of industrial firms, branches or industries that were of national interest still represented the second most prominent instrument of state intervention in Western Europe to promote industrial development and to face the challenges of the collapses in sectoral demands, of rising factor costs and of fierce international competition.

During the previous strong growth period, but particularly since the early 1960s onwards, several "old" manufacturing industries, such as shipbuilding or textiles, were harshly affected by severe sales crises in many Western European countries mainly due to continuously growing international competition. Those ailing "old" industries – as highlighted in chapter II.2 of the present paper – already received large state support by means of direct and/or indirect subsidies. Moreover, since the late 1960s the European car industry, one of the most important European industries at all, experienced increasing economic difficulties, and many European governments were constrained to massively subsidize or even bail out a certain number of car makers that were perilously close to collapse. The oil crises of 1973/74 and 1979/80 had hit the European car industry especially hard and up to the early 1980s, many European carmakers suffered further huge losses as a cosequence of higher factor costs and decreasing demand. By the mid-1980s, most of them had returned to profitability and among the major European car makers only the performance of French Renault remained poor, thus leading the French government to further support the company´s restructuring that required plant closures and output reductions during the following years.[126] Perhaps the most prominent example for crises ridden industries beyond manufacturing is represented by the steel industry, which always received substantial state aid after WWII (except from Germany and the Netherlands) due to its assumed importance for national security and economic development in general and to its

[125] Ibid.

[126] Adams (forthcoming), 'French Industrial Policy', p. 106 ff.

ownership structure in particular, as the national steel prodction in Western Europe was almost entirely state owned. The European steel crisis already began in the late 1960s, but became particularly apparent across Western Europe from the mid-1970s onwards and the percentage of state aid for national steel companies in relation to the gross value added of the national steel production progressively increased in most Western European economies even until the 1980s.

Table 3.9: Subsidy patterns in the EEC, 1981-1986 (in %)

	Manufacturing/ GDP	**Manufacturing subsidy**	**Steel subsidy**	**Steel/ GDP**
West Germany	35.2	3.0	8.6	1.46
France	24.8	4.9	58.3	1.16
Italy	16.3	9.5	103.0	1.09
United Kingdom	27.6	3.8	57.6	0.94
Belgium	22.4	6.4	40.4	1.25
Denmark	17.8	2.8	18.0	0.20
Greece	16.7	12.9	n.a.	0.43
Ireland	30.7	7.9	107.2	0.17
Luxembourg	26.2	7.3	14.6	1.27
Netherlands	17.1	4.1	4.3	0.81

Note: Columns 2 and 3 are calculated as a percentage of sector value added.

Source: James Foreman-Peck and Giovanni Federico, 'European Industrial Policy: An Overview', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 451.

As illustrated in table 3.9, during the sub period from 1981 to 1986, Greece and Italy spent most on subsidies for manufacturing industries, and Ireland and Italy were heading the ranking for steel subsidies. As state aid was often directed to state owned industries in general, these payments reflected the growing political concern to particularly support declining nationalized industries in relation to the extent of state ownership in those three countries. West Germany and Denmark offered the least direct or indirect subsidies to manufacturing and the Netherlands and again West Germany the least to steel industries, which confirms this assumption for the reverse case. Quite apart from the fact that those payments were by no

means negligible, far more important was that – in the case of West Germany due to the enormous amount of direct "cash subsidies" for coal mining – the total percentage of state aid for total industry in relation to the industrial gross value added was much higher including mining. Moreover, after the German reunification in 1989/90 the total amount of state subsidies increased progressively until 1996 in contrast with the development in the rest of Europe since the early 1990s and – as table 3.10 illustrates – West Germany was heading the subsidy ranking (as percentage of GDP) among the three major Western European economies in the mid-1990s at a large distance. However, the German reunification and the reconstruction of Eastern Germany was a costly burden, especially for the German taxpayers, which had to shoulder a large proportion of the additional state subsidies by paying increased taxes for almost a decade.

Table 3.10: International trends in government subsidies in Western Europe, 1975-1990, 1996 and 1998-2002 (in % of GDP)

	T_1: 1975-1990 (averaged**)**	**1996**	**T_2: 1998-2002 (**averaged**)**	**Difference ($T_2 - T_1$)**
Ireland	7.5	n.a.	0.8	**-6.7**
Sweden	4.5	n.a.	1.8	**-2.7**
Greece	4.2	n.a.	0.2	**-4.0**
Belgium	3.9	n.a.	1.5	**-2.4**
Portugal	3.7	n.a.	1.4	**-2.3**
Italy	3.3	n.a.	1.2	**-2.1**
Denmark	3.2	n.a.	2.2	**-1.0**
Finland	3.2	n.a.	1.5	**-1.7**
Netherlands	2.9	n.a.	1.5	**-1.4**
Austria	2.9	n.a.	3.0	**0.1**
France	2.7	1.58	1.3	**-1.4**
Germany	2.1	1.98	1.7	**-0.4**
Spain	2.1	n.a.	1.1	**-1.0**
United Kingdom	2.1	0.62	0.5	**-1.6**
United States	0.5	0.44	0.5	**0.00**

Source: Pierre-André Buigues and Khalid Sekkat, 'Industrial Policy in Europe, Japan and the USA. Amounts, Mechanisms and Effectiveness', Basingstoke, Hampshire/ New York: Palgrave Macmillan (2009), p. 95.

Apart from state subsidies for declining industries, which by far collected the major part of industrial state aid, even state subsidies for R & D still represented an important industrial policy instrument during the period under consideration here. Since the mid 1960s, the common threat of growing international competition, particularly from the United States but also increasingly from Japan and other competitors in the Far East had caused many Western European governments to focus their support policies more strongly on high tech R & D. Given the fact that the international competitiveness of Western European industries in an increasingly globalised world had been further deteriorated in the wake of the two oil crises, it appears that the adjustment of national industrial policies in Western Europe to a much greater extent on research and development support would have been a promising means to foster competition, technological innovations and industrial development in general.

Table 3.11: R & D subsidies in Western Europe (as percentage of total industrial subsidies)

Germany	6.0	**Luxembourg**	1.0
France	3.8	**Netherlands**	13.4
Italy	2.8	**Portugal**	1.4
United Kingdom	6.0	**Spain**	2.8
Belgium	2.4	**Austria**	2.5
Denmark	17.0	**Finland**	12.8
Greece	5.3	**Norway**	6.5
Ireland	3.5	**Sweden**	8.0

Note: For EEC countries: averaged percentages from 1986-1988; for EFTA countries: averaged percentages from 1984-1987.

Source: James Foreman-Peck and Giovanni Federico, 'European Industrial Policy: An Overview', in: James Foreman-Peck and Giovanni Federico (eds.), 'Industrial Policy in Europe. A Twentieth Century Experience', Oxford: Oxford University Press (1999), p. 451.

As table 3.11 illustrates, focusing their support programs more strongly on high tech R & D in particular towards promising future industries, such as ICT or bio-technology, this issue gained increasing importance from the early 1980s onwards only in a few Western European countries. Denmark, the Netherlands and Finland were heading the ranking for average subsidies on R & D as a share of total industrial subsidies in the mid-1980s. These three countries were spending about one-sixth of their total industrial subsidies on research and development. The rest of Western Europe followed at a large distance and Belgium, Portugal and Luxembourg spent the least proportion of total industrial subsidies on R & D. On the one hand these data clearly demonstrate that "governments that provided lower industrial subsidy rates showed some slight tendency to emphasize research and development support in their total policy package." On the other hand, however, these data conceal the fact that at the same time, the total amount of R & D subsidies in relation to the total government expenditures in West Germany, the United Kingdom or in France had been much higher than for example in the Netherlands, which in turn only confirms the result that these countries had generally spent more for additional industrial subsidies.

Table 3.12: Total government expenditure on R & D in Western Europe and in the United States, 1980-2010 (in % of total government expenditure)

	United States	**France**	**Germany**	**United Kingdom**	**Netherlands**	**Finland**	**Italy**	**Austria**	**Belgium**
1980	3.15 (1981)	2.32	2.36	2.23	1.69	1.34	0.96	0.92 (1981)	0.99
1990	2.98	2.75	2.25	2.11	1.94	1.66	1.35	1.04	0.96
2000	2.49	1.86	1.76	1.84	1.83	2.03	1.39	1.19	1.15
2010	2.41	1.49	1.93	1.27	1.70	2.08	1.22	1.51	1.27

Source: European Commission, EUROSTAT (viewed 2013).

Taking into account the previous assumption that research and development support would have been a promising means to foster competition, technological innovations and industrial development, it is important to stress that – as shown in table 3.12 – with the exemption of West Germany, the United Kingdom and Belgium, all larger Western European countries

between 1980 and 1990 substantially increased government spending for R & D.[127] France led, followed by West Germany and the United Kingdom. Italy, Belgium and Austria spent the least. From the 1990s onwards until 2010, the proportion of R & D subsidies to government expenditures decreased remarkably in all the four major economies, even if West Germany in 2010 was still second best in Western Europe. The greatest step towards an industrial policy approach based on competition and R & D did Finland from the 1990s onwards.[128] From 1997 up to 2010, Finland headed the European ranking, and even Austria increased its proportion for R & D subsidies by more than 60 per cent. The greatest decline during this period from 1980 to 2010 experienced the British economy, which spent the second lowest rate on R & D in 2010, slightly more than Italy and Belgium, the two lowest spending countries in Western Europe. During this period and even before, the United States spent much more for R & D than all other Western European countries. This higher spending for R & D, aside from more favourable incentive structures in the United States and other even more important institutional factors, certainly represented an additional important explanatory reason for the American success during the 1990s and the continuing industrial world lead by the United States to the present day.

III.3 Transnational Perspectives of European Industrial Policy, 1973-1990

During the period from 1973 to the 1990s, the European Economic Community has been gradually enlarged from formerly six to fifteen member states. With the first Northern enlargement of the EEC in 1973, Denmark, Ireland, and the United Kingdom joined the European Communities. During the 1980s, the EEC was enlarged towards the South: Greece joined in 1981, Portugal and Spain followed in 1986. After the German reunification in October 1990, the EEC also came to include the former East Germany as a part of reunified Germany. In November 1993, when the Maastricht Treaty came into force, the European Union (EU) was formally established with 12 Member States, but already in 1995 with the second Northern enlargement, Austria, Finland and Sweden joined the newly established EU in 1995.

[127] For further information on the development of total government expenditure on R & D in Western Europe and in the United States from 1980 to 2010 including data for all years between 1980 and 2010, see as well the tables A-12, A-13 and A-14 in the appendix of the present paper.

[128] For the Finnish experience in the 1990s of how state investments in R & D and other policy measures transformed successfully Finland´s industrial structure within barely one decade from "one that was raw material-, energy-, capital- and scale intensive into one that is primarily knowledge-intensive", see Aiginger and Sieber (2005), 'Towards a Renewed Industrial Policy in Europe', pp. 97-120.

It is undeniable, that this deepening of the economic and political unification of Western Europe has to be considered at least as " an important part of western Europe´s post-Second World War success story." Firstly, it represented the consequent continuation of the EEC policies of the original "six" that were based on democratic political compromises balancing different national social and economic interests among the member countries and that were targeted on free competition and on the free movement of goods, services, and factors within the Community. Secondly, the gradual enlargement of the European Community had definitely stimulated economic development in Western Europe in general, and economic restructuring in particular due to increasing foreign trade flows and foreign direct investment.[129] Finally, the progressive economic integration of the peripheral economies with Western Europe´s core countries during this period had decisively contributed to further enhance the common process of catching up and convergence in Western Europe in terms of technological progress, labour productivity, general real income growth and social welfare.

However, it is doubtful whether this success story of European integration and unification might also have been the result of the implementation of supranational industrial policy initiatives of the European Communites. In practice, even from the mid-1970s onwards up until the early 1990s, national industrial policies, which remained strongly interventionist and rather reactive, prevailed and the rigorous pursuit of national interests largely prevented any supranational industrial policy of considerable importance. Only three realizations occurred after 1975: Firstly, some measures for crisis management for declining industries were implemented; secondly, several high-technology programs were devised, and thirdly, industrial policy aims were largely taken charge of by the Single Market Programme and by competition policy from 1985 onwards.

As demonstrated in chapter II.3 of the present paper, both the memorandums issued in 1967 and 1970, by the Italian Commissioner, Guido Colonna di Paliano were an attempt at implementing coordinated supranational industrial policies at the European Community level. However, even if no concrete activites resulted from both the memorandums, because the projects proposed by Colonna have been vetoed, it was not a complete failure, because it marked a new starting point of promising discussions between the member states in the subsequent years. Already in October 1972 a supportive declaration of the member-states

[129] For further information on the development of merchandise exports at constant prices in Western Europe, see tables A-15 and A-16 in the appendix of the present paper.

followed, in which the heads of the governments of the member states emphasized their willingness for industrial policy cooperation within the Community. The ensuing Council debate on industrial policy in December 1973 set out a timetable as well as a strategic guideline for a European technological and industrial policy program for the following next five years.[130]

However, the 1973 oil crisis and the subsequent deep recession of 1974-76 stopped the momentum and put an early end to those longer term ambitions. Instead, the political focus of the EEC turned exclusively to sectoral short-term measures to manage the restructuring of crisis ridden industries, particularly mining, steel, textiles and shipbuilding that were most severely affected by the heavy price shocks and the overall collapse in demand that followed the recession. These short-term measures were mainly based on state-aid control and at times commercial policy instruments, trying to alleviate the most immediate problems such as plant closures or rising unemployment, nevertheless, were powerless in preventing the ongoing dramatic decline in these industries. The most important initiatives of the Community occurred from March 1977 onwards in the steel sector within the framework of the Davignon Plan, named after the Commissioner for Industry at this time, Etienne Davignon. The measures of the Davignon Plan for the restructuring of the Western European steel industry, which were adopted by the EEC Commission in October 1977 included strict controls on pricing, capacity limitations, limitation of state aid, setting of quotas for imports from Japan and other major steel producers, and finally, a toughening of the surveillance mechanisms in order to balance capacities and expected demand. The implementation of these measures for rationalizing and re-stabilizing the EEC steel industry was managed by Davignon in cooperation with François-Xavier Ortoli (Commissioner for Economic Affairs) and Frans Andriessen (Commissioner for Competition Policy).

