

**"FRENCH POSTWAR GROWTH:
FROM (INDICATIVE) PLANNING TO
(ADMINISTERED) MARKET"**

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**French Postwar Growth:
From (Indicative) Planning to (Administered) Market**

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FRENCH POSTWAR GROWTH

SUMMARY

France's post-war growth has gone through four phases. The strong growth performance of the 50s was helped by a catch-up phenomenon on best foreign practices, and by a positive effect of capital rejuvenation. Yet, the best performance comes next and cover a period of nearly twenty years starting around 1958 and coming to an abrupt end in 1973. The macro treatment of the oil shock was less than happy, and the supply side measures came to a standstill. The 80s did not prove to be better, even though further liberalisation measures were taken, this time concerning financial markets as well the privatisation of a significant part of still state-owned industry.

Despite several waves of liberalisation, mostly after the creation of the EEC and the return of the franc to convertibility, both in 1958, and then in the eighties, France still appears to be struggling with lingering powerful rigidities. Labour market institutions and human capital accumulation may have replaced protection and inefficient productive capital accumulation as the main source of slower growth.

1. Introduction

France has managed to deliver one of the fastest and smoothest European growth performances since 1950. Why that is so remains largely a matter of debate. Alternative explanations centre on catching-up (Carré, Dubois, and Malinvaud, 1972; Dubois, 1985), on new personnel at the helm of the State (Sautter, 1982), on the benefit from opening up to international trade (Adams, 1989). In revisiting French growth we exploit the advantage of hindsight, extending the period of observation to the 1980s and early 1990s, and explore some of the implications of the "new" growth theory emphasising aggregate increasing returns. This leads us to look at human capital accumulation and the role of institutions.

France's growth performance has been impressive mainly in the 1960s. After 1973, France has undergone the same slowdown as most other European countries. Before 1958, it has not quite exploited all of its potential for catch-up. In searching for explanations, like Carré et al. (1972) - the landmark work on French growth - we devote particular attention to industry level data and emphasise the key role played by the state as part of its traditionally active industrial policies. As Villa (1993) we note the important role of equipment age and vintage.

As we focus on institutions, we pay particular attention to income distribution and find that the large swings in the rate of investment are well correlated with the share of GDP allocated to profits. More than previous authors, maybe, we find many footprints of distortionary policies, mainly in the distribution of saving for physical capital accumulation and in the education system for human capital accumulation.

Thus in the immediate post-war period, there is some evidence of inefficient capital, favouring industries already capital intensive. We can link this process to government control on subsidies and credit distribution, as part of its industrial policy. Following the Treaty of Rome (1957), however, France had to integrate itself into the Common Market. As a result of more competition and with the need to redirect trade towards its European partners, the process of

reallocation of factors of production became markedly more efficient. Another efficiency boost occurred in the mid eighties as financial markets were liberalised and macroeconomic policy became driven by the objective of a "strong franc" tied to the DM. The picture that emerges from our study is that of a country which has actively sought to integrate itself completely into the wider European Economy, and in the process has given up much of its idiosyncratic approach to economic policy making.

The next section presents the broad facts at the aggregate level: the main phases of post-war growth, the evolution of unemployment, inflation and the external sector. Section 3 looks at the immediate post-war period, known as the reconstruction from the effects of both World War II and of the economic decline observed during much of the interwar period. Section 4 covers the best years which extend over the period 1954-1976 during which GDP per capita nearly tripled and asks why it took so long for growth to reach its peak rate after the war. The two following sections cover the oil shock and its aftermath, up to the new wave of financial liberalisation of the second half of the eighties. Section 7 focuses on human capital accumulation while Section 8 explores the role played by institutions. The last section concludes.

2. Aggregate Performance

2.1. Output Growth and Variability

The broad facts to be kept in mind are presented in Table 2.1. We find it helpful to distinguish four sub-periods. The reconstruction and consolidation period (1945-1958) during which France restarts its economy in a context of shortages, rationing, import and export licensing under the aegis of the Planning Office. During much of that period the political environment is unstable, marked by short-lived governments and rapidly changing alliances. The economy grows steadily while forging an alliance with Germany within the Steel-Coal Community.

The second period (1958-1973) is France's golden age. It starts with the creation of the Common Market and the return to external convertibility of the Franc and ends with the first oil shock. Growth is faster than in the immediate post-war and accompanied by a marked increase in the labour force, both in manufacturing and in the service sector.

During the third period (1974-1981) France adapts with difficulties to the wage and oil shocks. Overall growth slows down very markedly and employment grows only in the government sector, declining fast in the manufacturing sector.

Finally, since 1981 France has embraced more forcefully market principles for its goods markets. Yet labour markets remain highly protected and, as productivity growth does not recover from its post-1973 decline, limited growth in public employment is insufficient to prevent a massive rise in unemployment.

Table 2.1 about here

One little-known particularity of France's growth, as measured by the real GDP, is that it has been remarkably smooth, significantly more so than elsewhere. Figure 2.1 illustrates this point by comparing the French and German GDPs. The visual impression is easily confirmed by formal tests as in Table 2.2 which look for a number of countries at the deviation of annual growth rates from a (split) trend, sometimes called the output gap. The table presents the ratio of the variance of France's output gap to the variance of each country's output gap. A value below one indicate a lower variance in France and stars indicate that the ratio is significantly smaller than one. At the 90% confidence level, we cannot reject the hypothesis that the variance of growth is smaller in France than in any of the OECD countries in the sample.¹ At the 98% level the only country for which we cannot reject the hypothesis is Belgium.

¹ We have looked at more other OECD countries with the same result. The choice of countries reported is based on data availability for the series used in Tables 2.2 and 2.3.

Figure 2.1 and Table 2.2 about here

The table also reports the same test performed with the industrial production index. Strikingly, it is not the case that the French index is smoother than in the other countries. Only in Germany and the US does the industrial production index exhibit significantly more volatility than in France. Industrial production actually exhibits a lower variance in some countries, although not significantly so. How can these two results be reconciled? France has been subject to similar output disturbances as the other OECD countries, hence the behaviour of industrial production. The relative stability of GDP means that these disturbances did not translate to the same extent into income fluctuations. One rather implausible explanation is that France is better able to absorb shocks, for example because of more flexible product or labour markets. A more likely possibility is that countercyclical policy has been systematically more active. This is confirmed by the result, shown in Table 2.3, that inflation has been more and unemployment less volatile than in the comparison group.

The question, then, is what instruments have been used to that effect. The natural ones to investigate are fiscal and monetary policies. Table 2.3 shows that it cannot be fiscal policy: there is no evidence that budget deficits (as a percentage of GDP) have been more volatile in France than elsewhere. There is strong evidence that investment rate has been much less volatile in France. It might well be anachronistic to look for an active budget policy aiming at stabilising the growth rate, but there was a clearly stated goal to stabilise investment by making steady the financing sources through active credit policy.

This leaves open the possibility that monetary policy has been used more extensively. In principle, a comparatively more activist monetary policy cannot fail to affect the exchange rate. The fact that France has adhered to a fixed exchange rate regime for all of the period except for a few quarters at the time of the collapse of the Bretton Woods system seems to contradict this conclusion. It is important to keep in mind, however, that France has nearly continuously operated under capital controls until 1990 and that until the mid 1980s bank credit was

rationed and often directed to objectives identified by the government.² It is impossible to measure directly such a procedure for policy actions since it operates through quantities, not prices. We provide evidence of the role of directed credit below. At this stage, we conclude that activist monetary policy is the more likely interpretation of the remarkable stability of the GDP along its growth trend path.

Table 2.3 about here

2.2 Unemployment and Inflation

The rate of unemployment, mainly unchanged at about 2% throughout the fifties and the sixties, has exhibited a strong trend since 1973. Figure 2.2 shows that its relentless rise reflects the experience observed throughout EU countries. Except for a slight delay the pattern is nearly identical with that of the 12 EU countries. Relatively to the 9 EU countries, which excludes most of southern Europe, the French performance has been significantly worse after 1984. Similarly, the rise and fall of inflation remarkably follows the average European pattern, except for a slightly better performance since the late eighties. For believers in the Phillips curve, this would suggest that the French unemployment trade-off is representative of Europe's, corresponding for example to a typical European labour market structure. Alternatively, this could be interpreted as reflecting a great degree of similarity in disturbances and policy responses.

Figure 2.2 about here

² We return to this issue in Section 8.

2.3. Exchange Rate and the Current Account

The external sector displays a mostly unexciting story.³ Existing data for the current account after 1967 indicate that France never underwent serious external imbalances. This confirms earlier suggestions that France has never been subject to serious idiosyncratic disturbances.

The current account has always remained within +/- 2% of GDP. The largest deficit in 1982, 2.5% in GDP, forced a change in economic policy as described below. Overall the current account has on average been balanced throughout the post-war period. According to Sinn (1990) France had a small positive net asset position amounting to 5.7% of its GDP in 1970, and to 6.2% in 1987. As for the exchange rate, by and large it has closely followed purchasing power parity. Whatever limited real exchange rate movements can be observed, they are essentially due to a frequent tendency to delay nominal corrections after a period of relatively high inflation.

Figure 2.3 reveals the existence of two distinct periods. Until the end of the 1960s, the real exchange rate has remained quite stable vis à vis the US dollar. Once the Bretton Woods system had come to an end, it appears that the dollar has ceased to be used by French monetary authorities as an anchor. Rather, the fact that the real exchange rate has next been stabilised vis à vis the DM suggests a shift in the conduct of exchange rate policy. The figure, in fact, tells an interesting story about the shift from a dollar anchor to a DM anchor. Over the period 1971-73, we observe a marked, once-off, real depreciation vis à vis the DM which seems to perfectly offset an real appreciation vis à vis the US dollar, suggesting a near-constancy of the effective real exchange rate⁴. This episode may be a telling insight into the French approach to exchange rate policy. France made sure to enter the DM zone with a

3 Saint-Paul (1993b) provides a detailed account of the postwar period, including exchange crises and restrictions to capital movement.

4 Standard measures of the effective real exchange rate (e.g. from the IMF) are not available before 1975.

competitive rate. That it appreciated when it left the dollar zone may also indicate that it had maintained a highly competitive rate vis à vis the dollar.

Figure 2.3 about here

2.4. A Brief Assessment and a List of Questions

The rapid overview of France's aggregate performance allows a few robust conclusions. First, French growth has gradually picked up speed in the mid-fifties and has proceeded at a fast pace until the oil shock. Second, the GDP has little moved away from its trend growth path. Third, there is an abundance of indications that successive French governments have adopted a hands-on approach to economic policy-making, at least until the eighties. Fourth, after the oil shock, the French performance, as measured by the traditional macroeconomic indicators, closely resembles that of the average of European countries, including a slowdown in productivity advances and an apparently permanent sharp rise in the rate of unemployment.

