West German Growth and Institutions, 1945-90

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1. Introduction: West German post-war growth in historical and comparative context

Popular perceptions of West German economic growth are polarized: either it is the miracle economy of the post-war era, the 'strong-man' of Europe or it is a sclerotic economy, typifying Europe's inflexibility in labour and capital markets relative to the United States. One way of reconciling these apparently contradictory views is to depict West Germany as 'The Fading Miracle' as Giersch et al. (1992) have done. From this perspective, the miracle has long since gone and memories have lingered far behind the reality. But in Michel Albert's recent popular account of post-war capitalism (1992), Germany's reputation for dynamism and adaptability remains untarnished. One aim of this chapter is to put these contrasting interpretations into a longer term and explicitly comparative perspective. Throughout the chapter, Germany's performance will be compared with that of the other three large European economies, the UK, France and Italy.

It is useful to begin by looking at attempts to identify a common OECD pattern of growth over the long run and then at the extent to which West Germany fits this pattern. As a starting point two such studies are used to provide a benchmark for the assessment of German growth. First is an endogenous growth model based on Scott (1989) and estimated by van der Klundert and van Shaik (1993; henceforth, KS) for a group of 8 OECD economies from 1870 and extended to 16 for the post-war period. The second study is that of Dowrick and Nguyen (1989; henceforth, DN) which is a Solow-type model with exogenous technical progress, augmented with catch-up estimated for a group of 24 OECD countries for the post-war period.

In KS's analysis, a strikingly simple growth equation is estimated where the growth of GDP is explained by the investment share, the growth of labour input

measured by man-hours and catch-up. Catch-up is found to be significant for 1950-60 and 1960-73. Investment appeared to be less effective in generating growth only in Australia in their primary sample and in Scandanavia in the larger sample.

The disappearance of the catch-up effect accounts for the bulk of the slow-down after 1973 in the KS equation. Thus neither weaker investment nor lower effectiveness of investment can account for the post-73 slow-down in the OECD. They interpret this as signifying that the major economies have experienced a 'return to normal' after the exceptional period of the post-second world war years. By contrast, Dowrick and Nguyen find that TFP catch-up persists in the post-73 period and that lower investment is largely responsible for the growth slowdown.

Turning to Germany, it is the only country in the KS sample for which there is a large positive residual for the 1950s (see Table 1). Their equation suggests that more than half of German growth in the 1950s is not accounted for by investment and labour force growth. In addition to the common feature of 'catch-up', it is necessary to introduce German-specific factors in order to understand this period. Dowrick and Nguyen come to a very similar conclusion: Germany's per capita growth of GDP was 2 percentage points above the sample average for 1950-60 once account was taken of catch-up and cyclical bias, capital and employment deepening.

Table 1

The proximate causes of growth, Germany (from van der Klundert and van Shaik 1993)

GDP, labour input measured by hours.

Period	Actual growth rate	Explained by			Unexplained
		Investment share	Growth rate of employee-hours	Catch-up	
1870-1890	2.38	1.55	0.41		0.03
1890-1913	3.18	1.91	1.08		-0.20
1913-1929	1.20	1.61	-0.14		-0.65
1929-1938	3.78	1.32	1.14		0.93
1950-1960	7.97	2.20	0.85	2.68	1.84
1960-1973	4.37	2.39	-0.67	2.51	-0.24
1973-1989	2.05	1.98	-0.49		0.18

Source: Van der Klundert and van Shaik (1993) Table 5.

In terms of the polarized characterization of German performance referred to earlier, both cross-country studies are agnostic about growth after 1973. In KS, after the high positive residual for 1950-60, Germany has a small negative residual for the rest of the golden age (1960-73) and a small positive one for the post-73 years. In DN, unexplained growth virtually disappears for 1960-73 and is 0.64 percentage points above the OECD average for the third period. Compared with the other three large European economies, DN find that Germany's performance is well above that

of the other three for the 1950s, below France and Italy for 1960-73 and above all three for the post 1973 period.

To sum up, the broad picture about German post-war growth which emerges is that the 1950s were quite exceptional in terms both of German historical experience from 1870 and in comparison with other countries. From 1960 to 1973, the contribution of capital and catch-up are very similar to their values for the 1950s (in KS) but growth is markedly lower. Labour input declines and the high positive residual turns negative. This suggests a period of capital deepening as the economy adapts to labour shortage. The two studies differ in their interpretation of the relative role of investment and catchup in accounting for the generalized post-73 slowdown but concur in finding that German performance was just above average, whether the reference group is the OECD or Germany's large European competitors.[1]

From the perspective of convergence, it is striking that Germany has continued to narrow the total economy productivity gap to the US over the entire post-war period. However the aggregate data hides a sharp divergence between the relative dynamism of the manufacturing and non-manufacturing sectors from 1979 (see Table 2). The impression from the labour productivity comparisons is confirmed in a cross-country regression analysis of sectoral TFP growth in OECD countries in which Rowthorn finds that Germany has a positive residual for the three non-manufacturing sectors and a negative one for manufacturing (1992). Yet manufacturing industry has been traditionally viewed as the engine of growth in Germany. It is a technologically progressive sector in the terminology of Baumol et al. (1989). Table 1.3 presents the growth accounts for manufacturing for Germany and the three other large European economies. Germany's TFP performance in manufacturing is well below that of France and Italy in the 1960-73 period and even falls below that of the UK from 1973. Comparisons which begin from 1979 eliminate

the UK's particularly poor performance in the 1970s and present an impression of an even greater weakness of German manufacturing. The hourly labour productivity level data presented in Figure 1 paint a similar picture.

Table 2 Convergence of value added per hour in manufacturing and the total economy, 1950-1990

US=100

GERMANY	1950	1960	1973	1979	1990
Total economy	27.6	42.0	59.0	69.6	75.2
Manufacturing	38.9	61.6	79.7	95.8	85.9

Source: van Ark and Pilat (1993) Table 5 p.27.

However, judgements of the decline of German manufacturing prowess should be postponed until a closer examination is made of the character of productivity improvements in the 1980s. The data in Table 3 highlight the feebleness of output growth in manufacturing in both France and the UK, along with the extreme weakness of investment in the UK. The German data present a mixed picture: more limited labour shedding than in the other countries and average capital stock growth. Germany's competitiveness as measured by its performance in export markets has not weakened in the post 1973 period as would have been expected on the basis of the productivity data. This suggests that an analysis of the relationship between growth performance and other indicators of performance in manufacturing is called for.

Table 3

Growth accounting for manufacturing, Germany, France, Italy, UK.

	Germany	France	Italy	UK
1950-61				
Output	10.1	5.5	8.3	2.8
Capital	8.3	3.2	5.6	3.4
Labour	3.3	0.7	2.2	0.8
TFP	5.3	4.1	5.2	1.4
1961-73				
Output	5.1	7.3	6.9	3.3
Capital	6.6	5.2	5.3	3.8
Labour	0.0	0.8	0.7	-0.5
TFP	3.6	5.3	5.2	3.0
1973-88 [79-88]				
Output	1.2 [0.8]	1.3 [0.2]	2.7 [2.4]	-0.2 [0.1]
Capital	1.7 [1.3]	2.5 [1.7]	2.1 [1.3]	1.5 [0.9]
Labour	-1.3 [-1.0]	-1.7 [-2.1]	-1.0 [-1.8]	-2.8 [-3.9]
TFP	2.0 [1.4]	2.1 [1.6]	3.0 [3.5]	2.1 [3.5]

Source: Data set from Bhaskar and Glyn 1992. Note that labour input is employees and weight on capital input is the net profit share.

How can economic institutions and policy be introduced into the analysis? For the OECD as a whole, the existence of catchup in the 1950s and 60s and its disappearance thereafter (or particularly low investment in the DN explanation) must be explained. Since this is a common phenomenon, common factors should be sought. This suggests that cross-country institutional differences and variations in policy are largely irrelevant. Yet for Germany in 1945, it was quite unclear if it would become a member of the 'convergence club'. Decisions taken by the Occupation governments between 1945 and 1948 played a central role in establishing membership.

German 'super-growth' in the 1950s appears to be a genuine outlier and calls for an examination of the 'reconstruction' effect (Dumke 1990). Dumke finds that inclusion of the level of post-war productivity relative to pre-war in the growth equation is significant and accounts for the German residual for the 1950s. Why should a war-induced output drop create the conditions for especially rapid growth - i.e. not simply explaining rapid recovery to pre-war levels but fast growth persisting beyond the recovery phase?

One hypothesis is that rapid investment was promoted by a disproportion between the stocks of human and physical capital. The idea is that a high level of human relative to physical capital entails a high return to investment, promoting growth. The human capital available to West Germany increased sharply from the end of the war until 1961 through the inflow of German expellees and refugees. The inflow continued until the building of the Berlin Wall in 1961. If the boost to growth from the human to physical capital disproportion occurs solely through market incentives, then once again, the role for institutions and policy shrinks.

The second hypothesis accounting for a reconstruction growth effect is that the war destroyed growth-inhibiting redistributive coalitions (Olson 1982). The

Olson hypothesis prompts a comparison between the weak growth that followed the first world war in Germany with the exceptionally rapid growth after 1945. Superficially it seems plausible that there was a growth-inhibiting distributional conflict after the first world war but not after the second. Why was the outcome so different? Is there any evidence of a role for the Occupation, the division of Germany and international commitments in the creation of institutional structures compatible with rapid growth? Although large, successful managerial companies had been established in Germany even before the first world war in steel, chemicals and engineering, international and domestic institutional arrangements prevented Germany from taking full advantage of the growth opportunities offered until the 1950s.

For the years from 1961 to 1973, German growth performance is in line with the average. This performance is notable however for the extent of capital deepening. Unemployment was extremely low and foreign workers were recruited to mitigate the labour shortage. Why did the adjustment to labour shortage take the form of immigration rather than wage increases? Was the human capital endowment of these workers sufficient to offset the productivity growth dampening effects of immigration (in a full employment economy)? Compared with other European economies, migration to Germany was unusually high in this period.

Looking for German participation in common domestic factors which played a role in bringing the golden age to a close, one can highlight the common European experience in the 1960s of adjustment to slower labour force growth in the context of very tight labour markets (Flanagan *et al.* 1982, Armstrong *et al.* 1991). The most dramatic manifestation of the problem of managing a smooth transition to slower growth throughout Europe was the rash of strikes and wage explosions from 1968 to 1971. Adjustment in Germany was postponed through the policy of recruiting foreign workers. The unions favoured the foreign worker policy and also

contributed to the wage moderation of the 1960s by exercising bargaining restraint. However, the heightened distributional conflict associated with labour shortage eventually emerged with the outbreak of wild-cat strikes in 1969.

The period of slow growth from 1973 raises many puzzles. Country studies focus on idiosyncratic country failings often apparently ignoring the common character of the slow-down. It appears that institutional differences in labour markets in combination with differences in macroeconomic policy have been responsible for the wide variation in employment and unemployment performance across countries suffering the same slowdown in growth (e.g. Glyn & Rowthorn 1988, Calmfors 1993). There is also some suggestion that changes in the personal distribution of income have differed in a systematic way across countries with different institutional structures in the post 1973 period: inequality has increased less in countries with encompassing institutions (Green et al. 1993). This lends support to the hypothesis that whilst growth is little affected by *country-specific* institutions (as found by e.g. Crafts 1992), the distribution of the burden of slower growth across the population in terms of unemployment and income differentials may be. Germany is often attributed with a distinctive institutional structure. Is there any evidence of an interaction between German institutions and the growth slowdown?