However, Davignon, who played a major role within the field of the elaboration of industrial policy strategies of the EEC between 1977 and 1985, was convinced of the necessity to provide European-wide solutions for the support of ailing industries in assistance or even instead of national initiatives. Moreover, in 1979 he claimed for supranational projects of the EEC to promote growth industries such as ICT or biotechnology, not at least because “opening up markets and pooling industrial capacity was necessary to reach the scale required by

[130] Council of the European Community, ‘Council Resolution of 17 December 1973 on Industrial Policy’, in: *Official Journal of the European Communites* (OJEC), 31.12.1973, No C 117/1, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:1973:117:0001:0014:EN:PDF (viewed on 5th May 2013).

international competition."[131] The most important high-technology programs that were implemented by the EEC from the mid-1980s onwards date back on his initiatives.

In 1984, a new framework for technological cooperation among the member states of the EEC was established with the "European Strategic Program on Research in Information Technology" (ESPRIT) including a series of integrated programs of information technology research, development projects and industrial technology transfer measures. This initiative, which focused particularly pre-competitive research, was funded jointly by industry and the Commission and managed by the Directorate General for Industry (DG III) of the European Commission. The first ESPRIT program ran from 1983 to 1988 but four other programs followed consecutively until 1998. In addition, other similar collaborative programs had been set up for example the "Basic Research in Industrial Technologies in Europe Programme" (BRITE) and the "Research and Development in Advanced Communications Technologies for Europe Programme (RACE). Both programs had been established in 1985. The 10-years RACE program was adopted by the European Council of Ministers to accelerate the deployment of advanced communications infrastructures and services, and was complemented by extensive European research in the related fields of information technology and telematics. The BRITE program had been established to encourage research into the development of new technologies, manufacturing processes and products in older industrial economic sectors. Renewed in 1988, it merged with European Research in Advanced Materials (EURAM), to become BRITE-EURAM. All these collaborative research programs were brought together by the Commission in a "Framework Programme for Research and Technological Development" to support and encourage research in the EEC/EU and which has continued to be the most important instrument of the European Commission in collaborative research among the member states until the present day. The rationale for these technological cooperations was, as Geoffrey Owen put it, "the belief that collaborative research, bringing together companies, universities and research institutes across Europe, would improve the quantity and the quality of European research and help European industry to catch up with its Japanese and American competitors."[132] The first "Framework Programme" was funded by the Commission with 3.75 billion € and ran from 1984 to 1988. Since then, the framework programmes up until

[131] Commission of the European Communities, 'The Community´s Industrial Policy', February 1979. Quoted from Owen (2012), 'Industrial Policy in Europe´, p. 21.

[132] Owen (2012), 'Industrial Policy in Europe´, p. 37.

Framework Programme 6 covered five-year periods, but the current Framework Programme 7 from 2007-2013 ran for seven years and is funded with 50.52 billion €.

It is obvious that the previous subordinated status of industrial policy within the total policy package of the EEC had gradually changed from the mid-1980s onwards when policies for competitiveness moved on the core of the political agenda of the Community. However, since industrial policy objectives were largely included in the European Single Market Programme launched by the European Commission in a 1985 white paper called "Completing the internal market", it seems that since then a new appraisal of European-wide industrial policy was developing. Paradoxically, industrial policy was incorporated for the first time in the European Treaties in 1986 (Single Act) and in 1992 (Maastricht Treaty), at a time when it underwent a decisive decline in general importance and was, as Karl Aiginger characterized the academic and political loss of reputation of industrial policy in the 1990s , "a dying breed".[133]

However, the White Paper of 1985 gave industrial policy at the Community level a major boost. Moreover, in 1990 the Commission published a communication entitled "Industrial Policy in an Open and Competitive Environment. Guidelines for a Community Approach", which was soon welcomed and supported by the member countries.[134] This communication in hindsight, has to be considered as a milestone in the history of EU industrial policy, "not only because of its novelty (it is the first EC document outlining a Community industrial policy approach), but also because it reflected a convergence of views and an implicit agreement on common principles between member states that have until now often followed rather different industrial policy approaches".[135] This communication also set up the main objectives for industrial policy of the Community which are still just as important and valid today: Greater openness of the world trading system, R & D policy, competition policy, social and employment policies, consumer protection, public health policy and environmental protection.[136] In accordance with a system

[133] Aiginger (2012), 'Systemic Industrial Policy', p. 9.

[134] Commission of the European Communities, 'Industrial Policy in an Open and Competitive Environment. Guidelines for a Community Approach', Communication for the Commission to the Council and to the European Parliament, Brussels (16 November 1990), http://aei.pitt.edu/5690/1/5690.pdf (viewed on 5th May 2013).

[135] Laurens Kuyper, 'A Policy for Competitiveness of European Industry', in: Michael Darmer (ed.), 'Industry and the European Union. Analysing policies for Business', Cheltenham (UK)/Northhampton (US): Edward Elgar Publishing (2000), p. 30.

of open and competitive markets, those policies shall be aimed – as defined in the Treaty of Maastricht – at "speeding up the adjustment of industry to structural changes, encouraging an environment favourable to initiative and to the development of undertakings throughout the Union, particularly small and medium-sized undertakings, encouraging an environment favourable to cooperation between undertakings, fostering better exploitation of the industrial potential of policies of innovation, research and technological development."[137]

The Maastricht Treaty establishing the European Community (EC) provided the legal basis for industrial policy initiatives by which the Commission can, firstly, coordinate the national activities of Member States and, secondly, propose and implement measures to improve the competitiveness of European industry and promote industrial development in general. However, the Commission must have the Council's unanimous support to conduct industrial policy operations.

IV Conclusion and Outlook

The earliest supranational industrial policy initiatives in Western Europe after WWII had been implemented within the institutional framework of the European Coal and Steel Community, so their legal basis was the Treaty of Paris (1951). The Treaty of Rome (1957) included only a very few elements of industrial policy at all. It was not until the Maastricht Treaty, signed in February 1992, that an actual title concerning industrial policy appeared in the Treaty of the European Union. From the early 1990s onwards, the EU had increasingly intensified its efforts to support and coordinate industrial development and structural adjustments in member states, and recently made new rapid progress since the beginning of the new millennium. Nevertheless, industrial policy at the Community level is still playing a rather subsidiary and coordinating role compared to national policies as EU industrial intervention had largely been carried out only by competition policy. However, the European Union already favoured the strategical shift towards a promising integrated industrial policy approach that on the one hand "emphasizes the need for cooperation and coordination of efforts between the European Commission and the

[136] European Parliament, 'General Principles of EU Industrial Policy', http://circa.europa.eu/irc/opoce/fact_sheets/info/data/policies/industrial/article_7274_en.htm (viewed on 5th May 2013).

[137] European Commission, 'The Maastricht Treaty. Provisions Amending the Treaty Establishing the European Economic Community with a View to Establishing the European Community', Title XIII: Industry, Article 130, Maastricht. 07 February 1992, http://www.eurotreaties.com/maastrichtec.pdf (viewed on 5th May 2013), p. 32 f.

Member States" and on the other hand "encompasses a full range of EU policies such as competition, trade, innovation or energy since they all have an impact on the competitiveness of industry."[138]

In May 2012, the European Commission hosted a Conference in Brussels with the programmatic title: "Mission Growth: Europe at the Lead of the New Industrial Revolution." While in his opening address President Barroso underlined that "an integrated industrial policy for the globalization era is at the heart of our growth strategy,"[139] the American economist and policy advisor Jeremy Rifkin presented his concept of a "Third Industrial Revolution" and its potential for creating competitive industries, sustainable growth and economic stability in the coming decades.[140] Behind the usual rhetoric exercises, a more consistent policy agenda emerged. Already in October 2010, the European Commission had launched a "flagship initiative" in order to booster industrial development within an ambitious "Europe 2020 strategy." The initiative included a program of industrial standardization, measures to facilitate credit access for Small and Medium Enterprises, more efficient transport, energy and communication infrastructures and sector-specific innovation strategies; all specifically for advanced manufacturing technologies.[141]

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[138] European Commission, 'Industrial Competitiveness. Industrial Policy', http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/index_en.htm (viewed on 5th May 2013). See also the European Competitiveness Report 2011: European Commission, 'Industrial Policy: Reinforcing Competitiveness, European Competitiveness Report 2011', Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2011) 642 final, Brussels (October 2011). It stated: "Improving the performance of the EU economy, in particular maintaining and reinforcing the competitiveness of European industry (…) requires close integration of all relevant policies. This applies first and foremost to the core EU policies that shape industrial competitiveness and their respective toolkits."(p. 127). Moreover, and most important, the European Commission put forward an integrated industrial policy approach within the framework of the "Europe 2020" strategy for smart, sustainable and inclusive growth. As one of seven promising "flagship initiatives", an integrated industrial policy for the globalisation era represents an important core aspect of this new growth strategy of the European Union "to improve the business environment, notably for SMEs, and to support the development of a strong and sustainable industrial base able to compete globally". See: European Commission (2010), 'Europe 2020', p. 4 f.

[139] José Manuel Durão Barroso, 'Mission Growth: Ensuring Europe's future through Growth and Stability', SPEECH/12/394, 29/05/2012 (http://europa.eu/rapid/press-release_SPEECH-12-394_en.htm, 27/12/2012), p. 5.

[140] Jeremy Rifkin, 'Beyond Austerity. A Sustainable Third Industrial Revolution Economic Growth Plan For the European Union', Keynote Speech for the Mission Growth Summit: Europe at the Lead of the New Industrial Revolution, hosted by The European Commission, May 29th 2012 (http://ec.europa.eu/enterprise/policies/innovation/files/mg-speech-rifkin_en.pdf, 27/12/2012).

[141] European Commission, 'An Integrated Industrial Policy for the Globalisation Era. Putting Competitiveness and Sustainability at Centre Stage', Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions (COM (2010) 614), Brussels,

The present crisis in the wake of the global financial turmoil provides evidence that economies based mainly upon services – such as those of Great Britain, Ireland or the United States – are more heavily under pressure than countries with a sound industrial foundation, such as Germany or France.[142] Even for the progress of knowledge-based economies, a complimentary industrial development seems to be crucial. However, the belief in the overall efficiency of market allocation has been shattered. The collapse of the financial sector has fairly demonstrated that market economies require a more rigorous level of regulation and coordination. Finally, the economic problems of Southern Europe have brought industrial policy back to the fore. There are reasons to assume that the foreign debt crisis is also the consequence of more severe and structural deficiencies of the real economy in these countries, such as weak infrastructures, backward technologies and an underdeveloped manufacturing sector. Experts therefore claim the need for a "New Marshall Plan" which – beyond short-term financial support – is supposed to implement long-term strategies of industrial growth in Greece, Spain or Italy.[143]

Hence there are good reasons to reconsider the historical trajectories of industrial policy in Europe in a long-term perspective. This paper provides unequivocal evidence that state industrial policy in Europe after 1945 had been always one of the most controversial policy fields and that its scopes and instruments differed greatly between countries and changed over time. Industrial policy was not a novel phenomenon of the post-war era. Beyond the immediate goals, it was part of what can be considered the economic culture of every country. National traditions, historical legacies and path-dependencies did play an important role and may explain the enormous differences between nations and regions in Europe, even when they had to face similar challenges.[144] However, for the period from 1945 to 1990, there are some overall results that can be drawn from: the paradigm shift towards an interventionist industrial policy approach implemented in most European countries after 1945, which persistently prevailed until the 1990s, fostered economic structural change and was partially very effective in supporting the high economic growth rates during the prosperity years, but had often led to an

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28/10/2010 (http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/files/communication_on_industrial_policy_en.pdf, 27/12/2012).

[142] Karl Aiginger (2012), 'Systemic Industrial Policy', p. 11.

[143] Grabas and Nützenadel (forthcoming), 'Introduction', p. 11. f.

[144] Ibid.

inefficient allocation of national economic resources in many countries in the longer run. The more important and effective factors that enhanced industrial productivity in the long run, were, firstly, industrial policies establishing national and/or regional promising effective incentive structures for the private sector, and secondly – as James Foreman-Peck recently put it –, industrial "policies encouraging openness to trade and investment, by creating an (international) environment favourable to competition, (innovation) and technology transfer". For Western Europe, it was "increasing trade and investment openness, largely, but not exclusively, under the heading of European integration."[145]

One last result, as a by-product of the present study, is that still more research on the economic impact of industrial policy is needed, because historical lessons on achievements and failures of industrial policies in Western Europe after WWII needs to be made fruitful for any current or future effective political action. This paper thus provides a starting point for further promising research in "rethinking industrial policy."[146] Further research, to which the present study will hopefully give a fresh impetus, will be, if not essential, then certainly more than helpful in achieving a better understanding of the tumultuous past and diversity of Europe. Last, but not least, it will also be helpful to understand any current and future attempts of government interventions for sustainable economic growth and recovery in Europe and beyond.

As economic crises and slumps were always reasons for state intervention in Western Europe after 1945, at the same time these economic crises always provoked a "rethinking" in terms of the suitability of industrial policy approaches, measures and instruments. The integrated and future oriented industrial policy approach of the "Systemic Industrial and Innovation Policy" (SIIP) can be considered as a perspicacious and profound outcome of this theoretical correlation, which fairly demonstrates that future effective industrial policy "has to start from the challenges revealed by globalisation and those in the financial crisis."[147] In a free and open market, further national and/or regional promising effective incentive structures for the private and the public sector has to be established and industrial policies have to be "based on research and education, and industrial policy merges with innovation policy. It has to encompass small as

[145] Foreman-Peck (forthcoming), 'European Industrial Policies', p. 22 f.