Beyond these points, a number of interesting questions emerge and will be pursued in the rest of the paper. First, why is it that the expected post-war catch-up seem to have been delayed by a decade? Second, if government interventions have been rather heavy handed, what precise form did they take? For example, there is no evidence of a particularly activist use of the budget. Third, has France's famed attempt to charter a "third way" between central planning and full reliance on the markets achieved its aims? Fourth, has the adoption by a socialist government of more market-oriented policies produced lasting changes? Finally, how far has France given up its cherished specificity as it has integrated itself into Europe?

3. The Legacy of the 1930s and Reconstruction

At the outset of its phase of reconstruction, France was facing two adverse legacies: war destruction, as in all other continental European countries, but also a ten year period of stagnation prior to the war itself. The depression of the 1930s has been quite protracted in France. As a result net capital (i.e. capital corrected by a declining economic capability from investment to scrap) has decreased. In addition, the second World War had worse effects on French capital accumulation than the first. While the war effort prevented investment from falling too much between 1914 and 1918, there was no net investment in occupied France during the Second World War (Figure 3.1). According to recent estimates by Villa (1993), fifteen years of negative net investment from 1930 to 1945 led to a fall by 40% in net equipment capital, while net building capital fell by 29% (see Table 3.1 for yearly growth rates). Yet war destruction explain only 16% and 14% of the fall in net equipment and building capital. The major legacy of the 1930s was therefore a worn out capital.

Table 3.1 and Figure 3.1 about here

This very bleak investment performance has had serious consequences in terms of output. For example, Dubois (1985) considers what would have been the real GDP had France maintained the average rate of growth achieved between 1896 and 1929. He finds that it has taken thirty years to catch up as actual output reaches projected output somewhere between 1955 and 1960.⁵ This result, among many others all pointing in the same direction, warns us that France's performance in the years immediately following World War II is not at all impressive. In fact, a number of post-war economists were keenly aware that all was not well. In the mid 1950s they started to voice concern recent growth was merely a modest catch-up on the effects of the war and that France might fall back in sluggishness, never quite recovering from the economic decline that had set in before the war.⁶

⁵Dubois also noticed that the rate of growth from 1896 to 1913 was equal to the rate from 1913 to 1923: 1.7%.

⁶See below the concerns by Divisia, Pupin, and Roy.

Given the relatively low level of capital in post-war France, one would expect a high return on capital. This conjecture is borne out by the calculations by Saint-Paul (1993, p. 101) who rightly asks why investment remained relatively low at the beginning of the 1950s (see Figure 5.2 below). In fact, this period is best characterized by very limited international private capital mobility. Most of the capital flows were related to the Marshall Plan and hence resulted mostly in public spending. When one realizes that liquidity constraints were the rule for most private agents, it becomes clear why investment has followed, and not preceded, growth. For example, Figure 5.2 shows that productive investment suffered more than total investment during the slump of the early 1950s.

The disappointing performance of investment, and its effect on growth, can be related to three main features of post-war France. First is a continuing fall in the share of profits in GDP at a time of widespread liquidity constraints. Second comes the absence of an international market for private capital. Third, we find the clear priority given by the government to dwellings and public infrastructure. Whether this choice indeed impedes growth rests on assumptions about the social return on equipment and infrastructure, putting aside the welfare enhancing effect of badly needed new dwellings:⁷ it is argued below that, given the volume of productive investment it could have been possible to better allocate capital, mainly away from energy and railways and toward manufacturing and services.

4. The "Vingt glorieuses" (1954-1976)

After the reconstruction period and the mild recession following the Korean war boom, Divisia, Pupin, and Roy entitled the second volume of their book, *A la recherche du franc perdu*, "Stagnation de la production," because they had noted that output in 1952 was not

⁷It should be kept in mind that "output" produced by dwellings or public infrastructure is not covered by figures underlying our growth measures.

uniformly higher than in 1929.⁸ These concerns extended beyond the circle of neo-classical economists opposed to the French planning and who were arguing already in the mid 1950s that international competition and market forces should be given a bigger role. Concerns about stagnation were also shared by members of the left-wing circle assembled around Mendès France. It is only after investment had started to soar in 1955 that the prospect of a long-lasting stagnation evaporated. Rioux (1983, p. 184, p. 248) even observes that it took much longer for the mainstream public opinion to realize that the country had embarked on a remarkable path of steady growth since the turning point is detected by polls only in 1957.

The data on aggregate TFP growth presented in Table 2.1 conceals two important differences between the two subperiods 1950-58 and 1958-1973. First, TFP in manufacturing and Transport and Telecommunications speeded up after 1958, while TFP in services slowed down. Second, it is the reallocation of capital and labour between industries which lies behind the acceleration observed during the second sub-period as we now show.

4.1. TFP Growth Rates

Table 4.1 presents TFP growth rates at the industry level. TFP growth is measured using the standard "residual" methodology. Financial services and the non-market sector are excluded from output, which is measured by the value added. Factors of production are measured as net capital and number of hours annually worked. In principle, net capital productivity is less sensitive to age structure than gross capital productivity, since a given investment has a declining weight in the net capital, while it is counted for a fixed amount until it is scrapped in the gross capital.

Results from previous works may help assess our calculations. We have not made any adjustment for capital quality but we use net capital data. Carré, Dubois, Malinvaud (1972, p. 657, p. 275) assume 4% improvement of capital quality at constant prices for equipment, and

⁸Quoted by Bloch-Lainé and Bouvier (1986, p. 40).

1% yearly improvement for buildings. They find a 0.4% annual impact of the reduction in the mean age of capital on production growth from 1951 to 1969. They report a mean age of equipment in 1951 of 18.4 years declining to 12.2 years in 1966. New estimates by Villa (1993) from 1896 to 1985 show an increase in the mean age of equipment from 7.8 years in 1930 to 11.5 in 1945, and then a sharp decline to 9.1 in 1950, 7.6 in 1958, the bottom was reached at 6.3 in 1973 followed by a rise up to 7.3 years in 1985. The absolute mean age reduction found by Villa (1993) for the 1950-58 period is about half that found by Carré, Dubois, and Malinvaud (1972), respectively 0.2 and 0.4 year per year, and even smaller from 1958 to 1973. A gross correction on TFP growth for capital age could therefore be -0.2% to -0.4% for the first period, half that much for the second period and +0.2% for the most recent one.⁹

No attempt has been made either to take into account the quality of labour. Carré, Dubois, and Malinvaud (1972, p. 275) estimate that its impact on growth was 0.4% per year. Dubois (1985, p. 26), in his update piece, noticed that the quality of work, defined by average years of schooling and age of the employed population, increased after 1973 more quickly than between 1951 and 1973, and concluded that the influence on the output growth was 0.7% per year since 1973. The change in the quality of work goes therefore against a drop in the measured TFP growth, and offsets the capital age effect.

Table 4.1 about here

Not surprisingly perhaps, the overall stability of TFP growth between the first two sub-periods conceals a significant amount of variability across industries. Similarly the fall in TFP growth

⁹Mabille (1990) found a -0.5% influence of capital age on TFP in manufacturing from 1970 to 1990, using gross capital (TFP should be 0.5 point above what she reported using gross capital) and practically nothing for the non-manufacturing industries. Using gross capital instead of net capital, we have found a TFP growth about 0.2 point below figures reported in Table 4.1.

after 1973 is mainly due to manufacturing (labeled U04 to U06 in the French accounting system).¹⁰ This stands in contrast to the US where manufacturing did not suffer from a productivity slowdown (Griliches, 1988). This has led some observers to consider that 1973 signals the end of a long period of post-war catching up. Indeed, the adoption of best practices is expected to have a declining positive influence, presumably highest in the early post-war years. However, the catch-up hypothesis is at odds with the observation that TFP growth in manufacturing increased quite sharply after 1958. It is only for trade and services that the break occurs in 1958 but these are not industries where one would expect to see catch-up play any important role. A third pattern of acceleration after 1958 and still strong TFP growth after 1973 can be found in transport and telecommunications. Thus we are left with a puzzle.

One possible explanation could be mismeasurement. For example, Dubois (1985) does not find any break in the evolution of manufacturing TFP growth until 1979. This is because after 1973 the positive influence from a reduction in the age of gross capital (0.4% per annum) disappears while a negative influence of capacity utilization (0.9% per annum) appears at that time. However, according to Dubois himself, these explanations are not sufficient to account for what happened to total factor productivity in manufacturing after 1979. Our own computations show indeed that TFP in manufacturing grew at an annual rate of 3.5% from 1973 to 1979, declining to 2.1% from 1979 to 1984 and 1.8% from 1984 to 1992.

4.2. Factors Reallocation

Another explanation has been popular for a long time. It has always been suspected that labour mobility could be a major explanation of French growth after 1945. According to this view, French backwardness was the result of the inability of peasants to move to other activities. Carré, Dubois, and Malinvaud (1972, p. 274) addressed this point by estimating difference in marginal productivity between industries. They attributed to labour mobility an annual

¹⁰This point is statistically confirmed when one looks at the difference between the means of annual TFP growth after and before 1973.

contribution of 0.5% to 0.7% to total productivity (with outmigration from agriculture explaining 0.4% to 0.6%), and they concluded that this influence seemed to have increased during the fifties before lessening. This is at odds with the interpretation given by Adams (1989, p. 204) who argues that after 1958, "exposure in the competitive world markets through international trade and investment does stimulate economic growth and structural change."

To assess the influence of factor allocation on measured productivity growth for the economy as a whole, we have used the accounting decomposition proposed by Matthews, Feinstein and Odding-Smee.(1982, chapter 9). TFP growth can be written as:

$$\begin{aligned} TFP &= \frac{\Delta Q}{Q} - \alpha \frac{\Delta L}{L} - (1-\alpha) \frac{\Delta K}{K} \\ &= \sum_i \frac{Q_i}{Q} \left(\frac{\Delta Q_i}{Q_i} - \alpha_i \frac{\Delta L_i}{L_i} - (1-\alpha_i) \frac{\Delta K_i}{K_i} \right) + \sum_i \left(\alpha_i \frac{Q_i}{Q} - \alpha \frac{L_i}{L} \right) \frac{\Delta L_i}{L_i} + \sum_i \left((1-\alpha_i) \frac{Q_i}{Q} - (1-\alpha) \frac{K_i}{K} \right) \frac{\Delta K_i}{K_i} \end{aligned}$$

Note that the two last terms equal:

$$\alpha \sum_i \left(\alpha_i \frac{Q_i}{L_i} / \alpha \frac{Q}{L} - 1 \right) \frac{\Delta L_i}{L} + (1-\alpha) \sum_i \left((1-\alpha_i) \frac{Q_i}{K_i} / (1-\alpha) \frac{Q}{K} - 1 \right) \frac{\Delta K_i}{K}$$

and that if $L_i w_i = \alpha_i Q_i$ and $K_i r_i = (1-\alpha_i) Q_i$, the cross product terms would become:

$$\alpha \left(\sum_i \frac{L_i}{L} \left(\frac{w_i}{w} - 1 \right) \frac{\Delta L_i}{L_i} \right) + (1-\alpha) \left(\sum_i \frac{K_i}{K} \left(\frac{r_i}{r} - 1 \right) \frac{\Delta K_i}{K_i} \right),$$

i refers to particular industries, α_i are the industry-level labour shares (corrected for self-employment) in nominal value added for 1974 (when the overall share of labour in value added was 0.66, close to its 1970-1989 mean, 0.67)

Table 4.2 about here

Thus TFP growth is shown to consist of two parts. The first part is simply the weighted average of individual industry factor productivity growth rates. The second part, in turn, consist of two terms: for each factor of production it is the cross product between its increase and a measure of its productivity in the sector relative to its aggregate productivity. Thus the second part can be seen as measuring the contribution of the reallocation of each factor to overall growth. Indeed, if the factor flows into industries where its productivity is higher than in the aggregate, this will rise overall TFP. It is of course possible that a factor moves into an industry where it is less productive, thus contributing negatively to TFP growth. This is why we call the two terms of this second part "reallocation" of capital and labour.¹¹

The results of this decomposition are presented in Table 4.2 and Figure 4.1. The table shows that the "reallocation" terms explain 0.5 point of the 3.6% growth between 1950 and 1958, but as much as 1.5 point of the same 3.6% growth between 1958 and 1973. This result goes a long way toward solving the puzzle apparent so far. There has been a catch-up process in the early post-war period which has delivered a 3.1% average annual gain in productivity net of reallocation from 1950 to 1958, indeed gradually petering off to 2.1% over the next fifteen years and 1.6% after the oil shock. If TFP growth did not decline after 1958 it is because the allocation of inputs had become more efficient. Thus we now need to understand what lies behind this reallocation effect.

