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## EXCHANGE RATE REGIMES: SOME LESSONS FROM POST-WAR EUROPE

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## **ABSTRACT**

### **Exchange Rate Regimes: Some Lessons from Post-war Europe\***

Can Europe's post-war experience with fixed exchange rates be useful for today's emerging market countries? A new conventional wisdom suggests that the answer is negative, that in today's world of huge capital flows the only choice is between freely floating exchange rates and hard pegs. The Paper argues to the contrary, that Europe's strategy has much to recommend it. Most European countries have identified trade integration as a key objective, and have considered that exchange rate stability is a prerequisite for establishing a level playing field. The survival of the regime was made possible by widespread financial repression. There is no evidence that such a strategy stunted growth, quite the contrary in fact. Nor is it the case that this strategy is impossible today for other small open economies.

JEL Classification: E30, F30, F40, G20, O10

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## **NON-TECHNICAL SUMMARY**

For decades the choice of an exchange rate regime has traditionally opposed fixed and floating exchange rates. Now a third option has emerged: hard pegs. Once considered as exotic, arrangements such as currency boards or dollarization are now spreading. There is even serious talk about setting up regional monetary unions, in particular in the Mercosur area and in Southeast Asia (the Chang Mai initiative). In parallel a new conventional wisdom has emerged. The hollowing-out view holds that there is no workable middle ground between floating and hard pegs. It predicts that traditional fixed exchange rate regimes, still in place in more than half of all countries, are doomed in a world of unfettered capital flows. Full capital mobility, in turn, is taken as a Darwinian step in mankind's evolution.

As the hollowing-out view gains ground, Europe's evolution is often seen as a blueprint for the emerging market economies. Over the last half-century, European countries have moved from pegged exchange rates backed by capital controls to full capital mobility and monetary union. Along the way, they have intensified their economic integration, eventually establishing a thorough common market. And they are now pursuing an agenda of gradual political integration. The record is broadly one of peace and prosperity.

Is Europe a model? In order to answer this question properly, one has to look at the particular circumstances that brought about success, as well as the setbacks and costs incurred along the way. Were the costs worth it? Are the same characteristics present elsewhere in today's developing world? Is it not the case that the 'European strategy' is made obsolete by the globalization phenomenon and the information technology revolution?

These questions motivate the present Paper as it revisits Europe's post-war experience with exchange rate regimes. A key aspect is Europe's unflinching commitment to fixed exchange rates, indeed to the point of ultimately sharing the same currency. The Paper argues that behind Europe's commitment to exchange rate stability lies a widely shared belief that it is a precondition for trade integration as it is the only way of establishing a level playing field for international competition. This concern led European countries to take various protective measures, including capital controls, until they were ready to adopt a common currency.

Since the early 1950s the European countries, with the notable exception of Britain, have continuously sought to tie their exchange rates to a fixed regime. The Bretton Woods system initially provided an adequate framework which did not require any additional explicitly European initiative. When it fell apart, Europeans promptly moved to develop their own arrangements, starting with the rather informal Snake, moving on to the more structured and cohesive EMS, and ending up with full-blown monetary union. This history reveals a

strong commitment to exchange rate fixity, even as most other developed countries, including the UK, were moving in the opposite direction of increased flexibility.

The explicit use of exchange rate realignments to make up for accumulated inflation differentials within Europe strongly suggests three conclusions:

- For most of the post-war period, fixed exchange rates were not used as a disciplinary device. Indeed, continuing inflation drift was systematically accommodated.
- This approach changed in the mid-1980s when ERM realignments were explicitly avoided and adherence to fixed nominal rates became the pre-eminent monetary policy anchor in many countries. Yet, as the 'Franc fort' strategy of 'competitive disinflation' well illustrates, stabilising real exchange rates was the overarching constraint.
- The relaxed attitude of Europeans towards the shift from the Bretton Woods system towards flexible exchange only concerned extra-European arrangements, consistent with little preoccupation with mostly stagnant extra-European trade. The view on intra-European trade and exchange rate regimes was sharply different.

The emphasis on fixed exchange rates should have implied a willingness to give up the use of monetary policy for domestic purposes. That has not been the case. Until the mid-1980s, most European countries fully intended to retain their monetary instruments. The first country to give up monetary policy independence completely and explicitly, the Netherlands, did so only after 1982. In fact, in a large number of countries, monetary policy was not only seen as a macroeconomic tool, but also as an instrument to support fiscal policy through the financing of budget deficits, and even as one of the means used to conduct structural policies: bank lending was often directed towards favoured sectors and to firms identified as national champions, and interest rates were kept low, often negative in real terms.