This question necessitates an attempt at identifying features of a West German economic model. We will look at the relationship between the industrial relations system, vocational training, and the ownership and governance structure of enterprises, including the role of employee representation. Germany is characterized by a dense network of unions, works councils, employers and other business associations which is embedded within a legal framework which promotes the continuity of economic structures and relationships. Examples from labour and corporate law of legally defined forms of continuity are employment protection and

the status of supervisory boards and their role in mitigating the need for hostile takeovers as a method of enhancing management efficiency. It has been suggested that in a set of core industries in Germany, this structure has proved responsive to the demands of increased competition in the product market. For other industries, the model fails to generate rapid adaptation because of a stalemate between the stakeholders as to the appropriate strategy. An effective form of government intervention to promote adjustment has not been developed.

The structure of the chapter is as follows. We begin in section 2 with the inter-war period focusing on reasons why growth was so feeble in the Weimar Republic. In section 3, we look at the period of reconstruction from 1945 to 1961. The aim is to provide an explanation for the very rapid growth in the 1950s - both relative to German's historical experience and to that of other OECD economies. Section 4 examines the second phase of golden age growth focusing on capital deepening and the recruitment of foreign labour. Looking for factors signalling the close of the golden age, Germany's experience of industrial relations disharmony, wage explosions and the sharp growth in the share of state expenditure in GDP, in common with its European neighbours is analyzed. Section 5 turns to the slow growth of the 1970s and 1980s and the debate about West Germany's relative performance. The issue of the relationship between economic institutions and growth is taken up in section 6 with an attempt to set out the main features of the West German economic model. The chapter concludes by drawing some tentative lessons from the growth experience of West Germany for the prospects for growth in the reunified Germany.

2. The growth weakness of the Weimar Republic

Military defeat in each of the World Wars was followed in Germany by periods of great economic instability and inflationary pressure: only after the second was the instability followed by rapid growth. Comparison of the two post-war reconstruction episodes is clearest if the starting date is the year following each currency reform: 1924 is compared with 1949. The weakness of the Weimar reconstruction as compared with that of the Federal Republic was reflected across all dimensions. German post-World War I reconstruction was also weak in comparison with the rest of the industrialized world - world industrial production (dominated by the US) was over 40% above pre-war by 1928-9 as compared with the 14% in Germany (Borchardt 1990, p.130). Of particular note is the comparison between investment in the two periods. The post-48 gross investment share was historically high (25% in 1949) and rising through the 1950s whilst the investment share in Weimar was historically low and remained around the 18% level from 1924 to 1929 (Mendershausen 1954 Table IX p.49).

Many accounts of low growth in the Weimar period focus on the explanation of low investment. Knut Borchardt has stimulated an intense debate with his argument that the central reason for weak investment was a profit squeeze which he links to the role of collective bargaining and the welfare state in the Weimar republic[2]. He argues that a major factor contributing to the profit squeeze was the ability of the trade unions to secure wage increases above those warranted by the growth of productivity. The unions were able to do this, according to Borchardt, because of their enhanced bargaining power arising from the Weimar compact between unions and employers in 1918 which both restored war-time compulsory arbitration by the state and introduced a system of unemployment insurance and benefits (Borchardt, 1990).

Borchardt's thesis must be qualified in several respects. First, trade union strength in the Weimar period should not be exaggerated: organizational strength

was weakened both by the inflation and by the split in the labour movement. Secondly, even in industries where profits could be protected through mark-up pricing, investment was weak. Factors extending well beyond the new setting for industrial relations appear to have played a role.

After a decade of war and inflation, the German economy emerged in 1924 in a weak competitive position. As Kato points out, investment during the inflation was often irrational, taking the form of 'diversification into sectors having few close inter-sectoral ties with existing operations and ... made without much concern for productivity' (1988, p.11). Given the concessions to labour under Weimar, the productivity gap vis-à-vis Germany's competitors could only be made good through rapid productivity growth. Although there was much discussion at the time about rationalization, the necessary investment and organizational changes did not take place on a broad front (James 1986, Kato 1988).

Questions of industrial organization and industrial structure as well as industrial relations appear fundamental to the low investment of the Weimar years. A key question in the inter-war impasse in Germany is to explain why heavy industry with its aim of a return to the pre-1913 order where the state played a minimal role in the economy and employees were subordinate remained dominant and was not supplanted by the industries of the 'second industrial revolution' where supporters of 'the American model' were prevalent. The 'Americanization' of the German economy occurred only after the Second World War - where Americanization refers to the generalized use of 'modern' techniques of production and management combined with the recognition by business of mass consumption as part of a legitimate new form of capitalist economic organization (see Maier 1987 and Berghahn 1986 for arguments along these lines). (The German form of Americanization has a number of characteristic features - often with roots in early German industrialization - and is discussed further in section 6.)

One explanation for the investment failure is that there was an alternative strategy available to heavy industry less risky than industry-wide rationalization - the operation of price-fixing cartels. At the end of the 19th century, anti-trust legislation in the United States was paralleled in Germany by a law making cartels legally binding. The availability of price fixing as a strategy had the effect of delaying and distorting the process of industrial restructuring associated with the new manufacturing technologies and left industry with a persistent problem of excess capacity. James describes the limited form of rationalization and the weakness of productivity growth in the post-stabilization years (James 1986 pp.146-154).

The major difference between large German and US enterprises in this period was that 'industrial leaders in the United States continued to compete functionally and strategically for market share, while in Germany they often preferred to negotiate with one another to maintain market share at home and in some cases abroad' (Chandler 1990 p.12). Chandler (1990) points out that it was only in those companies where investments had been made well before the first world war sufficient to exploit the cost advantage of scale and scope that recovery took place in the mid 1920s. Chemicals (IG Farben) and electrical machinery (Siemens and AEG) achieved successful rationalization.

Investment in mechanical engineering was hampered by the dampening effect on profitability of the high prices of inputs due to price-fixing in heavy industry and by the high cost and limited availability of credit to the small and medium-sized firms which dominated this sector (Kato 1988 pp.15-16). Kato in particular stresses the impact of the weakness of the banks following the hyperinflation on finance for investment in some key sectors. Thus a patchy pattern of investment and rationalization was the outcome of the fact that few industries had both the incentive to invest (no cartel option) and the means to do so (access to

finance).

In addition to the constraints of industrial organization, the structure of German industry in the 1920s hampered the transition to a form of growth based on mass consumption. Although German entrepreneurs like American ones had undertaken the investments necessary to create industries successful on a world level, the German enterprises were concentrated in producer and capital goods whereas the US firms produced consumer goods as well. Even German producers in electrical equipment like Siemens appear to have had no vision of creating a mass market for the output of consumer goods. James tells of Siemens' idea in 1932 of promoting the radio as a replacement for the piano in the home: 'He designed an elegant black box with folding doors as a luxury radio: it barely sold' (1986 p.152). In the isolated cases where investments were made in consumer goods in the 1920s such as the US foreign direct investment in the automobile industry, seeking a mass market was not attractive: German roads were poor and earlier heavy investment had produced a highly efficient, cheap railway network (James 1986 p.153).

The employers were successful in having the legislation on the 8-hour day revoked (in 1923) but were unable to prevent the establishment of collective bargaining. By 1928, nearly 30% of workers were covered by either regional or Reich-wide wage agreements (James 1986 p.210). Nor were they able to prevent the reintroduction of the wartime compulsory arbitration system. '[T]he organisations of employers and workers found it very difficult to reach autonomous agreements in the slow-growth Weimar economy, and as a consequence called the state in more and more frequently' (James 1986 p.211). It was state intervention in wage setting and the 'political wage' rather than trade union strength *per se* which lay behind the strategy of the industrialists to support deflationary policies in the late 1920s and into the Great Depression as a means of reversing the Weimar system of industrial relations (Weisbrod 1990 p.62).

Borchardt is right to identify the profit squeeze in the 1920s as symptomatic of a 'sick' economy and to suggest that this sickness could not be cured by countercyclical medicine[3]. However, there appear to have been broad structural problems in the domestic (and international) economy which prevented successful transition to a modern capitalist economy.

3. Reconstruction, 1945-61

3.1 Marshall Aid, the currency reform and the pre-conditions for rapid growth

The announcement of the Marshall Plan in 1947 marked the turning point in US attitudes to German recovery and began to lower the uncertainty about the political and economic future of the country. Economic reconstruction of the Western zones of Germany was to be fostered. The existing distribution of private property rights would be confirmed and a market economy restored. The Marshall Plan cleared the way for the US to assume the dominant role vis-à-vis the British and plans for nationalizing the heavy industries of the Ruhr were shelved. US influence was important later in strengthening the hand of the German policy makers who were in support of a liberal trade policy and opposed to the revival of the pre-war cartels. But West Germany could not enjoy the benefits of membership of the catch-up club until market incentives were restored. This highlights the importance of the currency and economic reforms of mid 1948.

Between the cessation of hostilities in 1945 and the economic and currency reform of mid 1948, West German economic recovery was constrained by both physical and institutional factors. Destruction of the industrial capital stock and of the labour force were not responsible for the low level of output. Behind the appearance of chaos and destruction was an industrial capital stock considerably larger and of more recent vintage than before the war. The balance between war-time investment and destruction had favoured the German economy relative to that

of the other major Western European countries. The industrial capital stock was just higher in 1948 than in 1939 with a more favourable age structure and technically more advanced, in spite of disinvestment and dismantling after 1945 (Krengel 1958). Parallel with the underlying strength of capital equipment was a labour force swollen by immediate post-war immigration. The loss of prime-age males in the war was offset by immigration combined with a higher level of war-time training leaving the labour force equal in quality and quantity to that before the war. The physical impediments to recovery were bottlenecks in the flow of raw materials and fuel due to the almost complete paralysis of the transport system and the mismatch between labour and jobs due to the loss of housing stock.

The institutional impediment to growth was the absence of either a coherent set of market incentives or an effective planning system for resource allocation. Economic transactions reverted to a complicated form of barter plus a narrow black market. Well over half of economic activity in the first two years after the war took place outside official channels. There was no functional money due to the rapid expansion of the money supply during the war, the maintenance of fixed prices and the low level of output. Firms were rationed in the labour market as labour supply was reduced owing to the low availability of consumer goods. Extensive absenteeism lowered the output of firms, reinforcing the rationing of goods to consumers. The result was a state of repressed inflation in which both the supply of output and the supply of labour were reduced below what they would have been had there been functional money and flexible prices and wages. Payment in kind was the essence of the relationship between employer and employees and between producers. The objective of businesses under these conditions was to accumulate stocks, ensure the survival of the firm and maintain good-will in the hope that conditions would improve (Carlin 1989).