It is clear that factor reallocation was particularly poor in the early post-war years. It is natural to ask which industries were responsible for this. Service and trade are the two sectors where TFP growth sharply decrease after 1958 (Table 4.1), thus they necessarily account for the decline in the average industry factor productivity growth. As relative productivity (measured with 1970 relative prices) was larger in these sectors, factor allocation towards them was highly

¹¹Note that for capital this is not exactly a correlation between relative productivity and factor use because the capital stock is always growing. For labour which has an average growth rate approximately nil it is not incorrect to think of this term as a correlation.

favourable. To find about the role of other industries we turn to Figure 4.1. Along the vertical axis we represent the relative increase in each factor of production for each industry, using the French classification numbers shown in Table 4.1: these are the second product terms ($\frac{\Delta K_i}{K_i}$ and $\frac{\Delta L_i}{L_i}$) in the reallocation term - the second part - of the TFP growth decomposition. Along the horizontal axis we represent the difference between the industry shares in value added and the industry shares in use of factors of production: these are the first product terms, $(1 - \alpha_i) \frac{Q_i}{Q} - (1 - \alpha) \frac{K_i}{K}$ and $\alpha_i \frac{Q_i}{Q} - \alpha \frac{L_i}{L}$.

The cross products of these variables are the reallocation terms.¹² In principle, we would expect a positive correlation on the assumption that a factor's accumulation is faster where it is initially used less intensively. It would correspond to a positive factor reallocation term and appear on the figure as positively sloped regression line. This is what is found for both factors of production and all sub-periods with one important exception: capital over the 1950-58 period. The implication of this result is particularly interesting. The disappointing performance of France's TFP growth in the early post-war period can be ascribed to a misallocation of productive investment. Capital was put in place in industries which were already capital intensive and where, therefore, it is natural to expect lower returns. More precisely, the industries which clearly appear to have undergone excessive productive investment are those classified U03 (energy, including coal, gas, and electricity). Also suspect are industries U04 (intermediary goods) and U05 (investment goods).

Figure 4.1 about here

It is also important to note that the positive impact of reallocation almost disappears when the service and trade sectors are removed, as shown in the second panel of Table 4.2.¹³ What

¹²That capital accumulation was slow between 1950 and 1958 appears on the vertical axis: during these eight years industry average capital increase was about 40%, while in the 15 years from 1958 to 1973 it was about 150%.

¹³Mabille (1990, p. 77) found a reallocation positive effect from 1970 to 1989 because of the shift in favor of financial services, which are included in her work, but not in ours.

stands out there is the increase in the weighted average of industry TFP growth rates. We return to these points in Section 8 where we consider the role of the opening of France to foreign competition.

5. Shocks and Stagflation in the Seventies

By and large, throughout the two oil shocks France has maintained its status as the average European country. Figure 5.1, for example, tracks down inflation and unemployment in both France and the whole of the European Union. The two shocks are seen to produce nearly identical short-run effects in both dimensions, and the long run rise in unemployment is likewise very similar. This average behaviour, though, did not come by chance: the shocks forced macroeconomic discipline on France which abandoned initial attempts at chartering its own path irrespective of the external constraint. The interpretation of oil shocks is now standard (see Bruno and Sachs, 1985) and we know that a country's reaction is fashioned by two main aspects.

Figure 5.1 about here

The first issue concerns the authorities willingness to accommodate the initially inflationary impact. This choice affects both the size and the duration of the unavoidable burst of inflation. Characteristically, the initial French reaction in the mid-seventies was an attempt at stabilising incomes, in effect fully accommodating the inflationary shock, while Germany mostly concentrated in containing inflation. The resulting emergence of a large inflation gap between France and Germany in the aftermath of the first oil shock would not be eliminated for nearly two decades and strongly impressed the French, particularly as the DM emerged as the strong-man of Europe. The lesson eventually drawn was to adopt a non-accommodation policy: not only did Germany manage to almost completely avoid the initial burst of inflation, but the ensuing DM appreciation significantly reduced the increase of the DM price of oil, thus

cushioning the blow at the root. As *the* average European country, France could not benefit from this exchange rate effect, of course. When the second oil shock came about, France was determined to follow a "German strategy". But as most other European countries had drawn the same lesson and also adopted this strategy, France again found itself in the average position. Consequently it did not benefit from an effective exchange rate appreciation the second time around either.

The second aspect of an oil shock is that it represents a transfer of income away from oil-consuming countries toward oil-producing countries. It matters a lot how the income shortfall is distributed between the factors of production within each oil-consuming country. If most of the burden is borne by firms, investment declines which ultimately affects growth and the demand for labour. If instead labour bears the cost - in the form of lower real compensation - growth is reduced only temporarily and unemployment need not rise, at least not permanently. Figure 5.2 shows that the first shock was entirely borne by firms while the second shock was followed by a slow process during which income gradually shifted back from labour to profits. Oudiz and Sterdyniak (1982) have shown how wages were perfectly and swiftly *de facto indexed* on prices and little responsive to demand pressure. Their conclusion, which anticipated what was to follow, was that it would take a high and prolonged level of unemployment to reverse the shift of income away from profits. They also correctly predicted that high unemployment would be tolerated by the authorities because of the increasing importance for macroeconomic policy of the external constraint imposed upon France by its integration within the European Community.

Figure 5.2 about here

In the event, the constraint operated first and foremost through the exchange rate. After the demise of the Bretton Woods system, France had joined in April 1972 the European "snake" arrangement.¹⁴ Soon after the first oil shock, however, by end-1973 the franc had to leave the

¹⁴ For a detailed account, see Oudiz and Sterdyniak (1982).

arrangement because of the emerging mismatch between France and Germany which came to dominate the Snake. France re-entered the Snake in July 1975 only to leave it again in March 1976. It then took three years of austerity under the "plan Barre" to bring the Franc up to the level required to the launching of the EMS in March 1979. The "plan Barre" matches closely the principles noted above. It explicitly referred to the external constraint to justify restrictive measures even if the policy stance was far less restrictive than advertised. Its most lasting impact may well have been pedagogical: it explicitly warned wage and price setters that the policy of depreciating the exchange rate to ratify inflationary behaviour was not appropriate if France wanted to stop its inflationary spiral.

The sense of defeat at being twice forced out of the Snake and the pedagogical efforts of the "plan Barre" greatly contributed to the subsequent decision to stick to the EMS. Freshly elected (in May 1981) President Mitterrand, after some soul searching during the first few months of his presidency, decided to return to policy orthodoxy and to blend France into the European fold. Indeed, by end-1981, the franc was under heavy pressure. In the aftermath of the second oil shock the new socialist government seemed to have reversed the Barre strategy of non-accommodation as it led a largely unsuccessful attempt at macroeconomic expansion while the rest of the EC was pulling the brakes. Facing a stark choice, to leave the EMS or to change its policies, Mitterrand opted for the latter; this choice would determine the next decade.¹⁵

6. A Partial Recovery

The new policies developed after the exchange crises of 1981-83 relied on three pillars. First, an explicit move against wage indexation was deemed necessary to bring inflation down. Second, exchange rates would not be used to correct past policy mistakes. Instead

¹⁵ For a detailed analysis of this period see Sachs and Wyplosz (1986) and Muet and Fonteneau (1990).

macroeconomic policies would be steered towards the attainment of stability in prices, exchange rates and budget balance. Third, industrial policy would be reconsidered, with much less sympathetic eyes. All three approaches represented a major innovation because they were proposed by a leftist majority whose history had been dominated by radical talking.

The first year of Mitterrand's presidency was marked by a series of expansionary measures coupled with policies inimical to the supply-side. The budget, in balance in 1980, reached a 2.8% deficit by 1982 and money growth increased quickly as well. The workweek was reduced from 40 to 39 hours without reduction in monthly wages and tight limits were imposed on overtime work. Regulations on working conditions (hiring and firing, safety) were tightened and union power increased within firms. Several large industrial groups and banks were nationalised.

The outcome can be read in two different ways. On the dark side, inflation and unemployment both rose, the current account quickly worsened, even in the non-oil sector, a clear sign of a supply-side shock. Thus Mitterrand's promise of an expansion and more jobs did not materialise. The bright side is visible in Figure 5.1 which shows that, following the second oil shock, France did not do worse than the rest of the EC. In fact, among the large countries, France arguably achieved the best growth performance as it managed to avoid altogether negative growth in the post-second oil shock period (see Figure 6.1). This performance, however, was borrowed against future growth. The feeling that the economy was badly wounded forced a profound re-think and ushered in a period of serious change. Paradoxically, it took a socialist government to move toward more market-oriented policies, gradually and quietly giving up a number - but far from all - of dogmas which lay at the root of the "French way".

A key step in tackling inflation was to disindex wages. The procedure, however was politically clever. Rather than attempting to sever formally the - mostly informal - link between wages and prices, the new policy aimed at maintaining real wages constant, i.e. to promise 100% indexation but nothing more. As a result productivity gains would entirely benefit profits and rebuild firms shattered positions. The policy came in stages. It started with a complete freeze of wages, followed by a carefully staged removal of controls. Figure 6.2 provides evidence of a break in the behaviour of real consumer wages in 1982 and shows that the lost ground was never recovered afterwards. The rebalancing of income distribution, which achieved more than the restoration of the pre-1973 situation (see Figure 5.2), was the result of both the wage policy and of the dampening effect of rising unemployment. Investment responded, with a lag, but as shown in Figure 5.2 never quite recovered the very high rates of the sixties. In the labour market, additional measures have been subsequently introduced to bring back some flexibility, for example a relaxation of restrictions on part-time work or on lay-offs. It must be admitted that the results have been quite disappointing. The best that can be vouched is a suspension of the continuous increase in the rate of unemployment, which soared again in during the recession of the early nineties.

