**Business Cycles and Economic Policy, 1945-2000**

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## 1. European business cycles 1945-2000: a narrative

During the great reconstruction and catch up boom, the business cycle seemed to have been either abolished or re-defined. Instead of periodic collapses of output and employment, for almost a generation after 1945 in most of Europe the cycle consisted of temporary slow downs in the growth of output and employment[1]. A rise in unemployment from two to four percent was classified as a recession. Did avoiding recessions make for high growth, or did high growth make for avoidance of recessions? Why did this period end - were the internal contradictions of financial repression under Bretton Woods simply too great to be contained? Were the 1970s the ultimate price to be paid for the long boom? Or was it all OPEC's fault that the business cycle, as traditionally understood, returned?

This remarkable break with the past was often attributed to the greater role of government in the economy – most extreme on the eastern side of the Iron Curtain with government ownership and control of the entire means of production , but substantial in even the 'mixed economies' of western Europe. There government ownership of swathes of industry was supplemented by budgets of historically unprecedented size. Heavier taxation and greater transfers as well as bigger state bureaucracies meant that a large component of aggregate demand was less exposed to the vagaries of the market than in classic laissez-faire capitalism.

[1] Backus and Kehoe's (1992) statistics understate the change in the trend until the oil crisis by extending their post war series typically to the mid 1980s. Nonetheless they find substantially greater stability for all the economies in their sample. Table 1 standard deviations.

Anglocentric interpretations of history may be inclined to explain this greater stability and high levels of employment by the Keynesian demand management of benign and omniscient governments. In what should have been the most Keynesian of economies, the UK, the cause of the higher levels of employment in these decades compared with 1937 was primarily higher investment and secondarily higher exports, rather than public sector deficits (Matthews 1968). Policy was not Keynesian in the sense that fiscal policy targeted employment creation, simply because of the need to sell government debt to the private sector and for the private sector to have confidence in the policies that debt was financing (Tomlinson 1984)[2]. Close observers noted that, while the larger government sector may have contributed to strong private sector demand by enhancing confidence, it was also government that triggered recessions with demand management (Maddison 1960). In this sense there was a government/central bank reaction function that was a part of the economy generating the cycle. Whenever there was a balance of payments crisis, interest rates were raised and or fiscal policy was tightened, for example.

Contrary to the Keynesian interpretation, even the most conservative of national economic policies met with apparently similar or greater success in minimising the business cycle. Ludwig Erhard's economic miracle in West Germany based on currency reform and price decontrol, and António de Oliveira Salazar's balanced budgets in Portugal, are cases in point. Nor should stability necessarily be attributed to reconstruction or policy breaks with the past; Sweden's stability in terms of maximum peak trough fall in annual GDP between 1950 and 1973 compared with Britain's yet Sweden had suffered no war damage nor experienced major political changes.

The new found stability was not confined to Europe. Japan, the United States and Australia are examples of reduced business cycle amplitude. This suggests that some features of the international regime may have been responsible. Candidates are the institutions that encouraged greater openness to international trade and investment, and the environment that gave rise to their creation. For, unlike interwar years,

[2] More recently it has been contended that the British policy of heavily taxing capital was Keynesian and was responsible for Britain's poorer economic performance than the United States (Cooley and Ohanian 1997).

international trade and payments were not unsettling; exports especially stabilised western European economies by continuing high when other components of demand fell, thereby improving the investment climate (Postan 1967 114)[3]. A determination to learn the lessons of the interwar debacle was one component of the international environment but so too was the Cold War and the accompanying US expenditure abroad.

At least moderate cycle synchronisation suggests western European economies were responding, albeit in different ways, to common shocks for much of the time. The analytical problem is to identify what common shocks were large enough to change the course of the economies, and which were truly exogenous. A large academic industry filters time series in a wide variety of ways, to identify cycle peaks and troughs, amplitudes and periodicities. But as with shocks, a credible narrative history must be able to find independent evidence of these peaks and troughs in national experience.

The immediate post war period was dominated by initial conditions, and some economies' upswings were stronger than others. British output of steel and cloth and goods carried by rail fell between 1946 and 1947, as did domestic coal consumption. But other indices continued to rise. The very severe winters of 1946/7 and 1947/8, coupled with an Allied policy of pastoralising the economy, held back Germany, along with division into zones of occupation and inflation. Currency reform in June 1948 lifted this last constraint.

The Berlin blockade of the same year precipitating the Cold War was a common shock for Eastern Europe, just as rebuilding trade with the West was underway (Foreman-Peck 1994 249). US economic warfare in the form of the 1949 Export Control Act was very damaging unless, as in the case of Czechoslovakia, exports could substitute for eastern bloc imports formerly bought from the West. But the West was easily able to manage without the East (no shock for them). The severe weather conditions were probably more damaging.

[3] Backus and Kehoe's (1992) Table 3 does not quite address this issue, not only because of the periodisation but because net exports (exports minus imports) are considered, rather than exports. Imports should be highly correlated with output fluctuations even when exports are not.

Iberia was a separate bloc politically, not directly affected by the Second World War, though Spain had it its own indigenous devastation. Nonetheless somewhat analogous cycles to those in North Western Europe can be detected. There were slumps in 1949, 1953 and 1959 for Spain and in 1948, 1952 and 1958 for Portugal. Drought seems to have played a role in the first recession.

The Korean war boom peak varied only between the first and third quarters of 1951 for the western European countries of Lundberg's (1968 90) sample – though some economies production fell by more and for longer than others. This phase of the cycle is to be understood as a common policy response to the rising raw material prices and speculative imports putting pressure on balances of payments (van der Wee 1986 63-4). The upswing from this recession raised wage and price inflation, creating labour scarcities that would be assuaged by migrants. Once more stress was imposed on the pegged exchange rates of the Bretton Woods regime.

Industrial production again fell around 1957-8, though Britain's recession began earlier, thanks to the Suez Crisis. Japan and the US, as well as western Europe, expanded rapidly thereafter, helped by tax cuts, removals of HP restrictions and more public spending. Traded good production especially iron and steel, textiles, shipbuilding and machinery were particularly well synchronised between economies, compared with GDP.

With West European recovery, the US no longer played an initiatory role in cycles, particularly after the boost to expansion conferred by the Treaty of Rome in 1958 (van der Wee 1986).[4] This seems to have neutralised the threat of recession in 1963, but not by 1967, when inflation began rising. France was squeezed by government policy earlier in 1964 and so the balance of payments permitted expansion through 1965 and 1966. The upswing of late 1960s was stopped by wage explosions and spiralling inflation by 1971, and the oil embargo of 1973 is generally reckoned to have ended the era of the growth cycle. For both Portugal and Spain a phase of sustained and

[4] Duecker and Wesche (2004) find Germany causes France and Italy but not the UK after the end of the Bretton Woods system, when their data series begin. A more systematic assessment of the period 1950-1963 is warranted.

stable growth—the Golden Age of growth in both countries—began around 1959-60 and lasted until 1974, when the Portuguese revolution provided an unambiguous exogenous shock. Serious harvest failures in Soviet Union presented another such shock, raising demand for primary products in West in the mid 1970s.

Did the golden age end because of inflation, independently of oil prices (Barsky and Kilian 2004)? As tests, there were several "oil price shocks" after the 1970s, notably the 1986 collapse of oil prices and the 2000 boom in oil prices, as well as the oil price increases associated with the 1990-1991 Gulf war and the 2003 Iraq war. There is an endogenous element to oil prices- supply in the short run is inelastic so prices expand or collapse with relatively small shifts in demand. The first oil shock coincided with an expansion of demand that pushed up all raw material prices across the world, no longer constrained by pegged exchange rates. In Britain and Norway's cases North Sea production largely insulated the economies from adverse oil shocks by the end of the seventies and Britain received much of OPEC's recycled unspent 'petrodollars' on deposit in 1974 and 1975. Yet Britain's cycle amplitude was as great as any in the West.

The second phase of cycle history begins with the recession of the mid 1970s, when GNP fell in the OECD as a whole for the first time since 1945. 'Stagflation' marked the next decade or more; high unemployment as well as high inflation. No longer was policy constrained by the pegged exchange rates of Bretton Woods. Initially the Bundesbank's tight money policy allowed an appreciation of the DM and linked currencies against the dollar by 30-40 percent, offsetting much of the oil price increase. France and Italy depreciated their currencies so exacerbating the impact of the shock. Recognition of German success led to the formation of the European Monetary System of 1978. The Volcker shock in 1980 appreciating the dollar against EMS currencies helped survival of the system in the face of the second oil shock.

Most of western Europe shared in the recession of 1980-82 (Maddison 1992 91). Floating exchange rates did not seem to decouple the cycle. Increasing trade encouraged synchronisation. Inflation was gradually squeezed out of the cycle in the 1980s, perhaps helped by the positive oil shock of 1986 and the Single Market initiative, EEC widening, was probably also a positive supply side shock.

The 1980s saw the increasing acceptance of conservative macroeconomics by policy makers in the US and UK; there was no trade-off between inflation and unemployment. The markets had rational expectations and could not be fooled by governments or central banks. For present purposes one of the most significant intellectual developments was Kydland Prescott on real business cycles. In this framework individuals positioned themselves optimally in the face of unanticipated events (shocks) and therefore government stabilisation policy was bound to make matters worse. Moreover KP introduced a new method because of the impossibility of dynamically simulating business cycles with any degree of accuracy with econometric models. Calibrated models are simulated to establish correlations and autocorrelations of time series, which are then compared with those properties of real time series. Blackburn and Ravn's (1992) study of UK data from 1956 show that prices are countercyclical, real wages are procyclical and so is productivity. Net exports consumption and hours per worker are highly volatile and employment is the opposite. The productivity result is consistent with the real business cycle doctrine that business cycles are driven by productivity shocks- hence productivity increases in upswings. But no less plausible is that labour hoarding diminishes in upswings, productivity is not accurately measured.

Government policy certainly turned what could have been a positive supply shock for Europe into a massive a sustained negative shock. With the breakdown of the Berlin Wall in 1989 the Cold War ended. The Soviet client states of Eastern Europe were allowed to abandon their experiment with central planning, and shift to markets. Had Chancellor Kohl managed economic aspects of German reunification with the perspicacity shown half a century earlier by Ludwig Erhard, European economic history would have been different. In July 1990 German economic and monetary union occurred at a rate of one for one Ost marks to Deutschmarks for two months wages and two Ostmarks for one DM above that amount. Unfortunately the low productive of the East German economy meant that this exchange rate massively overvalued east German labour and assets. Prices were controlled in former East Germany, creating a large new market but with impossibly low productivity. The currency conversion rate bankrupted eastern financial institutions. The burden of

supporting a large population rendered unproductive by the terms of the monetary union pushed up unemployment in the west as well as in the east.

This negative shock was superimposed upon what seemed to be a successful system of pegged European exchange rates, the EMS. The 1992 crisis forced the UK and Italy off what was effectively the DM peg, but other economies managed to stay in. UK exports and economic activity generally then began to expand while France stagnated. Momentum for a single currency was maintained and the Euro introduced for eleven countries on 1 January 1999

Continued deficits of German (and French and Portuguese) government broke the Maastricht limits, in part because the German reunification policy raised interest rates throughout Europe. Fiscal stances were rarely adjusted to take account of the economic slowdown from the 1970s, because of the difficulties of creating a political consensus to do so. Slower economic growth meant that a stable-debt GNP ratio required a smaller government budget deficit yet many western European economies neither raised taxes or cut back spending. Consequently debt ratios rose strongly, creating their own challenges for economic stabilisation. Periodically governments were obliged to attempt adjustment, either because of exchange rate crises or to fulfil obligations required by European monetary treaties. These adjustments then constituted shocks that created their own cycles.