[146] See the homonymous policy brief by Philippe Aghion, Julian Boulanger and Elie Cohen, 'Rethinking Industrial Policy', *Bruegel Policy Brief* 2011/04, June 2011. [Policy Paper], (http://www.bruegel.org/publications/ publication-detail/ publication/566-rethinking-industrial-policy/).

[147] Aiginger (2012), 'Systemic Industrial Policy', p. 11 f.

well as large firms, and promotes close relations between firms and universities and cooperation between firms and universities (clusters)."[148] This integrated industrial policy approach, based on strong cooperation and coordination between the European Commission and the Member States and which encompasses competition, trade, innovation, education or energy policies, needs to be translated and implemented in concrete political measures and instruments both at national and EU level for stimulating industrial productivity and modernization, economic development and social and ecological sustainability.

[148] Ibid.

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GGDC, Total Economy Database.

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VI Appendix

Table A-1: Unemployment rates in Western Europe and in the United States, 1950-1973 (in % of labour force)

	1950	**1960**	**1973**	**1950-1973**
Belgium	5.0	3.3	2.4	**3.0**
France	2.0	1.7	2.7	**2.0**
West Germany	8.2	1.1	1.0	**2.5**
Ireland	4.1	5.6	5.7	**n.a**
Italy	6.9	3.9	6.2	**5.5**
Netherlands	2.8	1.2	3.0	**2.2**
Portugal	2.8	2.2	2.5	**2.5**
Spain	1.5	1.0	2.5	**2.9**
Sweden	1.7	1.7	2.5	**1.8**
United Kingdom	2.5	2.2	2.2	**2.8**
European average	3.8	2.4	3.1	**2.6**
United States	5.2	5.4	4.8	**4.6**

Source: For the years 1950, 1960 and 1973 see Angus Maddison, 'Macroeconomic accounts for European countries', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), p. 43; for the averaged annual growth rates see Angus Maddison, ' The World Economy. A Millennial Perspective', OECD: Development Centre Studies (2001), p. 134.

Table A-2: Inflation, compound annual growth rates of changes in consumer price index in Western Europe and in the United States, 1950-1973

	1950-1973
Belgium	2.9
Finland	5.6
France	5.0
Germany	2.7
Ireland	4.3
Italy	3.9
Netherlands	4.1
Spain	4.6

Sweden	4.7
United Kingdom	4.6
European average	**4.3**
United States	2.7

Source: Angus Maddison, 'The World Economy. A Millennial Perspective', OECD: Development Centre Studies (2001), p. 134.

Table A-3: Labour productivity (GDP per man-hour in US $=1990) and averaged annual rates of growth of labour productivity in Western Europe, 1950-1973

	1950	**1960**	**1973**	**1950-1973**
Belgium	6.06	8.26	16.53	4.5
France	5.65	9.03	17.77	5.1
West Germany	4.37	8.65	16.64	6.0
Ireland	3.80	5.48	10.06	4.3
Italy	4.28	6.70	15.58	5.8
Netherlands	6.50	9.78	19.02	4.8
Portugal	2.58	n.a.	9.86	6.0
Spain	2.60	n.a.	10.86	**6.4**
Sweden	7.08	9.86	18.02	4.1
United Kingdom	7.86	9.69	15.92	**3.1**
European average				**5.0**
United States	12.66	16.28	23.45	**2.7**

Source: Angus Maddison, 'Macroeconomic accounts for European countries', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), p. 44.

Table A-4: Relative levels of labour productivity in Western Europe compared to the United States, 1950-1992 (US-level = 100 in year specified)

	1950	1973
Belgium	48	70
France	45	76
West Germany	35	71
Ireland	30	43
Italy	34	66
Netherlands	51	81
Portugal	20	42
Spain	21	46
Sweden	56	77
United Kingdom	62	68
European average	40	64

Source: Angus Maddison, 'Macroeconomic accounts for European countries', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), p.45.

Table A-5: Value of merchandise exports at constant prices and rate of growth in volume of merchandise exports in Western Europe and in the United States, 1950-1973 (in million US $=1990 and in %)

	1950	1973	1950-1973
Austria	1.348	13.899	10.7
Belgium	8.182	61.764	9.2
Denmark	3.579	16.568	6.9
Finland	3.186	15.641	7.2
France	16.848	104.161	8.2
West Germany	13.179	194.171	12.4
Italy	5.846	72.749	11.6
Netherlands	7.411	71.522	10.4
Norway	2.301	11.687	7.3
Spain	2.018	15.295	9.2
Sweden	7.366	34.431	6.9
Switzerland	6.493	38.972	8.1
United Kingdom	39.348	94.670	3.9

United States	43.114	174.548	6.3

Source: Angus Maddison, 'The World Economy. A Millennial Perspective', OECD: Development Centre Studies (2001), p. 361.

Table A-6 (2.3): Sectoral employment shares in Western Europe, 1950

	Agriculture	Industry	Services
Belgium	12.2	48.9	38.9
UK	5.3	48.8	45.9
Switzerland	16.5	46.6	36.9
West Germany	23.2	42.9	33.9
Sweden	2.3	40.9	38.8
Netherlands	17.8	38.4	43.8
Austria	32.3	37.1	30.6
Norway	25.9	36.9	37.4
Denmark	25.1	33.3	41.6
Italy	42.2	32.1	25.7
France	31.5	31.8	36.7
Finland	46.0	27.7	26.3
Portugal	48.4	25.1	26.5
Spain	48.8	25.1	26.1
Ireland	39.6	24.4	36.0
Greece	48.2	19.3	32.5

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 316.

Table A-7: Sectoral employment shares in Western Europe, 1974

	Agriculture	Industry	Services
Austria	13.0	44.8	42.2
Belgium	3.8	41.0	55.2
Denmark	9.6	32.3	58.1
Finland	16.3	36.1	47.6
France	10.6	39.4	50.0
West Germany	7.0	46.7	46.3
Greece	36.0	27.8	36.2
Ireland	22.8	32.6	44.6
Italy	17.5	39.3	43.2
Netherlands	5.7	35.9	58.4
Norway	10.6	34.3	55.1
Portugal	34.9	33.8	31.3
Spain	23.2	37.2	39.6
Sweden	6.7	37.0	56.3
Switzerland	7.5	44.3	48.2
UK	2.8	42.0	55.2

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 316.

Table A-8: Sectoral employment shares in Western Europe, 2004

	Agriculture	Industry	Services
Austria	5.0	27.8	67.2
Belgium	2.0	24.9	73.1
Denmark	3.1	23.7	73.2
Finland	4.9	25.7	69.4
France	3.5	23.0	73.5
Germany	2.4	31.0	66.6
Greece	12.6	22.5	64.9
Ireland	6.4	27.7	65.9
Italy	4.5	31.0	64.5

Netherlands	3.0	20.3	76.7
Norway	3.5	20.9	75.6
Portugal	12.1	31.4	56.5
Spain	5.5	30.5	64.0
Sweden	2.1	22.6	75.3
Switzerland	3.7	23.7	72.6
UK	1.3	22.3	76.4

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 316.

Table A-9: Labour productivity (GDP per man-hour in US$=1990) and averaged annual rate of growth of labour productivity in Western Europe, 1973-1992

	1973	**1990**	**1992**	**1973-1992**
Belgium	16.53	26.81	28.55	2.9
France	17.77	28.93	29.62	2.7
West Germany	16.64	26.49	27.55	2.7
Ireland	10.06	20.36	n.a.	4.1 (1991)
Italy	15.58	23.95	24.95	2.4
Netherlands	19.02	28.93	28.80	2.2
Portugal	9.86	13.19	n.a.	1.7 (1973-90)
Spain	10.86	18.95	20.22	3.3
Sweden	18.02	22.49	23.11	1.3
United Kingdom	15.92	22.60	23.98	2.2
European average				2.6
United States	23.45	28.55	29.10	1.1

Source: Angus Maddison, 'Macroeconomic accounts for European countries', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative aspects of post-war European economic growth', Cambridge: Cambridge University Press (1996), p. 44.

Table A-10: Growth rates of manufacturing output in Western Europe and in the United States, 1973-1990 (in %)

	United Kingdom	France	West Germany	Italy	Netherlands	Denmark	Sweden	Spain	United States
1973-74	-1.19	3.22	-0.98	8.44	3.74	1.55	5.40	11.66	-4.78
1974-75	-6.98	-2.06	-4.72	-4.92	-10.35	-2.41	0.33	4.39	-7.45
1975-76	2.00	7.06	7.65	14.40	6.29	4.79	0.02	7.49	9.70
1976-77	1.86	3.72	1.85	3.60	-4.60	0.44	-5.73	6.10	7.40
1977-78	0.48	2.16	1.90	5.43	3.00	-0.28	-2.70	4.38	4.50
1978-79	-0.18	2.41	4.96	11.00	3.20	5.67	6.43	2.53	2.52
1979-80	-8.68	-0.67	-1.91	5.44	0.50	4.51	0.39	4.94	-5.38
1980-81	-6.00	-0.69	-1.00	-1.67	0.00	-3.17	-2.62	-2.46	0.7
1981-82	0.21	0.87	-3.50	-0.42	-1.30	1.59	0.33	1.77	-6.48
1982-83	2.87	0.41	1.35	0.85	1.70	6.72	5.81	2.36	6.23
1983-84	3.83	-1.83	2.93	4.40	5.80	4.68	7.32	0.57	11.60
1984-85	2.67	-0.39	3.45	3.44	2.60	3.17	1.90	1.85	3.56
1985-86	1.30	-0.17	1.41	2.82	2.44	0.00	1.20	5.10	3.10
1986-87	5.23	-0.92	-1.95	4.13	1.36	-4.10	2.46	5.16	6.07
1987-88	7.03	5.96	3.16	7.31	3.81	1.58	3.06	4.30	5.20
1988-89	4.48	5.16	3.43	3.82	4.53	1.17	1.17	3.98	0.94
1989-90	-0.20	1.85	5.48	2.10	3.30	-1.03	-0.65	1.44	0.39
1973-1990	**0.43**	**1.50**	**1.33**	**4.04**	**1.45**	**1.42**	**1.36**	**3.81**	**2.03**

Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Table A-11: Growth of GDP, industrial GDP (IDP) and manufacturing GDP (MGDP) in Western Europe and in the United States, 1950-1990 (in %)

	1950-1973	1973-1990	1950-1990
United Kingdom			
GDP	76	37	141
IGDP	85	n.a.	120
MGDP	105	8	120
France			
GDP	190	52	342
IGDP	270	n.a.	379
MGDP	322	29	444
West Germany			
GDP	290	47	472
IGDP	349	n.a.	440
MGDP	449	25	587
Italy			
GDP	218	60	409
IGDP	344	n.a.	583
MGDP	390	96	860

Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Table A-11 (continued): Growth of GDP, industrial GDP (IDP) and manufacturing GDP (MGDP) in Western Europe and in the United States, 1950-1990 (in %)

	1950-1973	1973-1990	1950-1990
Netherlands			
GDP	198	43	326
IGDP	317	n.a.	363
MGDP	367	28	497
Denmark			
GDP	162	43	275
IGDP	186	n.a.	264
MGDP	171	27	245
Sweden			
GDP	135	43	237
IGDP	180	n.a.	263
MGDP	200	26	279
Spain			
GDP	320	76	640
IGDP	650	n.a.	1324
MGDP	728	89	1466
United States			
GDP	129	51	248
IGDP	126	n.a.	190
MGDP	141	41	239

Source: Own calculations based on Bart van Ark, ' Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Table A-12: Total government expenditure on R & D in Western Europe and in the United States, 1980-1990 (in % of total government expenditure)

	United States	France	Germany	United Kingdom	Netherlands	Finland	Italy	Austria	Belgium
1980	n.a.	2.32	2.36	2.23	1.69	1.34	0.96	n.a.	0.99
1981	3.15	2.56	2.31	2.59	1.62	1.34	1.24	0.92	0.88
1982	3.03	2.54	2.42	2.47	1.68	1.37	1.15	0.94	0.93
1983	2.98	2.63	2.34	2.45	1.65	1.33	1.19	0.96	0.92
1984	3.14	2.65	2.30	2.44	1.62	1.36	1.28	1.00	0.95
1985	3.24	2.71	2.42	2.35	1.55	1.43	1.28	0.99	0.99
1986	3.23	2.56	2.37	2.45	1.68	1.48	1.39	1.01	0.94
1987	3.28	2.65	2.36	2.40	1.82	1.51	1.48	0.99	0.94
1988	3.23	2.62	2.27	2.33	1.76	1.55	1.55	1.03	0.92
1989	3.16	2.66	2.34	2.29	1.77	1.65	1.38	1.08	1.02
1990	2.98	2.75	2.25	2.11	1.94	1.66	1.35	1.04	0.96

Source: European Commission, EUROSTAT (viewed 2013).

Table A-13: Total government expenditure on R & D in Western Europe and in the United States, 1990-2000 (in % of total government expenditure)

	United States	Finland	France	United Kingdom	Netherlands	Germany	Italy	Austria	Belgium
1990	2.98	1.66	2.75	2.11	1.94	2.25	1.35	1.04	0.96
1991	2.87	1.64	2.61	1.96	1.77	2.12	1.35	1.15	0.95
1992	2.81	1.62	2.38	1.81	1.67	2.04	1.40	1.15	0.91
1993	2.77	1.62	2.21	1.83	1.62	1.96	1.19	1.18	0.95
1994	2.61	1.58	2.18	1.69	1.63	1.86	1.13	1.23	0.96
1995	2.52	1.57	2.03	1.75	1.51	1.60	1.07	1.17	0.98
1996	2.42	1.58	1.96	1.74	1.63	1.79	1.08	1.11	1.03
1997	2.44	1.95	1.83	1.76	1.74	1.74	1.18	1.15	1.08
1998	2.43	2.02	1.82	1.64	1.70	1.70	1.14	1.17	1.12
1999	2.44	2.02	1.79	1.71	1.76	1.69	1.12	1.20	1.15
2000	2.49	2.03	1.86	1.84	1.83	1.76	1.39	1.19	1.15

Source: European Commission, EUROSTAT (viewed 2013).