Market liberalisation was not confined to labour markets. Financial markets and the banking sector have undergone a deep transformation (see Melitz, 1982), including the end of administrative rationing of credit, the near-elimination of subsidised credit, the development of the Paris Bourse freed from the numerous regulations which were initially designed to give priority to the financing of state borrowing needs. Privatisation, while temporarily stopped and partially reversed in 1988-99, has proceeded fairly fast since 1986.

The outcome of these supply-side efforts, while visible in Figure 5.1, has been mostly disappointing so far. Growth of output certainly recovered from the generalised slowdown of the early eighties, but with considerable delay and only a modest retrenchment from high unemployment. The return to high profit shares has not been followed to the same extent by investment and job creation. While the recession of the early nineties may have nibbled deeper

effects underway, supply-side has yet to demonstrate its usefulness in France. There are three possible ways of explaining this modest outcome.

One interpretation is the presence of hysteresis effects in the labour market. According to that view, temporary increases in unemployment become permanent. This may occur when employed workers seek and obtain higher wages, trading off a reduced workforce against wage moderation at the expense of the unemployed. An alternative route for hysteresis asserts that unemployed workers suffer an erosion of their human capital which reduces their chances of finding a new job, the situation worsening continuously the longer they remain unemployed. Thus protracted periods of high unemployment leave a permanent imprint. Hysteresis effects have indeed been documented for labour markets in France and elsewhere in Europe¹⁶.

An alternative interpretation lays the blame on the new macroeconomic policy adopted after the great exchange rate debacle of 1981-83. The pledge to tie the franc to the DM has forced France to adopt a monetary stance considerably tighter than it had grown accustomed to. Blanchard and Muet (1993) find that, while low inflation eventually improves competitiveness and favour growth, the process is extremely slow, while the contractionary effects of the deflationary policy are front-loaded. According to that view the return to faster growth and lower unemployment predicated by virtuous supply-side policies will eventually emerge once the dampening effects of the anti-inflation policy will have petered out.

A third interpretation is that France suffers from capital shortage. A long period of insufficient capital accumulation has reduced the number of available jobs. With little ex-post substitutability between capital and labour a period of low investment may indeed leave a legacy of lower marginal productivity of labour.

16 See Burda (1990), Coe (1990) and Grunner (1993). For a dissenting view, see Cotis and Mihoubi (1990).

A last interpretation is that the policies have not gone far enough. This view asserts that labour markets still remain rigid and distortions from faulty government intervention has been reduced.

7. Human capital

So far, the analysis has only tangentially considered the possibility of non-decreasing returns and the associated endogenous growth effects. This section and the next take up this aspect, starting here with human capital following the initial idea in Lucas (1988). The approach adopted here is comparative: is there any indication that human capital accumulation has been very different in France from it has been elsewhere? As a basis for comparison we look at France's chief partner and competitor, Germany.

A full comparison of human capital accumulation and its effect on growth would require detailed econometric work beyond the scope of this paper, in particular for lack of readily available data. Most work in this area has used data measuring spending on education. This may be misleading for two reasons: first the data do not allow a precise discrimination within the group of advanced countries which spend similar amounts on education; second because they rely on a measure of the input into education, not about the output which is the important variable. Our approach is therefore to draw on recent studies comparing France and Germany to seek meaningful ways of assessing an element gradually recognised again as the key success factor of growth.

Data based on input into capital accumulation usually conclude that France has done better on this respect than Germany. For example Table 7.1 reports the results obtained by Maddison (1987) based on the average number of years of formal education. Total average time spent in education was, in 1984, 10.8 in France and 9.5 in Germany. An index based on this data shows econometrically that education accounts for an additional average annual 0.5% of growth in

France over the period 1974-1984 and only 0.07% in Germany. We provide evidence which casts, in our view, some doubt on these input measures.

Table 7.1 about here

At the high school and university levels, France and Germany differ little when one concern the proportion of population achieving given number of years. The main difference between the French and German education systems rather appear at lower levels and mainly concerns how training is organised. Germany differs for having an extensive system alternating schooling and training within the firms. In Table 7.2 this is referred to as vocational training, while the corresponding French structure only includes shorter term "internships" which makes the difference there with "no degree" rather formal. The table shows that in 1989 more than 50% of the active German population has emerged from this particular track while nearly half of the French employees have no degree at all, or degrees which simply correspond to completion of school. The difference made by serious vocational training in Germany is particularly striking when we look at the unemployment rates. Among the youths (less than 25 years old) the unemployment rate stood at 22.6% in France and 7.1% in Germany in 1989, a year when the overall unemployment rates were 9.6% and 7.2%, respectively. The table shows that the main reason for this sharp difference comes the low rate of unemployment among young Germans who underwent vocational training. This is evidence that on-the-job training in Germany represents an efficient investment in human capital while it has little discernible effect in France.

Table 7.2 about here

These data are suggestive of insufficient investment in human capital or, more precisely, a misallocation of resources as the French school system appears to operate less efficiently than its German counterpart. According to some endogenous growth theories, inadequate investment in human capital might have significant permanent effects on growth. For part of

the slowdown in TFP growth reported in Section 4 to be ascribed, a necessary - but not sufficient, of course - condition would be a worsening in the performance of the French education system.

Casual observation does not indicate any major loss of performance at the upper end of the education system. More likely is an aggravation of the misperformance at the lower end evidenced in Table 7.2. Could it be that the mass of French labour force, those with no degree, have actually become less well adapted to demand? One way to answer that question is to look at their marginal productivity. Under standard assumptions¹⁷ marginal productivity is measured by the real wage. Table 7.3 presents the cumulated proportion of workers without degree among those whose earnings are the 10%, 25% and 50% lowest, respectively. The message is unambiguous. For example, while in 1970 15.3% of males without degree were among the lowest decile, by 1985 this proportion had doubled to 30.4%.

Table 7.3 about here

The evidence is indirect but the finger prints are there. The French education system, at least in comparison with its German counterpart, has not managed to provide about half of its labour force with an adequate stock of human capital. The effects on unemployment are beyond dispute. It is highly plausible that this massive underinvestment has adversely affected growth. There is also some evidence that the situation has deteriorated even though real wages do not reflect the gap in marginal productivity. This could be one element, among others, in explaining the puzzling lack of noticeable effect from the supply side policies of the eighties.

¹⁷ These assumptions are unlikely to be verified because of the existence in France of a minimum wage which is binding across all industries and concerns directly about 8% of the employed, while another 10% of the labour force is slightly above this wage level. This distortion actually strengthens our conclusions. Indeed the existence of a binding minimum wage (called SMIC, an acronym for *salaires minimum interprofessionnel de croissance*), which has been de facto indexed on the cost of living with occasional additional increases, would tend to bias wages upward as if the marginal productivity of the less skilled workers had increased faster than it actually did. Indeed, the data corresponding to the lowest quartile in Table 7.2 show that the effect of the relatively fast increase in the SMIC has had the effect of narrowing the wage dispersion, bringing the lowest deciles closer to the median (Baudelot and Glaude, 1989, p. 12).

8. Institutions

Institutions are being recognized as another understudied but potential powerful influence on growth. This section focuses on two aspects of post-war France. First we look at the French Planning, long considered as an original experiment with strong implications for the allocation of financial resources before 1958. Second we review the impact of the European Common Market which promoted the opening of France to foreign competition.

8.1 French Planning

In our review of the role of planning we focus on the influence exerted by the government in directing credit to industries. Table 8.1 presents available information on the different channels used to provide firms with financing. To permit meaningful comparisons, total credit outstanding in 1956 is presented along with the share of productive capital held in each industry in 1950. It is safe to consider that bank credit was government controlled - most banks were state-owned anyhow. Loans provided by the Fonds de Modernisation et d'Equipement and by the Fonds de Développement Economique et Social (FDES) were provided by the government to be distributed in a way that would meet the objectives of industrial policy. It is clear which industries have been given preferential treatment. While energy and transports were the most helped, equipment and consumption goods were the least. This is consistent with the choices stated in the first plan (Bloch-Lainé and Bouvier, 1986, p. 126), which considered that strong externalities from these industries justified such a choice in the immediate afterwar. In addition industrial policy initially sought to buttress activities where minimum efficient scale was large and where the technology was well known and stabilized. Our results in Section 5 have already shown that the preferential treatment of these industries may well have been maintained for too long.

In addition to these concerns based on efficiency considerations, it may be relevant to note that the most of the favored industries (electricity, gas, coal, railways) were made up of large

nationalized firms. Their managers may have been drawn from various quarters (former trade unionists, high ranking civil servants, heads of private firms), yet it is likely that industrial policy then also aimed at placating trade unions which were particularly strong in these industries. Thus, it could well be that the allocation of resources by the government was the result of rent seeking from employees of these industries, seen by Crafts (1992) as an impediment to growth. This hypothesis is corroborated by the observation in Section 5 that these industries did not benefit to the same extent of a preferential allocation of capital after 1958 when France opened its economy to international competition after 1958. By then heightened pressure for strict efficiency may have made rent seeking more difficult and forced a political change.

Table 8.1 about here

It can be objected that this kind of government intervention actually benefited the whole economy. This would certainly be the case if the prices of subsidised industries had been kept low thanks to these subsidies. This is why we show in Table 4.1 the evolution of each industry's relative (value-added) price between 1950 and 1958. The available evidence does not bear out this justification. Relative price movements of energy and transports and telecommunications appear to be well in line with the relative evolution of industry level TFP growth. There is no indication that subsidies to these industries have been passed on to consumers through lower prices.

Further evidence questioning the efficiency argument is provided by Figure 5.2 which displays the shares of non-business investment (housing and government investment) and of business investment. It appears that business investment rate has been declining from 1950 to 1954. While total investment increased by 34% from 1949 to 1956, non-housing business investment increased by 13%, its share in total investment declining from 77% to 64% from 1949 to 1956 (INSEE, 1958, p. 293). Later on, the share of "productive investment", that is non-housing business investment, levelled off between 55% and 50% from 1964 onwards (INSEE, 1981, p.

156).¹⁸ When investment in transport equipment is removed from total business investment, the increase in the volume of machine investment from 1949 to 1956 is very small (4%). That investment in machines increased slowly during the 1950s may be due to the constraint of national saving at a time when the possibility of foreign borrowing was remote. National saving rate took off in the late 50s when growth expectations themselves had become firmly established. Investment rates as displayed in Figure 5.2 increased from 20% in the beginning of the 50s to 28% in 1974 (the plateau from 1957 to 1960 is obviously related to the costs of the Algerian war). In the end, we find that the preferential treatment of some industries did not translate in a powerful push in equipment investment, strengthening our view that priorities either had little to do with efficiency or failed to achieve its aims.