Does requiring countries to follow fiscal rules or disciplines create a optimum currency area (as Darvaz et al 2005) contend)? Or does it simply introduce common shocks and therefore a policy-induced cycle correlation? Do optimum currency area characteristics of groups of economies emerge as a result of currency links? Duecker and Wesche (2004) find over the post- Bretton Woods period , for France, Germany and Italy cycles are correlated but not the UK's. Similarly Stock and Watson (2004) note that Eurozone countries correlations have increased, while the UK cycle is more correlated with North America's. They also observe that for G7 common international shocks have been smaller in the 1980s and 1990s than they were in the 1960s and 1970s.

'This declining volatility of common G7 shocks is the source of much of the observed moderation in individual country business cycles. Moreover, this moderation of

common G7 shocks is responsible, in a mechanical sense, for the failure of business cycles to become more synchronous as one might expect given the large increase in trade over this period…. Persistence of disturbances has increased in France, and the UK. In those countries, a shock of a given magnitude would result in more cyclical volatility today than thirty years ago.' But they do not explain why.

### 2. Cycle facts: amplitude, duration and synchronization

Annual data on real GDP is provided by the OECD and covers the period 1950-2006; hence, we exclude the 1945-1950 period due to WWII related economic shocks that do not reflect business cycles. Quarterly data on real GDP has been seasonally adjusted and thus should reflect an underlying tend and a cyclical component. Table 1 shows descriptive statistics for quarterly data.

TABLE 1

To decompose real GDP time series into a trend and transitory component, we follow Hodrick and Prescott (1997), which is nowadays a standard procedure in macroeconomic time series analysis. Before applying the Hodrick-Prescott (HP) filter, we take the natural logarithm of real GDP of European countries and fill gaps in our time series based on the Holt-Winter procedure (see Holt, 1957; Winter, 1960). The basic idea of the HP filter is to minimize the following loss function, which consists of a goodness of fit measure represented by the first term and a penalty term with the smoothing parameter λ. The penalty term accounts for changes in the secular trend $\tau_t$, which have to be kept at a minimum.

$$\min_{\{\tau_t\}} \sum_{t=1}^{T} \left(x_t - \tau_t\right)^2 + \lambda \cdot \sum_{t=2}^{T-1} \left(\Delta\tau_{t+1} - \Delta\tau_t\right)^2 \qquad (1)$$

The secular trend converges to a linear trend if the smoothing parameter λ approaches infinity. For quarterly data, Hodrick and Prescott (1997) suggest that λ should be equal to 1600. In contrast, Marcet and Ravn (2003) determined λ endogenously and derived different values for the smoothing parameter. For annual data, Ravn and Uhlig (2002) and Maravall (2004) suggested values between 6 and 7, which we use for our HP filter. Deviations from the trend component can be regarded as cyclical component; thus, we can identify business cycles as perturbations from a long-term growth pattern of GDP.

Decomposing log GDP into its secular trend and a cyclical component is a purely technical process and does not rely on any definition of business cycles. When we want to identify business cycles, we have to time the cyclical patterns by uncovering expansion and recession periods according to our definition of business cycles. The most widely applied definition is provided by the National Bureau of Economic Research (NBER): "a recession as a significant decline in activity, spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and trade. A recession begins just after the economy reaches a peak of output and employment and ends as the economy reaches its trough. Between trough and peak, the economy is in an expansion. Expansion is the normal state of the economy; recessions are brief and relatively rare." Hence, to identify business cycles, we have to determine peaks and troughs in the real GDP time series (see Figure 1), which can be done by applying parametric and non-parametric approaches. Figure 1 reveals that France suffered only twice from a recession, namely in 1975 and 1993; however, this impression is based on annual data, which might be misleading, as recessions are usually short and might be hidden in annual aggregates. Artis et al. (2003) contended that a typical recession in European countries lasts for about three quarters; thus, quarterly data are required to identify business cycles precisely. Nevertheless, the cyclical pattern of annual GDP figures can provide insights concerning divergence and synchronization of European economies in the long run. In particular, it has to be noted that quarterly data are not available before 1960. To cover the whole post-1945 period, we have to rely on annual as well as quarterly data.

We follow the simple but widely applied algorithm of Bry and Boschan (1971), which has been modified by Harding and Pagan (2001) for quarterly data, to determine peaks and troughs of real GDP time series. Bry and Boschan's (1971) non-parametric approach is rather straightforward and consists of two rules: (1) a local maximum (minimum) exists in t if it is the highest (lowest) value compared to values from t-2 to t+2; (2) the minimum phase duration should be two quarters (e.g. two negative quarterly growth rates in t and t+1). Due to the second requirement, we can only identify two recession periods, as a downturn has to last for at least 2 quarters to be labelled a recession. Table 2 shows the number of recessions and their duration for

European countries. Accordingly, the average duration of a recession was 2.85 quarters, and the amplitude reached -0.52%.

TABLE 2

We turn now to the issue of synchronization of business cycles in Europe. Due to increasing economic, political and financial integration, it is believed that business cycles have become more similar in terms of timing (expansion and recession), amplitude, and duration. Close economic ties (e.g. trade flows, FDI) serve as a transition mechanism for economic shocks; however, the strongest connection of European economies has been driven by the introduction of the Euro and a unified monetary policy that determines interest rates and money supply for all Euro member states. According to recent studies also fiscal convergence may have enhanced business cycle synchronization within Europe (Darvas et al 2005).

Based on our annual estimates of the cyclical component of real GDP, Figure 1 plots the cyclical pattern for major European economies (UK, France, Germany and Italy).

FIGURE 1

Apparently, since the 1970s cyclical GDP components have become more similar – except the effect of the reunification of Germany, which distorts our estimates. Calculating time-varying correlation coefficient for a 9-years window illustrates the increased similarity of cyclical patterns. Figure 2 shows the time-varying correlation coefficient for the Italian and French economy, which exhibits a considerable increase.

FIGURE 2

Due to the limitations of annual data mentioned in a previous section, we use quarterly data since 1960 to analyze the synchronization of European GDP cycles in more detail. Interestingly, using quarterly data shows a similar picture in that major European economies have exhibited synchronized cyclical patterns (see Figure 3).

FIGURE 3

Besides analyzing the cyclical components based on annual and quarterly data, we use states (expansion / recession) derived from the timing of business cycles to quantify the degree of synchronization in Europe. Accordingly, if countries are in the same state (e.g. recession) at the same point in time, synchronization can be confirmed. To obtain a measure of concordance for states of business cycles, Harding and Pagan (2002) proposed the following indicator.

$$C_{k,j} = \frac{\sum_{t=1}^{T} S_{t,k} S_{t,j} + (1 - S_{t,k}) \cdot (1 - S_{t,j})}{T} \tag{2}$$

If cycles exhibit perfect comovement, $C_{k,j}$ is equal to one, and in the case of a countercyclical behaviour $C_{k,j}$ is equal to zero. Table 3 shows Harding and Pagan's (2002) concordance matrix for major European countries for the period 1960-2006.

TABLE 3

Apparently, the level of concordance is very high between European countries indicating a high level of integration.

## 3. What shocks caused fluctuations? Real business cycles VS neo-Keynesian interpretations

The debate about the ultimate causes of cyclical movements of the economy has generated considerable controversy in the last twenty years. According to the real business cycle (RBC) school of thought, random and persistent changes in total factor productivity are the proximate causes of fluctuations in the aggregate level of economic activity. This perspective challenged the traditional, dominant view according to which cycles were caused by monetary and financial disturbances to aggregate demand or by aggregate supply shocks. The RBC approach is based on the assumption that firms and households are always efficiently adjusted and therefore active government stabilisation policy can only make matters worse.

According to RBC theory, positive productivity shocks (i.e. unexpectedly above-average rates of TFP growth) raise workers' real compensation, thereby influencing their decisions about how many hours to work, and how much to consume or save. Thus, macroeconomic variables such as investment, consumption and total hours worked should rise above their long-run trend during upswings, and fall below their trend during downturns. These features are well known for the post-Korea US economy, on which the studies by Kydland and Prescot (1982) and Long and Plosser (1983) were based, and which were replicated in their RBC calibrations exercises. As a reaction to the RBC school, a new Keynesian view of business cycles has emerged, also based on micro foundations but drawing opposite predictions. In sticky prices models, such as Gali (1999) for instance, technological shocks are found to reduce labour hours in the short run.

Unfortunately empirical tests of competing explanations focus mainly on the USA and a few majore European economies, and rarely venture back further than the early 1970s. For the rest of Europe, this issue is still virtually unexplored. Although we cannot pretend to carry out a comprehensive assessment for all countries over the entire post-1945 period, we can provide some evidence for a selection of countries.

Since in a standard RBC model a positive technological shock is reflected in increased factor inputs, we start by analyzing the relationship between output fluctuations and different labor inputs: total employment, total hours worked and hours worked per employee. Data on real gdp (expressed in 1990 Geary-Khamis dollars), total employment, total hours worked and hours worked per employee, are from the Groningen Total Economy Database. Data on nominal hourly wages and the Consumer Price Index are from IMF International Financial Statistics. Cycles are extracted by applying to the log-series a HP filter with smoothing parameter 6.25 as suggested by Ravn and Uhlig 2002.

Figures 1 report the raw series of employment, total hours and hours per worker for the four main Western European countries (West Germany, UK, France and Italy). Figures 2 plot the filtered cycles of GDP, employment and total hours worked; the two series seem to move pro-cyclically in all countries. However, real wages and hours worked per worker are the best variables to capture the behavior of wages and

households, since total hours worked can increase just as a consequence of increased employment. As shown in Figures 3, hours worked per worker employed and real wages exhibit clear and consistent pro-cyclicality in the UK for the whole period, and West Germany between the early 1960s and the mid 1980s—after which some countercyclicality can be observed until the mid-1990s. In the cases of France and Italy, however, the procyclicality of the two variables is much less clear and irregular, suggesting that the causes of cycles of this two countries may be different.

(unfinished; to be completed)

## 4. Did governments respond to cycles? Searching for policy rules

Did European authorities target employment, price stability or external equilibrium? Was their policy rule stable over time? When evaluating the response of economic policy to cycles throughout the second half of the 20$^{th}$ century, we have carefully to assess the changes in objectives and instruments of economic policy that took place over time. In turn, this changes were driven by deeper changes in dominant economic ideas and in the level of international economic integration—a tendency that can be summarized as a 'contraction in the agenda of national economic management' and ' a surrender...to international market forces' (Cairncross 1990, 50).

To investigate the policymakers' role in the stabilization (or destabilization) of the business cycle, we have properly to identify policy objectives, targets and instruments. This may be complicated, as these differ across countries and over time. In any case, our main purpose in this section is to identify the existence of possible responses of policymakers to fluctuations in the aggregate level of the economy. Hence, we postulate that policy rules may exist based on a systematic feedback from cycles to policy (monetary, fiscal or both). Some provisos are warranted here.

First, feedback rules are just one possible kind of rules. Policymakers may have also fixed rules, or react to unexpected and particularly serious shocks in a totally discretionary fashion. Second, standard models of reaction function focus generally on responses to small deviations of policy targets (say, inflation) from long-run or

steady-state trends (think of the Taylor rule), but are they helpful when target variables suffer large and enduring swings, such as, by instance, the drifting away from low to high inflation (Reynard 2007), where policymakers need to engage in long-lasting process of macroeconomic adjustment which may prove less sensible to macroeconomic fluctuations?

Third, the problem of target identification by the policymaker is complex, and particularly so when deviations from output trend are involved. As it is known, cycles obtained by filtering may be spurious; even more importantly, their usefulness as indicators of deviation from output potential or trend is seriously questioned. How can we realistically proxy the output gap perceived by policymakers in real time? Probably the best alternative is to use GDP and employment growth rates, an information which was generally available to contemporary policymakers. We should also account for the possibility that, due to informational uncertainties, policymakers can easily under- or over-predict output gaps, which in turn may lead to important policy mistakes (Orphanides 2000 and 2001). Finally, we should ask whether policymakers' behaviour was backward looking or forward looking. Most recent policy rules are set in a forward looking framework (Clarida et al. 2000), but the debate is unsettled.