Table A-14: Total government expenditure on R & D in Western Europe and in the United States, 2000-2010 (in % of total government expenditure)

	United States	Finland	Germany	Netherlands	Austria	France	United Kingdom	Belgium	Italy
2000	2.49	2.03	1.76	1.83	1.19	1.86	1.84	1.15	1.39
2001	2.56	2.02	1.64	1.76	1.28	1.92	1.65	1.19	1.41
2002	2.71	1.97	1.64	1.78	1.31	1.90	1.83	1.20	n.a.
2003	2.86	1.98	1.64	1.75	1.26	1.86	1.75	1.19	n.a.
2004	2.97	2.01	1.64	1.78	1.22	1.80	1.61	1.20	n.a.
2005	2.88	2.04	1.65	1.77	1.32	1.81	1.52	1.14	1.39
2006	2.84	2.08	1.68	1.76	1.33	1.53	1.50	1.26	1.26
2007	2.76	2.04	1.77	1.72	1.33	1.42	1.49	1.25	1.34
2008	2.6	1.99	1.81	1.71	1.42	1.65	1.36	1.36	1.30
2009	2.76	1.99	1.90	1.68	1.48	1.64	1.35	1.25	1.24
2010	2.41	2.08	1.93	1.70	1.51	1.49	1.27	1.27	1.22

Source: European Commission, EUROSTAT (viewed 2013).

Table A-15: Value of merchandise exports at constant prices in Western Europe and in the United States, 1950-1998 (in million US $=1990)

	1950	1973	1998
Austria	1.348	13.899	69.519
Belgium	8.182	61.764	175.503
Denmark	3.579	16.568	49.121
Finland	3.186	15.641	48.697
France	16.848	104.161	329.597
West Germany	13.179	194.171	567.372
Italy	5.846	72.749	267.378
Netherlands	7.411	71.522	194.430
Norway	2.301	11.687	58.141
Spain	2.018	15.295	131.621
Sweden	7.366	34.431	103.341
Switzerland	6.493	38.972	78.863
United Kingdom	39.348	94.670	277.243

United States	43.114	174.548	745.330

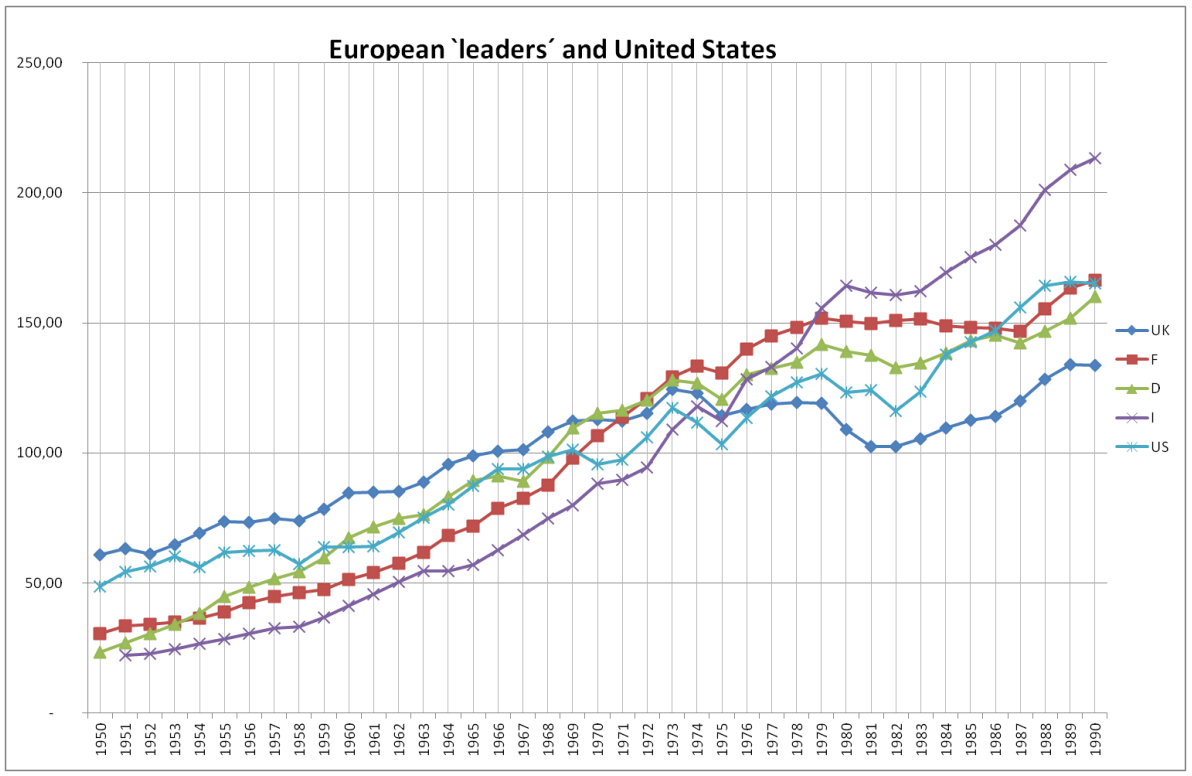
Source: Angus Maddison, 'The World Economy. A Millennial Perspective', OECD: Development Centre Studies (2001), p. 361.

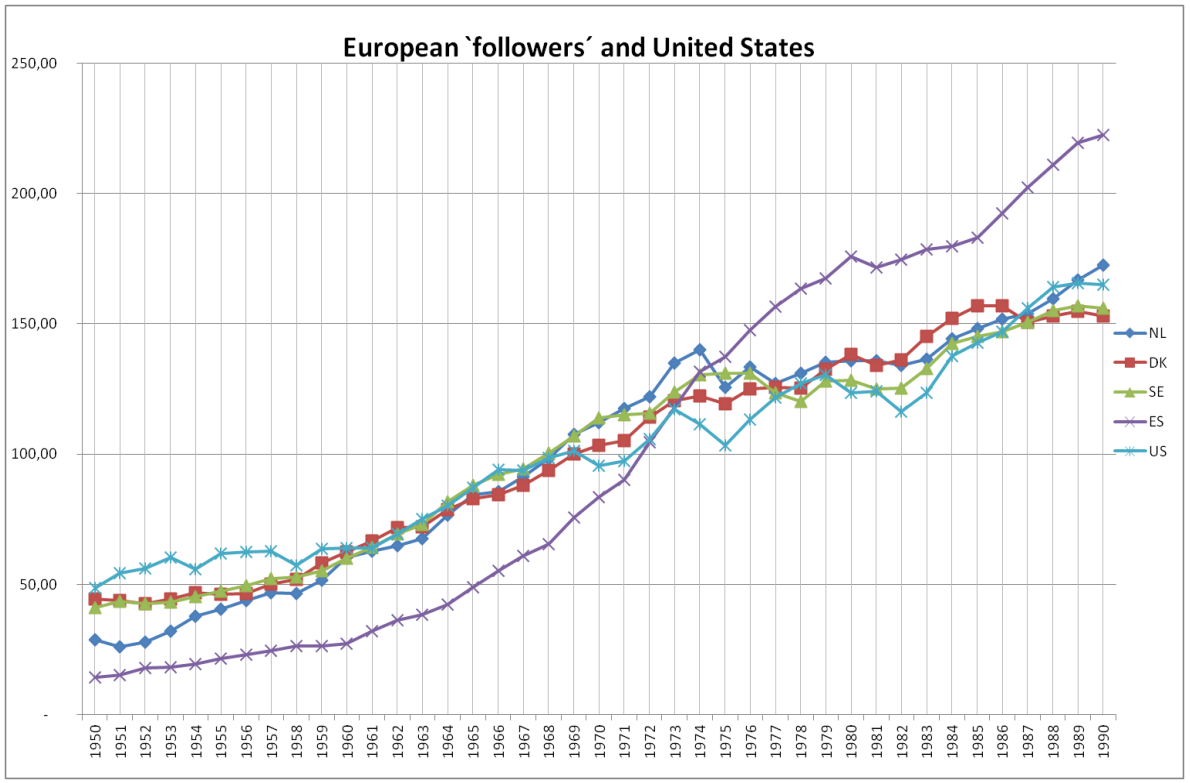
Table A-16: Rate of growth in volume of merchandise exports in selected Western European countries, in the United States and in Japan, 1950-1992 (compound annual growth rates)

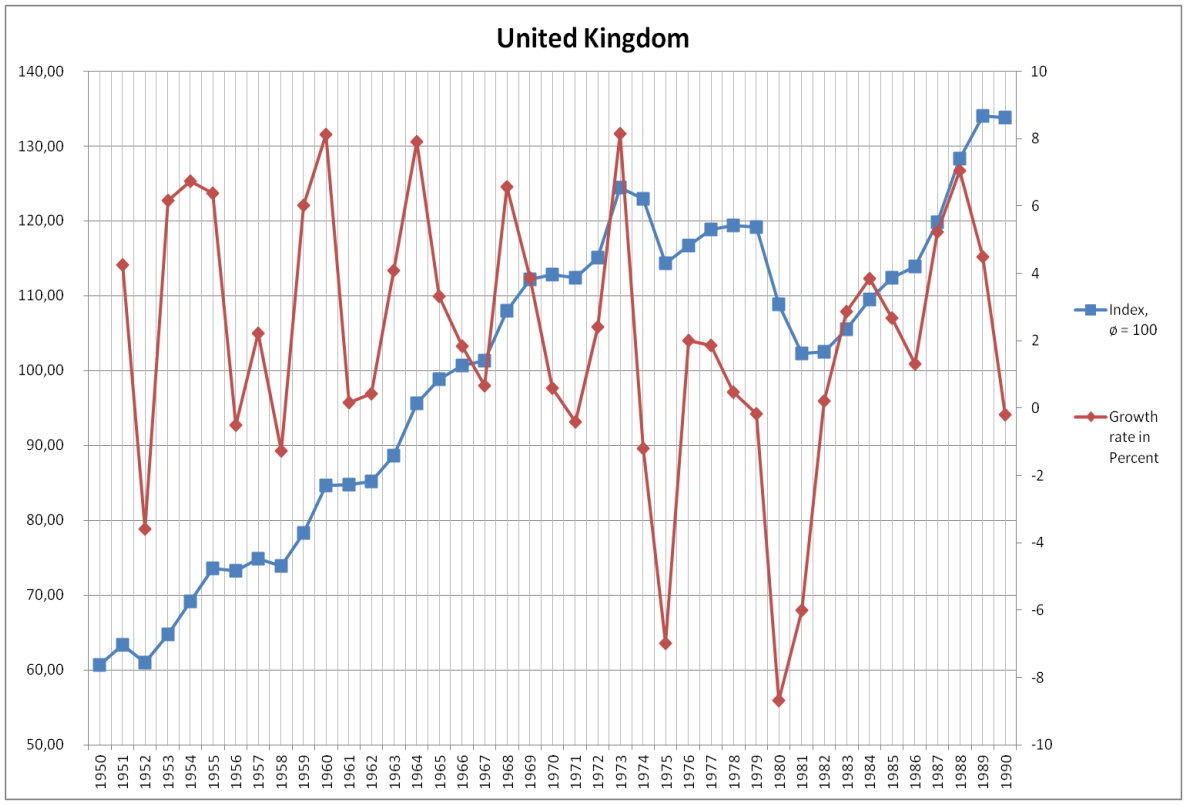
	1950-73	**1973-92**
Austria	10.7	6.5
Belgium	9.2	3.7
Denmark	6.9	4.7
Finland	7.2	2.8
France	8.2	4.4
West Germany	12.4	4.0
Greece	11.9	6.2
Ireland	6.8	8.8
Italy	11.6	4.8
Netherlands	10.4	3.7
Norway	7.3	6.7
Portugal	5.7	8.5
Spain	9.2	8.0
Sweden	6.9	2.7
Switzerland	8.1	2.7
United Kingdom	3.9	3.9
United States	6.3	5.1
Japan	15.4	6.2
World	7.9	5.1

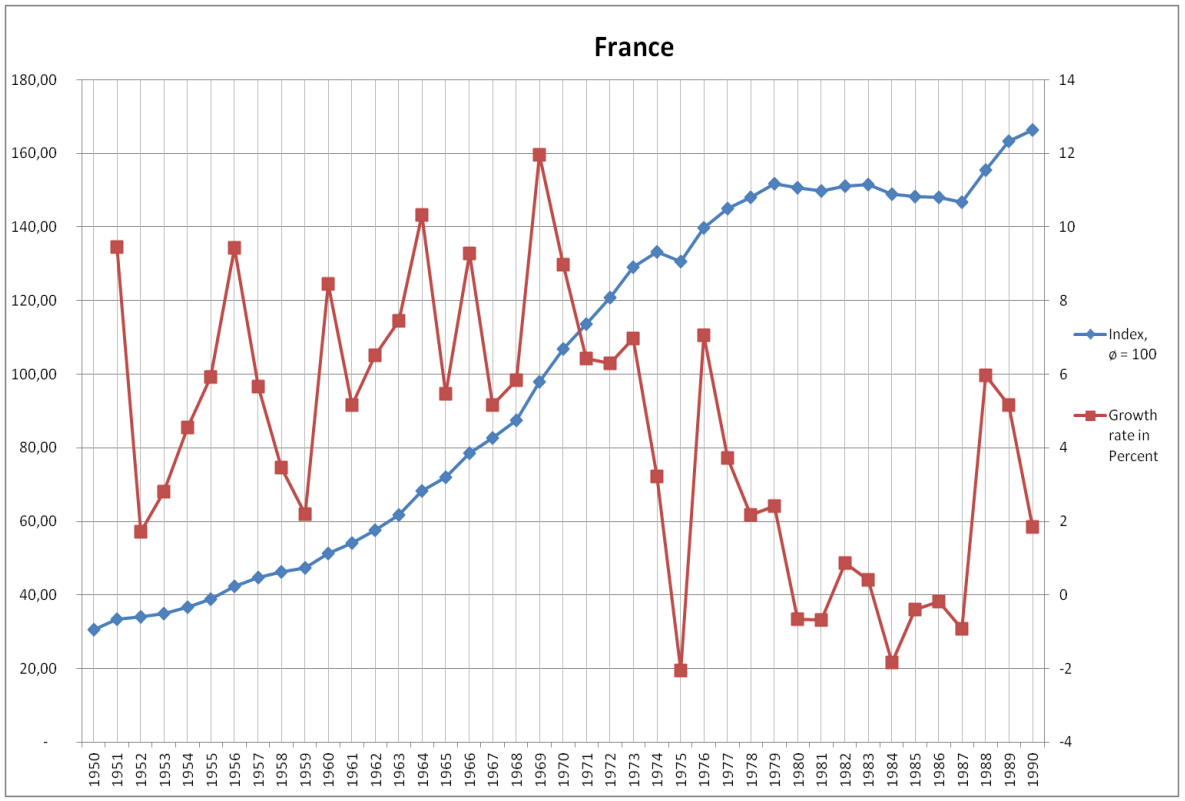
Source: Angus Maddison, 'Monitoring the World Economy 1820-1992', Paris: OECD Publishing (1995), p. 74.