We have questioned the effectiveness of planning *à la française*. In France, it has long been considered as a successful specificity. Dissenting voices have been rather limited to economists dubbed "neo-classical" such as Divisia and Roy as mentioned in Section 4. To this day the institution, the Commissariat General du Plan, still exists. Even if its role has been sharply reduced since the mid sixties to a forum where the "social partners" exchange views, it still produces five-year indicative plans which are formally adopted by the Parliament. It is just perceived too much as French way of life to be scrapped. Abroad, French planning has enjoyed for a while at least some interest. By the early sixties professional assessments seem to have turned mostly critical. Representative of the non-French view is the following opinion by Lutz (1969, p.184):

"I have concluded, on both empirical and logical grounds, that French planning never had worked in France - nor could have worked there or anywhere else - as a largely 'non-interventionist' form of integral central planning. Doubtless its effects on economic growth were not all positive." These distortions could be part of an explanation of the relatively low growth observed in the period up to 1958.

¹⁸The share of business investment is 3.8% larger in the 1971 National Account Base, from which figures after 1959 are taken, than in the 1956 National Account Base from which figures from 1949 to 1956 are taken.

It should be acknowledged that the third plan (1958-1961) prepared in the late 50s was favorable to the opening of the French economy to foreign competition, topic to which we turn now. Consequences implied by this opening on macroeconomic policies were however noticed later on, in the mid 60s (Ullmo, p. 12, p. 17).

8.2 Opening to Foreign Competition

The effect of opening to trade on growth in France has been emphasized by Adams (1989). As noted by Marseille (1984), rather than an increase in the ratio of exports or imports to GDP, the most important effect was to redirect trade away from the former colonies and towards Europe. This development resulted in increased competition, and therefore, according to Adams, made innovation more advantageous, prompting French firms to become more innovative.

The distribution of French exports by destination has changed remarkably between 1958 and 1973 as can be seen in Table 8.2. In 1952, 43% of French exports went to OECD countries: by 1958 this share was 47% and it rose to 76% in 1973, then slightly declined to 68% in 1984 when after the oil shock some flows were redirected toward oil producer countries. The bulk of this overall change was toward the original EEC countries, explaining 26 percentage points of the 29 points increase in the OECD share. The major shift in the distribution of French exports occurred during the first four years of existence of the Common Market as the share of exports the EEC countries increased on average by 3.5 points a year, while the overall share towards OECD was rising by 4.5 points per year. During the following 11 years both shares increased by 1 point per year. Thus, Non-EEC OECD share went up between 1958 and 1962 and stopped increasing afterward. We observe first a redistribution away from former French colonies following the decolonization, and then a movement specifically toward EEC members after 1962.

The impact of the Treaty of Rome on French Exports was gradual. The Treaty had prescribed a long transition which ended in 1968. France had failed to fulfil the OEEC requirements to loosen quotas in the 1950s. These quotas were very stringent in France and in Italy: less than 3% of home production for a large number of products. They were finally removed under the Treaty of Rome provisions only at the end of 1961. (Adams, 1989, p. 132). Tariffs internal to the EEC were reduced in steps and the only tariffs left were those on agricultural products (Adams, 1989, p. 132). In 1958, the average French tariff rate, computed as the average of the tariffs by SITC groups, stood at 17% second only to Italy's (18.7%) among the EEC countries. The average rate was 6.4% in Germany and 9.7% in the Benelux (Resnick and Truman, 1975, p.63).

With respect to Non-EEC trade, the main tariff reductions occurred within the framework of the Dillon and Kennedy rounds, negotiated within the GATT by the European Commission. For the EEC as a whole, the average external tariff rate stood at 10.4% in 1968 and declined to 6.6% following the Kennedy round. Adams (1989, p. 157) notes that among manufacturing industries, tariff levels in 1959 are correlated with the change in import exposures as measured by the ratios of imports to the home market; in textiles the tariff duties were about 25% of the import values in 1959.

The degree of French openness, measured as the ratio of exports to production, increased only after 1966: in 1966 as in 1959 the ratio of exports to production in manufacturing was 14%; it went up to 21% in 1973 and 27% in 1979. However exports to the OECD as a share of production regularly increased after 1958. Import exposure of the domestic market has developed more swiftly, its share being 8% in 1959, 12% in 1965, then 17% and 25% in 1971 and 1979 (Adams, 1989, p. 156, p.159).

This evolution is consistent with the observed increased in TFP growth in manufacturing after 1958 at a time when the catch-up effect should had become less important. While Adams

meant his evidence to concern the micro level of the firms, our evidence instead emphasizes the role of resource allocation between industries. After 1958, we believe that the "new spirit of innovation" inside the firms prompted by foreign competition showed up in the measured TFP growth in manufacturing, and that a more market oriented resources allocation, impossible to describe at our level of aggregation by industries, helped the most efficient firms to expand.

9. Conclusion

France's post-war growth has gone through four phases. The strong growth performance of the 50s was helped by a catch-up phenomenon on best foreign practices, and by a positive effect of capital rejuvenation. Yet, the best performance comes next and cover a period of nearly twenty years starting around 1958 and coming to an abrupt end in 1973. The macro treatment of the oil shock was less than happy, and the supply side measures came to a standstill. The 80s did not prove to be better, even though further liberalisation measures were taken, this time concerning financial markets as well the privatisation of a significant part of still state-owned industry. At the time of writing, the privatisation is undergoing a new phase of acceleration, possibly bringing down state ownership to minority shares everywhere.

We have argued that France's golden years in the sixties are the result of the introduction of market forces in the wake of goods market integration, which made more difficult widespread government intervention. Strong intervention under the Planning procedure, we believe, has slowed down the early post-war catch-up period by promoting inefficiency both in the allocation of resources at the national level and at the firm level. Despite several waves of liberalisation, most active after the creation of the EEC and the return of the franc to convertibility, both in 1958, and then in the eighties, France still appears to be struggling with lingering powerful rigidities. This is most evident when one considers the rate of unemployment, which has remained stuck at a very high level for a decade. In our view, labour

market institutions and the process of human capital accumulation play an important role in these rigidities and may be a source of slower growth much as protection and inefficient productive capital accumulation did in the fifties.

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Table 2.1. Aggregate Performance

		1950- 1958	1958- 1973	1973- 1981	1981- 1992
GDP, including financial services and non market sectors	Growth rate	4.3	5.2	2.5	2.2
	Growth rate per employed person	4.3	4.6	2.2	2.0
GDP, without financial services and non market sectors	Growth rate	4.8	5.4	2.1	2.2
	Growth rate per employed person	4.9	5.3	2.4	2.5
	Growth rate per hour worked.	4.9	5.6	3.4	3.0
	TFP growth	3.6	3.6	2.0	2.1
Manufacturing	Growth rate	6.2	7.3	1.7	0.9
	Growth rate per employed person	5.7	6.4	3.1	2.7
	Growth rate per hour worked.	5.7	6.7	4.0	3.2
	TFP growth	4.4	4.8	2.8	2.1

Note: GDP is measured as the sum of the values added, omitting indirect taxes and import duties which are normally included in the GDP by the French national accounts.

Table 2.2: Ratio of Variances: France Relative to Other Countries

	Germany	United Kingdom	Italy	Netherlands	Belgium	USA
GDP	0.42**	0.34**	0.32**	0.38**	0.52*	0.35**
IPI	0.54**	1.11	0.71	0.99	0.79	0.44**

Variance of GDP and Industrial Production Index (IPI) growth rates are computed around split trends. One (two) star(s) indicates that variance in France is significantly lower at the 90% (98%) confidence interval. Sample periods: 1960-1991 for GDP, 1949-1991 for IPI.

Table 2.3: Ratio of Variances: France Relative to Other Countries

	Germany	United Kingdom	Italy	Netherlands	Belgium	USA
Budget Deficit	1.26	0.26**	0.30**	0.33**	0.19**	0.80
Unemployment	0.41*	0.16**	0.85	0.19**	0.30**	0.15**
Investment rate	0.20**	0.34**	0.16**	0.20**	0.25**	0.35**
Inflation	3.44**	1.03	0.97	1.98**	2.32**	2.66**

Variances of Budget deficit (as a ratio of GDP) and inflation are computed vis à vis split trends. Variance for unemployment and investment rates are computed vis à vis a 5-year centered moving average. One (two) star(s) indicates that variance in France is significantly lower or higher at the 90% (98%) confidence interval. Sample periods: 1961-1991 for budget deficits, 1964-1991 for unemployment, 1952-1991 for investment rate, 1950-1992 for inflation.

Table 3.1: Capital growth from 1930 to 1958
(average annual growth rates)

	1930-1939	1939-1946	1946-1950	1950-1958
Gross equipment capital	0.2	-3.9	5.8	5.8
Gross building capital	0.3	-2.9	1.0	1.0
Net equipment capital	-1.2	-4.2	9.2	6.4
Net building capital	-0.5	-4.0	2.2	1.8

Source: Villa (1993, statistical mimeo appendix).

Table 4.1: TFP growth by industries, and relative prices of value added

		TFP growth			Relative prices
		1950-1958	1958-1973	1973-1992	1950-1958
Agriculture	U01	3.0	4.3	4.8	-0.4
Food industries	U02	1.7	3.5	1.3	-4.0
Energy	U03	2.0	3.2	2.3	1.3
Intermediary goods	U04	4.7	4.2	1.9	
Investment goods	U05	3.6	5.0	2.6	
Consumption goods	U06	4.2	5.0	2.6	
Manufacturing	U04 to U06	4.4	4.8	2.4	-0.3
Building, public works	U07	2.0	2.1	2.2	3.4
Trade	U08	2.5	0.9	0.9	-0.1
Transport and telecommunications	U09	2.9	4.2	3.2	0.3
Services	U10	3.4	0.2	-0.1	2.6
Total	U01 to U10	3.6	3.6	2.1	

Source: French National Accounts and authors' adjustments for data prior to 1970. INSEE (1981, p. 203) for relative prices.

Table 4.2: Accounting decomposition of TFP growth

	1950-1958	1958-1973	1973-1992
TFP growth	3.6	3.6	2.1
Weighted average of sectoral TFP growth rates	3.1	2.1	1.6
"Reallocation" of capital	-0.2	1.1	0.3
"Reallocation" of labour	0.7	0.4	0.2
TFP growth without services	3.9	4.8	2.2
Weighted average of sectoral TFP growth rates	3.1	4.1	2.2
"Reallocation" of capital	0.1	0.4	-0.1
"Reallocation" of labour	0.7	0.4	0.1

Source: see Table 4.1.

Note: The labour share correspond to 1974. All other variables are in constant 1980 francs from 1970 to 1992, and retropolated before using data in 1970 francs. The labour variable is the hours of work. Accounting terms are used to weight overall TFP growth from Table 4.1 to get rid of decomposing problems.