Finally, output stabilization may be just one of the possible elements that enter the loss function of policymakers. In the recent literature the policymaker loss fuction is generally formulated as follows:

$$L = \alpha\sigma^2_{\pi} + \gamma\sigma^2_{y} \qquad (1)$$

where $\alpha$ and $\gamma$ are the weights assigned to inflation stabilization and output stabilization. But how realistically does this formulation reflect governments' loss function over time?

Certainly, under the pegged exchange-rate with increasing (though imperfect) capital mobility of the early Bretton Woods period, governments had to worry principally about their external balance. If that is true, economic policy could have designed to stabilize the nominal exchange rate, or may have responded to fluctuations in

international reserves and the current account . Yet, demand management seems to have been quite unresponsive to external imbalances in the vast majority of European countries. As it emerges from the most detailed study available for nine Western countries between 1950 and 1966 (Michaely 1971), no consistent pattern of response of budgetary policies, as an instrument of aggregate demand policy, to the requirements of the balance of payments can be found—the only exception possibly being UK between 1952 and 1956. Even more strikingly, such unresponsiveness apparently cannot be explained by the use of the budget for competing policy targets. Rather, it seems that 'most often, budgetary policy seems to be excluded from the list of instruments available for the correction of domestic as well as balance-of-payments disequilibria'—again, with the possible exception of Sweden, in which output and employment stabilization seemed to prevail (Michaely 1971, 32). Nor governments seemed to make use of any combination of fiscal and monetary policy consistent with the 'policy mix' rule (with tight monetary policy and expansionary fiscal policy in periods of external deficit and rising unemployment).

In fact, in a significant group of European countries (including the UK, France, Belgium, the Netherlands and Italy) instruments of monetary policy—mainly discount rate actions and the growth rate of money supply—were found to have been moving in a direction (not necessarily with a magnitude) consistent with the external position (i.e. with an increase in interest rates and a fall in the growth of money supply during periods of external deficit). This evidence is broadly consistent with a policy environemnt increasingly influenced by the 'policy mix' framework proposed by Bob Mundell in the early 1960s., in which the use of monetary policy for external purpose was encouraged. The IMF view was that countries affected by 'temporary and reversible disequilibrium in the balance of payments...should not be expected to incur fluctuations in internal demand and activity'; rather, they should pursue 'policies aimed at attracting appropriate equilibrating movements of private capital through international coordination of interest rates' (Fleming 1964; also IMF Annual Report 1964, quoted in Chalmers 1972, 17-18). However, such consistency seemed to have been relaxed in the course of the 1960s, whereas substantial evidence is provided of sterilization policies, with central banks' domestic assets partially offsetting falls in international reserves. On the contrary, in Germany monetary policy seemed to have

played a neutral role, although the possible role of sterilization policies is not directly examined (Michaely 1971, 39-40).

Although capital controls created some scope for autonomous monetary policy, changes in domestic credit tended to be substantially neutralized by offsetting short-term capital flows (Kouri and Porter 1974). As Maurice Obstfeld argues, 'despite its intellectual elegance, the theory of policy mix was almost completely impracticable. (...) Fiscal policy was in many cases disabled, and the use of monetary policy posed a dilemma—whether to move toward full employment at the cost of risking an external crisis.' (Obstfeld 1993, 218-9).

Can we confirm these findings for the Bretton Woods period? How would our assessment change when we move into the 1970s and 80s? In 1950s-60s Western Europe, the classical instruments of monetary policy—discount rate actions, open market operations and reserve requirements—were used in different combinations across countries; their mix also changed over time in the same country. By instance, bank rate action was sistematically used by monetary authorities in the UK, West Germany, Belgium, the Netherlands and Sweden. Also French authorities frequently resorted to this instrument in the 1950s, but much less so in the following decade. Conversely, Italian authorities left discount rates almost unchanged for very long periods. (Michaely 1971, 33-37). Both French and Italian authorities seemed to give increasingly priority to the maintainance of low and stable nominal interest rates, in order to guarantee cheap funding to the government and the large state-owned industrial sector. The same applies to Spain under the Franco regime, in which even monetary policy in its modern acception seemed to be invented only in the wake of the democratic transition of the mid 1970s (Martin Aceña 2006). In many cases traditional instruments were also complemented by a wide array of administrative constraints, such as cash and liquidity ratios, quantitative limits on rediscounting and credit, regulation of banks' external position and so on. This wide diversity of target and instruments was maintained also in the transition to targeting growth rates of monetary aggregates with anti-inflationary purposes, initiated by West German ca. 1974 and adopted by the rest of major European governments by the end of the decade (Houben 2000, 142-174).

For our empirical purposes, we use changes in the discount rate and the growth rate of monetary aggregates (M0 or M1), as the monetary policy instruments of European policymakers. In the case of the discount rate, a monetary policy rule can be estimated from the following equation

$$\Delta RATE_t = c + a\ OG_t + AR(1) + e \qquad (2)$$

where $\Delta$RATE is the change in the discount rate, and $OG_t$ is a contemporaneous indicator of the output gap. In the case of monetary aggregates, part of their growth rate is likely to depend automatically of the cycle situation. The cyclical component of the monetary aggregate is recovered from the following equation:

$$\Delta M_t = c + a\ OG_t + AR(1) + e \qquad (3)$$

where M is the monetary aggregate. The residuals, e, in (3) are the non-cyclical, i.e. autonomous component of monetary policy stance and can be used to estimate a reaction function as follows:

$$e_t = c + b\ OG_{t-1} + v \qquad (4)$$

where $OG_{t-1}$ is the lagged output gap. However, we also want to assess whether governments targeted different variables in different periods. In order to do that, we test monetary reaction functions using also employment, international reserves, the current account, and inflation.

As far as fiscal policy reaction functions are concerned, the identification of instruments is also less than straightforward. Recent empirical specifications are usually based on the ratio of primary balance to GDP as the standard indicator of fiscal stance, since it is supposed better to capture the discretionary dimension of fiscal policy (Darvas et al. 2005; Fatas and Mihov 2002; Gavin and Perotti 1997; Lane 2003). However, the use of primary balance raises an identification problem. Theoretically, the cyclicality of fiscal policy stance can be optimally assessed in terms of instruments—that is, government spending— rather than endogenous outcomes such as the fiscal balance. In fact Kaminsky et al. (2004: 7-9) demonstrate that, irrespectively of the acyclical, procyclical or countercyclical stance of fiscal policy, its cyclicality eludes unambiguous interpretations when the real primary balance or its GDP ratio are used.[5] Since real government expenditures are better able to

[5] In the case of acyclical fiscal policy with constant tax rate and government expenditure, tax revenues and the primary balance are positively correlated with the cycle, but the GDP ratio of government expenditure is negatively correlated with the cycle, and the correlation of the GDP ratio of tax revenues

discriminate between pro-cyclical (magnifying), countercyclical (stabilizing) and acyclical policies, they argue that the latter possibly represent a superior indicator of fiscal policy stance.

Our approach to fiscal reaction functions in the simplest form can be written as:

$$\Delta PB \text{ (or } PG)_t = \varphi_0 + \varphi_x x_t + \varphi_b b_{t-1} + u_t \qquad (5)$$

where ΔPG (or PG) is the first difference of log-real primary balance or primary expenditure, x is the output gap, b is the GDP ratio of debt outstanding (to take into account the constraint that high debt levels represent on government's fiscal behavior). To exemplify, if we consider primary expenditure as the true instrument, fiscal policy aimed at countercyclical stabilisation would be indicated by $\varphi_x<0$—in good (bad) times when cyclical conditions are above trend (below trend), the government reduces (increases) real primary expenditure and fiscal policy turns restrictive (expansionary)—, and pro-cyclicality by $\varphi_x>0$. As for the debt constraint, $\varphi_b<0$ indicates that, when past spending and borrowing have been high, real current expenditure must be adjusted to prevent the debt-income ratio spiralling out of control; on the other hand $\varphi_b\geq 0$ shows that past borrowing is no constraint on present borrowing, either because debt-income levels are so low, or because fiscal policy is irresponsible and unsustainable.

An estimation problem of (5) is that changes in fiscal policy may cause contemporaneous changes in aggregate demand, hence in the output gap, or at least that was often the intention. If this was so, the OLS estimate of $\varphi_x$ would be biased. For instance, recent studies (such as Gali and Perotti 2003) have sought to distinguish the 'policy constant' or 'cyclical' aspects of changes in the budget deficit or surplus (due to automatic stabilisation) from systematic, discretionary policy responses to changes in the utilisation of the economy's capacity. One typical solution to the problem of endogeneity and reverse causation is to use lagged explanatory variables.[6]

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is ambigous, as it also turns the GDP ratio of primary balance. With procyclical fiscal policy (identyfied by falling tax rate and increasing expenditure in good times), the correlation of tax revenues and their GDp ratio with the cycle is ambigous (the tax rate falls but the tax base increases) and the same happens to the GDP ratio of the primary balance.

[6] Another solution would be to employ instrumental variables, regressing the indicator of fiscal stance on a component of the output gap which is not correlated with exogenous discretionary fiscal shocks—for instance by instrumenting $x_t$ with $x_{t-1}$ and the US output gap. This is because fiscal policy coordination is more unlikely to be a determinant of business cycle coordination between European

The timing of fiscal policy decisions is also relevant, so at time t, the expected output gap ($E_{t-1}x_t$)—or, the past output gap ($x_{t-1}$), if we assume backward-looking behaviour—can prove relevant, rather than the actual gap. Hence, the approach we adopt here is simply to use $x_{t-1}$, the lagged output gap. An additional problem, also suggested by Gali and Perotti (2003), is that changes in fiscal stance may be gradual rather than instantaneous and/or exogenous shocks can be serially correlated, so that the use of an autoregressive element seems also warranted.

### 5. Country-studies: Great Britain

We limit for the moment the empirical analysis to Britain, the textbook case of Keynesian stop-and-go policy in the 1970s. In fact, the recent revision of traditional interpretations of British economic policy-making in what is usually indicated as a 'Keynesian era' (between 1945 and the early 1970s) suggests that, whereas the Keynesian discourse may have been dominating in British elites, little Keynesian inspiration can be found in the actual conduct of economic policy (Tomlinson 1994; Booth 2001). Indeed, some suggest that post-1950 monetary policy was motivated by pre-Keynesian objectives (price stability and external equilibrium), even at the cost of causing unemployment at business cycle peaks (Howson 1994; Middleton 1996). Our main purpose here is to shed light on the response by British policy-makers to economic fluctuations over the second half of the 20$^{th}$ century. However, we also explore the impact of economic policy on cycle patterns and volatility.

Between 1950 and 1970 the British economy went through relatively short and moderate growth cycles, with economic recessions or serious slowdowns in 1952, 1958, 1962 and 1967. The 1970s were characterized by unprecedented large fluctuations of the cycle, even before the economy was hit by the two oil shocks; troughs can be identified in 1971, 1975 and 1981. The 1980s apparently constituted a unique, long cycle, encompassed by the 1981 and 1992 crisis. After the recovery from the 1992 shock, the British economy seems to have entered her 'great moderation', with very mild cyclical fluctuations. As Figure 1 shows, employment cycles consistently comoved with GDP cycles with some lag.

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countries and the USA, than among European countries (especially since the 1980s onwards), which makes it a suitable instrument. See Gali and Perotti (2003)

Figure 7 also shows that no regular comovement of inflation (measured on the base of the Wholesale Price Index) with the GDP cycle can be detected in the long run.