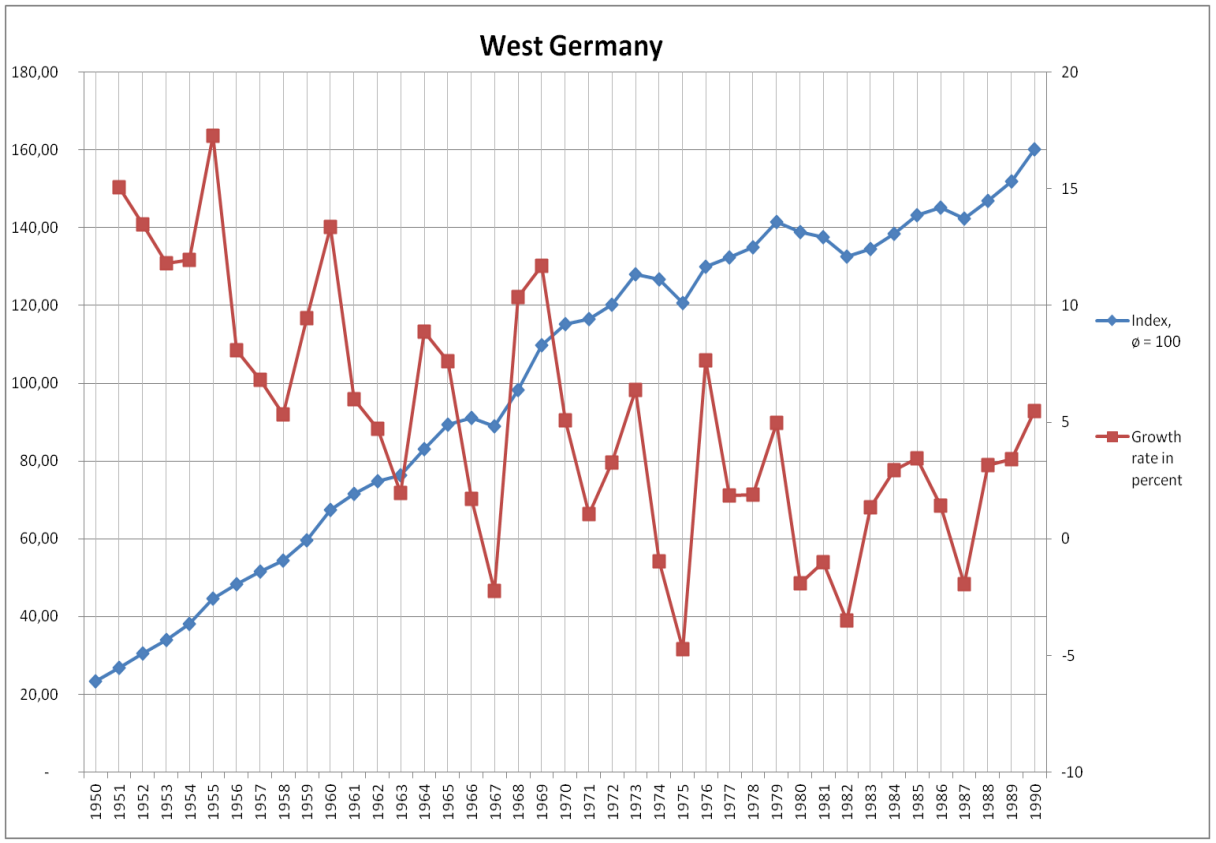
Figure A-1: Development in manufacturing output for selected countries in Western Europe and in the United States, 1950-1990 (Index = Average level of manufacturing output, 1950-1990 and annual growth rates)

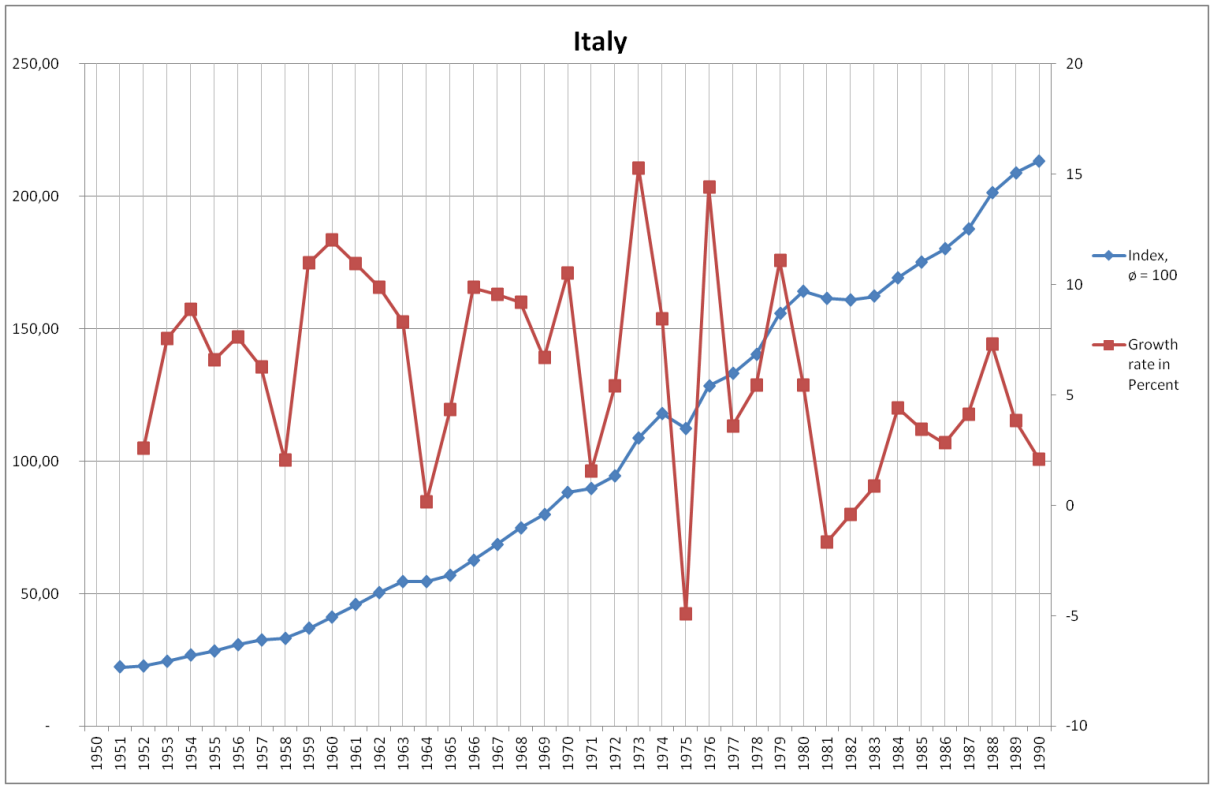


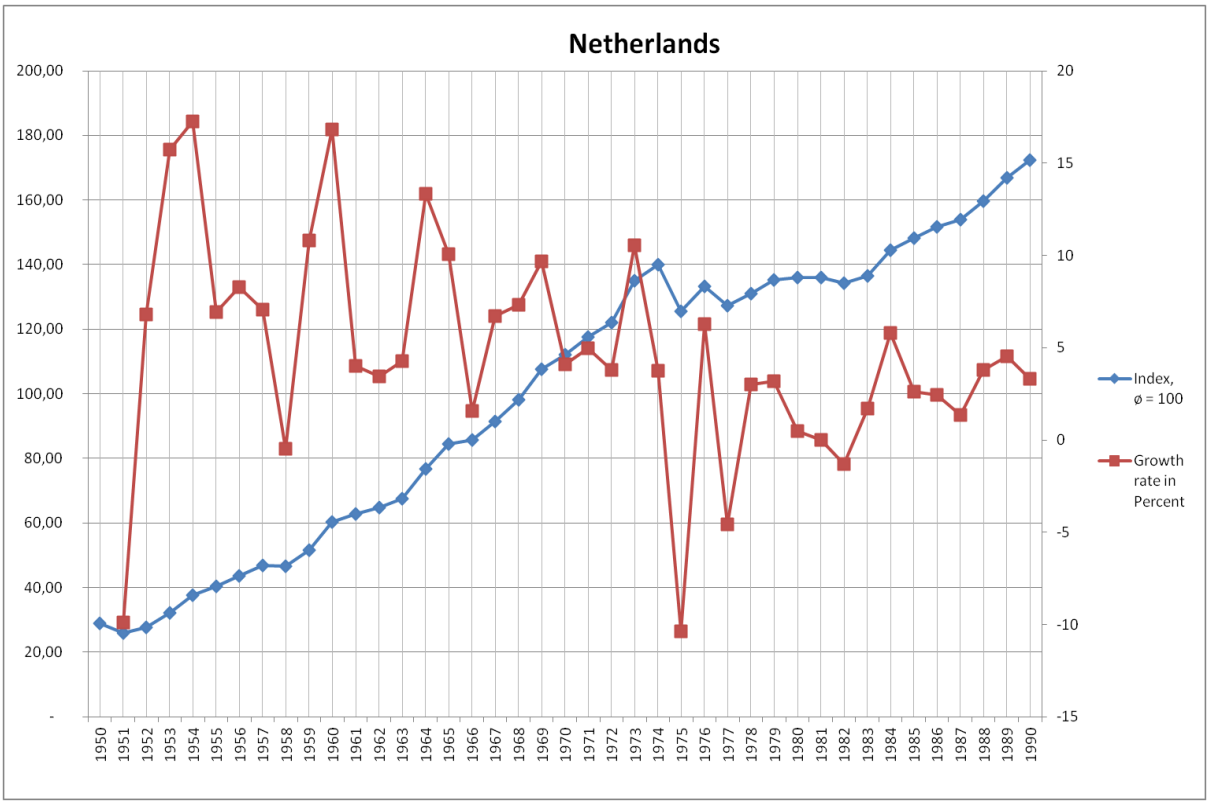


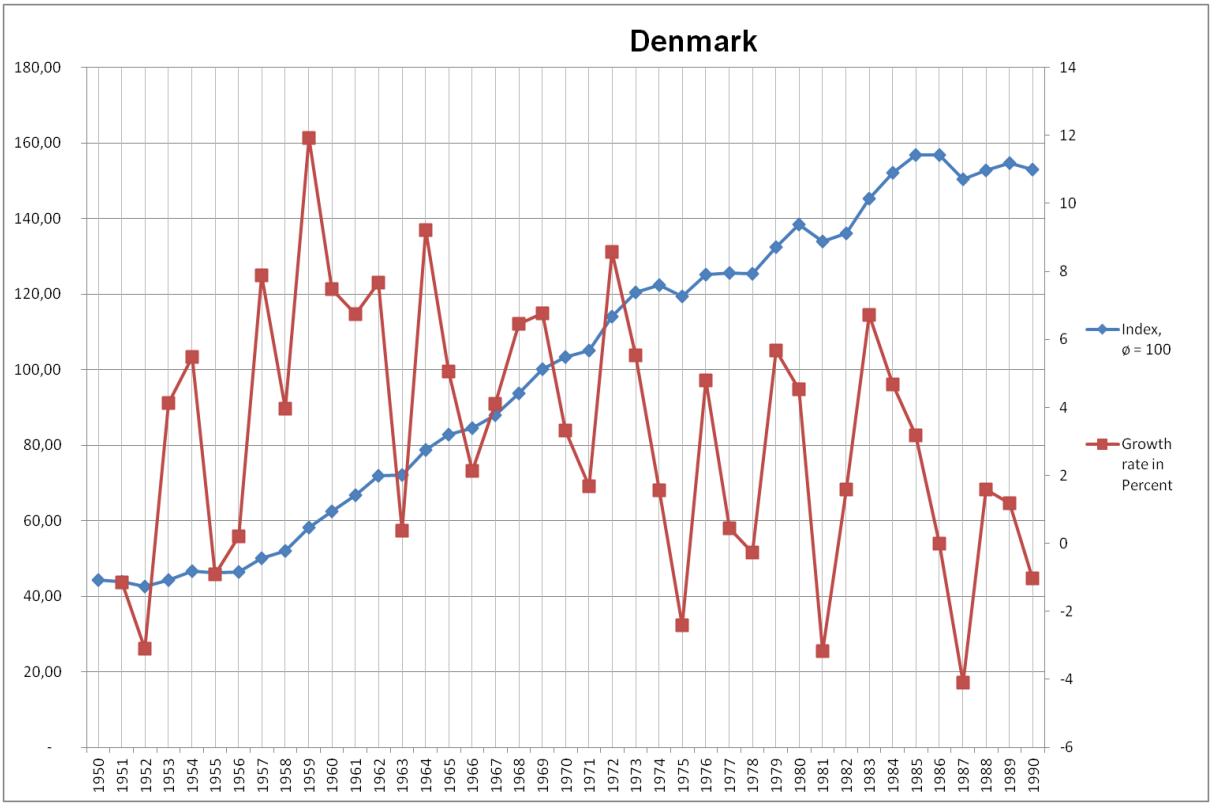

United Kingdom
140,00
130,00
120,00
110,00
100,00
90,00
80,00
70,00
60,00
50,00
10
8
6
4
2
0
-2
-4
-6
-8
-10
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent

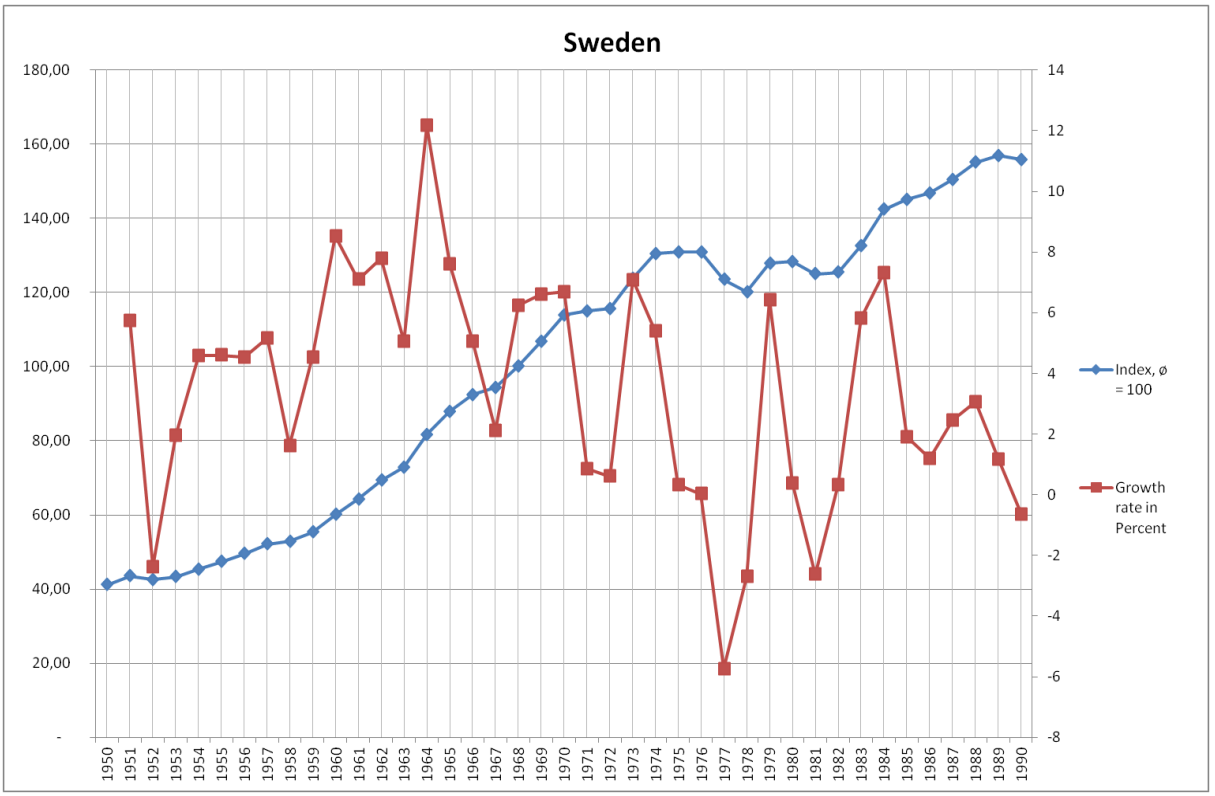

France
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
-
14
12
10
8
6
4
2
0
-2
-4
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent

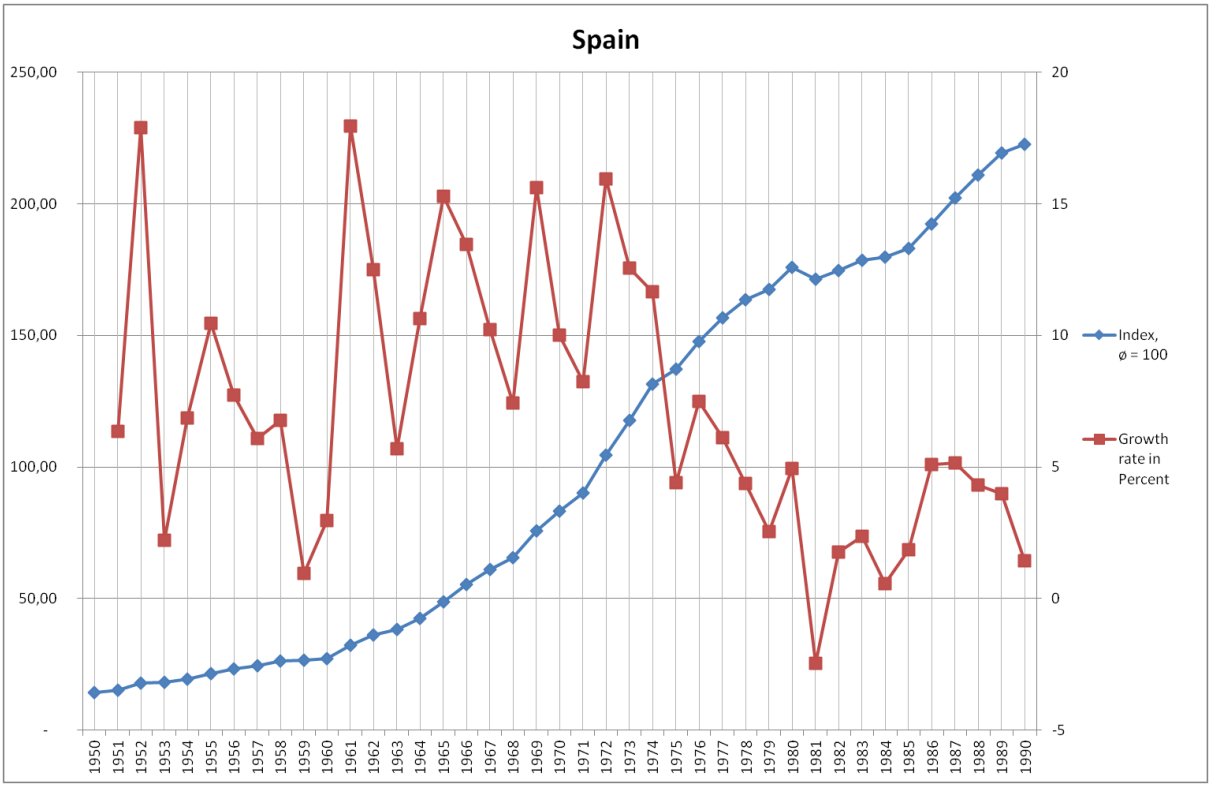

West Germany
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
-
20
15
10
5
0
-5
-10
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in percent

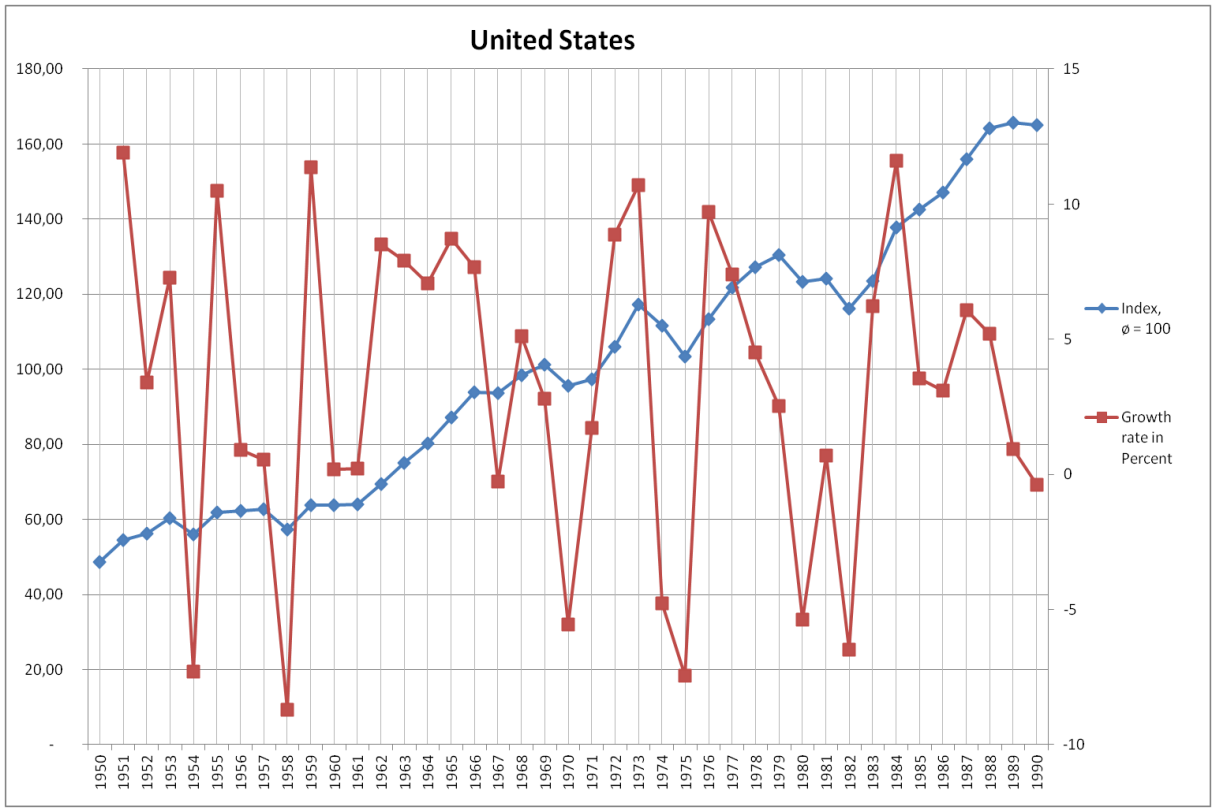

Italy
250,00
200,00
150,00
100,00
50,00
-
20
15
10
5
0
-5
-10
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent


Netherlands
200,00
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
-
20
15
10
5
0
-5
-10
-15
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent


Denmark
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
-
14
12
10
8
6
4
2
0
-2
-4
-6
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent


Sweden
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
-
14
12
10
8
6
4
2
0
-2
-4
-6
-8
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent


Spain
250,00
200,00
150,00
100,00
50,00
-
20
15
10
5
0
-5
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990
Index, ø = 100
Growth rate in Percent



Source: Own calculations based on Bart van Ark, ' Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Table A-17: Development in manufacturing output for selected countries in Western Europe and in the United States, 1950-1990 (Nominal output, Index = Average level of manufacturing output, 1950-1973, 1973-1990 and 1950-1990, annual growth rates and compound annual growth rates)

United Kingdom

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	42020	60,72		68,82	
1951	43810	63,30	4,26	71,75	
1952	42234	61,03	-3,60	69,17	
1953	44841	64,79	6,17	73,44	
1954	47856	69,15	6,72	78,38	
1955	50910	73,56	6,38	83,38	
1956	50657	73,20	-0,50	82,97	
1957	51786	74,83	2,23	84,82	
1958	51124	73,87	-1,28	83,73	
1959	54198	78,32	6,01	88,77	
1960	58594	84,67	8,11	95,97	
1961	58692	84,81	0,17	96,13	
1962	58945	85,17	0,43	96,54	
1963	61357	88,66	4,09	100,49	
1964	66201	95,66	7,89	108,43	
1965	68399	98,84	3,32	112,03	
1966	69648	100,64	1,83	114,07	
1967	70117	101,32	0,67	114,84	
1968	74724	107,97	6,57	122,39	
1969	77613	112,15	3,87	127,12	
1970	78081	112,83	0,60	127,88	
1971	77769	112,37	-0,40	127,37	
1972	79643	115,08	2,41	130,44	
1973	86124	124,45	8,14	141,06	106,31
1974	85095	122,96	-1,19		105,04
1975	79158	114,38	-6,98		97,71
1976	80741	116,67	2,00		99,67
1977	82245	118,84	1,86		101,52
1978	82641	119,41	0,48		102,01
1979	82490	119,20	-0,18		101,83
1980	75333	108,85	-8,68		92,99
1981	70813	102,32	-6,00		87,41
1982	70964	102,54	0,21		87,60
1983	72998	105,48	2,87		90,11
1984	75800	109,53	3,84		93,57
1985	77823	112,45	2,67		96,07
1986	78835	113,92	1,30		97,31
1987	82959	119,87	5,23		102,41
1988	88796	128,31	7,04		109,61
1989	92778	134,06	4,48		114,53
1990	92592	133,79	-0,20		114,30
Index; ø = 100		69204,98			
Compound annual growth rates					

1950-1973	3,17
1973-1990	0,43
1950-1990	1,99

France

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	137838	30,57		46,69	
1951	150883	33,47	9,46	51,11	
1952	153458	34,04	1,71	51,99	
1953	157769	34,99	2,81	53,45	
1954	164963	36,59	4,56	55,88	
1955	174733	38,76	5,92	59,19	
1956	191221	42,41	9,44	64,78	
1957	202026	44,81	5,65	68,44	
1958	209024	46,36	3,46	70,81	
1959	213626	47,38	2,20	72,37	
1960	231670	51,39	8,45	78,48	
1961	243616	54,04	5,16	82,53	
1962	259461	57,55	6,50	87,90	
1963	278795	61,84	7,45	94,45	
1964	307582	68,22	10,33	104,20	
1965	324366	71,95	5,46	109,88	
1966	354451	78,62	9,28	120,07	
1967	372709	82,67	5,15	126,26	
1968	394499	87,50	5,85	133,64	
1969	441671	97,97	11,96	149,62	
1970	481283	106,75	8,97	163,04	
1971	512181	113,61	6,42	173,51	
1972	544431	120,76	6,30	184,43	
1973	582366	129,17	6,97	197,28	87,48
1974	601105	133,33	3,22		90,30
1975	588750	130,59	-2,06		88,44
1976	630296	139,80	7,06		94,69
1977	653759	145,01	3,72		98,21
1978	667908	148,15	2,16		100,34
1979	684036	151,72	2,41		102,76
1980	679520	150,72	-0,66		102,08
1981	674873	149,69	-0,68		101,38
1982	680762	151,00	0,87		102,27
1983	683532	151,61	0,41		102,68
1984	671038	148,84	-1,83		100,81
1985	668425	148,26	-0,39		100,41
1986	667256	148,00	-0,17		100,24
1987	661095	146,64	-0,92		99,31
1988	700521	155,38	5,96		105,23
1989	736640	163,39	5,16		110,66
1990	750295	166,42	1,85		112,71
Index; ø = 100		450839,83			
Compound annual growth rates					
1950-1973		6,47			
1973-1990		1,50			
1950-1990		4,33			