Table 7.1. Estimates by Maddison (1987) of the Effect of Education on Growth
1973-1984

	France			Germany		
	Primary	Second.	Higher	Primary	Second.	Higher
Average years of formal education	5.00	4.9	0.9	4.0	5.2	0.3
Estimated Growth Effect		0.48			0.07	

Source: Maddison (1987, p.679, 688)

Table 7.2. Highest Degree Obtained (D)
(% of employed)
and Unemployment Rate (U)
(% of each category)

		Germany	France
No degree ¹	D	19.5	43.1
	U	13.0	13.7
Vocational ²	D	55.4	28.9
	U	7.0	10.4
High School	D	13.4	11.6
	U	5.6	7.4
Higher Education Short ³	D	4.0	8.2
	U	4.3	4.2
Higher Education Long	D	7.7	8.2
	U	4.2	4.1

Notes: Labour force excludes apprentices and internships. 1) Lowest possible qualifications, including some certificates (e.g. BEPC in France, Realschule in Germany); 2) In Germany necessarily includes on-the-spot training, not so in France; 3) Typically 2-3 years after high school, e.g. Fachhochschule in Germany; DEUG, BTS, DUT in France.

Source: Möbus and Sevestre (1991)

Table 7.3. Proportion of employees without degree
according to relative earnings (%)

	Male		Female	
	1970	1985	1970	1985
Lowest decile	15.3	30.4	24.5	15.3
Lowest quartile	50.4	56.0	49.6	53.0
Lowest half	78.9	82.4	78.8	92.0

Source: Baudelot and Glaude (1989)

Table 8.1: Credit outstanding in 1956
(billion of current francs)

		Banks	FDES	Govt subsidies cumulated from 1947 to 1956	Shares on the sums of the 3 previous columns	Shares of capital in 1950
Agriculture	U01	176.7	340.6	517.4	11.63	9.49
Food industries	U02	156.8		120.08	3.20	7.01
Energy	U03	319.2	1056.2	260.73	18.38	14.90
Intermediary goods	U04	442.3	202	361.28	11.30	9.77
Investment goods	U05	420.8		343.72	8.59	8.56
Consumption goods	U06	336.9	0.3	275.19	6.88	7.74
Building, public works	U07	167.7		136.98	3.42	3.34
Transport and telecom.	U09	142.5	209.2	1780.8	23.96	20.11
Trade and Services		607.5	21.3	496.22	12.64	19.08
Total		2770.4	1829.6	4300.4	100.00	100.00

Sources: Annual reports of the C.N.C., Annual Report of the FDES (1958), and André and Delorme (1983), Mairesse (1972).

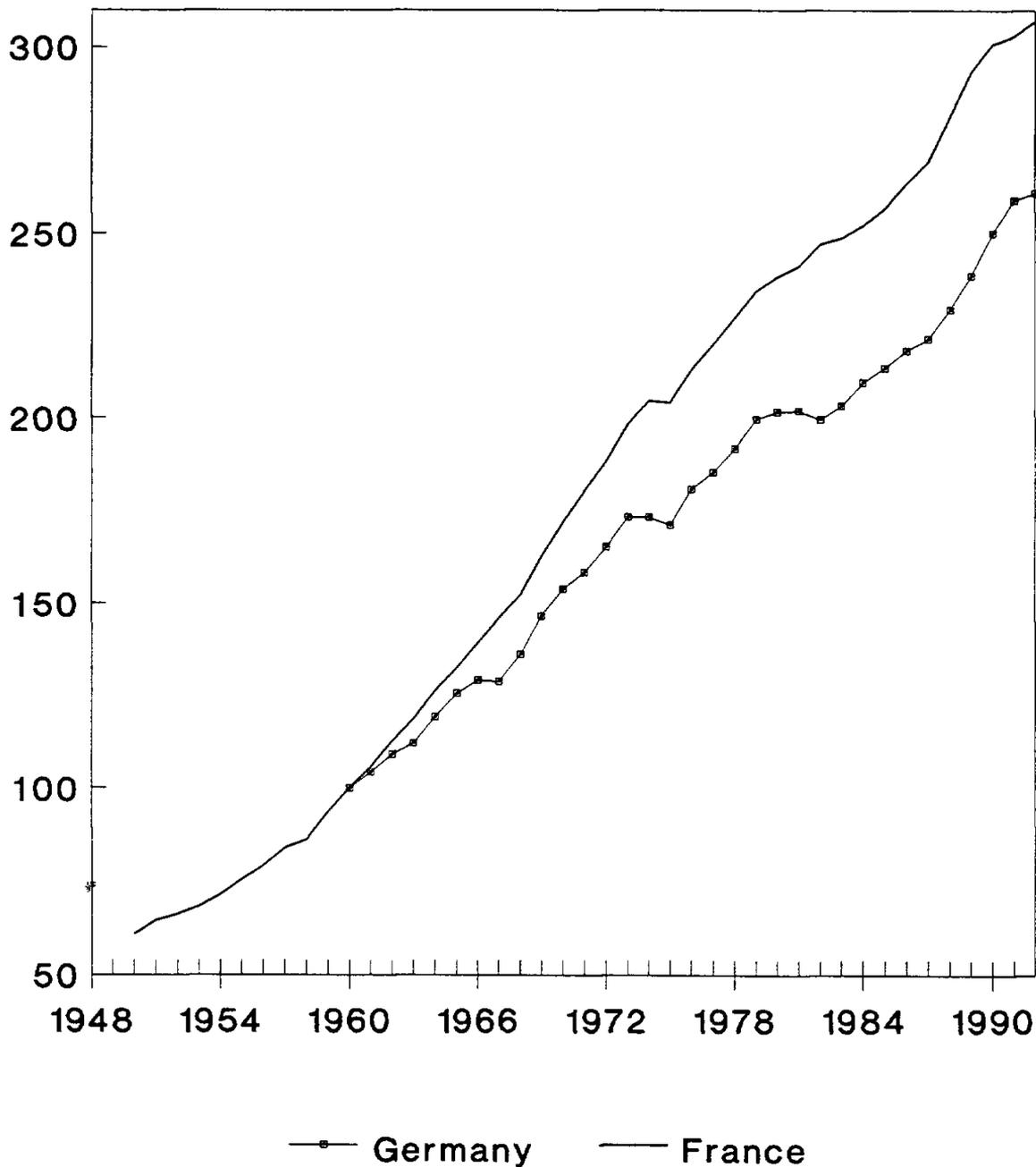
Note: Subsidies are known only for non-agriculture non-transport, they have been distributed like bank credits. Value added in 1956 was 1754.5 (old) billion francs.

Table 8.2: Share of French Exports by Destination

	Former French Colonies	Non EEC OECD	Original EEC
1952	42.2	27.3	15.9
1958	37.5	24.4	22.2
1962	20.8	27.9	36.8
1968	13.5	27.0	43.0
1973	9.2	27.5	48.6
1984	9.3	30.7	37.3

Source : Adams, 1989, Table 22, p. 178.

Fig 2.1 : GDP: FRANCE AND GERMANY
(Index: 1960=100)