The conflict between fixed exchange rates and the active use of monetary policy was reconciled through internal and external financial repression, i.e. the use of widespread regulation limiting the normal activities of financial markets. Domestic financial repression included quantitative limits on bank credit, ceilings on interest rates, directed lending, priority to budget financing, limits on the development of stock markets, etc. External financial repression took the form of capital controls, including administrative restrictions on inflows and outflows, the interdiction to lend to non-residents, the banning of forward transactions, the obligation for exporters to remit foreign currency earnings, etc. Domestic financial repression allowed the authorities to control the interest rate independently of credit and money supply growth. External financial repression supported domestic repression by preventing arbitrage,

relative to the world interest rate. It also limited the ability of markets to attack the currency.

Europe's experience as a fixed exchange rate zone is unremarkable. What makes Europe stand out is its continuing attachment to a fixed exchange rate regime. Most other OECD countries have allowed their currencies to float as they were dismantling their domestic and external financial controls. Europe's response, instead, has been to strengthen exchange rate fixity by aiming at a currency union. This reaction to the conflict between monetary policy independence and fixed exchange rates in favour of the latter confirms Europe's paramount commitment to nominal exchange rate stability. This is in line with the view that the authorities have taken great care not to disrupt trade within Europe.

The traditional macroeconomic development literature (e.g. McKinnon, 1979), eventually enshrined as the 'Washington consensus', argues that financial repression hurts economic growth. This view is largely informed by the experience of developing countries, for example Latin America over the period 1950–70. A possible problem with the conventional wisdom is that it is based on the experience of countries that simultaneously resorted to a wide array of extensive controls, often alongside serious political instability and many other potential impediments to growth, of which financial repression was just one component. In Europe instead, a quick look reveals that its best economic growth performance was achieved in the post-war period – fastest in the 1960s at the heyday of financial repression while goods markets and trade were being liberalized.

In Europe, in contrast with conventional wisdom, internal financial repression – captured by the presence of credit constraints – is found to have a *positive* effect on growth, adding on average one percentage point to the annual performance (measured by growth in *per capita* GDP). The effect of capital controls is not well established, and possibly not significant, but certainly not adverse. The adoption of a fixed exchange rate regime has a small, negative but hardly significant impact on growth. Importantly, trade openness raises growth: a 10% increase in the ratio of the average of exports and imports to GDP is found to raise annual economic growth by 0.2%. Overall, the conventional wisdom that financial repression seriously hurts growth, is not supported by the post-war experience of the OECD countries.

Europe's evidence also runs against the view that financial markets ought to be liberalized and if that means giving up the exchange peg, so be it. The strategy adopted in Europe put exchange rate stability at centre stage and if that means delaying financial liberalization, so be it. There is no evidence that Europe's strategy has had an adverse effect on its growth performance.

Does the European lesson still apply in today's world? It seems easy to make the case that the answer is negative. The overall size of financial markets is

several times what it used to be back in the 1960s. The information technology revolution makes borders obsolete. Financial flows are far too large to be stopped and international lending is far too convenient to be shunned by countries with massive capital needs. Why should any country decide to blunt such a powerful engine of growth, which not only provides resources on a scale unavailable at the domestic level, but also works as a channel for technology transfers? These arguments are far from definitive. The very sophistication of markets can be used to harness them; the authorities too can, if they so wish, use the information technology to monitor and regulate capital movements. Useful capital flows are foreign direct investments, not hot capital that comes and goes. Capital flows have a tendency to be destabilizing in the wake of rapid liberalization, as Argentina, Chile, Mexico, Korea, Malaysia and many other emerging market countries have discovered much to their grief.

A reasonable reading of Europe's strategy is as follows. Like any price-fixing scheme, pegged exchange rates may result in mispricing and inefficiency in the allocation of resources and trade. On the other hand, the experience with deep and long-lasting misalignments should act as a sobering reminder that financial markets, including the foreign exchange markets, are open to problems of asymmetric information and the resulting distortions. Misalignments of floating exchange rates often exceed those found in fixed exchange rate regimes; this is certainly the OECD experience. Fixing the exchange rate is a time-honoured response to these distortions.