FIGURE 7

However, synchronous cycles of GDP and inflation are clearly observable before 1968. This regularity broke down in 1969-70, when for the first time inflation rose in coincidence with negative output gap, due to sustained cost inflation caused by substantial increases in nominal wages. By then commentaries about the death of the Phillips curve had already made their way into British economic policymaking (Budd 1998, 275). Similar situations, with rising inflation and falling gdp and employment cycles, would occur again in 1974-75 and 1979-81 in coincidence with the oil shocks. The regular comovement of output and prices was recovered only by the late 1980s. Table 4 confirms the results.

TABLE 4

In order to test the existence of policy rules, it is necessary to identify targets and instruments of economic policy. After WW2, monetary policy in Britain was mainly based on the traditional instrument of the discount rate, revived in 1951. In spite of the use of complementary instruments (open-market operations, liquidity requirements and bank credit controls), Bank Rate changes were bound to signify the general direction of monetary policy 'probably even more in the UK than in any other country' (Michaely 1971, 212-13). A new monetary policy strategy, based on the targeting of monetary aggregate (launched by the Bundesbank in 1974), was announced in 1976 in the midst of the worst external crisis of the postwar. In fact money targeting became operative only in 1980 with the explicitly anti-inflationary Medium-Term Financial Strategy. However, the UK vacillated in the choice of money targets, trying M3, M1, Private Sector Liquidty, and finally (since 1984-85) M0, which guaranteed very high target achievement ratios. Money targeting was discontinued in 1992 in favour of direct inflation targeting (Houben 2000, 144-150). The functional link between monetary and fiscal policy was officially recognized only in the monetarist-inspired policy-making framework of the 1980s, in which monetary

policy pre-commitment was compounded by consistent budgetary adjustment.. Before that, a 'policy mix' approach seems to have prevailed, with monetary policy responding to external priorities and the budget assigned to achieve domestic objectives.

How did monetary policy respond to cycles? Figure 8 plots the GDP cycles and the percentage changes in Bank Rate over the entire post-1950 period; Figure 9 adds in the growth rate of the monetary base.

FIGURE 8 AND 9

The graph suggests that until the mid-1960s monetary authorities tended to respond to output fluctuations by using Bank Rate actions in a countercyclical way—i.e. increasing (decreasing) the discount rate when the output gap was rising (falling). There were some exceptions however, namely 1966 and 1969, in which the interest rate was increased when the output gap was falling or negative.. In these two cases, Bank Rate changes were triggered by the international spread of monetary shocks originating in the USA, which boosted world interest rates. Defensive bank rate actions had to be implemented by the British authorities in order to stem massive outflows of short-term capital (Chalmers 1972). The growth rate of the monetary base shows mild fluctuations with some procyclicality until the late 1960. In the 1970s, however, episodes of pro-cyclical Bank Rate actions (generally rate increases with negative output gaps) became the rule rather than the exception.

What about the external equilibrium target? Figure 10 shows the trend of the current account-to-GDP ratio together with changes in international and gold reserves. Until the late 1960s current account patterns tended to follow the cycle, and imbalances remained mild. But losses of international reserves were frequent and increasingly serious, with serious gold losses in 1967 (precipitating devaluation in this year) and in 1971 which contributed to the Sterling flotation of 1972

FIGURE 10

After the full liberalization of capital movements at the end of the decade, the external constraint was practically removed and public authorities became less and less concerned with the current account position of the private sector. Indeed, in the 1980s the British authorities openly professed a 'benign neglect' of the current account (Gros and Thygesen 1992, 152).

By and large, the statistical evidence so far suggests that before the shocks of the late 1960s British authorities used monetary policy (mainly Bank Rate changes) to stabilize output. However, as inflation (and the current account) broadly comoved with GDP cycles, we cannot rule out that price stabilization or the external equilibrium was the target. Indeed, under the pre-1968 pattern, the three targets would be perfectly compatible. In order better to assess the empirical evidence, Table 5 reports the results of reaction functions of the Bank Rate instrument to different possible targets: output gap, deviation of inflation from trend, changes in international and gold reserves, and the current account-GDP ratio.

TABLE 5

Apparently, the evidence supports a non-Keynesian interpretation of the monetary policy rule before 1970, as bank rate tended to be raised whenever the price level moved abiove trend, gold reserves declined and the (lagged) current account went into red numbers. The fit of the response of bank rate to gold losses, with R2 0.55, is somehow surprising. This results would lend quantitative support to the revisionist interpretations summarized at the beginnings of this section.

In order to estimate reaction functions for the post-1971 period, we focus on the growth rate of M0, cyclically adjusted, as the main instrument of monetary policy. Regressing the non-cyclical component of the monetary base growth rate against any inflation target however specified (deviation from trend, level, second difference) yields no results. On the contrary, we find some evidence in favor of an output stabilization objetive, as the non-cyclical component of M0 growth rate increases when the lagged output gap is negative (and viceversa), as shown in Table 6.

TABLE 6

Fiscal shocks were the ultimate cause of monetary shocks of the 1970s. Figure 11 shows the main fiscal variables: revenues, expenditures, and the budget deficit, all normalized by GDP. We can identify four periods of fiscal relaxation: 1950-54; 1961-66, followed by fiscal tightening after the 1967 Sterling devaluation; 1970-74, briefly reversed in 1975-76; and 1989-1992. The year 1972 marks a turning-point with a steep increase both in revenues and expenditures, creating the conditions for the rapid deterioration of the budget balance until the end of that decade. Figure 12 illustrates the most important periods of fiscal tightening and stimulus, as indicated by the existing literature (Budd 1998) and their position relative to cycles, shocks and external crises.

FIGURES 11 AND 12

As shown in the figures, the first use of monetary and fiscal policy can be observed in the response of the 1962 growth slowdown, followed by four years of mild fiscal expansion and a substantial acceleration in the growth rate of the monetary base. The consequences of rising inflation and current account imbalances were temporarily stemmed by international financial assistance, but eventually led to the Sterling devaluation of November 1967 (Eichengreen 1996, 127-8), followed by a tightening of fiscal policy that brought the budget balance out of red numbers.

The classical example of Keynesian response reported in the literature is however the fiscal expansion of 1972-73. Following four disappointing years of low growth, rising unemployment and mounting cost inflation and in coincidence with the cycle trough, the Labour government engaged in an expansionary fiscal package including increases in government expenditures and significant tax cuts. Theoretical justification was found in the real wage push and catch-up theories, according to which faster growth would deliver lower nominal wage increases and unit labor costs (Budd 1998, 275). The abandonment of external equilibrium as a policy objective was announced by the Chancellor of the Exchequer by declaring that ‘it is neither necessary nor desirble to distort domestic eonomies to an unacceptable extent in order to retain unrealistic exchange rates’ (James 1996, 239). The ‘Triumph of New Cambridge’, signalled by the steep recovery of growth and employment in 1972-73,

was compounded by a new bout of inflationary pressures, the worst deterioration of the current account in the postwar and a new external crisis forcing Sterling out of the 'Snake'. In spite of the removal of the balance of payment constraint through the flotation of Sterling, growth remained slow and both unemployment and inflation kept rising. Monetarists were soon to had their revenge in the form of the 1976 IMF crisis. By then, Labor prime minister Callaghan had to recognize that the option to 'spend your way out of a recession' was no longer feasible (Budd 1998, 276).

## 6. A world apart? Russia and Eastern Europe

Whether or not the concept of business cycles makes sense in a centrally planned economy, the availability and quality of data on eastern European countries and the Soviet Union limit the analysis of long-term economic trends. Identifying cyclical patterns based on official data or reconstructed time series therefore seems to be an even tougher task. Hutchings (1969), however, argued that fluctuations in growth rates observed based on official figures are far less likely to be manipulated compared to the overall long-term growth pattern. Figure 13 plots the year-to-year percentage change in Soviet industrial gross output for the period 1952 to 1966. Obviously, growth rates declined steadily over time and exhibited fluctuations with four local peaks over the period.

FIGURE 13

An important peculiarity of the Soviet economy and to some extent of the Russian economy nowadays is the huge proportion spent on defence. Accordingly, to understand government spending and cyclicality, defence spending plays a crucial role. Table 7 shows estimates of government spending for defence from 1928 to 2000. Since 1951 in the table the trend of defence to GDP has been downwards but not continuously; there is a rise between 1960 and 1965 and a slight increase between 1970 and 1975. The drop after the break up of the Soviet Union is more sustained

TABLE 7

Standard business cycle theory cannot be easily applied to centrally planned economies; in particular, the absence of a free price setting driven by demand and supply makes it hard to believe that business cycles of the western type can emerge. The previous section, however, showed that the Soviet Union did indeed experience growth cycles.

A planned economy – at least from the Soviet point of view – should have overcome economic fluctuations and allow persistent economic growth. For instance, Lokshin (1964) argued: "As is known, in a socialist system of economy the cyclical character of development which is organically inherent in capitalism has been overcome and the law operating in a socialist economy is its unswerving, continuous growth." Nevertheless, cyclical patterns seem to exist – but how can they be explained ?

Kontorovich (1990) described fluctuations of economic growth rates and factor productivity. The latter, however, has to be carefully considered, as measuring factor productivity for the Soviet Union is not an easy task (see Easterly and Fischer, 1995). In addition, Kontorovich analyzed a rather short time period, from 1970 to 1983, which was characterized by a steady decline in economic growth. Accordingly, it raises doubts whether his results are representative for the entire period after WWII. Nevertheless, he identified a driver that explains cyclicality of growth rates to a large extent. He argued that the utilization of capital stock caused business cycles using the capital utilization rate as proxy. Mistakes in the allocation of investment (between raw-materials and manufacturing industries) triggered imbalances and declining capital utilization rates, which in turn cause fluctuations in economic growth rates.

Apart from the relationship between industrial output and capital stock that might drive business cycles even in a planned economy, Hutchings (1969) discussed additional factors that can cause fluctuations in growth rates. He identified the planning system as a main driver for cyclicality. Specifically, the efforts to fulfil the five-year plans changed over time, as in the beginning of the planning period pressure to enhance output was high – but declined thereafter, especially when some firms reached their 5-year goals earlier. Besides this timing issue, the system of capital grants provided by the state without interest and the legal framework (absence of bankruptcy) triggered asymmetric behaviour that favoured expansion of business. The

allocation mechanism was biased towards dividing capital grants into smaller grants for various projects, for central planning tended to provide a similar amount to every project, as it failed to identify attractive projects.

Behavioural aspects of central planning might have contributed to the emergence of cycles, but the speed with which these mechanisms worked differed from a market economy in that consumption and investment were announced long before they actually occurred. Hutchings (1969) argued that this signalling effect might have increased the speed of adjustments and contributed to shorter cycles compared to market economies, besides the five year plan planning horizon.

After the breakdown of the Soviet Union and a related period of instability and uncertainty, the transition economies managed to achieve considerable economic growth. The post-1989 period can be characterized as a period of economic and political integration in Europe underlined by the widening of the European Union to include many of the transition economies. Creating the conditions for the Eurozone in Western Europe entailed substantial policy shocks to a number of national economies. The most extreme monetary union shock however was the German reunification which was – apart from other aspects – also a monetary union that replaced the Ost-Mark by the long admired DM. The failed monetary union between the Czech and Slovak Republic, however, is a less prominent case, which highlight the essentials needed to make a monetary union work.

On 1st January 1993, Czechoslovakia was politically divided into the Czech and Slovak Republic – but maintained an economic and monetary union. Lack of political commitment, especially after the parliamentary election in June 1992, undermined the credibility of the Czech-Slovak monetary union and caused the break down of this construct on 8th February 1993. Whether the collapse also had economic reasons as described by the theory of optimum currency areas (Mundell, 1961) is still under investigation (Fidrmuc et al., 1999). Mundell (1961) stressed that countries that experience symmetric output shocks or develop absorption mechanisms for asymmetric shocks (i.e. labour mobility, financial transfer system, etc.) could successfully form a monetary union. Fidrmuc et al. (1999) argued that labour mobility between the Czech and Slovak Republic was very low and a transfer system that

coped with economic shocks did not exist. Besides the political deadlock, economic reasons might have played a role for the disintegration of the Czech and Slovak Republic.