The pre-conditions for a successful currency and economic reform in mid 1948

were not only the strength of the productive base of the West German economy and the clearing of bottlenecks, but also the business confidence engendered by the inclusion of the western zones in the Marshall Plan. The currency reform, designed by the US, entailed harsh redistributive effects in favour of those owning real assets and away from holders of financial assets. Enterprise and government debt was basically written off - as was their counterpart in personal sector savings. This eliminated the monetary overhang. Employers were left with physical assets but with very limited liquidity. The technical design of the reform contributed to its immediate success in forcing producers to release their accumulated stocks of goods so as to remain liquid.

The new currency broke the repressed inflation equilibrium with the supply of goods and labour rising fast. Alongside the Currency Reform, the German economic authorities, under the leadership of Ludwig Erhard and against the advice of most Anglo-American advisors, introduced a sweeping liberalization programme. The bulk of price controls were lifted as well as the major quantitative controls over the allocation of resources. The incentive to work was raised by the availability of consumer goods and even further by the government's decision to make over-time earnings tax-free.

For the reforms to mark a change of regime promoting long-term decision-making, it was essential not only for the release of hoarded stocks, but also for current production to be profitable. This is confirmed by the data in Table 4, (given that the profit share in 1938 was very high (Maier 1987)). Highly profitable current production fostered favourable expectations about future profitability and promoted investment on a broad front. Investment was also encouraged by the very high depreciation allowances and other tax concessions for investment introduced soon after the currency reform by the German authorities (Wallich, 1955). An examination of the investment series shows clearly the break between the quality of

recovery at mid 1948 (Carlin 1989 Table 2.1 p.54). The evidence of de Long and Summers (1992) about the robustness of investment in machinery and equipment in their growth equation suggests that the structure of tax allowances in Germany at this time was particularly growth promoting.

Table 4

The balance between productivity and product wages in industry, 1948-52 (1938=100)

Year	Real wages	Product wages	Productivity (output/employment)	Real input costs
1948	75	64	59	98
1949	85	74	69	107
1950	101	84	82	124
1951	105	80	91	129
1952	112	85	95	113

Source: Carlin (1989 Table 2.2 p.56) Data from Bank deutscher Länder Monthly Reports and Annual Reports; UNECE (1949, 1953, 1954).

Macroeconomic stability was threatened toward the end of 1948. Prices rose sharply and weakening confidence in the new currency was reflected in the reappearance of hoarding and barter. The German authorities were advised to reintroduce price controls and the selective allocation of raw materials. They refused: the Bank deutscher Länder tightened credit conditions. This choice of

policy was probably important for growth because it interrupted the attempts of German business to rebuild their traditional price-fixing arrangements (section 2). The government signalled its unwillingness to maintain aggregate demand at home at a level sufficient to ensure full utilization of capacity: firms were forced to enter or reenter export markets. Wallich commented in 1955: 'German businessmen, having so long been cut off from the outside world, would not willingly seek new markets abroad if selling was made easy for them at home.' (p.83). Their task was made easier when the Korean War boom generated rapidly growing demand for investment goods in which Germany, unique in Europe, had spare capacity. The Germans had to reenter international markets in the early 1950s but they were not starting from scratch: 80% of exported branded articles in 1952/3 were sold using trade-marks valid world-wide before the war (Kramer 1991 p.184).

Many authors have argued that the radical cheapening of transport and communications following the second world war greatly increased the awareness of investment opportunities and facilitated diffusion of technology, management techniques and consumption patterns (Abramovitz 1986, Scott 1989, Nelson and Wright 1992). Trade liberalization interacted with improved communications to facilitate the spread of best-practice techniques, as well as raising growth through specialization and economies of scale. West Germany was particularly favoured by virtue of its pattern of specialization in investment goods.

3.2 War-time disruption and competing explanations for German 'super-growth'

By 1951, pre-war levels of GDP (1938) and of industrial productivity (1936) had been attained in West Germany (Maddison, 1982; Wallich, 1955). Whilst the end of a phase of recovery can be dated at about 1951, the cross-country growth equations suggest that Germany benefited from a growth bonus (on top of catchup) until 1960. As noted in the introduction, Dumke has proposed a reconstruction growth bonus

specifically related to war-induced effects. He tests the model by assuming that the 'best measure of material loss due to the war is provided by the comparison of prewar and postwar levels of output' (1990, p.476). This measure turns out to be significant and both complementary and competitive with the catchup term in a cross-country regression for OECD countries in the post-war period. Both effects are significant, but the inclusion of catchup reduces the size of the reconstruction effect.

Dumke puts forward two hypotheses as to the mechanisms through which war-time disruption promotes growth. The first links Janossy's thesis of the growth enhancing effects of a disproportion between the stock of human and physical capital to the recent theories of growth (Lucas 1988, Barro 1989) which assume constant returns to a broad measure of capital which includes human capital. A high ratio of human to physical capital raises the marginal product of capital inducing high investment. The second hypothesis linking wartime disruption to growth is an Olsonian one stressing the effect of war in breaking up coalitions of vested interests.

There are two caveats to the first market-driven interpretation of German supergrowth. First, the disproportion between human and physical capital should be considered carefully. As Krengel and Abelshauser have documented, the *industrial* capital stock was higher in 1948 than before the war, whilst the labour force was about the same size. Loss of capacity was concentrated in housing and the basic industries of coal, iron & steel, electricity and water, as well as transport. Yet it was in precisely these sectors that market forces could not induce higher investment. Because of the maintenance of price controls in these sectors and continuing uncertainty about ownership, private returns to investment were very low. Both Marshall Plan (indirectly through the use of Counterpart Funds) and later, organized business in West Germany played a key role in rebuilding capacity in these sectors. Marshall Aid counterpart funds financed over 40% of investment in coal in 1949-50,

20% in electricity in 1949-51 and 15% in iron and steel in 1950-51. The business associations organized a levy on light industry and services. This Investment Aid levy picked up the burden of providing finance for the basic industries from the Counterpart Funds - financing almost 20% of investment in coal, iron and steel and power between 1952 and 1956 (Carlin 1989 pp.63,64).

Secondly, it is questionable whether the role of surplus labour in maintaining the profitability of investment can be considered a purely war-related effect. Surely there is also a Cold War effect: a transfer from East to West, as Abelshauser insists (1983, pp.96-8). Reserves of underemployed labour have long been identified as a source of exceptional growth in the golden age (Kindleberger 1965). The one-off boost to growth from the reallocation of labour to more productive uses appears particularly relevant for West Germany in the years up to 1961. West Germany, like a number of other Continental European economies, benefited from a pool of labour in agriculture which could be drawn into industry without putting upward pressure on wages. In addition there was a steady inflow of well-trained and mobile German immigrants from East Germany and elsewhere in Europe.

A total of 3.6 million refugees from East Germany entered West Germany between 1950 and 1962 (adding to the 2.5m who entered between 1946 and 1950). On average this labour pool was well trained and highly mobile. Abelshauser argues that the inflow of trained labour permitted West Germany to devote a smaller proportion of GDP to training and education in the 1950s than was the case in the Weimar Republic without negative consequences for growth (1925: 2.8%; 1951: 2.4%; 1962: 2.7%; 1968: 3.0% (1983, p.97)).

Econometric evidence from cross-section data in the most recent period (O'Mahony 1992b) suggests that the German productivity advantage over the UK depends on higher capital per head, of more recent vintage; higher R&D expenditure; and higher human capital per worker as measured by the higher

proportion of skilled labour in the German economy. In the reconstruction period, rapid capital accumulation produced a very 'young' industrial capital stock (40% of machinery and equipment was less than five years old by 1957 (Krengel 1958 pp.52-3). The import of human capital through the inflow of skilled workers almost certainly boosted productivity and, through the mechanisms highlighted by the new growth theory, may well have contributed to rapid growth. It seems possible that the average human capital of these immigrants was higher than that of the host population creating the possibility of the strong endogenous growth effects suggested by Dolado et al. (1993).

Surplus labour contributed to the weakening of the economic strength of the trade unions relative to that of employers in the immediate post-war period. The unions were accorded a diminished role in economic policy making from 1947, in parallel with the rehabilitation of business. The shift in the balance of power toward business was symbolized by the loss of union financial resources in the currency reform and confirmed in the stabilization episode of 1949 in which rationalization and labour shedding took place. The growing cohesion of the business associations was further marked by the passing of the Works Constitution Act in 1952 which weakened the position of the unions at plant level. The economic weakness of labour reflected high unemployment and the economic insecurity of employees. The pool of unemployment in this period included the highly skilled and motivated refugees who can be thought of as good substitutes for the existing labour force and hence as a genuine excess supply of labour dampening union wage bargaining power. Trade union membership density fell from a peak of 36% in 1951 to 32% in 1955. It is union economic weakness in this period more than a conversion to 'the politics of productivity' (Maier 1987) which accounts for wage moderation (Carlin 1992). Wage claims were made to look even more moderate *ex post* by the unexpectedly rapid growth of productivity (Giersch *et al.* 1992 pp. 76-78).

An Olsonian view of German supergrowth would focus on the effect of the war in destroying growth-inhibiting distributional coalitions and thus opening up a period of growth unfettered by the activities of interest groups. Subsequent growth would then depend on the extent to which new interest groups were encompassing and on the effect of a period of political stability in generating renewed institutional sclerosis. However, in political parties, business associations and unions there is a clear continuity between the personnel and organizations of the Bonn and Weimar republics (Unger & van Waarden 1993, Paqué 1993). Especially in the British occupation zone which included the Ruhr industrial area, the unions were seen as a core institution of the new Germany. Organizationally the unions were stronger than they were during the Weimar period: their economic weakness in wage bargaining in the 1950s was due to the conditions in the labour market discussed above.

There is some evidence of the emergence of more encompassing unions in the post-war period. In particular, the shift from craft-based to industrial unions already underway in the Weimar period was completed. The more striking change in industrial relations - but one, as emphasized by Paqué (1993), which is not central to Olson's interpretation - was the removal of compulsory state arbitration in wage setting.

4. Golden age growth, 1961-73

4.1 Labour shortage and growth

In 1961, labour supply conditions in Germany changed sharply with the building of the Berlin Wall which ended the inflow of labour from the East. Between 1950 and 1961, the labour force grew by 1.5% p.a.; from 1961 until 1973, it grew by only 0.4% p.a. Even more striking is the slowdown in non-agricultural employment growth from 2.5% (1955-61) to 0.4% after 1961. Table 5 shows the sources of growth

of non-agricultural employment between 1955 and 1973.

Table 5

Sources of growth of non-agricultural employment, 1955-73

	Growth of non-agric. employment		of which from:				
	% p.a.	'000	GDR	Abroad	Unemployment	Agric.	Residual
55-61	2.6	543	144	71	96	122	110
61-69	0.3	106	9	107	0	136	-146
69-73	0.5	199	0	265	-24	110	-152

Sources: OECD *Labour Force Statistic*s, *Statistisches Jahrbuch* 1962, 1975, SVR *Jahresgutachten*.