The choice of an exchange rate regime is not a black and white issue, but one that involves trade-offs and that remains poorly understood. Rightly or wrongly, most European countries have determined early on that misalignments are harmful to trade, and that the benefits from trade are first order ones, too large to be jeopardized by long-run exchange rate uncertainty. In contrast, financial repression carries at worst second-order negative effects. The post-war record does not indicate that this has been a policy mistake.

In fact, the choice of an exchange rate regime ought to be considered as part of a package that may include, if needed, some degree of financial repression. Indeed, pegged exchange rate regimes are inherently unstable in a world where financial shocks eventually challenge the hardest commitment of the monetary authorities. Given enough time, pegged exchange rate regimes ultimately collapse. Financial repression is a useful backup to reduce the incidence of financial shocks and make fixed exchange rate regimes more manageable and longer lasting.<sup>1</sup>

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<sup>1</sup> As noted above, fixed exchange rates and financial repression were also instrumental in countries that sought to channel domestic savings towards preferred use, such as the financing of endemic budget deficits or of particular industries. This aspect is not taken into account in the present discussion.

## 1. Introduction

For decades the choice of an exchange rate regime has traditionally opposed fixed and floating exchange rates. Now a third option has emerged, hard pegs. Once considered as exotic, such arrangements as currency boards (Ghosh et al., 2000) or dollarization (Calvo, 1999) are now spreading. There is even serious talk about setting up regional monetary unions, in particular in the Mercosur area and in South-East Asia (the Chang Mai initiative). In parallel a new conventional wisdom has emerged. The hollowing-out view holds that there is no workable middle ground between floating and hard pegs. It predicts that traditional fixed exchange rate regimes, still in place in more than half of all countries, are doomed in a world of unfettered capital flows. Full capital mobility, in turn, is taken as a Darwinian step in mankind's evolution.

As the hollowing-out view gains ground, Europe's evolution is often seen as a blueprint for the emerging market economies. Over the last half-century, the European countries have moved from pegged exchange rates backed by capital controls to full capital mobility and a monetary union. Along the way, they have intensified their economic integration, eventually establishing a thorough common market. And they are now pursuing an agenda of gradual political integration. The record is broadly one of peace and prosperity.

Is Europe a model? In order to properly answer this question, one has to look at the particular circumstances which brought about success, as well as the setbacks and costs incurred along the way. Were the costs worth it? Are the same characteristics present elsewhere in today's developing world? Is it not the case that the "European strategy" is made obsolete by the globalization phenomenon and the information technology revolution?

These questions motivate the present paper as it revisits Europe's postwar experience with exchange rate regimes. A key aspect is Europe's unflinching commitment to fixed exchange rates, indeed to the point of ultimately sharing the same currency. The paper argues that behind Europe's commitment to exchange rate stability lies a widely shared belief that it is a pre-condition for trade integration as it is the only way of



establishing a level-playing field for international competition. This concern has led European countries to take various protective measures, including capital controls, until they were ready to adopt a common currency.

The following section sets the stage; it describes the exchange rate regimes adopted in Europe over the last 50 years. Section 3 builds up the case that trade was a key concern behind the commitment to exchange rate stability. Having noted that fixed exchange rate regimes are inherently unstable, Section 4 looks at the various measures that were adopted in an effort to increase the chance of survival of the fixed exchange rate arrangements. These measures at times severely constrained the financial markets, both domestic and external. But is not the case that such measures are costly and inefficient? Section 5 attempts to answer that question and, surprisingly perhaps, finds no such evidence. Quite to the contrary, in Europe at least, domestic financial repression seems to have supported growth. The last section attempts to distillate the lessons from Europe's experience. It argues that the choice of an exchange regime cannot be dissociated from the choice of a regime of capital mobility. Countries which are open, or country groupings which aim at deepening trade integration, may indeed opt for a fixed exchange rate regime. Hard pegs are an option, but not the only one once financial repression is not seen as sinful.