The DSI Database provides online access to the datasets of the International Monetary Fund. This database includes monthly information about industrial production, short-term and long-term interest rates. All time series are seasonally adjusted. Monthly output figures of the Czech and Slovak Republic are available from January 1991 until May 2004. Figure 14 plots the industrial production of both countries. For the sake of comparison, industrial production is set equal to 100 in January 1991.

FIGURE 14

Notable is the domination of both series by seasonal movements and the trough about the time of the break up of monetary union. In 1999 output falls but thereafter rises strongly. The high degree of integration of these economies explains why industrial production exhibits a strong comovement in both countries. At a first glance, one can assume that these series are non-stationary, which can be confirmed by unit root tests.

Inflation rates show a strong comovement in both countries before the end of monetary union. Afterwards however, the Slovak Republic exhibited several severe peaks in inflation rates independent of Czech peaks.

FIGURE 15

Neglecting political events and necessities, the German reunification is also a story of a monetary union, as the Ost Mark was replaced by the long desired DM. In spite of considerable differences in labour productivity and industrial structure (focus on manufacturing of non-consumer goods and agriculture), wages denominated in Ost Mark were exchanged one-to-one into DM. The same happened in the case of pensions – except savings were treated differently. Yet as people saved a considerable amount of money due to the unavailability of consumer goods, savings were high. The following economic boom can be best seen in the automobile industry, as savings were turned into new cars. Although the economic expansion was remarkable, it

failed to stimulate long-term growth and prosperity in the eastern part of Germany. Soon after the 'honeymoon' was over, people realised an unprecedented economic decline in the heavy industry (especially mining, steel etc.) and agriculture. Many aspects contributed to the upsurge in unemployment rates and the persistently high levels of unemployment afterwards.

Among them the most prominent factors were the following: (1) high wages due to the one-to-one exchange of wages into DM and the labour productivity gap, not just compared to the western part of Germany but also compared to Poland and other eastern European countries; (2) a failed state intervention to boost economic activity by giving investment incentives (e.g. direct subsidies, cheap land, special depreciation). These incentives made capital cheaper compared to labour and contributed to an even higher level of unemployment. Besides that investments were made without any economic reasoning, which led to waste and overinvestment; (3) the German social security system already outdated for coping with economic shocks and change in western Germany before reunification had even more negative effects on the economic situation afterwards. The core issue is that unemployed can claim benefits under the condition that they do not work. Henceforth, once unemployed it gets harder to accept less paid jobs, for working means a reduction or a total loss of unemployment benefits. In fact, the marginal tax in terms of reduced social benefits can be as high as 100% depending on the previous level of salary and social circumstances (e.g. children). Of course, this system fosters illegal jobs, which leads to a culture of dependency on state subsidies and increases the shadow economy, which in turn weakens the social security system due to the lack of contributions. In sum, these factors had a devastating effect on employment and reduced the speed of recovery. However, one might argue that the observed increase and persistent unemployment is due to a lack of skills because technology was outdated and formal education was biased towards glorifying the centrally planned economy and paid little attention to providing a set of skills needed in a market economy. Although this argument is true insofar formal education differed and people were driven into unproductive activities especially in the agricultural sector, it fails to address the issue of on-job training. Employment is crucial to develop and maintain skills; hence, long periods of unemployment destroy skills and deter future employment possibilities.

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## TABLES

**Table 1**
**Descriptive statistics for quarterly data, 1960-2006 (%)**

| Country | Observations | Mean | St. dev. | Min | Max |
|---|---|---|---|---|---|
| Austria | 189 | 0.78 | 0.96 | -4.38 | 4.51 |
| Belgium | 189 | 0.73 | 0.72 | -1.23 | 3.76 |
| Czech Republic | 49 | 0.80 | 0.76 | -0.85 | 2.92 |
| Denmark | 189 | 0.66 | 1.04 | -2.55 | 3.31 |
| Finland | 189 | 0.83 | 1.42 | -4.65 | 6.09 |
| France | 189 | 0.78 | 1.21 | -7.58 | 11.37 |
| Germany | 189 | 0.68 | 1.09 | -3.50 | 4.48 |
| Greece | 189 | 1.00 | 2.71 | -6.85 | 10.43 |
| Hungary | 49 | 0.94 | 0.44 | -0.27 | 1.65 |
| Ireland | 42 | 1.73 | 2.12 | -1.75 | 6.72 |
| Italy | 189 | 0.75 | 0.99 | -2.09 | 6.00 |
| Luxembourg | 189 | 1.00 | 0.98 | -2.69 | 3.20 |
| Netherlands | 189 | 0.77 | 1.50 | -6.27 | 8.94 |
| Norway | 189 | 0.85 | 0.95 | -1.94 | 3.35 |
| Poland | 49 | 1.16 | 1.21 | -3.20 | 6.16 |
| Portugal | 189 | 0.94 | 1.19 | -2.33 | 4.90 |
| Slovak Rep. | 57 | 1.22 | 0.88 | -2.41 | 3.52 |
| Spain | 189 | 1.01 | 1.05 | -1.92 | 5.75 |
| Sweden | 189 | 0.68 | 1.27 | -4.77 | 5.50 |
| Switzerland | 189 | 0.57 | 1.14 | -3.57 | 5.13 |
| Turkey | 82 | 1.06 | 2.79 | -10.90 | 6.39 |
| UK | 189 | 0.61 | 0.97 | -2.48 | 5.38 |
| EU 15 | 189 | 0.74 | 0.63 | -1.03 | 3.65 |

**Table 2**
**Duration and amplitude of recessions in European countries, 1960-2006**

| | | Duration | Amplitude in % | | |
|---|---|---|---|---|---|
| Country | Recessions | Quarters | Average | Max | Min |
| AUT | 5 | 2.40 | -0.18 | -0.51 | -0.06 |
| BEL | 6 | 2.83 | -0.38 | -0.75 | -0.05 |
| DNK | 9 | 2.67 | -0.47 | -0.97 | 0.13 |
| FIN | 8 | 2.88 | -0.20 | -0.65 | 0.39 |
| FRA | 2 | 3.50 | -0.39 | -0.49 | -0.29 |
| DEU | 10 | 2.60 | -0.39 | -0.93 | -0.06 |
| GRC | 16 | 2.50 | -1.23 | -3.47 | 0.28 |
| IRL | 1 | 2.00 | -0.11 | -0.11 | -0.11 |
| ITA | 8 | 3.13 | -0.35 | -0.97 | -0.12 |
| LUX | 5 | 3.60 | -0.52 | -2.27 | 0.00 |
| NLD | 5 | 2.40 | -0.78 | -1.67 | -0.26 |
| NOR | 1 | 2.00 | -0.41 | -0.41 | -0.41 |
| PRT | 7 | 3.14 | -0.70 | -1.99 | -0.09 |
| ESP | 4 | 3.50 | -0.27 | -0.71 | -0.11 |
| SWE | 8 | 2.88 | -0.56 | -1.09 | -0.21 |
| CHE | 13 | 3.31 | -0.47 | -2.79 | -0.02 |
| TUR | 6 | 2.67 | -1.62 | -3.25 | -0.20 |
| GBR | 7 | 3.14 | -0.53 | -1.23 | 0.00 |
| E15 | 3 | 3.00 | -0.33 | -0.46 | -0.22 |

**Table 3**
**Concordance measures**

| | France | Germany | Italy | UK |
|---|---|---|---|---|
| France | - | 0.87 | 0.90 | 0.87 |
| Germany | 0.87 | - | 0.83 | 0.85 |
| Italy | 0.90 | 0.83 | - | 0.78 |
| UK | 0.87 | 0.85 | 0.78 | - |

**Table 4**
**UK: Inflation and GDP cycles**

| Dependent variable: WPI Annual Inflation | | | | | |
|---|---|---|---|---|---|
| | 1950-2000 | 1950-2000 | 1950-1970 | 1971-2000 | 1979-2000 |
| c | 0.044 | 0.044 | 0.022 | 0.062 | 0.021 |
| | (3.12)*** | (2.90)** | (4.38)*** | (2.92)** | (0.72) |
| OG | 0.119 | 1.148 | 0.423 | -0.341 | -0.395 |
| | (0.29) | (2.02)* | (1.99)* | (-0.68) | (-2.45)** |
| OG*DUM_postBW | | -1.485 | | | |
| | | (-2.01)* | | | |
| OG(-1) | -0.110 | 0.647 | 0.811 | -0.441 | 1.179 |
| | (-0.15) | (2.31)** | (2.71)** | (-0.40) | (3.45)*** |
| OG(-1)*DUM_postBW | | -1.095 | | | |
| | | (-1.00) | | | |
| AR(1) | 0.577 | 0.619 | 0.087 | 0.610 | 0.871 |
| | (5.19)*** | (6.31)*** | (1.13) | (4.01)*** | (8.60)*** |
| R2 | 0.36 | 0.42 | 0.35 | 0.35 | 0.82 |
| R2 adj | 0.32 | 0.35 | 0.22 | 0.28 | 0.79 |
| DW | 1.87 | 2.04 | 0.80 | 2.39 | 2.53 |

Note. Series are stationary. Estimates by OLS with Newey-West HAC standard errors and covariance.

**Table 5**
**Reaction functions: UK, change in bank rate**

| Dependent variable: change in log(bank rate) | | | | | |
|---|---|---|---|---|---|
| | 1950-2000 | 1950-1970 | 1971-2000 | | |
| c | 0.026 | 0.084 | -0.014 | | |
| | (0.93) | (2.14)** | (-0.38) | | |
| OG | 13.073 | 10.896 | 15.628 | | |
| | (3.85)*** | (1.31) | (5.94)*** | | |
| OG(-1) | 1.041 | 5.919 | -0.704 | | |
| | (0.46) | (1.51) | (-0.33) | | |
| AR(1) | -0.328 | -0.305 | -0.444 | | |
| | (-2.52)** | (-2.12)** | (-3.04) | | |
| R2 | 0.35 | 0.31 | 0.46 | | |
| R2 adj | 0.31 | 0.17 | 0.39 | | |
| DW | 2.02 | 1.92 | 2.13 | | |
| | 1950-2000 | 1950-1970 | 1971-2000 | | |
| c | 0.015 | 0.065 | -0.009 | | |
| | (0.55) | (1.75) | (-0.22) | | |
| WPI | -2.115 | 6.883 | -3.863 | | |
| | (-0.75) | (2.73)** | (-1.09) | | |
| WPI(-1) | 1.391 | -5.753 | 2.429 | | |
| | (0.64) | (-1.71) | (1.00) | | |
| AR(1) | -0.097 | -0.363 | -0.250 | | |
| | (-0.75) | (-3.17)*** | (-0.64) | | |
| R2 | 0.03 | 0.20 | 0.10 | | |
| R2 adj | -0.02 | 0.04 | -0.01 | | |
| DW | 2.10 | 1.99 | 2.07 | | |
| | 1950-1970 | | 1950-1970 | | 1950-1970 |
| c | 0.028 | c | 0.031 | c | 0.083 |
| | (0.93) | | (0.67) | | (2.95)** |
| ΔGOLD | -0.828 | ΔRES | 0.064 | CA/GDP | 11.598 |
| | (-3.90)*** | | (0.36) | | (2.00)* |
| ΔGOLD(-1) | -0.072 | ΔRES(-1) | 0.026 | CA/GDP(-1) | -18.885 |
| | (-0.49) | | (0.57) | | (-3.12)*** |
| AR(1) | -0.225 | AR(1) | -0.285 | AR(1) | -0.472 |
| | (-1.30) | | (-3.03)*** | | (-3.70)*** |
| R2 | 0.55 | R2 | 0.09 | R2 | 0.40 |
| R2 adj | 0.46 | R2 adj | -0.10 | R2 adj | 0.28 |
| DW | 0.02 | DW | 2.19 | DW | 1.88 |

Note. OG is output gap obtained from HP-filtered (log) real GDP. WPI is deviation of the Wholesale Price Index from tend, obtained from HP-filtered (log)WPI index. ΔGOLD and ΔRES are first differences of (log) International Reserves and Gold respectively. CA/GDP is the ratio of current account to GDP.