In spite of the recruitment of foreign workers who comprised one in ten employees by 1973, the labour market remained extremely tight. Inter-industry wage differentials were compressed (Gerfin 1977). However, as argued elsewhere (Carlin 1992), the tightening of the labour market did not result in the full utilization by the unions of their increased bargaining power. First, there was a parallel increase in the level of organization and cohesion of the employers' associations and second, the unions chose to exercise bargaining restraint. In the early 1960s, the attempt by the engineering union, IG Metall, to make use of the tension in the labour market by supporting decentralized wage negotiations was defeated by the concerted action of the employers. Subsequently, although the underlying balance of factor availability was operating to shift the factor distribution of income in labour's favour, the unions refrained from pushing their advantage - apparently recognizing the benefits for their membership of protecting competitiveness and investment. Further evidence for this interpretation comes from the fact that the

unions supported the recruitment of foreign workers, just as in the 1950s they had supported trade liberalization. Maier's reference to the 'politics of productivity' is a better description of the 1960s than the 1950s.

Growth slowed down because of the fall in the growth of the labour supply and the exhaustion of the pool of labour. Did the recruitment of foreign workers affect the growth rate? This subject has been hotly debated in Germany (see for example Giersch *et al.* (1992)). Until 1969, the jobs filled by foreign workers were concentrated in a few branches of manufacturing and construction. A limited number of large firms provided most of the employment (Gerfin 1977 p.138). These were unskilled workers and, unlike the early immigration from East Germany, were not close substitutes for German workers. Table 6 compares the qualifications of foreign and German employees in 1984.

Table 6 Educational and vocational qualifications of German and foreign employees, 1984

Nationality	Vocational education		School Education	
	completed	without	Lower secondary school	University
German	72.6	22.3	87.8	5.1
Foreign	30.0	53.6	79.1	3.2

Source: Franz (1993) Table 4 p.8.

There is no doubt that the use of foreign workers affected the development of German industry. It probably prolonged the period for which wage restraint was exercised, by providing Germans with mobility out of unskilled and semi-skilled employment into more attractive jobs. Unlike the first wave of post-war migration,

the human capital of the foreign workers was lower than that of the host workforce. In Dolado *et al.*'s augmented Solow model (with full employment), such migration is productivity growth dampening (1993). Franz (1993) uses a rationing model to simulate the effects of lower migration in this period. He finds heightened macroeconomic tension in the form of higher price and wage inflation from 1969 to 1973 as compared to the baseline of the actual level of immigration. Lower migration would presumably therefore have hastened the rate of scrapping and the speed of exit from labour-intensive industries. We have much less basis for confidence that an offsetting shift of resources into other industries would have occurred. Given the weakening of investment in the early 1970s in response to the already severe profit squeeze (see section 4.3), it is difficult to believe that higher investment would have been stimulated by a sharper rise in unit labour costs associated with lower levels of immigration.

4.2 Demand buoyancy

In accounting for the existence of catch-up in the golden age or for the need to introduce dummy variables for the 1950s and 1960s, exponents of the growth equation approach just like the growth accountants find they must introduce ad hoc factors. It seems that growth benefited from other sources in the golden age (apart from factor accumulation, the reallocation of labour stimulated by the gains from trade liberalization and access to world markets and reconstruction after the war). Alternatively, even if the residual in growth accounting is reduced by using a larger weight for the contribution of capital, the high level of investment remains to be explained.

Common to a number of accounts is the buoyancy of aggregate demand (e.g. Scott 1989, Maddison 1991). But there is a serious problem of causality involved here because it can be argued that governments were able to maintain buoyant

domestic demand in the 1950s and 60s because of the favourable supply side conditions - i.e. demand simply accommodated the rapid growth of potential. On the other hand, Keynesians argue that government commitment to maintaining demand fostered favourable expectations about growth which raised investment and in turn, the growth of potential (e.g. Boltho 1982, Allsopp 1985).

For Germany, the issue of the role of demand is less muddied by the simultaneity problem since until 1968 the government steadfastly refused to undertake a commitment to maintain domestic demand. In the golden age, Germany benefited from demand buoyancy as an external effect of the strong growth of its markets, especially in Europe. Modernization of the French and Italian economies called for new capital equipment and this was supplied by Germany. The formation of the European Community contributed to the creation of favourable expectations especially in Italy as the threat of increased competition acted to boost investment. When demand slackened at home, high capacity utilization in German industry was maintained because of export growth. This was assisted by the very long periods of fixed exchange rates combined with restrained wage behaviour during which German competitiveness was maintained (until 1969).

Detailed analysis of German export behaviour in the 1950s and 1960s confirms that once markets had been reentered, Germany benefitted from the strong growth of its markets (commodity and area composition) rather than from the growth of market share (Maizels 1963, Batchelor *et al.* 1980).

4.3 The end of the golden age: the significance of the 1966/67 recession and its aftermath

In the growth equation approach, the slowdown after 1973 is accounted for either by the disappearance of 'catch-up' or the fall in the investment share. Less attention in that tradition has been devoted to *explaining* either of these two

phenomena. Elsewhere (e.g. Armstrong et al. 1984, 1991, Marglin & Schor 1990, Flanagan et al. 1982) efforts have been made to document the deterioration of the environment for growth from the late 1960s. There appears to have been a common experience in the OECD countries of a buildup of distributional conflict over wages, conditions of work (new technology, organization of production) and the level and financing of government expenditure. Olson would emphasize the length of the period of political stability, whilst others would emphasize the disappearance of labour supply flexibility as underlying determinants of the rise of distributional tension. Accounting for the timing of the wage explosions is not easy (see Soskice 1978). Either way, it was reflected in increased inflationary pressure and declining profitability before 1973. Although growth rates did not decline until *after* 1973, these developments at the end of the 1960s can be interpreted as weakening both the environment for catchup and for investment. The issue in relation to Germany is the extent to which its industrial relations system was able to insulate it from the common tensions apparent at the close of the golden age.

The limits to union moderation were met in the aftermath of the 1966-67 recession, the first occasion on which GDP had fallen since the currency reform. This recession is significant for understanding German growth at the close of the golden age and in the years that followed. A most striking aspect of the recession was the extent to which private sector employment was cut in response to the fall in demand. Before 1967, downswings were associated with slightly falling productivity growth due to labour hoarding. But in 1966, the sharper than usual slowdown in output growth produced a *fall* in the level of employment; in 1967, employment fell by much more than output.

The recession produced significant changes in work practices and technology to increase productivity - it was referred to by the Council of Economic Experts as a *Reinigungskrise*, a cleansing crisis (1969/70 Z78). New systems for job evaluation and

performance appraisal to enable a general intensification of work were introduced (Müller-Jentsch 1981 p.48). The Bundesbank reported that the recession had the effect of improving the allocation of labour between industries and revealed cases of over- and misinvestment (AR 1966 p.10).

The combination of these sharp improvements in productivity with the wage restraint brought about by a voluntary incomes policy, produced a rebound of profitability in the boom that followed. The SPD was in government for the first time and had established a tripartite forum ('Concerted Action') for the coordination of wage and price-setting with the requirements of aggregate demand. The union leadership agreed to cooperate in wage moderation as part of a package deal which included increased government expenditure and, of greater long term significance, employment security in situations of rationalization. The downward trend of profitability since 1955 was reversed over the 1965-69 cycle with the net profit rate in manufacturing in 1969 above that in 1965. It fostered an investment boom in 1969-70, the intensity of which has not been repeated. Figure 2 shows the paths of manufacturing profitability and capital accumulation.

The strength of the upswing produced a rare loss of discipline by both unions and employers associations. Wild-cat strikes in the engineering industry in 1969 were fostered not only by the surge of profits and the very tight labour market but also by plant-level resentment at changes in work organization introduced during the recession. They were rapidly settled by employers offering substantial enterprise and plant wage increases above the negotiated levels. The result was a shift in union strategy: in the light of the threat to their authority from their membership, they were no longer able or willing to deliver the level of bargaining restraint which had characterized the 1960s.

As well as exercising less restraint, the unions experienced an increase in their bargaining power over the final cycle of the golden age. Membership density increased and they were able to extract important changes in industrial relations legislation from the government. At the same time, the exchange rate underwent a very sharp appreciation, producing an annual deterioration in German relative unit labour costs of 8.1% p.a.. High nominal wage increases and weakening labour productivity growth were common to Germany and its trading partners in these years so that excluding the appreciation of the exchange rate, relative unit labour costs would have declined by 1.7% p.a. The remarkable aspect of the impact of exchange rate appreciation is that German firms exercised extraordinary restraint in their pricing behaviour in export markets, raising prices by only just above the rate of increase of world export prices. This meant on the one hand, a very sharp squeeze on profits in tradeables (Figure 2) and on the other, that Germany's share of world exports of manufactures continued to rise from 1969 to 1973 (Carlin 1987, p.347). The change in union behaviour meant that the gains to real wages associated with the appreciation were not eroded by moderate claims in subsequent wage rounds.

It is impossible to identify clearly the implications for growth of these

developments because of the occurrence of the first OPEC shock in 1973. Businesses appeared to be taking the long view in seeking to maintain their market share by holding down export prices in the face of the revaluation of the DM. On the other hand, the erosion of profitability must have been at least partly responsible for the failure of investment to grow following the trough of 1971 (unlike any previous cycle) (see Figure 2). The early 1970s saw the exercise by the unions of increased bargaining strength registered by an upward shift in the expected real wage which unions sought to negotiate (at given unemployment). However, well before the OPEC shock, the Bundesbank made it clear that the reflection of heightened distributional tension in higher inflation would not be tolerated. There was a return to the traditional assignment of inflation control to monetary policy with the floating of the DM in the spring of 1973 and the adoption by the Bundesbank of a tight non-accommodating monetary policy.

5. Slow growth 1973-90

Slow growth was common across the OECD in this period yet the econometric estimates reported in section 1 above suggest that West German performance was not below average: residuals for Germany for this period are small and positive. As noted above however, the situation with respect to manufacturing industry is rather different, especially if the focus is on the period from 1979 rather than from 1973 (Tables 2 and 3).

It has been shown that there is little correlation across countries between the slowdown in growth after 1973 and the rise in unemployment (Glyn & Rowthorn 1988). It is not surprising therefore that whereas cross-section studies of unemployment have found support for the idea that both highly decentralized labour markets and ones where there is high coordination in wage-setting institutions lower equilibrium unemployment, efforts to find a systematic

relationship between such structures and growth have been unsuccessful (Crafts 1992). One interpretation of this result is that different institutional structures have affected the distribution of the common burden of the slowdown. Most obvious are different patterns of unemployment (Calmfors & Driffill 1988, Soskice 1990) but changes in household income distribution from 1973 have also differed across groups of countries with different institutions (Green et al. 1992).

The available evidence suggests that income inequality declined in OECD countries during the golden age. In the years of slow growth since 1973, the general trend toward equality has been halted everywhere. However, whilst inequality has increased markedly in the UK and US, it has remained stable in the Nordic countries, Austria and Japan (and also in Canada) (Green et al. 1992).

Inequality fell between 1950 and 1973 - with the rise from 1960-73 failing to offset the earlier decline (Sawyer 1976). A recent study of real disposable income per consumption unit (i.e. adjusted for household composition) shows that the income of households of salary earners, pensioners and the unemployed relative to those of wage earners has remained virtually unchanged between 1980 and 1990 (Bedau *et al.* 1993 Table 5.7 p.103). The only major change has been the rise in income of self-employed households (outside agriculture) from 2.4 times that of a wage-earning household in 1980 to 3 times in 1990. In terms of levels, in the late 1970s, Germany had a more equal distribution of income than the UK and a lower poverty rate (Buhmann et al 1988, O'Higgins & Jenkins 1989).