## **2. Overview of Exchange Rate Developments**

Fixed exchange rates were adopted in Europe in the immediate postwar within the broader Bretton-Woods agreements. It provided indirectly for fixed exchange rates within Europe but it was not a joint undertaking, nor was it intended to further any specific European goals. It matched European interests, but also those of the US equally preoccupied with the restoration of trade links. Faced with an acute shortage of dollar balances, European countries did not move to establish currency convertibility from the outset. Rather they concentrated on developing bilateral payment settlement agreements, both among themselves and with non-European countries. Yet, early on within the Bretton-Woods framework, they started to work out their own arrangements:

- The European Payments Union (EPU) was set up in 1950 to simplify the cumbersome web of some 200 bilateral payment agreements that had been set up. The EPU worked as a multilateral clearing system, focusing on the overall balances of payments of its member countries vis a vis the union. The Bank for International Settlements (BIS) acted as agent for the EPU. Limited credit facilities were based on IMF-type quotas. They were extended to some countries which faced speculative pressure, for example during the Korean war in 1951-52, or in 1957-58 when France and the UK started to run large deficits because their currencies had become overvalued due to accumulated inflation. As member countries grew less concerned about payments, they gradually lifted their extensive trade restrictions. Generally considered as a success, the EPU is credited for having helped the resumption of intra-European trade. The EPU had some drawbacks, mainly its tendency to encourage trade amongst its members, discriminating against non-members. Over time the dollar shortage disappeared, lessening the need for the EPU which, anyway had been explicitly created as a temporary arrangement.
- The restoration of currency convertibility in 1958 was a joint move. It was decided alongside the adoption of the Treaty of Rome, the foundation of Europe's Common Market. It also coincided with the end of the EPU. Convertibility only applied then to the current account. For many more years the financial account remained subject to fairly draconian restrictions in most countries.

Over the next decade, the arrangement provided for a high degree of exchange rate stability, with few realignments. The first major depreciation, by the UK, did not occur until 1967. It was followed by a depreciation of the French Franc and a revaluation of the Deutschemmark, both in 1969. By the time when the Bretton-Woods system collapsed during 1971-73, further imbalances had accumulated inside Europe. After a series of realignments, most European countries undertook to maintain limited margins of fluctuations for their bilateral exchange rates while the other developed countries let the currencies float. The resulting arrangement, the Snake, was a mixed success; most countries were able to keep up with the arrangement, but speculative pressure forced others --mainly France, Italy, and Sweden-- to exit the Snake. Outside

of Britain, there was no serious questioning of the wisdom of keeping exchange rates pegged.

The main setback from monetary integration during this period was the abandonment of the Werner Report. Completed in 1970 and endorsed by the Council of Ministers in 1971, the Werner Report recommended the rapid adoption of a common currency. Three stages were envisioned, including the pooling of foreign exchange reserves for joint interventions. The turmoil surrounding the breakup of the Bretton-Woods system led the larger countries to aim at more modest steps, partly out of pragmatism, partly as a pretext to escape a move that was clearly ahead of policymakers' thinking. The smaller countries, which were seeing their own policy autonomy decline, were frustrated but unable to shake the domination of the larger countries.

Monetary integration soon took another direction, though. The European Monetary System (EMS) was agreed upon in 1978 and launched in 1979. Eight of the then nine members of the European Community became active members of the exchange rate mechanism (ERM). When the euro was launched in January 1999, all members of the European Union were part of the ERM, with the exception of Sweden, the UK, and Greece. Greece joined the ERM later that year. Among European non-member of the EU, Switzerland has traditionally steered its own currency alongside the DM, even though it has always been very careful not to declare an official linkup, and has occasionally used the exchange rate as a tool of monetary policy.

During its first ten years of existence, the ERM has been buffeted by frequent crises. By the early 1980s its survival was very much in doubt, especially as a series of attacks affected the French franc in the wake of the election of President Mitterrand. The policy reaction turned out to be another show of support for fixed exchange rates as monetary authorities rededicated themselves to a new ERM, one where the DM would play the role of central currency. This "Greater DM area" gradually asserted its credibility and became seen as such a success that policymakers grew emboldened to move to the next logical step, monetary union.<sup>1</sup>

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<sup>1</sup> A detailed review of this evolution is provided by Kenen (1995).

Success was concealing a buildup of tensions, though. Inflation rates had not converged and yet realignments were seen as *passé* on the road to monetary union. The combination of accumulated imbalances and of a major policy mistake --the denial that German unification would require a DM revaluation-- triggered a round of violent speculative attacks. Two countries (Italy and the UK) left the ERM, many were forced to devalue, some of them several times. The ERM was radically changed when its margins of fluctuations were widened to the point of irrelevance. While, for all practical purposes ERM currencies were officially closer to floating, unofficially the monetary authorities endeavored to keep currency fluctuations within narrow margins, in fact quietly mimicking the defunct ERM. By then, monetary union had been decided and its start date firmly set.