**Table 6**
**Reaction functions: UK, M0 cyclically adjusted**

| Dependent variable: cyclically adjusted growth rate of M0 | | | |
|---|---|---|---|
| | 1950-2000 | 1950-1970 | 1971-1992 |
| c | -0.001 | -0.051 | 0.024 |
| | (-0.06) | (-1.45) | (0.95) |
| OG(-1) | -1.544 | -0.350 | -2.886 |
| | (-3.56)*** | (-0.53) | (-4.29)*** |
| R2 | 0.07 | 0.05 | 0.22 |
| R2 adj | 0.03 | -0.07 | 0.14 |
| DW | 1.92 | 1.43 | 1.55 |

**Table 7**
**Defence spending relative to GDP in the Soviet Union and Russia[7]**

| Year | Estimate |
|---|---|
| 1928 | 1.0(1) |
| 1937 | 6.2(1) |
| 1940 | 13.8(1) |
| 1944 | 38.8(1) |
| 1950 | 10.3(1) |
| 1951 | 24.2(2) |
| 1955 | 19.2(2) |
| 1960 | 14.5(2) |
| 1965 | 16.0(2) |
| 1970 | 15.4(2) |
| 1975 | 15.5(2) |
| 1980 | 15.3(2) |
| 1990 | 13.8(2) |
| 2000 | 13.2(3) |

[7] The footnote (1) refers to Bergson's estimates, (2) is based on CIA reports, and (3) was calculated by Rosefielde.