West Germany

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	94288	23,32		32,13	
1951	108505	26,84	15,08	36,97	
1952	123118	30,45	13,47	41,95	
1953	137643	34,05	11,80	46,90	
1954	154118	38,12	11,97	52,52	
1955	180749	44,71	17,28	61,59	
1956	195347	48,32	8,08	66,57	
1957	208671	51,62	6,82	71,11	
1958	219825	54,37	5,35	74,91	
1959	240623	59,52	9,46	81,99	
1960	272780	67,47	13,36	92,95	
1961	289120	71,51	5,99	98,52	
1962	302790	74,90	4,73	103,18	
1963	308770	76,37	1,97	105,22	
1964	336160	83,15	8,87	114,55	
1965	361750	89,48	7,61	123,27	
1966	368000	91,03	1,73	125,40	
1967	359770	88,99	-2,24	122,60	
1968	397070	98,22	10,37	135,31	
1969	443490	109,70	11,69	151,12	
1970	466000	115,27	5,08	158,79	
1971	470920	116,48	1,06	160,47	
1972	486250	120,27	3,26	165,69	
1973	517310	127,96	6,39	176,28	92,65
1974	512250	126,71	-0,98		91,75
1975	488080	120,73	-4,72		87,42
1976	525440	129,97	7,65		94,11
1977	535130	132,37	1,84		95,85
1978	545330	134,89	1,91		97,67
1979	572390	141,58	4,96		102,52
1980	561430	138,87	-1,91		100,56
1981	555850	137,49	-0,99		99,56
1982	536360	132,67	-3,51		96,07
1983	543600	134,46	1,35		97,36
1984	559520	138,40	2,93		100,21
1985	578850	143,18	3,45		103,68
1986	587020	145,20	1,41		105,14
1987	575590	142,37	-1,95		103,09
1988	593760	146,87	3,16		106,35
1989	614123	151,90	3,43		109,99
1990	647787	160,23	5,48		116,02
Index; ø = 100		404282,37			
Compound annual growth rates					
1950-1973		7,68			
1973-1990		1,33			
1950-1990		4,94			

Italy

Year	Nominal	Index (ø 100)	Growth rates (in %) (1951-1990)	Index (ø 100) (1951-1973)	Index (ø 100) (1973-1990)
1950					
1951	21989	22,21		41,60	
1952	22559	22,79	2,59	42,68	
1953	24265	24,51	7,56	45,91	
1954	26421	26,69	8,89	49,99	
1955	28163	28,45	6,59	53,29	
1956	30309	30,62	7,62	57,35	
1957	32211	32,54	6,28	60,94	
1958	32868	33,20	2,04	62,19	
1959	36473	36,85	10,97	69,01	
1960	40852	41,27	12,01	77,29	
1961	45320	45,78	10,94	85,75	
1962	49794	50,30	9,87	94,21	
1963	53930	54,48	8,31	102,04	
1964	54017	54,57	0,16	102,20	
1965	56360	56,94	4,34	106,64	
1966	61915	62,55	9,86	117,15	
1967	67832	68,53	9,56	128,34	
1968	74073	74,83	9,20	140,15	
1969	79019	79,83	6,68	149,51	
1970	87322	88,22	10,51	165,22	
1971	88683	89,59	1,56	167,79	
1972	93485	94,44	5,41	176,88	
1973	107755	108,86	15,26	203,88	68,02
1974	116848	118,04	8,44		73,76
1975	111104	112,24	-4,92		70,13
1976	127100	128,40	14,40		80,23
1977	131674	133,02	3,60		83,12
1978	138819	140,24	5,43		87,63
1979	154188	155,77	11,07		97,33
1980	162570	164,23	5,44		102,62
1981	159854	161,49	-1,67		100,90
1982	159190	160,82	-0,42		100,48
1983	160548	162,19	0,85		101,34
1984	167611	169,33	4,40		105,80
1985	173371	175,15	3,44		109,44
1986	178253	180,08	2,82		112,52
1987	185613	187,51	4,13		117,16
1988	199178	201,22	7,31		125,73
1989	206795	208,91	3,82		130,53
1990	211134	213,30	2,10		133,27
Index; ø = 100		98986,63			
Compound annual growth rates					
1951-1973		7,49			
1973-1990		4,04			
1950-1990		5,97			

Netherlands

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	14170	28,90		41,58	
1951	12767	26,03	-9,90	37,46	
1952	13636	27,81	6,81	40,01	
1953	15781	32,18	15,73	46,31	
1954	18507	37,74	17,27	54,31	
1955	19793	40,36	6,95	58,08	
1956	21428	43,70	8,26	62,88	
1957	22943	46,79	7,07	67,32	
1958	22836	46,57	-0,47	67,01	
1959	25306	51,61	10,82	74,26	
1960	29567	60,29	16,84	86,76	
1961	30750	62,71	4,00	90,23	
1962	31815	64,88	3,46	93,36	
1963	33175	67,65	4,27	97,35	
1964	37601	76,68	13,34	110,33	
1965	41378	84,38	10,04	121,42	
1966	42032	85,71	1,58	123,34	
1967	44851	91,46	6,71	131,61	
1968	48129	98,15	7,31	141,23	
1969	52787	107,65	9,68	154,90	
1970	54943	112,04	4,08	161,22	
1971	57668	117,60	4,96	169,22	
1972	59866	122,08	3,81	175,67	
1973	66170	134,94	10,53	194,17	94,62
1974	68642	139,98	3,74		98,15
1975	61537	125,49	-10,35		87,99
1976	65410	133,39	6,29		93,53
1977	62404	127,26	-4,60		89,23
1978	64277	131,08	3,00		91,91
1979	66333	135,27	3,20		94,85
1980	66665	135,95	0,50		95,32
1981	66665	135,95	0,00		95,32
1982	65798	134,18	-1,30		94,09
1983	66917	136,46	1,70		95,69
1984	70798	144,37	5,80		101,23
1985	72639	148,13	2,60		103,87
1986	74415	151,75	2,44		106,41
1987	75430	153,82	1,36		107,86
1988	78305	159,68	3,81		111,97
1989	81856	166,92	4,53		117,05
1990	84562	172,44	3,31		120,92
Index; ø = 100		49037,85			

Compound annual growth rates	
1950-1973	6,93
1973-1990	1,45
1950-1990	4,57

Denmark

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	20632	44,40		61,98	
1951	20396	43,89	-1,14	61,27	
1952	19762	42,52	-3,11	59,36	
1953	20577	44,28	4,12	61,81	
1954	21705	46,71	5,48	65,20	
1955	21509	46,28	-0,90	64,61	
1956	21551	46,37	0,20	64,74	
1957	23250	50,03	7,88	69,84	
1958	24169	52,01	3,95	72,60	
1959	27049	58,20	11,92	81,25	
1960	29075	62,56	7,49	87,34	
1961	31034	66,78	6,74	93,22	
1962	33416	71,90	7,68	100,38	
1963	33537	72,17	0,36	100,74	
1964	36631	78,82	9,23	110,04	
1965	38480	82,80	5,05	115,59	
1966	39299	84,56	2,13	118,05	
1967	40913	88,04	4,11	122,90	
1968	43550	93,71	6,45	130,82	
1969	46501	100,06	6,78	139,68	
1970	48049	103,39	3,33	144,33	
1971	48853	105,12	1,67	146,75	
1972	53042	114,14	8,57	159,33	
1973	55978	120,45	5,54	168,15	86,68
1974	56846	122,32	1,55		88,03
1975	55471	119,36	-2,42		85,90
1976	58130	125,08	4,79		90,02
1977	58387	125,64	0,44		90,41
1978	58223	125,28	-0,28		90,16
1979	61530	132,40	5,68		95,28
1980	64311	138,39	4,52		99,59
1981	62267	133,99	-3,18		96,42
1982	63257	136,12	1,59		97,96
1983	67510	145,27	6,72		104,54
1984	70673	152,08	4,69		109,44
1985	72920	156,91	3,18		112,92
1986	72920	156,91	0,00		112,92
1987	69933	150,48	-4,10		108,29
1988	71036	152,86	1,58		110,00
1989	71869	154,65	1,17		111,29
1990	71130	153,06	-1,03		110,15
Index; ø = 100		46472,46			
Compound annual growth rates					
1950-1973		4,44			
1973-1990		1,42			
1950-1990		3,14			

Sweden

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	52971	41,17		55,77	
1951	56010	43,53	5,74	58,97	
1952	54684	42,50	-2,37	57,57	
1953	55750	43,33	1,95	58,70	
1954	58309	45,32	4,59	61,39	
1955	60990	47,40	4,60	64,21	
1956	63760	49,55	4,54	67,13	
1957	67052	52,11	5,16	70,59	
1958	68138	52,96	1,62	71,74	
1959	71222	55,35	4,53	74,98	
1960	77288	60,07	8,52	81,37	
1961	82772	64,33	7,10	87,15	
1962	89216	69,34	7,79	93,93	
1963	93736	72,85	5,07	98,69	
1964	105140	81,71	12,17	110,69	
1965	113143	87,93	7,61	119,12	
1966	118866	92,38	5,06	125,15	
1967	121371	94,33	2,11	127,78	
1968	128940	100,21	6,24	135,75	
1969	137470	106,84	6,62	144,73	
1970	146672	113,99	6,69	154,42	
1971	147916	114,96	0,85	155,73	
1972	148809	115,65	0,60	156,67	
1973	159340	123,84	7,08	167,76	90,90
1974	167952	130,53	5,40		95,81
1975	168511	130,96	0,33		96,13
1976	168552	131,00	0,02		96,16
1977	158891	123,49	-5,73		90,64
1978	154595	120,15	-2,70		88,19
1979	164543	127,88	6,43		93,87
1980	165183	128,38	0,39		94,23
1981	160847	125,01	-2,62		91,76
1982	161382	125,42	0,33		92,06
1983	170760	132,71	5,81		97,41
1984	183266	142,43	7,32		104,55
1985	186750	145,14	1,90		106,54
1986	189001	146,89	1,21		107,82
1987	193642	150,49	2,46		110,47
1988	199566	155,10	3,06		113,85
1989	201892	156,91	1,17		115,17
1990	200579	155,89	-0,65		114,43
Index; ø = 100		128670,17			
Compound annual growth rates					
1950-1973		4,90			
1973-1990		1,36			
1950-1990		3,38			

Spain

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	615	14,21		31,43	
1951	654	15,12	6,34	33,42	
1952	771	17,82	17,89	39,40	
1953	788	18,21	2,20	40,27	
1954	842	19,46	6,85	43,03	
1955	930	21,49	10,45	47,53	
1956	1002	23,16	7,74	51,21	
1957	1063	24,57	6,09	54,32	
1958	1135	26,23	6,77	58,00	
1959	1146	26,49	0,97	58,56	
1960	1180	27,27	2,97	60,30	
1961	1392	32,17	17,97	71,14	
1962	1566	36,19	12,50	80,03	
1963	1655	38,25	5,68	84,58	
1964	1831	42,32	10,63	93,57	
1965	2111	48,79	15,29	107,88	
1966	2395	55,35	13,45	122,39	
1967	2640	61,02	10,23	134,91	
1968	2836	65,55	7,42	144,93	
1969	3279	75,79	15,62	167,57	
1970	3607	83,37	10,00	184,33	
1971	3904	90,23	8,23	199,51	
1972	4527	104,63	15,96	231,34	
1973	5095	117,76	12,55	260,37	67,67
1974	5689	131,49	11,66		75,56
1975	5939	137,26	4,39		78,88
1976	6384	147,55	7,49		84,79
1977	6774	156,56	6,11		89,97
1978	7071	163,43	4,38		93,91
1979	7250	167,56	2,53		96,29
1980	7608	175,84	4,94		101,05
1981	7421	171,52	-2,46		98,56
1982	7552	174,54	1,77		100,30
1983	7730	178,66	2,36		102,67
1984	7774	179,68	0,57		103,25
1985	7918	183,00	1,85		105,16
1986	8322	192,34	5,10		110,53
1987	8751	202,26	5,16		116,23
1988	9128	210,97	4,31		121,24
1989	9491	219,36	3,98		126,06
1990	9628	222,53	1,44		127,88
Index; ø = 100		4326,68			