Source: IMF

Figure 2.2: Unemployment rates

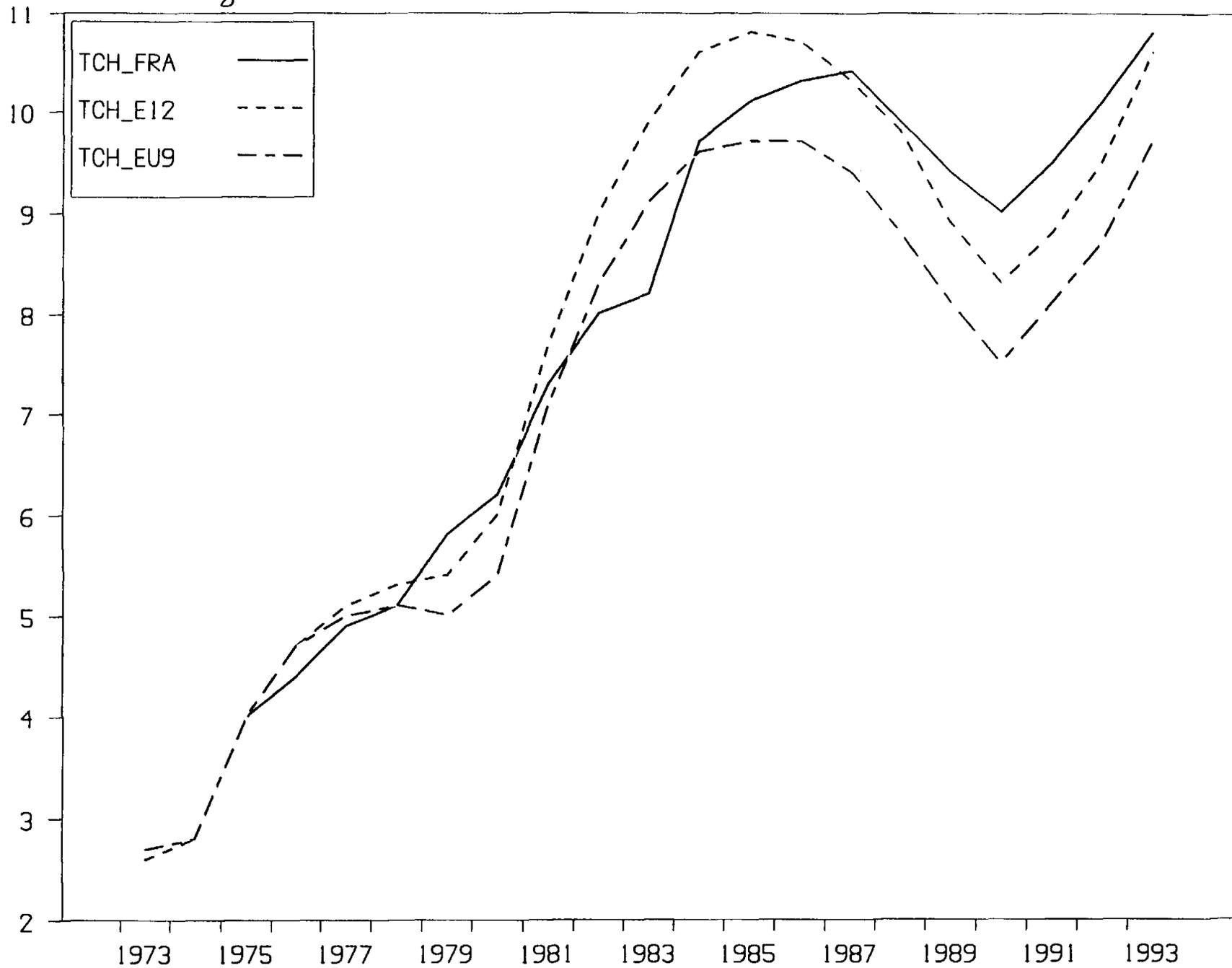


Figure 2.3 : Real Franc exchange rate

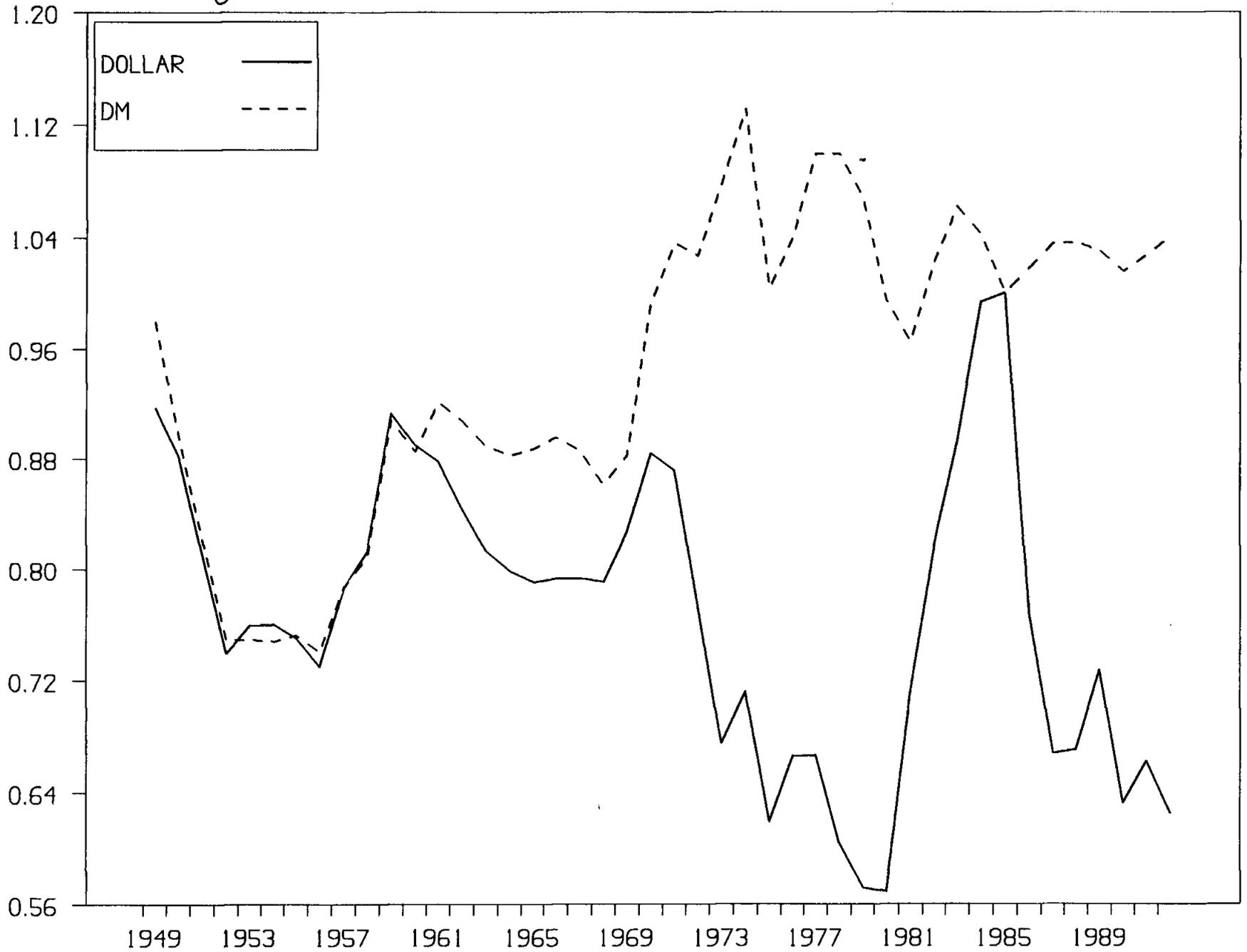


Figure 3.1: Investment rate

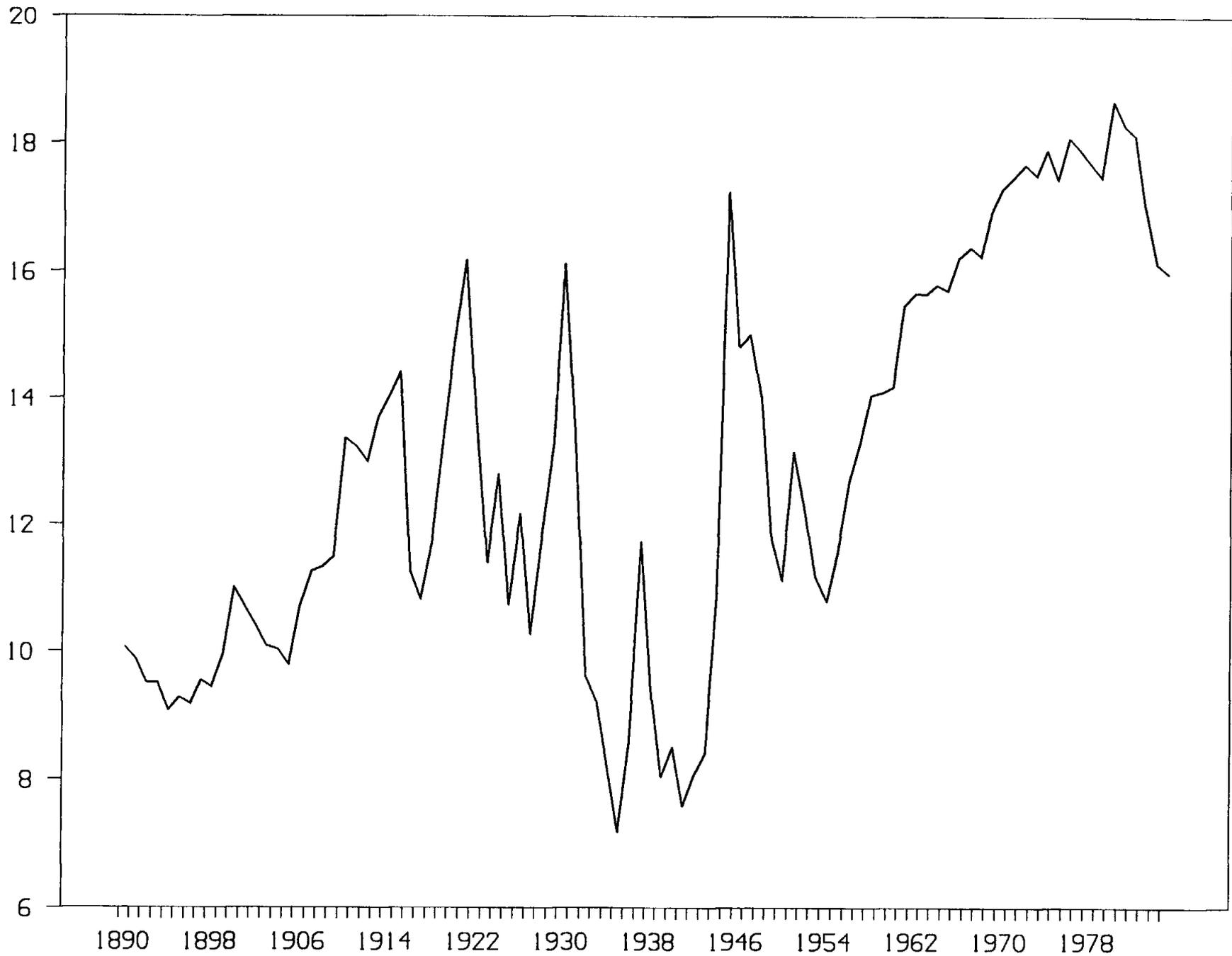


Figure 4.1: Factor Reallocations

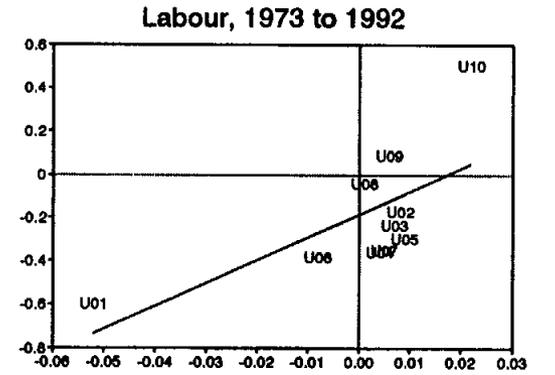
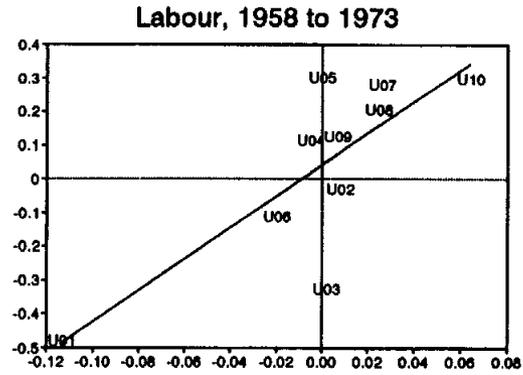
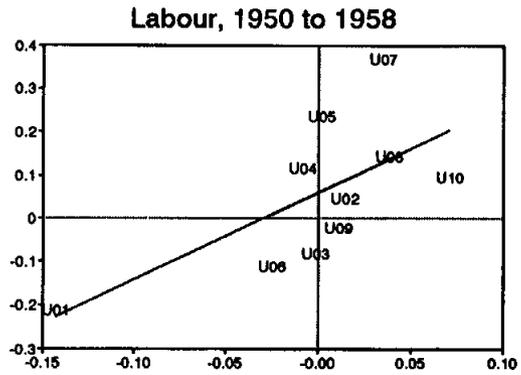
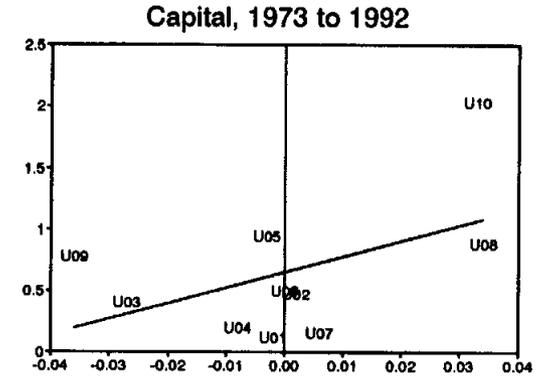
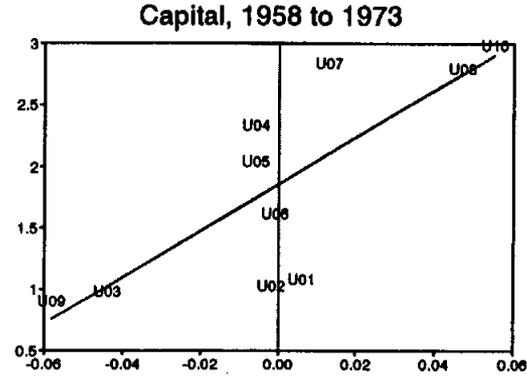
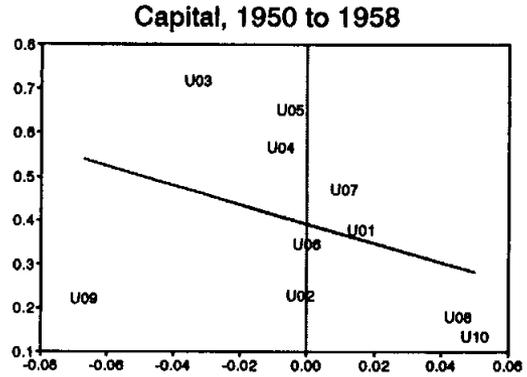
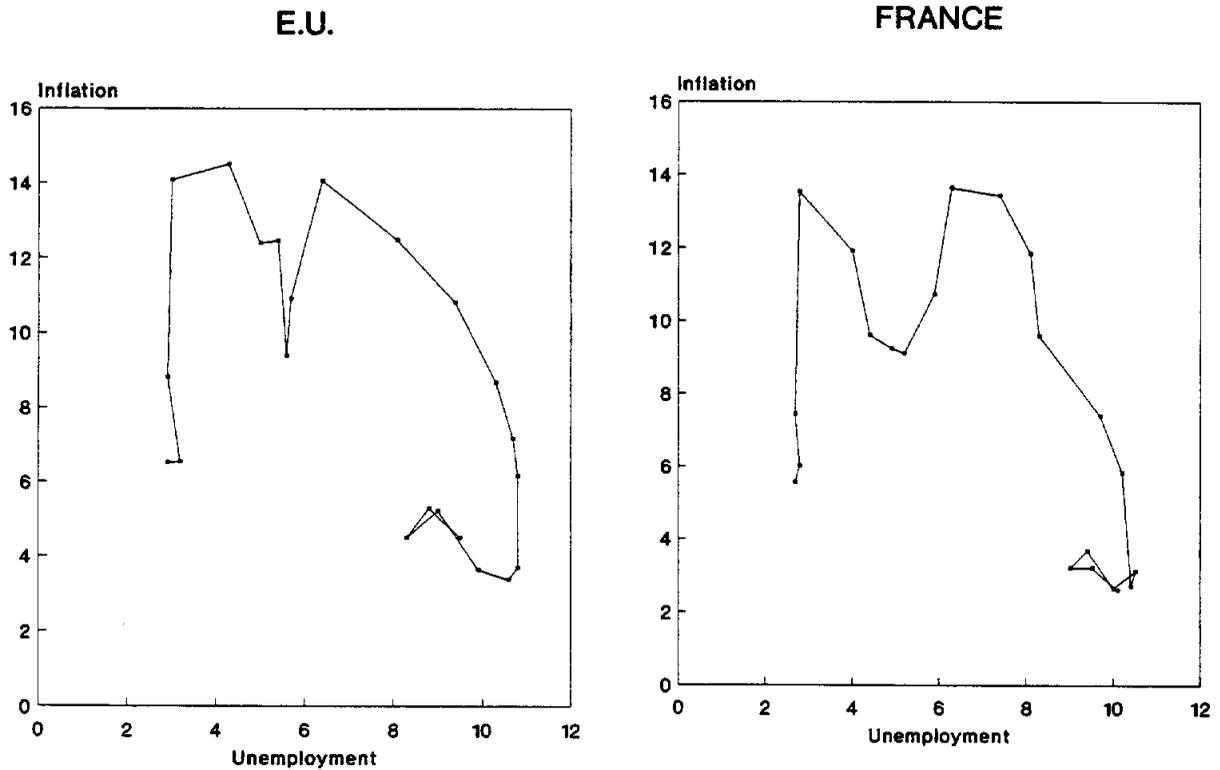