## FIGURES

**Figure 1**
**Cyclical pattern of GDP based on annual data, 1950 – 2006**

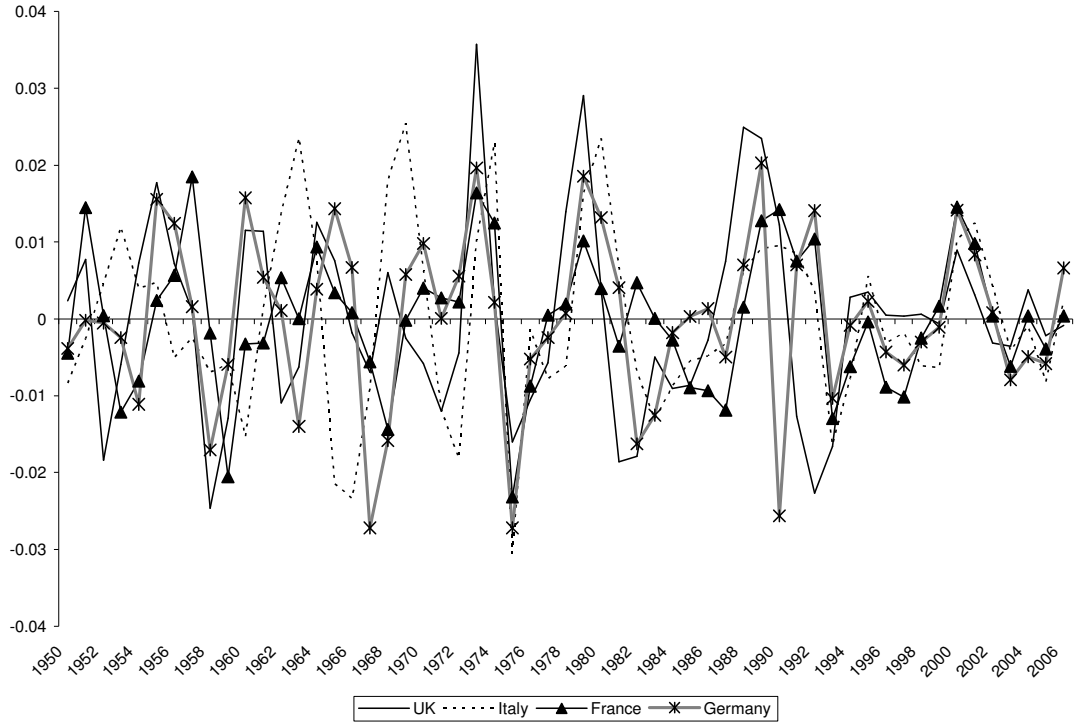



**Figure 2**
**Time-varying correlation between the French and Italian GDP cycles**

**Figure 3**
**Synchronization of business cycles based on quarterly data**

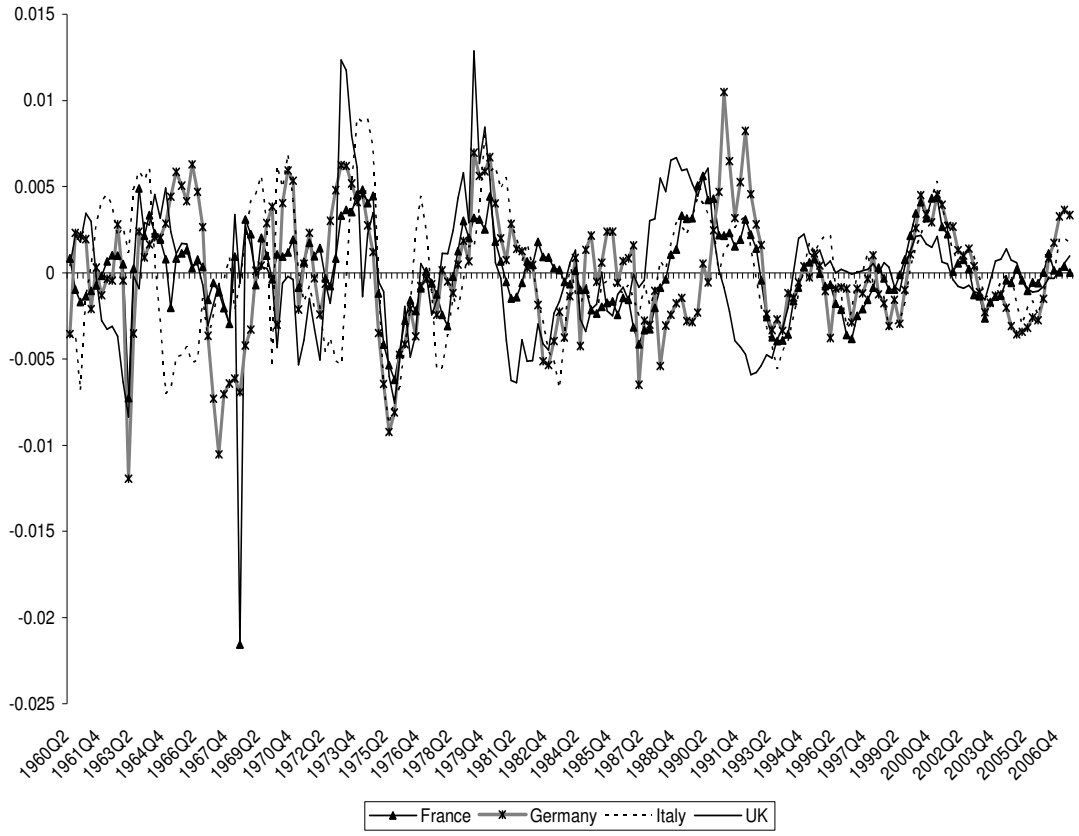


**Figure 4**
**Labor Inputs**

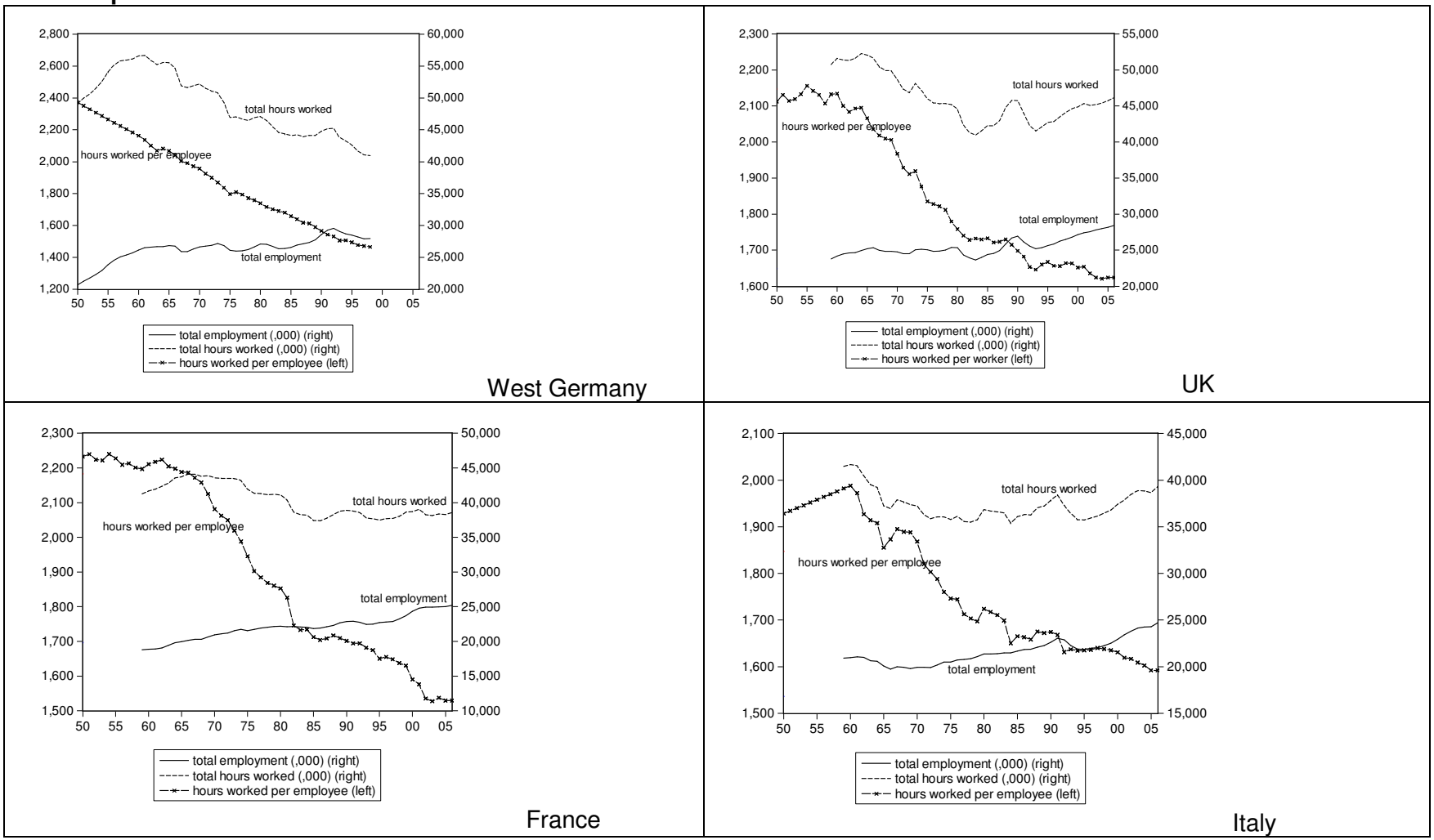


**Figure 5**
**GDP, total employment and total hours worked**

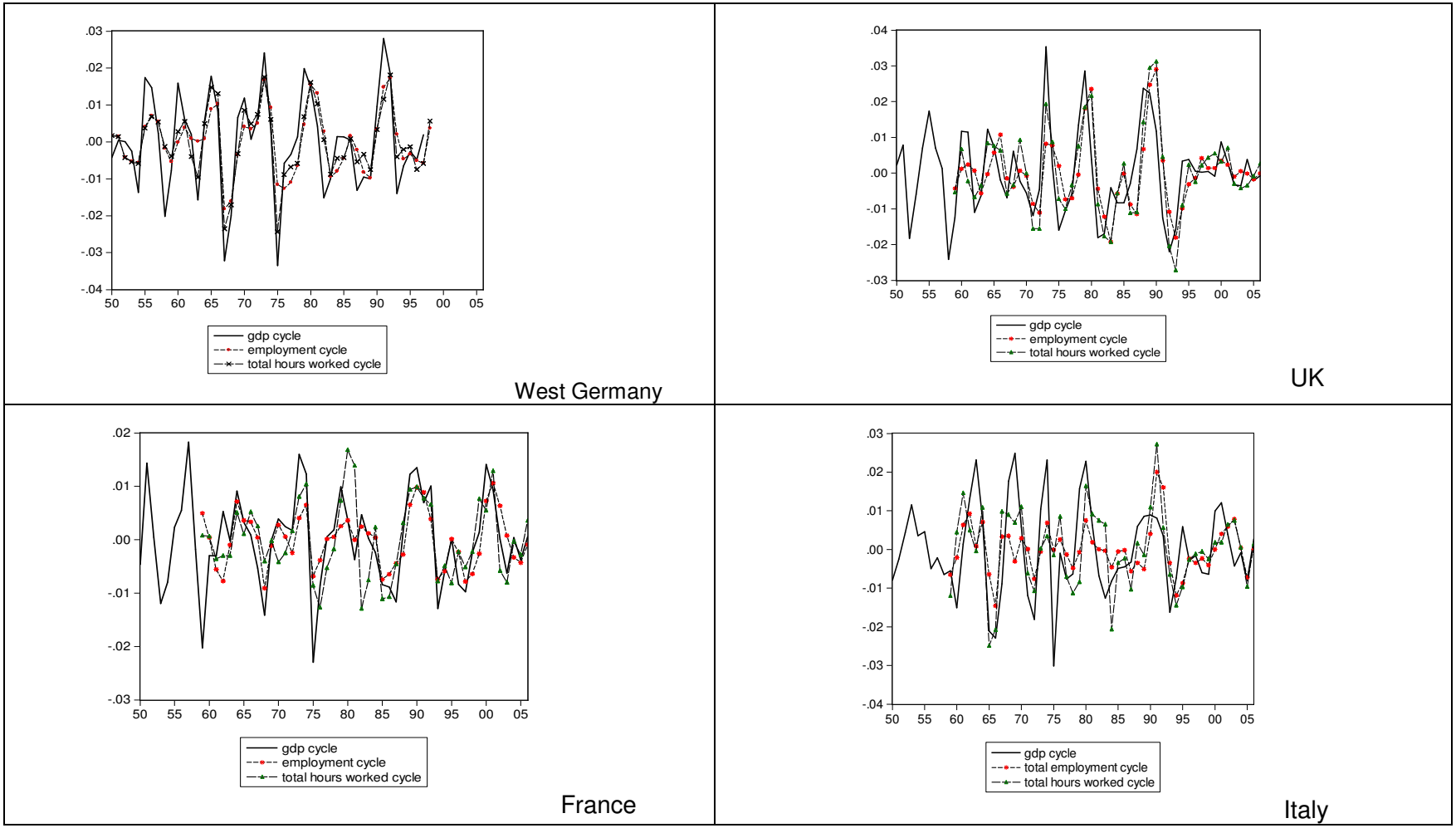
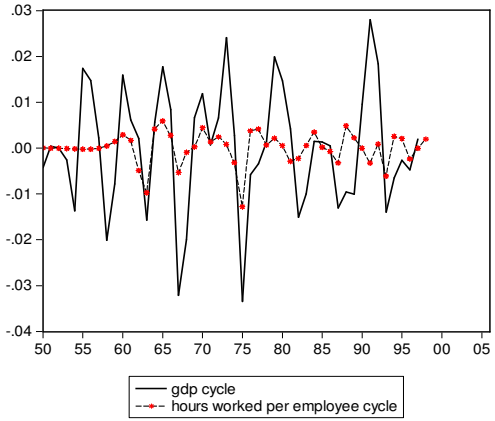
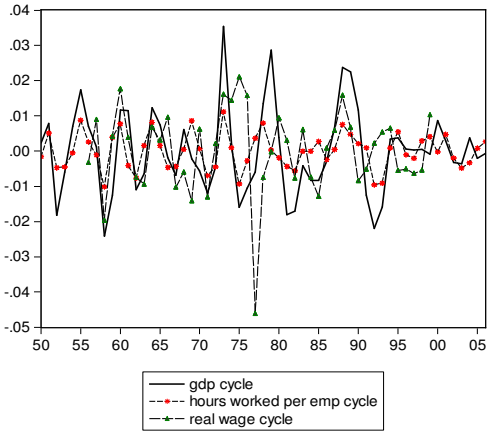


**Figure 6**
**GDP, hours worked per employee and real wages**

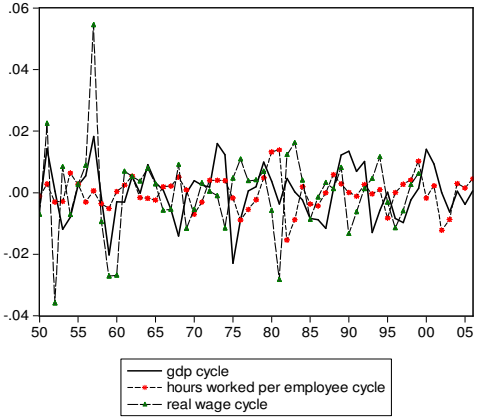



West Germany

*Data on hourly wages are not available from the IMF-IFS source.




UK

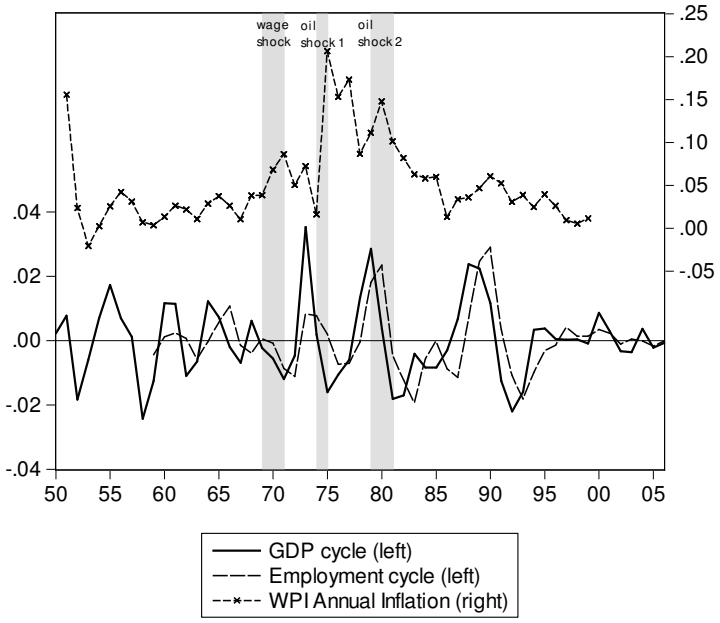



France

*IMF-IFS report 'labor cost', not hourly wage

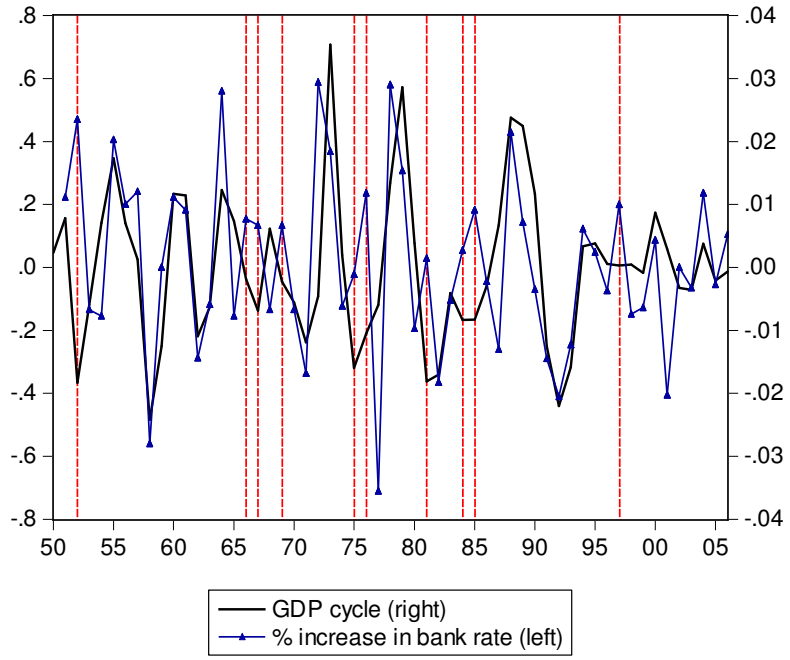

Italy

**Figure 7**
**GDP, employment and prices: UK 1950-2000**



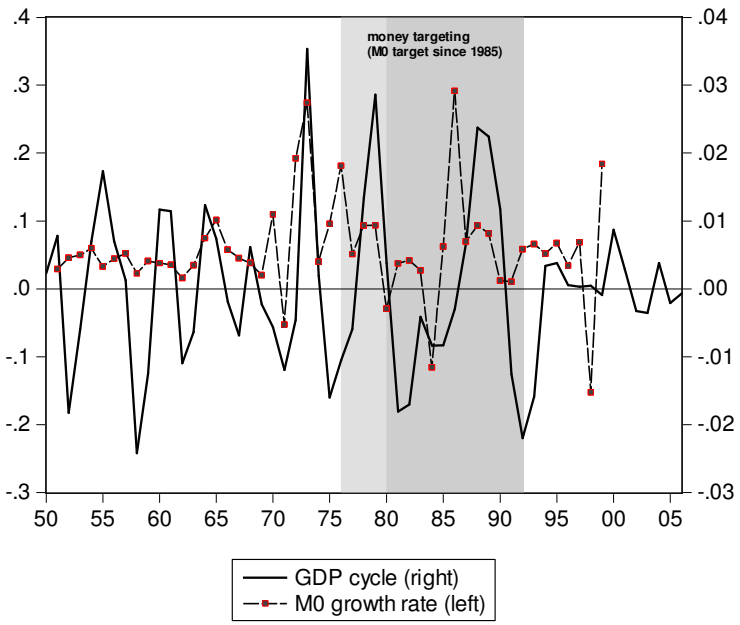

Note. GDP and employment cycles are HP-filtered (log)series with 6.25 smoothing parameter. Annual Inflation is the change in the (log) Wholesale Price Index. Sources: GDP and employment from Groningen Data Base; WPI from IMF International Financial Statistics.