In section 5.1 we look at the deceleration of growth in the intershock period, focusing on the role of investment. Section 5.2 takes up the debate about the weakness of German growth in the 1980s: two divergent views can be found in the literature. On the one hand are those for whom Germany is the archetypal sclerotic European economy where institutional rigidities have inhibited the structural changes imposed by developments in the world economy in the 1980s. A quite

different view is that German economic institutions have facilitated adaptation.

5.1 The weakness of investment

Capital stock growth slowed from 6.1% p.a. (business) in 1969-73 to 3.9% p.a. 1973-79; for manufacturing the slowdown is even more dramatic - from 6.0% p.a. 1969-73 to 2.2% p.a. for 1973-79 (see Figure 2). For Germany - in contrast to the other three large European economies - it is clear that the proximate cause of slow growth in the *inter-shock* period was the slow-down in the rate of growth of the capital stock. Total factor productivity growth did not slow down markedly until after 1979. From 1979 to 1985, growth slowed yet further but this additional deceleration cannot be accounted for fully by slower growth of the capital stock. In terms of growth accounting both for GDP and for manufacturing, TFP growth more than halved. Germany's TFP performance relative to other OECD countries right across manufacturing industry dipped sharply after 1979 (Wolff 1992).[4]

Econometric evidence to support the role of declining profitability in the fall in investment in Germany is provided by Bhaskar and Glyn (1992). In an investment equation estimated for both manufacturing and non-agricultural business with the net profit share, output growth and a relative cost term, using data from 1951 to 1988, they find both the profit share and relative costs to be significant. (For manufacturing, output growth is also significant). Using the estimated values of the coefficients, they find that for Germany over half of the fall in the investment rate (I/K) between 1960-68 and 1980-88 was accounted for by a lower profit share, under a third by higher relative cost of capital to labour and the remainder by lower output growth. Japan is the only other country of the G7 for which lower profitability accounted for at least half of the decline in investment.

It is striking that German economic policy debates in the 1970s and 80s were couched in terms of the problem of profitability. This theme is found repeatedly in

the reports of the influential council of economic experts and in the annual reports of the Bundesbank (Carlin 1987, Giersch *et al.* 1992). The belief by the authorities that profitability had to be restored to its level of the late 1960s for sustainable growth to ensue underpinned monetary policy from early 1973 with the floating of the exchange rate. Following the OPEC shock, the Bundesbank reiterated its determination to force domestic agents to reduce their claims into line with the (reduced) output available (Bundesbank AR 1973 p.1). Their determination was tested the following year when public sector workers led the wage round seeking high wage increases. Public sector and then private sector employers acceded to the wage demands - presumably expecting monetary policy to be eased. The Bundesbank refused to budge with the result that a severe deflation was imposed.

This episode is highly significant for two reasons. Firstly, it demonstrated that the Bundesbank was prepared to inflict cuts in output, employment and short-term profitability necessary in its view to promote the recovery of long-term profitability and investment. (This echoes the behaviour of the Bank deutscher Länder in 1949.) And second, it established a Bundesbank policy rule under floating rates that higher inflation would produce monetary tightening and exchange rate appreciation. For the powerful engineering union IG Metall, it was therefore imperative that the initiative in future wage rounds be held by them rather than by the public sector union. Wage increases would have to be held down sufficiently to ensure that the Bundesbank was not forced to tighten policy. This episode can be seen as partially but not entirely reversing the upward shift in union bargaining intensity which occurred in the early 1970s. Whilst the sharp decline in manufacturing profit share was stemmed and for business, the profit share had recovered to its 1973 level by 1979, a return to golden age values did not take place.

Reference to the success of the 1949 stabilization highlights a key missing element of the second German attempt to use stabilization policy after 1973: the

strong growth of exports. The export orientation forced on German business by the tight macroeconomic policy stance from 1949 focused the attention of business and unions on productivity and investment rather than on price-fixing or aggressive wage-setting. This was rewarded with the arrival of the positive external shock of the Korean war. By contrast, there was a slow-down in world trade in the 1970s. Moreover, specialization in capital goods in an era of dramatically slowing investment was likely to be a handicap compared with its advantages in the 1950s. Although Germany was able to hold its share in world export markets, it could do no better than this - unlike Japan.

Unlike physical capital, there is no clear sign that the post-1973 period saw a fall off in the rate of accumulation of human capital in Germany. A major component of the process of skills acquisition is the dual system of youth training in which over two thirds of young Germans complete an externally certificated apprenticeship where training is provided by the employer at the workplace and by the state at a vocational college. With its origins in the nineteenth century and largely unchanged for sixty years, it 'appears to be characterised by a state of stable equilibrium with high demand for training places on the part of young people and high demand for trainees from industrial and commercial organisations of all sizes and in virtually all sectors of the economy.' (Steedman 1993 p. 1279). Table 7 shows the stable share of apprentices in employment.

Table 7 Apprentices as a share of employment in West Germany

	Whole economy	Manufacturing
1950	4.7	8.4
1969	4.9	5.7
1980	6.3	7.5
1988	6.1	7.3

Source: Broadberry 1993 Table 4 p.28.

There is indirect evidence of the continuing effectiveness of the system of human capital accumulation in Germany in the 1980s from the pattern of earnings differentials. Abraham and Houseman (1993) find some support for the hypothesis that the decline in earnings inequality in Germany through the 1980s (which contrasts with rising inequality in the US), is due to the fact that the relative supply of more educated workers has at least been maintained in Germany during the 1980s, in contrast to the US where it slowed considerably. Secondly, they suggest that the broadly based training provided to German young people who are not 'college-educated' makes them better substitutes both for older and more educated workers, thereby muting the effect of shifts in relative demand for labour on relative wages.

Labour shedding in Germany has been organized to keep up the level of apprenticeships by making redundant the oldest workers - who go officially into unemployment en route to retirement[5]. The industrial relations system has been crucial in preventing such senior 'insiders' from threatening the continuation of training rates in a period of low growth.

5.2 Productivity and competitiveness: the debate about German performance in the 1980s

A whole series of productivity indicators can be produced which show an unambiguous deterioration in German performance in manufacturing relative to its major competitors (including the UK) in the post 1979 period (e.g. Wolff 1992, using OECD data). The inferences drawn from Wolff's data are broadly supported by the more careful productivity calculations for Germany, Japan and the US used by van Ark and Pilat (1993) and reported in Table 8.

Table 8 Comparative levels of labour productivity per hour, manufacturing: Germany, US, Japan, 1973-90

US = 100

	Machinery, equipment		Chemicals		Textiles		Food		Total manufacturing	
	Germany	Japan	G	J	G	J	G	J	G	J
1973	90.0	50.6	90.5	60.4	81.0	53.2	68.4	39.5	79.7	49.2
1979	110.7	79.6	106.0	78.0	85.9	54.9	74.1	39.8	95.8	62.6
1990	87.6	114.4	76.7	83.8	88.2	48.0	75.8	37.0	85.9	77.9

Source: van Ark & Pilat (1993) Table 4, p.17

Turning from pure productivity measures to competitiveness, Germany's cost competitiveness deteriorated from 1979 to 1989 by 12% (using the IMF's measure of relative normalized unit labour costs in manufacturing). Relatively weak measured productivity performance was not offset by sufficiently moderate wage settlements. However, it is noteworthy that Germany's competitiveness as

measured by relative export unit values slightly *improved* over this period. (Japan is the only one of the other large OECD countries to show a similar pattern: RNULC increased by 24% whilst relative export unit values increased by only 4%.) An obvious way of interpreting this pattern would be that German companies sought to maintain their market share in the face of rising relative costs by allowing their profit margins to be squeezed, as had occurred in the period from 1969 to 1973 described earlier. However, this is hard to reconcile with the strong recovery of manufacturing profitability in the second half of the 1980s to a level close to that of 1979 (figure 2).[6]

Subject to the qualification concerning profit squeeze, it might be argued that the market test of competitiveness is the ability of an economy to maintain its position in international markets - both for exports and in the domestic market. Table 9 suggests that Germany's share of world export markets was very little changed over the decade of the 1980s. Unlike Japan and unlike its earlier performance in the 1950s, Germany was unable to achieve a major increase in market share. Nevertheless, given the dismal performance on productivity and the weak levels of physical capital accumulation in German manufacturing in the 1980s, this result is striking.

Table 9 German export competitiveness

(1972 = 100)

GERMANY	**1979**	**1990**
Germany's share of world export markets	101.7	100.7
due to change in market share	99.0	95.5
due to change in product or regional growth of world exports	102.7	105.3
JAPAN	**102.3**	**118.7**

Source: Calculated from DIW (1992), Table III.E.2/2, p.108.

Unlike the other large European economies and the US, Germany has maintained through the 1980s an industrial structure in manufacturing which is highly correlated with the structure of world exports (OECD 1989, Table 4.8, p.132). Table 10 provides more detail on German export and import performance in a number of key sectors in the 1980s. It shows that export market share has been maintained in both machinery and transport equipment and in chemicals. The contrast with the image presented by table 8 is remarkable. Nevertheless, there are signs of the erosion of domestic market share in the rise in import shares. Signs of improvement in US or UK performance in international competition commensurate with their productivity improvements are not apparent in the data.

Table 10

World market shares of Germany and its competitors, 1980, 1990.

Share of country in world exports or imports; the rank of the country is shown in brackets after X or M

MACHINERY & TRANSPORT EQUIPMENT (MTE)		1980	1990	CHEMICALS	Export or Import share	1980	1990
Germany (value of X = $197bn)	X (2)	16.5	16.5	Germany (value of X = $51bn)	X (1)	17	17
	M (2)	6.5	8.5		M (1)	9	10
Japan	X (1)	14.5	16.5	Japan	X (7)	4.5	5.5
	M (10)	1.5	3		M (6)	4	5
US	X (3)	17	15	US	X (2)	15	13
	M (1)	12	16.5		M (3)	6	7.5
France	X (4)	7	6.5	France	X (3)	9.5	9.5
	M (4)	5.5	6		M (2)	8	8
UK	X (5)	7.5	6	UK	X (4)	8.5	8
	M (3)	5.5	6.5		M (5)	5	6
Automotive products (subdiv. of MTE)		1980	1990	Office machines and telecom equipment (subdiv. of MTE)		1980	1990
Germany (value of X = $69bn)	X (1)	21	21.5	Germany (value of X = $21bn)	X (3)	10	7

	M (2)	6	9		M (2)	9.5	9
Japan	X (2)	20	20.5	Japan	X (1)	21	22
	M (10)	.5	2		M (9)	2.5	3.5
US	X (3)	12.5	10	US	X (2)	20	17
	M (1)	19.5	23.5		M (1)	15	20
France	X (5)	10	8	France	X (9)	4.5	4
	M (5)	5	6.5		M (4)	6	5.5
UK	X (7)	6	4.5	UK	X (4)	6.5	6.5
	M (4)	5.5	7		M (3)	6.5	7.5

Source: GATT (1991) World Trade 1990-1991, Tables IV.43, 34, 39, 29.