Summarizing, since the early 1950s, with the notable exception of Britain, the European countries have continuously sought to tie their exchange rates to a fixed regime. The Bretton Woods system initially provided an adequate framework which did not require any additional explicitly European initiative. When it fell apart, Europeans promptly moved to develop their own arrangements, starting with the rather informal Snake, moving on to the more structured and cohesive EMS, and ending up with a full-blown monetary union. This history reveals a strong commitment to exchange rate fixity, even as most other developed countries, including the UK, were moving in the opposite direction of increased flexibility.

### **3. Why Fixed? The Trade Connection**

There are several reasons for adopting a fixed exchange rate regime. The most commonly cited reasons are a lack of sufficiently deep financial and exchange markets, a strategy of importing monetary discipline, and a quest for stability for trade purposes. Investigating policymakers' true motives is generally a hopeless task, and this is especially the case for exchange rate management. Nevertheless, the approach taken here is that a policy that is upheld consistently over a long period must reflect true intentions. The approach does not assume that each and every policy outcome

reflects intentions. For a variety of reasons (unexpected shocks, policy mistakes, or changing policymakers' views) outcomes may be wholly unintended. However, these are occasional and temporary disturbances which cancel out in average when we adopt a long period of observation. This is the strategy adopted here.

### **3.1. Illiquid Markets**

There is little doubt that financial and exchange markets were shallow in Europe in the 1950s, partly intentionally so as explained in Section 4.1 below. Allowing exchange rates to freely float under such conditions may result in excessive volatility. After the move to current account convertibility in 1958, capital account restrictions remained widespread, partly motivated by the belief that it would help to operate the fixed exchange rate system. The question is when did domestic financial markets reach a sufficient stage of development to make it possible for exchange markets to deepen quickly enough to let the exchange rates float if it were felt desirable to do so.

Figure 1 presents an indicator of financial depth, stock market capitalization as a proportion of GDP. The figure indicates that stock markets have traditionally been small in Europe, with the notable exceptions of Switzerland and the UK. Interestingly enough, Britain and Switzerland are the two countries which have demonstrated the least interest in a fixed exchange rate regimes, and actually let their currencies float since 1973, with the exception of Britain's brief period of ERM membership. On the other side, as a comparison with Canada --a perennial floater-- shows, for quite some time Europe probably has had deep enough markets to operate reasonably stable exchange markets.

Figure 1

### **3.2. Monetary discipline**

Fixed exchange rates discipline monetary policy when the peg is taken as the central bank's main target. The currency peg provides a nominal anchor which is as stable as the currency to which the domestic currency is fixed. Europe first used the US dollar as its reference currency and then gravitated towards a DM anchor. The discipline

argument predicts that Europe's inflation rate should have remained close to that of the US early on, and then declined toward the lower German rate. It also predicts a contrast with other industrialized countries which have been floating for most of the post-Bretton Woods era (Japan, the UK, Switzerland and Canada; and more recently Australia and New Zealand). Figure 2 does not bear out these predictions. If fixed exchange rates were used as an anchor, it did not work. Europe (excluding the floaters, Switzerland and the UK) has, on average, had the worst inflation performance in the OECD area.

In many respects, the view that exchange rates can be used as an anchor is fairly recent, at least in European official thinking. When the EMS was created, reference was explicitly made to nominal exchange rate stability, not to the desire of anchoring inflation to best practice in Germany. Most ERM countries maintained other monetary targets alongside the exchange rate, mostly credit aggregates. Importantly, these multiple targets were not usually set consistently in reference to each other, or to Germany's. Rather, they aimed at domestic objectives, mostly interest rates and investment.<sup>2</sup> Realignments were not only possible but actively practiced and always justified as a "correction" of accumulated inflation differentials.

In fact, the EMS was explicitly set up as a symmetric system, with no center currency. Its rules carefully avoided adopting the Bretton-Woods presumption that high inflation-weak currency countries would bear the burden of adjustment in case of misalignment and market pressure. Responsibility for exchange market interventions was strictly bilateral, with unlimited support from the strong to the weak currency country. Applying the inflation anchor argument to the setting up the EMS is a revisionist interpretation, building on the evolution that followed the currency crises of 1983 and the eventual adoption by France of the "Franc fort" strategy.