**Figure 8**
**Monetary policy and GDP cycle: bank rate actions**



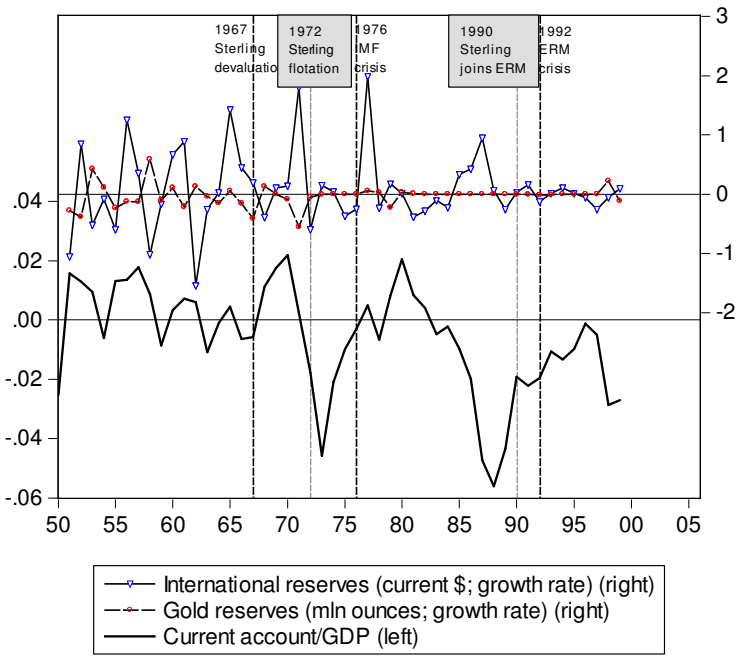

Note. Segmented red lines denote pro-cyclical use of bank rate action—that is, an increase of bank rate in correspondence to a falling or negative output gap.

**Figure 9**
**Monetary policy and GDP cycle: M0 growth rate**




Note. Grey area denotes the period in which monetary policy was based on money targeting.

**Figure 10**
**Current account, gold and international reserves: UK, 1950-2000**




Note. Data from IMF International Financial Statistics. International reserves are expressed in current bln dollars, and include foreign exchange, SDRs and Fund position. Gold reserves are expressed in million troy ounces.

**Figure 11**
**Fiscal policy, 1950-2000**

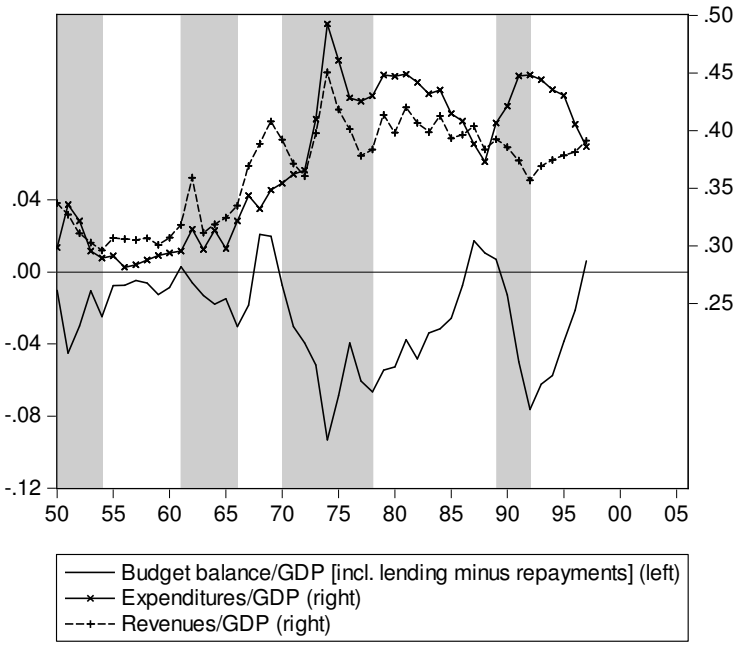



**Figure 12**
**Fiscal policy, cycles and crises, 1950-2000**

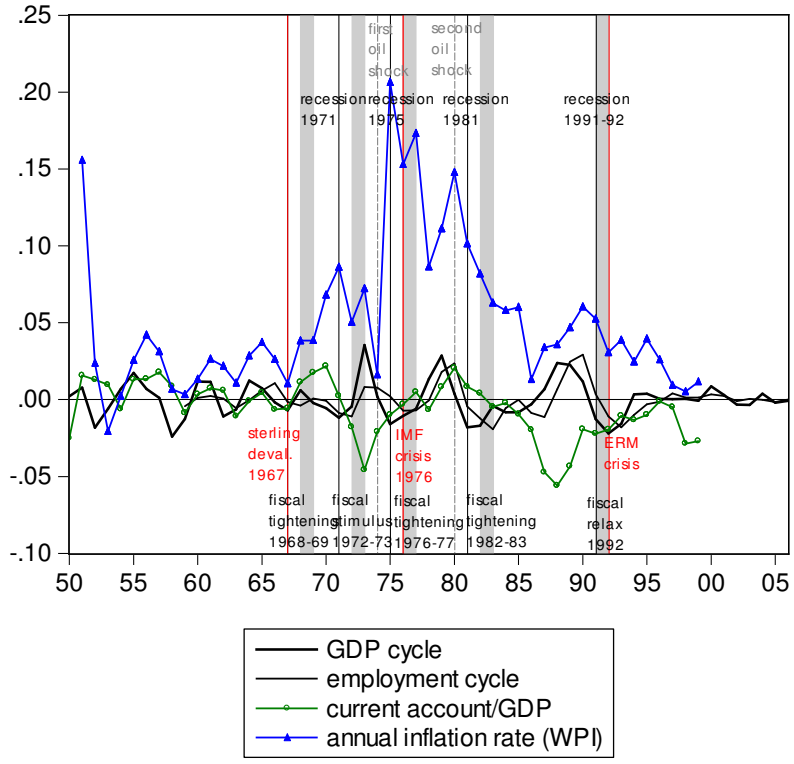


**Figure 13**
**USSR: Annual growth rates of industrial output based on official statistics**

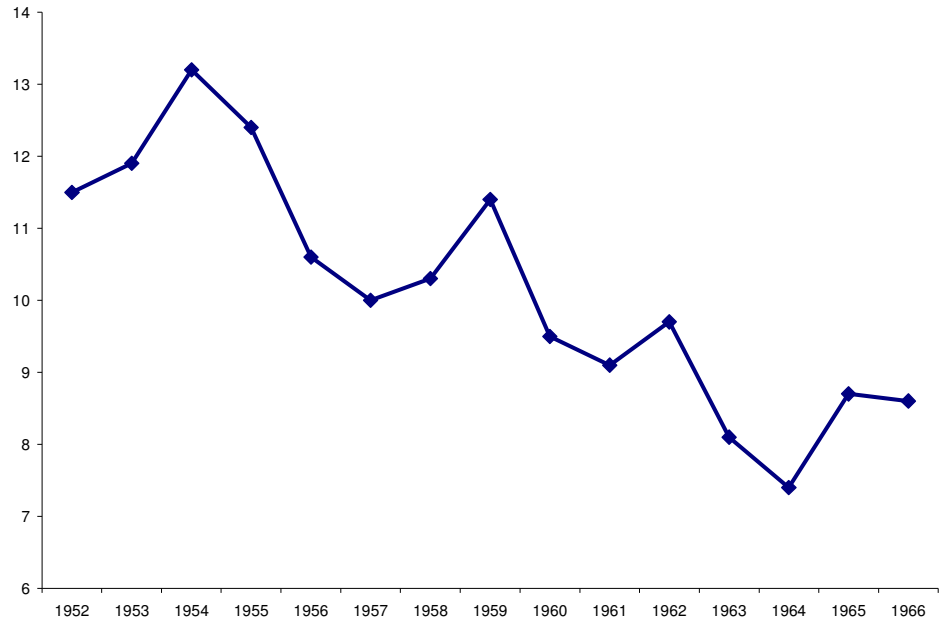



**Figure 14**
**Industrial production in the Czech and Slovak Republic, 1991-2004**

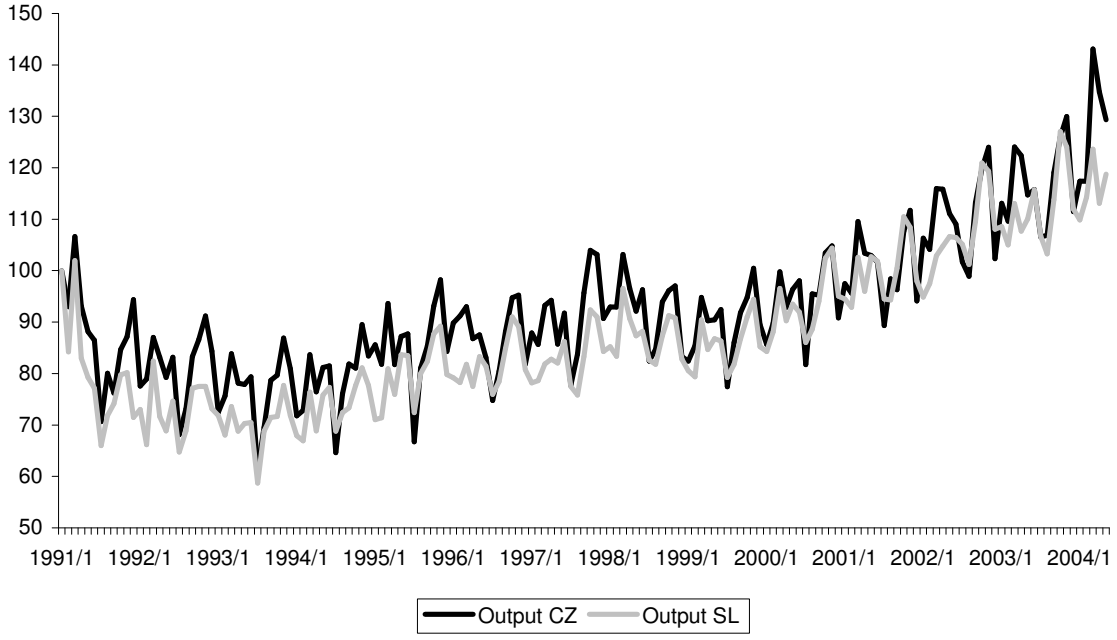
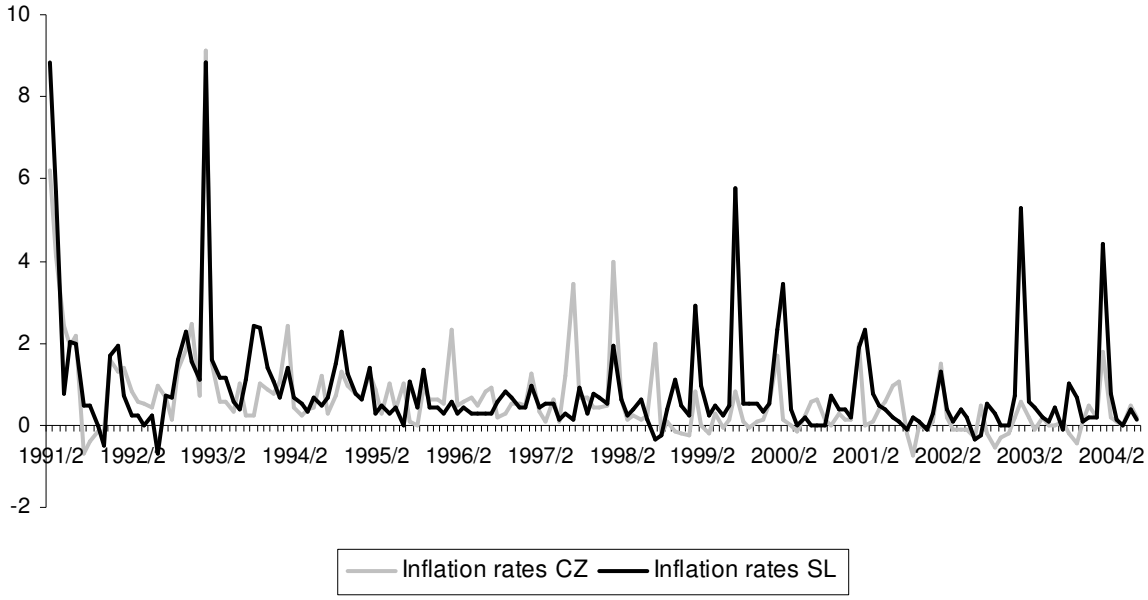


**Figure 15**
**Czech and Slovak Republic: Annualized inflation rates based on monthly consumer price indices**

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