There are two divergent views in the literature about German economic performance in the 1980s. The most familiar view focusing on productivity and investment weakness is presented very clearly in Giersch et al. (1992) and identifies mounting institutional rigidities which weakened the economy's ability to adapt to structural change. The alternative view focuses on the successful adaptation of German industry to increased competition in product markets. This approach, exemplified in the studies in Katzenstein (1989) is based on detailed 'qualitative' analysis of the behaviour of companies in adjusting to market pressures. It hints at possible problems with productivity-based indicators of performance and competitiveness and suggests that an exclusive focus on productivity may exaggerate weaknesses in German industrial performance in the 1980s.

These alternative interpretations of the *supply side* produce sharply different judgements about the role of *macro*economic policy in growth in the 1970s and 1980s. In the 'supply-weakness' interpretation, an activist fiscal policy during the 1970s and in particular Germany's leading role in the coordinated international expansion in 1978/9 worsened the conditions for growth. Once interventionist fiscal policy was abandoned and its operation brought into line with monetary policy in a medium-term stability orientation in the early 1980s, macroeconomic policy ceased to hamper growth (Hellwig and Neumann 1985). Germany's persistent current account surplus in the 1980s is attributed to the lack of sufficient worthwhile investment opportunities at home to absorb rising business savings (e.g. Giersch et al. 1992, pp.245-250).

From a perspective emphasizing the successful adaptation of German industry, the very restrictive monetary and fiscal policies pursued from the early 1980s were unnecessary in the sense that they were not required to impose discipline on the unions. Germany, it is argued, could have operated at a higher level of activity, and by implication with higher growth (thus turning the relationship between the interest rate and the growth rate in favour of growth and hence reducing the budgetary problem), without an unsustainable deterioration in macroeconomic stability. From this viewpoint, the persistent current account surplus reflects the failure to run the economy at maximum sustainable output[7] (e.g. Soskice 1990).

Englander and Mittelstädt (1989) find that slow output growth has a depressing effect on TFP growth in the medium term (pp.47-8, Table 20). To the extent that a more expansionary demand policy would have inflationary or budgetary consequences, the relationship between demand and TFP growth does not support the use of such a policy. Since the consequences may be distortionary and productivity decreasing (p.48), the relationship cannot be exploited by policy. This implicitly assumes the economy is operating at minimum sustainable unemployment. To the extent the Germany was operating with greater than minimum sustainable unemployment, Englander and Mittelstadt's results suggest that failure to expand demand contributed to weak productivity performance.

5.2.1 The 'sclerosis' view Giersch has been a long-standing proponent of the 'sclerosis' view. He identifies several growth-inhibiting institutional structures which reduced growth in a situation in which profitability was under pressure from increased union aggressiveness and higher commodity prices. Giersch *et al.* (1992 p.213) argue that there was a shift away from the institutionalized social peace characteristic of the 1960s due to a 'deep-seated sociological and economic transformation'. They point to a number of episodes in industrial relations to support this view: (i) the unions quit the 'Concerted Action' tripartite discussions in 1977 over the issue of codetermination; (ii) the print dispute in 1978 which sought to slow the introduction of new technology and (iii) the working hours campaign by the unions in support of a 35 hour week. However the case for identifying a fundamental break in the industrial relations climate is far from clear. Giersch *et al.* themselves downplay the importance of (i) and (ii). Compromise over the working hours campaign produced increased flexibility in the utilization of fixed capital and labour. Moreover, this period saw a high level of cooperation between the engineering employers and unions over the restructuring of the apprenticeship qualifications to meet the demands of new technology and the need for the multiskilling of workers (Casey 1990).

Secondly, they argue that there was a new qualititative dimension to public subsidization and the heavy legal regulation of economic activity in the 1970s and 1980s: '[n]aturally all the resources retained in structurally weak sectors were lacking in those branches - mostly high-tech industries and modern services - which could be expected to have a bright future in a world of free trade and free capital movements' (p.217). The third factor was the likely disincentive effect on work effort of the system of income and payroll taxation.

The analysis of sclerosis leads to the policy recommendation of liberalization and a shift toward the institutional minimalism of traditional neoclassical theory. In line with the Giersch view, it has been suggested that the brighter outlook for German productivity growth from 1988 arises from the easing of labour market regulation in 1985 to facilitate the use of short-term contracts and the impact of the Single Market programme in lowering barriers to entry in product markets and facilitating cross-border mergers and takeovers (O'Mahony 1992a, p.57).

Doubt is cast on the significance of German labour legislation as a mechanism of sclerosis by the findings of Houseman and Abraham (1993) that the adjustment of total labour input in Germany in response to changes in demand is very similar to that in the US and appears not to have changed following the weakening of employment protection in 1985. The key difference is that in Germany adjustment occurs through hours of work rather than through layoffs. In the context of structural adjustment, the option of short-time work is not necessarily inefficient: long-term unemployment may be reduced by the avoidance of large-scale layoffs. Public subsidy of short-time working can allow a slower reduction in employment through increased reliance on attrition and the voluntary departure of the most mobile.

5.2.2 The 'successful adaptation' view This view focuses on private-sector driven adaptation to increasing competitive pressures in Germany's core industries: machinery, motor vehicles and chemicals. The argument centres on the strength of German adaptation in these industries arising from the cooperation between unions, works councils and employers in the training system, the role of committed ownership allowing long-term incremental innovation strategies and the pressure that employment security places on companies to upgrade the skills of their employees and the quality of their output.

Case studies illustrate the way in which German companies developed the strategy of what has been referred to as 'diversified quality production' in response to the opportunities provided by microelectronic technology and the pressure to evacuate price-competitive market segments (e.g. motor vehicles (e.g. Streeck 1989), mechanical engineering (e.g. Herrigel 1989, Finegold 1993 on machine tools), chemicals (e.g. Allen 1989) and financial institutions (e.g. Oberbeck and Baethge 1989). From a completely different tradition, the series of matched plant studies carried out at the National Institute although primarily aimed at uncovering the determinants of comparative productivity *levels* rather than long-term company strategies frequently uncovered patterns of diversified quality production consistent with the findings of the industry case studies. Of note, is that the National Institute studies included industries outside those regarded as comprising Germany's core such as furniture, clothing and food processing.

There is a major problem with quantifying the improvements in quality which are stressed in the case studies. However, a detailed study has recently been completed by Mason et al. (1993) of the biscuit industry in Germany, UK, France and the Netherlands where they attempt to quantify the extent to which productivity comparisons based on the National Institute / Groningen method of using unit value ratios (as used in the calculations in Table 8 above) differ from quality-adjusted output per employee hour. A relatively simple product which is traded internationally was chosen to facilitate the comparison. Table 11 summarizes the various productivity measures.

Table 11 **Comparisons of productivity measures in the biscuit industry: quality effects**

UK = 100; Data is for 1989,90

West German productivity (employee-hour); Census of production - unit value ratio method			Productivity (employee-hour); Sample of plants in biscuit manufacture in Germany	
Manufacturing	Food, drink,	Biscuits	Tons/employee	Quality-adjusted value

	tobacco			hour	added/employee hour
120	107	75		80	140

Source: Mason et al. 1993

This study highlights the discrepancy in *levels* which arises from quality differentials. German producers would have had to have followed a strategy in the 1980s based on moving continually into higher quality market segments, for this to impart a measurement error into the trend of productivity growth measured according to the unit value method. There is one further interesting insight in the biscuit study. It found that the average age of machinery in all four countries was very similar and was uncorrelated with the inter-country quality-adjusted productivity differences. However, in Germany, a 'pro-active' engineering policy was identified where engineering staff worked closely with production supervisors to develop and adapt machinery. Low-tech, low-cost modifications to equipment were characteristic of the processing operations. 'According to one German manager, it could take a competitor 'up to ten years' of incremental improvements to achieve the desired throughput on capital equipment.' (Mason et al. p.28).

This study may provide one tiny piece of evidence which can help to reconcile how Germany has maintained its share of product markets in the face of falling cost competitiveness and low measured physical capital accumulation. The human capital endowment of German workers is linked to the quality adjusted productivity performance and to the product strategy chosen. The complementary skills of production workers, supervisors and engineers enabled low-cost / high return improvements to equipment which were not available to plants elsewhere.

The possibility therefore exists that measurement error is partly responsible for the competitiveness / productivity / investment paradox. Unfortunately there has been no work done in Germany comparable to the effort made in the United States

to construct quality-adjusted price indices. Whilst it is therefore impossible to make any calculations as to the underestimation of output and capital growth due to failure to adjust for quality changes, the results from the US indicate that the bias may be substantial.[8] Gordon (1990) found that for producers' durable equipment, the 'alternative' price index increased at a rate 3% p.a. slower than the official series over the period 1947-1983 (Table 12.2, p.536). Using the official price index, the ratio of equipment investment to GDP remained constant over the period, whereas using Gordon's alternative index, it trebled (Table 12.5 p.546).

5.2.3 An evaluation There are common threads in these two interpretations. An important point of agreement is the idea that direct government intervention in industry has been largely unsuccessful in this period. Neither in sunset (ship-building, steel) nor in sunrise (electronics and biotechnology) have attempts by the government to foster competitiveness met with success. By contrast, the government largely stayed clear of the three core sectors (and banking) (Katzenstein 1989 p.19). Government support for biotechnology since the early 1970s appears to have revealed the inability of German scientific institutions to facilitate advancements in this field.

The 'successful adaptation' view focuses on the incentives internal to the existing structures of labour and business. One simple hypothesis would be that weaker German productivity growth in manufacturing in the 1980s than in the UK and US reflects the existence of different forms of productivity growth. In the core sectors in Germany, export market shares have been maintained through innovation and increases in quality but average productivity growth for manufacturing has been pulled down by slow rationalization of ailing sectors - as compared with the UK. This does reflect the institutional structure in Germany - strong unions and ownership structures which militate against radical changes of strategy and can lead

to blocking coalitions and inertia (e.g. Houseman 1989, Mayer 1993). Klodt (1990) and Giersch *et al.* (1992) provide evidence of the role of increased government subsidies and higher effective protection in slowing the decline of employment in the so-called Ricardo industries (mining, agriculture and ship-building). This suggests that the growth of the physical capital stock and of human capital may be the best guide to the balance between the different qualities of productivity growth. The insights from the case studies and the biscuit industry suggest that human capital may play a more important role than physical capital in the German strategy of the 1980s.

6. Is there a West German economic model and, if so, has it affected growth?

6.1 Growth and institutions

The new growth theory has opened the way for the influence of institutions on growth to be taken seriously (by neo-classical economists). Within the traditional Solow model, even if institutions (or policy) were thought to affect capital accumulation, a higher investment share could only raise growth temporarily and by a small amount. By contrast, the new growth theory emphasizes a much broader notion of capital accumulation - investment not only in physical capital but also in human capital and intangible capital (innovation). Institutions which, for example, foster investment in human capital and therefore raise the stock, in turn stimulate further investment in the other complementary forms of capital, raising the growth rate.