Compound annual growth rates	
1950-1973	9,63
1973-1990	3,81
1950-1990	7,12

United States

Year	Nominal	Index (ø 100)	Growth rates (in %) (1950-1990)	Index (ø 100) (1950-1973)	Index (ø 100) (1973-1990)
1950	265611	48,63		63,88	
1951	297234	54,42	11,91	71,48	
1952	307358	56,27	3,41	73,92	
1953	329720	60,36	7,28	79,30	
1954	305643	55,95	-7,30	73,51	
1955	337718	61,83	10,49	81,22	
1956	340753	62,38	0,90	81,95	
1957	342660	62,73	0,56	82,41	
1958	312763	57,26	-8,72	75,22	
1959	348347	63,77	11,38	83,78	
1960	349040	63,90	0,20	83,94	
1961	349808	64,04	0,22	84,13	
1962	379543	69,48	8,50	91,28	
1963	409600	74,99	7,92	98,51	
1964	438488	80,27	7,05	105,45	
1965	476680	87,27	8,71	114,64	
1966	513182	93,95	7,66	123,42	
1967	511791	93,69	-0,27	123,08	
1968	538032	98,50	5,13	129,39	
1969	553109	101,26	2,80	133,02	
1970	522302	95,62	-5,57	125,61	
1971	531262	97,26	1,72	127,77	
1972	578427	105,89	8,88	139,11	
1973	640296	117,22	10,70	153,99	88,27
1974	609719	111,62	-4,78		84,06
1975	564273	103,30	-7,45		77,79
1976	618995	113,32	9,70		85,34
1977	664800	121,71	7,40		91,65
1978	694700	127,18	4,50		95,77
1979	712200	130,38	2,52		98,19
1980	673900	123,37	-5,38		92,91
1981	678600	124,23	0,70		93,55
1982	634648	116,19	-6,48		87,49
1983	674200	123,43	6,23		92,95
1984	752400	137,74	11,60		103,73
1985	779200	142,65	3,56		107,42
1986	803400	147,08	3,11		110,76
1987	852200	156,01	6,07		117,49
1988	896567	164,14	5,21		123,60
1989	905013	165,68	0,94		124,77
1990	901421	165,02	-0,40		124,27
Index; ø = 100		546234,22			
Compound annual growth rates					
1950-1973		3,90			
1973-1990		2,03			
1950-1990		3,10			

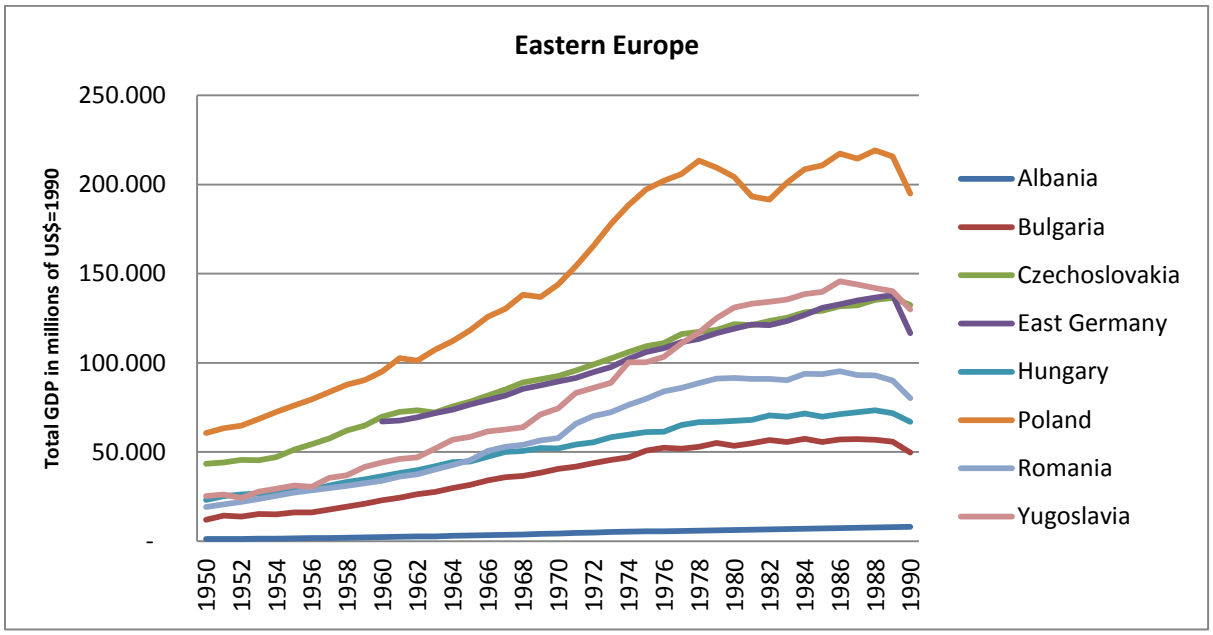
Source: Own calculations based on Bart van Ark, 'Sectoral Growth Accounting and Structural Change in Post-War Europe', in: Bart van Ark and Nicholas F. Crafts (ed.), 'Quantitative Aspects of Post-War European Economic Growth', Cambridge: Cambridge University Press (1996), pp. 121-138.

Table A-18 Levels and growth rates of real GDP per capita in Eastern Europe and Russia/USSR, 1820-2005 (in US $= 1990 and in % per year)

	Eastern Europe	Russia/ USSR		Eastern Europe	Russia/ USSR
1820	683	688	**1820-70**	0.63	0.63
1870	937	943	**1870-1913**	1.39	1.06
1913	1695	1488	**1913-50**	0.60	1.76
1950	2111	2841	**1950-73**	**3.81**	**3.35**
1973	4988	6059	**1973-2005**	1.14	0.14
2005	7174	6336			

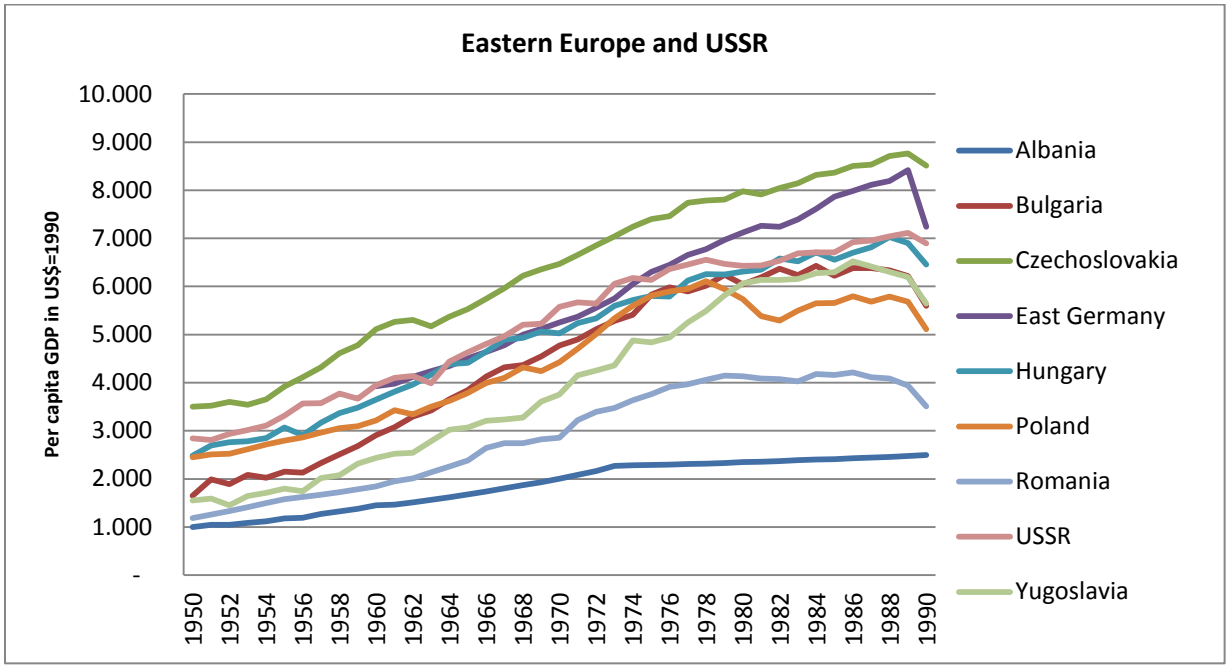
Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 302.

Figure A-2: Growth of total GDP in Eastern Europe, 1950-1990 (in millions of US $=1990)



Source: GGDC, Total Economy Database (viewed 2013).

Figure A-3: Growth of per capita GDP in Eastern Europe and in the USSR, 1950-1990 (in US $=1990)



Source: GGDC, Total Economy Database (viewed 2013).

Table A-19: Levels and rates of growth of real GDP per capita in Eastern Europe, 1950-1973 (in US $= 1990 and in % per year)

	1950	**1973**	**1950-73**
Czechoslovakia	3501	7041	3.08
Hungary	2480	5596	3.60
Poland	2447	5340	3.45
East Germany	2102	5753	4.47
Bulgaria	1651	5284	5.19
Yugoslavia	1551	4361	4.59
Romania	1182	3477	4.79
Albania	1001	2273	3.62

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 302.

Table A-20: Levels and rates of growth of real GDP per capita in Eastern Europe, 1973-2005 (in US $= 1990 and in % per year)

	1973	1990	1973-1990	2005	1973-2005
Czechoslovakia	7041	8513	1.12	10704	1.32
Hungary	5596	6459	0.85	8857	1.45
Poland	5340	5113	-0.35	8476	1.46
Bulgaria	5284	5597	0.29	7147	0.96
Yugoslavia	4361	5779	1.60	5582	0.79
Romania	3477	3511	0.08	3992	0.44
Albania	2273	2494	0.57	3476	1.34

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 301 and own calculations for growth rates from 1973-1990 based on Angus Maddison, 'The World Economy. Historical Statistics', Paris: OECD Publishing (2003), pp. 64-69.

Table A-21: Industrial output in Eastern Europe, 1950-1973 (volume indices of output, 1990=100)

	Bulgaria	Czechoslovakia	Hungary	Poland	Romania
1950	8.3	24.2	24.8	21.0	9.3
1951	9.4	24.9	28.1	24.0	n.a.
1952	10.5	25.2	32.2	25.7	n.a.
1953	11.3	25.5	34.0	28.7	n.a.
1954	12.5	25.5	35.2	31.1	13.3
1955	13.9	29.7	37.8	34.0	14.7
1956	15.1	32.3	34.6	36.2	15.8
1957	16.8	35.5	38.4	38.9	17.0
1958	19.4	39.4	42.3	41.8	18.6
1959	24.1	42.5	45.5	44.9	20.7
1960	27.7	46.4	49.4	49.2	23.7
1961	30.1	49.3	53.8	52.7	27.1
1962	33.7	51.6	57.6	56.3	30.2
1963	37.5	51.4	60.3	59.3	33.0
1964	42.2	52.6	64.8	64.1	36.6
1965	48.2	55.8	68.5	68.9	40.5
1966	53.4	56.7	71.9	72.7	45.5

1967	58.7	58.9	75.3	77.4	50.6
1968	64.2	61.3	78.7	n.a.	55.5
1969	68.3	62.4	80.1	n.a.	62.2
1970	71.5	65.2	83.9	93.2	68.4
1971	73.8	66.3	85.5	n.a.	74.4
1972	75.7	68.3	87.0	n.a.	80.4
1973	79.8	70.2	91.2	n.a.	88.2

Source: GGDC, Historical national accounts, online data base (viewed 2013).

Table A-22: Industrial output in Eastern Europe, 1973-1990 (volume indices of output, 1990=100)

	Bulgaria	**Czechoslovakia**	**Hungary**	**Poland**	**Romania**
1973	79.8	70.2	91.2	n.a.	88.2
1974	80.3	72.0	97.2		97.9
1975	95.2	80.8	94.0	134.2	107.0
1976	98.0	83.8	97.1	136.5	113.3
1977	101.8	87.2	101.6	138.9	118.3
1978	105.4	88.5	105.3	141.6	122.5
1979	109.1	89.8	106.3	140.1	125.2
1980	112.4	93.0	104.9	138.1	128.6
1981	115.0	94.7	106.5	120.4	126.6
1982	118.5	95.9	107.8	117.2	124.3
1983	120.6	97.7	108.8	124.6	125.9
1984	123.0	99.1	111.9	128.9	131.1
1985	123.1	101.0	112.0	131.0	129.7
1986	125.0	102.0	114.3	132.5	133.6
1987	126.5	102.4	115.9	131.0	131.6
1988	125.4	104.0	114.7	131.9	128.2
1989	121.0	103.1	111.0	126.3	124.7
1990	100.0	100.0	100.0	100.0	100.0

Source: GGDC, Historical national accounts, online data base (viewed 2013).

Table A-23: Sectoral employment shares in transition economies and value added of industry, 1990 (in % of real GDP)

	Agriculture	Industry	Services	Industry VA in % of real GDP	Overindustrialized in % of GDP
Bulgaria	18.5	49.3	32.2	59	23
Czech Republic	12.9	44.0	43.1	58	21
Estonia	21.0	36.8	42.2	44	10
Hungary	15.6	36.4	48.0	36	-1
Latvia	16.4	40.6	43.0	45	10
Lithuania	18.9	41.2	39.9	45	10
Poland	23.4	36.4	40.2	52	13
Romania	31.1	41.5	27.4	59	22
Russia	13.2	42.3	44.5	48	7
Slovakia	10.0	44.5	45.5	59	23
Slovenia	9.7	49.2	41.1	44	6

Source: Nicholas F. Crafts and Gianni Toniolo, 'Aggregate Growth, 1950-2005', in: Stephen Broadberry and Kevin O`Rourke (ed.), 'The Cambridge Economic History of Modern Europe, vol. 2: 1870 to the Present', Cambridge: Cambridge University Press (2010), p. 328.

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n° 290647.

Project Information

Welfare, Wealth and Work for Europe

A European research consortium is working on the analytical foundations for a socio-ecological transition

Abstract

Europe needs a change: The financial crisis has exposed long neglected deficiencies in the present growth path, most visibly in unemployment and public debt. At the same time Europe has to cope with new challenges ranging from globalisation and demographic shifts to new technologies and ecological challenges. Under the title of Welfare, Wealth and Work for Europe – WWWforEurope – a European research consortium is laying the analytical foundations for a new development strategy that enables a socio-ecological transition to high levels of employment, social inclusion, gender equity and environmental sustainability. The four year research project within the 7th Framework Programme funded by the European Commission started in April 2012. The consortium brings together researchers from 33 scientific institutions in 12 European countries and is coordinated by the Austrian Institute of Economic Research (WIFO). Project coordinator is Karl Aiginger, director of WIFO.

For details on WWWforEurope see: www.foreurope.eu

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