Figure 5.1: INFLATION AND UNEMPLOYMENT

1971-1992



Source: OECD, Main Economic Indicators

Figure 5.2: Investment rates and non-wage share in national income

TIT: total invest./GDP TINV: productive investment/V.A. of Business sectors

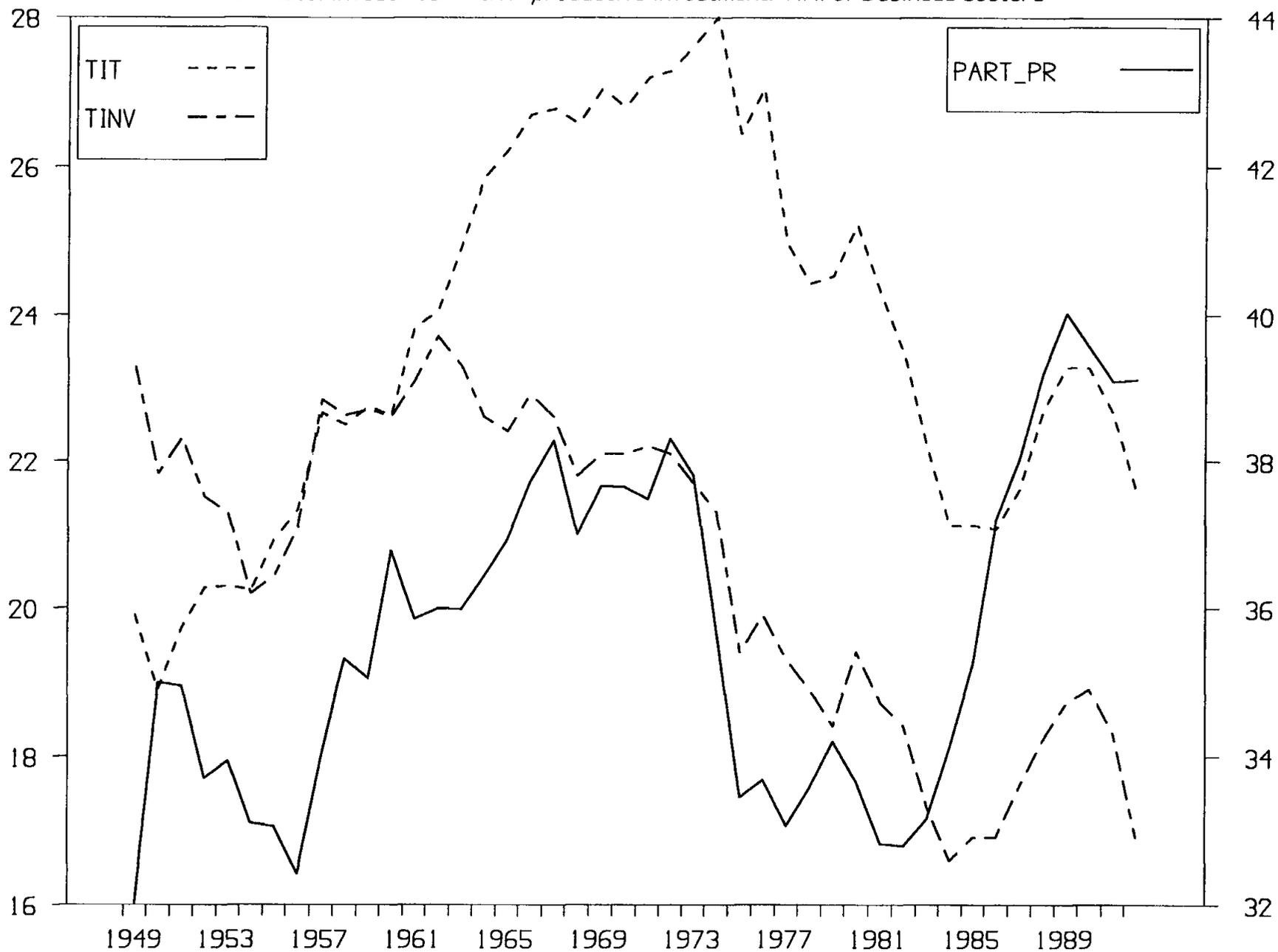
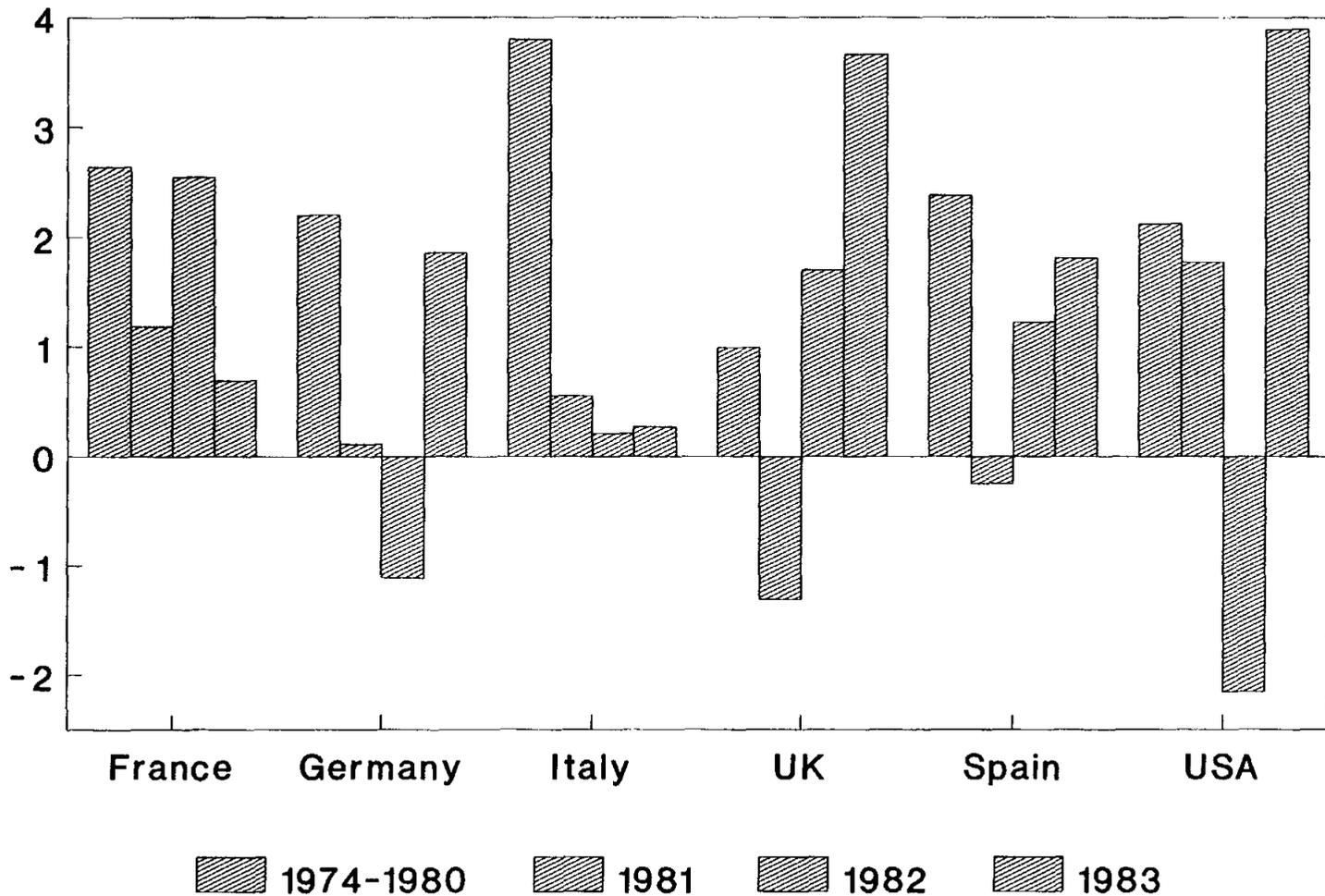


Figure 6.1 :

GDP GROWTH RATES (% per annum)



Source: IMF

Figure 6.2: Real Consumer Wages