To illustrate the possible magnitude of such effects, consider the simple example provided by King and Levine (1993). They compare Solow's production function $y = Ak^a$ (where y is per capita GDP, k is the per capita stock of physical capital and A represents the omitted residual elements including human capital) with the new growth theory production function of the form $y = \underline{A}(\underline{K})^a$ where $\underline{K}$ is

the comprehensive capital aggregate and a is the associated share parameter (pp.160-1, 164-5). In the Solow case, the estimated upper bound on a is about 0.5 whilst the work of Mankiw et al (1992) find a value for a of 0.8. This matters because a rise in the investment share of 10% produces a higher annual growth rate of 0.33% over a thirty year period in the Solow model (with a = 0.5) but of 1.33% p.a. in the model in which a much more comprehensive view is taken of the notion of investment. Of course even more dramatic results emerge if the value of a is put at one as in the endogenous growth approach.

The opening up of the debate about the role of institutions in growth by the new theoretical advances appears especially relevant to the analysis of West Germany for three reasons. On the one hand, the discussion of the experience of the inter-war period in section 2 above suggested that institutions played a part in the growth failure of the Weimar Republic. Secondly, there is a long tradition in the attempts to explain weak British post-war growth of drawing contrasts with Germany and its allegedly superior institutions. Thirdly, two major institutional developments have taken place in the UK and US (and elsewhere) in the 1980s which have been absent in Germany in spite of the presence of a conservative government from the early 1980s: the major weakening of trade unions and financial liberalization. In Germany, trade union strength has been largely untouched and the twin phenomena of financial liberalization (the expansion of consumer credit and the increasingly active market for corporate control) have not been observed. Has German failure to follow these institutional restructurings hampered its growth performance?

The 'ordo-liberal' architects of West Germany's post-war economic constitution took the view that they were engaged in constructing a distinctive model. Their concept of a 'social market economy' originated from a diagnosis of the failings of the Weimar Republic in which weak governments had become

increasingly open to the rent-seeking of private sector interest groups (Giersch et al. 1991, p.27). The implication was that a strong state with strictly limited competencies was required. By limiting the tasks of the state, the leverage of special interest groups would be minimized. One reflection of the objective of restricting the scope of state activities was to establish free collective bargaining in 1949 without compulsory arbitration by the state as in the Weimar period.

In particular, the state would be anti-interventionist following rule-based macroeconomic policies, it would use anti-cartel legislation and free trade to combat rent-seeking by interest groups and deal with market failures with 'market-conforming' instruments. But the state does not abstain from influencing interest groups: 'the State in the Federal Republic acts in a variety of ways as a supporting, facilitating, encouraging force in the formation and preservation of broad, encompassing, internally heterogenous interest organisations. Ironically, but hardly unintended, the interventionist policy of the German State on the organizational forms of social interests enables it in many cases to abstain from direct economic intervention since it provides interest groups with a capacity to find viable solutions between and for themselves.' (Streeck 1984 p.145).

This 'model' of the social market economy stood in sharp contrast to the 'post-war settlement' in the UK. The UK's post-war settlement is often taken to include interventionist macroeconomic policy associated with a commitment to full employment; the build-up of the welfare state; the use of 'non-market' techniques such as nationalization to deal with market failures and government agreement with the trade unions to secure wage restraint in exchange for the continuation of trade union 'privileges' on the shop floor regarding the organization of work.

Alfred Chandler (1990) has identified a distinctive German form of industrial capitalism originating in the late nineteenth century which he calls 'organized capitalism'. The challenge is to identify the circumstances under which organized

capitalism detracted from or contributed to growth. One example of the interaction of policy measures with 'organized capitalism' to produce growth dampening effects is the policy of official support for cartels. The use of foreign trade as a pro-competition instrument in West Germany in the 1950s was discussed above. Berghahn (1986) charts the 'Americanization' of German companies over the course of the 1950s and 1960s, in the sense of the demise of paternalism and cartel behaviour. American influence did not extend to corporate governance or to the wage bargaining system.

Hallmarks of a West German model - at least as perceived in the literature on Anglo-German comparisons - relate to the following characteristic institutions. (i) Industrial relations: industrial unions, works councils at plant and company level, highly organized employers' associations, high employment security. (ii) Vocational training: the dual training system (apprenticeships in companies combined with state-funded vocational schools), national standards of certification regulated by chambers of commerce. (iii) Finance and the ownership of industry: a close relationship between banks and industry, and a small proportion of companies subject to the classic split between management and a dispersed ownership. In all three cases, cooperative relationships between agents from different institutions which are not mediated through market transactions play a vital part in arguments identifying growth-enhancing institutions.

It has been argued that differentiated business strategies across the advanced countries have emerged in the past decade as a consequence of developments in microelectronics and of the increased competition from the so-called Asian miracle economies. These economies have succeeded in a sustained process of switching their workforce from less to more sophisticated products (Lucas 1993).

6.2 The core institutions of the German model: industrial relations, vocational

training and the financial system

Industrial relations

The economics literature on the relationship between industrial relations institutions and growth is not well developed. However, Lancaster's (1973) model of the dynamic inefficiency of capitalism provides insights into the implications for growth of both the conflict between labour and capital and of inter-union rivalry. Lancaster was concerned with the first issue. He set up the problem as a differential game in which capitalism was characterized as a dynamic conflict: 'Each group has control over one key variable - the workers over their consumption in each period, the capitalists over the rate of investment - but the outcome for both groups depends on the other group's decision variable as well as its own' (p.1096). The dynamic inefficiency arises because the workers' wage setting decision (consumption in each period) is separated from the capitalists' investment decision.

The model suggests that under circumstances of incomplete information, wage decisions may depend on the confidence of the union that consumption foregone will actually be invested. '[O]ne way of reassuring them on this point is by granting them institutionalized influence on the management of the enterprise.' (Streeck, 1984, p.147). The access to information and rights of consultation of Works Councils and of the employee members of the enterprise Supervisory Board under the provisions of codetermination in West Germany can therefore be interpreted as a means of mitigating the dynamic inefficiency.

Pohjola (1984) has extended Lancaster's model to consider the effects of union rivalry on growth. In this case, the 'capitalists' are modelled by an investment machine which automatically invests output which is not consumed. The dynamic inefficiency now arises because independent wage setting by the rival unions will result in a shift to setting the highest level of wages earlier than would occur under a collective union decision. The reason for the lower than optimal growth is

fundamentally the same as in Lancaster's model: the inability of one group to ensure that its decision to postpone consumption will actually be translated into investment.

Centralizing the bargaining structure is an obvious way of eliminating the externality. But for Germany, the relevant question is how to explain coordinated wage setting in spite of the formal location of wage negotiations at industry level (Soskice 1991). In brief, the method of wage setting in Germany has operated to coordinate private and public sector wage increases so as to protect international competitiveness; to regulate differentials between skill categories in the industry agreements; and to permit limited flexibility via the 'second round' of wage setting at local level. It has been suggested in a repeated game context that one influence on whether cooperative play is forthcoming from different unions is the level of inflation (Pohjola pp.69-70). In a low inflation environment, the costs of cheating are higher since it is easier to distinguish exogenous price shocks from those associated with one union cheating on the wage agreement. This argument provides a link from the independence and statutory obligation of the Bundesbank to maintain low inflation to cooperative (growth-promoting) behaviour between unions.

Vocational training

New growth theory (e.g. Romer (1989), also Scott (1989)) highlights the contribution which investment in human capital can make to growth. Problems of data availability have meant that empirical tests of the role of human capital in comparative growth have typically been limited to schooling variables. But the distinctive feature of human capital formation in the German economy especially as compared to the UK and the US is the extensive vocational training system. Twelve years after leaving school, 80% of Germans had received a training certificate or post-secondary education degree and almost all of the remainder had received some

formal post-secondary education or training (Buechtemann *et al.* 1993, p.101).

In a series of plant level comparisons of industrial productivity between Germany and the UK carried out at the National Institute (Daly et al. 1985, Prais et al. 1989, Steedman & Wagner 1987, 1989, Mason et al. 1993), vocational training has emerged as a prime candidate in explaining persistent productivity differentials. In particular, it is the delivery by the system of broadly based intermediate skill levels which marks it out from the US and UK systems. Support for the results of the plant level comparisons has been provided by the econometric estimates of O'Mahony (1992b).

Using ad hoc growth accounting methods following Denison , van Ark and Pilat (1993) find that the German labour quality index for manufacturing is 96.5% of the US on the basis of educational qualifications and rises only marginally to 98.5% when an adjustment for vocational qualifications is made. In these calculations, the higher proportion of college-educated employees in US manufacturing outweighs the effect of German vocational training. More research is required on the contribution of different types of education and training to on-the-job learning and productivity not only in manufacturing but also in the service sector. The panel data study of Buechtemann *et al.* which includes non-manufacturing as well as manufacturing jobs, compares German and US labour markets. It provides evidence albeit indirect on whether the German system 'provides for a better allocation and utilization of labour through producing more standardized, portable workforce skills and sending clearer signals about acquired skills and corresponding productivity potentials to employers' (1993, p.103). Table 12 below suggest a more efficient use of labour in the years following school in Germany. This is reflected at the aggregate level in Germany's relatively low youth unemployment. A majority of those undertaking training in Germany find employment in jobs requiring those qualifications. By contrast, three quarters of US school leavers in work five years

after leaving school were in jobs requiring at most 6 months on the job training.

Table 12 The transition from school to work: comparison between Germany and the US

School-leavers in training and further education n years after leaving school (% of cohort)			
	one year	4-5 years	12 years
Germany	79.0	40.7	3.9
US	33.6	9.3	5.5
School-leavers unemployed n years after leaving school (% of cohort)			
Germany	3.9	1.9	3.0
US	9.7	11.9	4.6
Matching of skills acquired with skills required by the job five years after leaving school			
Germany	% of school leavers in jobs requiring the specific occupational qualification they were trained in		
	70		
US	% of school leavers in jobs requiring		
	only brief on the job training	6 months on the job training	some post-school training
	20	55	25
Memorandum Items (ave 1980-90):			
Youth unemployment : % total unemployed less than 25 years		Standardized unemployment rate	
Germany	24.6	5.8	
US	39.3	7.0	

EC	41.8	9.5

Source: Buechtemann *et al.* (1993) Tables 1, 3a, 4b-c, pp.105-6, OECD *Historical Statistics 1960-1990* Table 2.19.

The provision of marketable skills to an unusually broad section of the workforce in Germany can be explained by the presence of a set of specific institutional arrangements (Soskice 1992). For the German system to work, it must provide incentives for school-leavers to work hard at school in order to compete for apprenticeships, for apprentices to contribute to the cost of training through low training wages, for firms to offer and partially fund training places and to be willing to have their standards of training supervised. To create these incentives, institutional arrangements include the division of responsibilities between the state, business, unions and individuals. The state contributes to the financing of training through the provision of vocational schools in which apprentices spend one or two days per week. It also establishes national standards for vocational qualifications. Unions and employers' associations cooperate closely in defining the detailed content of apprenticeships and in setting low training wages. The monitoring of training standards within companies is the responsibility of the local chambers of industry and commerce. This system helps overcome the unwillingness of companies to allow government officials close access to the details of production and other business activities.

The wage setting system and monitoring by Works Councils prevents employers from poaching trained workers and by eliminating the free-rider problem, creates incentives for firms to contribute to investment in training. The legal protection of the artisanal (Handwerk) sector plays a vital role in the supply of training places at the bottom end of the ability scale (Steedman 1993). To secure a sufficient demand for apprenticeships by young people, there is a hierarchy of

apprenticeships according to the quality of the internal labour market to which the training place provides access and the value of the training in the external labour market.

Finance and industry

A literature has recently developed proposing that the financial sector can have a large effect on productivity enhancing investment which, via the new growth theory, can have a large effect on growth (Bencivenga and Smith 1991, Roubini & Sala-i-Martin 1991). King and Levine (1993) sketch an intuitively appealing route through which financial markets can affect investment. In the traditional view, financial intermediaries are passive processors of financial surpluses from the household sector to the enterprise sector. The 'new view of finance' sees financial intermediaries as active participants in the shaping of industry. An efficient financial system will permit the evaluation of ideas without allowing those ideas to be appropriated by competitors and it will be able to evaluate investments including those in intangible capital goods and deal with the problem of the poor quality of collateral for such investments (King and Levine 1993 p. 159). Thus countries with better functioning financial systems will allocate savings to higher productivity projects which in turn will raise growth.

Testing such theories econometrically is in its infancy (see King and Levine (1993) and the comments on their paper by Gertler and Roubini). The variables used to measure the financial system seem too crude to help identify if there are differences between the relative efficacy of financial systems in the different advanced economies.

However, with the notion of a set of linkages from the financial system to comprehensive capital formation to growth in mind, one can turn to the long-standing debate about the relative merits of the German financial system. Many

industrialized economies are characterized by what can be described as 'insider' financial systems (Corbett and Mayer 1991, Franks and Mayer 1992) in which external markets for corporate control are not relied upon to enforce efficient behaviour on the managers of firms through the threat of hostile takeover. In the German system (a classic 'insider' one), large companies have a supervisory board obliged to monitor the management board (Schneider-Lenné 1992). Important share-holders (other companies, banks) and stake-holders (employees, other companies (suppliers and purchasers), banks) are represented on the supervisory board.

Moreover in Germany, a far smaller part of the business sector is characterized by the classic separation of ownership and control than is the case in the UK. The classic separation occurs in the joint stock public company. In Germany only about one fifth of turnover in the economy is accounted for by public joint stock corporations (AGs). This contrasts with the UK where at least 53% of turnover is accounted for by public companies. Even in public companies, share holdings are much more concentrated in Germany than in the US or UK. In the 200 largest listed German companies almost 90% of firms had at least one shareholding of at least 25%. In the UK by contrast in more than four fifths of the largest 200 listed companies, the largest shareholding was below 25%. The striking feature of ownership of large companies in Germany is not ownership by the banks but the extent of cross-ownership between non-financial companies (Franks & Mayer 1992).

Although the strong position of Andrew Shonfield (1965) that German banks plan industrial development cannot be sustained, it can be argued that the 'insider' financial system promotes investment in human, intangible and physical capital that is specific to enterprises and their long term relationships with related companies. Difficulties with realizing the value of such investments in the event of a change in ownership deters investment of these kinds in economies with outsider financial

systems (Mayer 1993, Kester 1992, Porter 1992). The advantages of such relationships lie in their ability to foster long-term investments which are relationship-specific - overcoming problems of opportunism which bedevil market transactions especially in relation to investment in intangibles such as human capital and research and development where the costs of writing complete contracts are prohibitive (Williamson, 1985).

What role do the banks play in sustaining such relationships? The attempted Americanization of the German banking system following the second world war was unsuccessful. The US occupation authorities did not succeed in their attempt to implement a 'Glass-Steagall' separation of commercial from investment banking. They managed to break up the three large banks on a regional basis but only until 1958. Contrary to common perceptions, the German banking system is not highly concentrated. The 'big banks' in West Germany accounted for only 12% of bank lending to non-bank enterprises and the self-employed in 1988. The state-owned savings banks and credit cooperatives accounted respectively for 35% and 16% of loans to enterprises in 1988 (Edwards & Fischer, 1993, tables 5.1, 5.4).

Both the large banks and the savings and cooperative sector banks play a part in corporate governance in Germany's 'insider system'. Although holding only a modest proportion of the entire market for loans, the big three banks maintain a far greater web of connections linking them to the governance of large German firms (through ownership of shares, control of voting rights, representation on supervisory boards and syndication of new share issues (see Edwards and Fischer (1993) Tables 5.4-8, 9.3).

For small and medium-sized firms, relationships with banks are not cemented by cross-ownership or membership of supervisory boards. Rather the savings and cooperative banks - for which counterparts do not exist in the UK - appear to form long-term relationships with their clients which are not found between SMEs and

banks in the UK (Harm 1991, Deakins and Philpott 1993). One explanation for this is that the regulated 'local embeddedness' of the savings banks (whereby banks are limited to a region and hence often to the fate of a limited number of industries) means that they have an incentive to concentrate on long term relationships with their local customers.

Early in German industrialization, bank coordination of industry took place through direct channels of supervisory board membership and bank ownership stakes in industry. More recently and especially in the past decade, technological advance has reduced the feasibility and importance of direct monitoring. German banks reduce informational asymmetries not by having tremendous industrial expertise as was the case before the first world war but by their use of reputational monitoring. Indirect or reputational monitoring has replaced direct monitoring as banks make use of inside information on companies gathered by other related companies, other banks and employers' and industry associations (through their training, technological transfer and export marketing activities) (Soskice 1993 p.26). Related companies have an incentive to tell the truth to the bank since they have their relationship-specific investments at stake if the bank were not to know some 'bad news' about the company and fail to take corrective action.[9]

From this perspective, German 'long-termism' should be interpreted in terms of such non-market relationships between companies and other companies, employees, bank(s) and institutions such as vocational colleges, industry associations and chambers of commerce. This interpretation provides a way of understanding the less than whole-hearted embrace by German business of financial and labour market deregulation in the 1980s.

7. West German growth - what does it tell us about the prospects for growth in

East Germany?

In the midst of the euphoria of German reunification in 1990 allusions were made to the Currency Reform in 1948 and the *Wirtschaftswunder* of the 1950s. Such parallels proved potent politically. But in historical and economic terms a parallel is scarcely discernible. As argued in section 3, in 1948 the Currency Reform clarified existing property rights and gave business the confidence to deepen the recovery process already underway by embarking on forward-looking decisions. Two more factors were identified as critical in turning the recovery into self-sustaining growth: production was highly profitable and the Korean War boom generated rapidly growing demand for German output, especially capital goods. Large well-established German companies picked up the threads of long-established markets. The situation facing the state-owned enterprises of the GDR in 1990 was very different. Reunification brought with it dramatic wage increases for East Germans which rendered unprofitable the great majority of enterprises in the tradeable goods sector (Akerlof *et al.* 1991). The organizational form of large enterprises was designed to fit an allocation system and an international division of labour unrelated to market incentives. Large-scale restructuring of enterprises was required as well as finding new owners and new markets (Carlin and Mayer 1992).

East Germany is likely to defy the pessimistic '2% convergence rule' (Barro and Sala-i-Martin 1991) which would predict convergence of East to West German living standards only in over 70 years. But this will be a result of quite different mechanisms than those underlying West German super-growth in the 1950s. For East Germany, the extremely high investment share (if maintained) of 45% of GDP (and 25% of GDP for business equipment investment) is central (Dornbusch & Wolf 1992, Burda and Funke 1993). The key difference from the post-war period is that this investment is coming from outside the East German economy.

The emphasis in sections 5 and 6 on West Germany's institutional structure

and the way it has affected business strategies in the 1980s provides a note of caution to the optimism engendered by the scale of investment in East Germany. The emergence of microelectronic technology and fast growing competition in sophisticated manufactured goods revealed differential adaptation patterns within the advanced economies. Germany's institutional rigidities of employment protection, highly structured wage setting, and compulsory consultation by management with the workforce ruled out adaptation through cost-cutting strategies and forced companies to move into high value added products and processes (Sorge and Streeck 1988). By the same token, the West German institutional structure makes possible forms of innovation which are not available to economies which are unable to sustain long-term relationships between companies, their employees and financial institutions.

The regions of East Germany are obliged to operate under the labour market and other forms of regulation transferred from West Germany and will not have the option of being a low-wage economy (cf the Czech Republic). If they are to develop an indigenous economic base and enterprises are not to remain as the 'extended work-benches' of West German companies, then the institutional structure must be created in which long-term relationships which seem essential to West Germany's high wage economy can be built up. For example, in the absence of local chambers of commerce which can provide the appropriate monitoring for apprenticeships, this task is being carried out by local governments - much to the distaste of West German companies operating there. There must also be a network of other related firms, a local infrastructure for the diffusion of innovations, and stability in banking and business association personnel sufficient to enable the development of 'collective knowledge of reputations' (Soskice, 1993). Without these features of a coordinated market economy, East Germany will have little chance of succeeding in the kinds of markets successful West German firms have moved into in the 1980s. The danger

for East Germany is of having only the constraints entailed by German labour and corporate law and few of the positive externalities associated with that system in the West.

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1. Note the contrast between the conclusion about relative German growth performance after 1973 using these comparative growth equations as compared with Giersch *et al.*'s characterization using the raw GDP growth rates: 'as all could now see, West Germany gradually turned into a laggard in the international growth race, with the lowest real GDP growth of the six largest industrialized countries. (1992, p.185).

2. A good collection of papers in English by the major participants in the debate is von Kruedener (ed) 1990.

3. For a fascinating analysis of contemporary proposals to boost profits and stimulate investment through the use of tax credits see Kalecki (1990(1932)) and Rüstow (1978).

4. Some doubt is cast on the decline in manufacturing TFP growth by the disaggregated analysis of Flaig and Steiner (1993). Examining TFP growth in 25 of the 31 2-digit branches of West German manufacturing industry over the period 1961-85, they find neither a trend in conventional TFP nor in their measure of TFP adjusted for capacity utilization and economies of scale and no structural break during the period.

5. The increased duration of spells of unemployment in the 1980s in Germany is largely accounted for by this pattern (Schettkat 1991 pp.302-3).

6. Given the productivity level data, it is also hard to reconcile the profitability data with the estimates for compensation per hour in manufacturing reported in Hooper and Larin (1989): they suggest that hourly compensation in Germany was 27% above that in the US in 1988 and 25% above in 1979 (Table 1, p.341).

7. See Carlin and Soskice (1990) for a theoretical discussion of this open economy concept.

8. Pilat and van Ark (1993) however, do not believe that improved price indices would substantially alter their conclusions about comparative productivity levels.

9. This interpretation suggests that the conclusions of Edwards and Fischer's study (1993) should be interpreted with caution. They are unable to substantiate empirically the existence of two specific channels through which German banks enhance the performance of large German companies. Their work focuses on patterns of direct monitoring (to alleviate asymmetric information problems and to monitor managerial behaviour on behalf of the owners) in large public companies. They do not address the broader context of the financial system in Germany and the UK (including the small and medium enterprise sector) nor the issue of indirect reputational monitoring.