Figure 2

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<sup>2</sup> As described below, capital controls were extensively used to shield domestic interest rates from the interest parity condition.

### 3.3. Trade

Fixed exchange rates are sometimes seen as a way of reducing relative price uncertainty for international traders which promotes commerce. This argument has no theoretical support (uncertainty can either encourage or discourage international trade depending on assumptions) and limited empirical support, see for example Kenen and Rodrik (1986) for a sample of industrialized countries and de Grauwe (1988) for the European Union; a recent review and more weak evidence is provided by Flam and Persson (2000), with stronger evidence in Rose (2000). Yet, this motivation has been crucial. Policymakers happened to believe that nominal exchange rate stability matters for trade, in spite of the theory and the evidence, and possibly for good reasons.

Most of the empirical evidence is based on high frequency (typically from one month to one year) fluctuations in the exchange rate. At such frequencies, there exist cheap hedging instruments, so that it is not surprising that the effect of exchange rate volatility is weak or non-existent. For technical reasons (chiefly the lack of enough observations), the literature does not deal with lower frequencies, in particular with the often deep multi-year currency cycles (e.g. *vis a vis* the dollar, the yen has depreciated by 47% between 1978 and 1985, then appreciated by 52% between 1985 and 1988, to depreciate again by 28% until 1990, and appreciate by 48% by 1995; similar fluctuations can be found for the DM, e.g. a 92% depreciation between 1979 and 1985, followed by a 52 % appreciation by 1987). Such fluctuations cannot be insured against, at least not cheaply or conveniently.<sup>3</sup> They simply wipe out established competitive positions. It is difficult to believe that they do not hurt trade.

Two pieces of evidence support the view that trade has been an essential motive in shaping European governments' attitude towards exchange rate regimes. First, as shown in Figure 3, since 1960 the intensity of intra-European trade relations has deepened significantly, in contrast with trade with the rest of the world. The assertion here is not that fixed exchange regimes have allowed intra-Europe trade to increase by

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<sup>3</sup> In principle, firms can cover long term trade exposure by acquiring matching positions but they do not seem to do so.

a factor of 2.5. The creation of a Common Market, and continuous and successful efforts at dismantling trade barriers, clearly lie behind trade integration. Rather the point is that trade integration has been a central objective pursued through all means available. If exchange rate stability is one such mean, or simply if it was perceived as a mean, it would be surprising that it has not been used as well.

### Figure 3

The second piece of evidence is the stability of intra-European exchange rates. The record is presented in Figure 4 for the three most important intra-European exchange rates vis a vis the DM. The figure displays the actual and PPP exchange rates<sup>4</sup> of the French francs, the Italian Lira and Sterling Pound relative to both the DM and the US dollar. For comparison purposes, they are all expressed as indices computed to average 1.0 over the sample period. While PPP is not necessarily a fact of life, it seems to act as a reliable anchor for most OECD countries, as noted by Clarida (1999).

If the objective was to achieve a high degree of *nominal* exchange rate stability (e.g. the discipline argument previously dismissed), the figure would suggest complete failure. The trade motive would make sense, however, if the objective was to stabilize the *real* exchange rates: this is what shields intra-European trade from the vagaries of worldwide financial disturbances.<sup>5</sup> To that effect, all exchange rate agreements, in particular within the ERM, included specific provisions for realignments and actual management made heavy use of PPP. This is in line with the experience of France and Italy, and most other currencies display the same feature. The figure also reports the monthly variance of log-deviations of the actual from the PPP exchange rate; for France and Italy this variance is much smaller vis a vis the DM than vis a vis the US dollar. For Britain, which did not share the continent's preoccupation with stabilizing

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<sup>4</sup> PPP exchange rates are computed using CPIs and take as a base the average exchange rate over the sample period. None of the conclusions drawn are sensitive to the use of a particular price index or to the choice of a base level.

<sup>5</sup> The statement announcing the creation of the EMS aimed at establishing "an island of monetary stability" in Europe.



intra-European real exchange rates, the variances vis a vis the dollar and the DM are similar.

Figure 4

The explicit use of exchange rate realignments to make up for accumulated inflation differentials within Europe strongly suggests three conclusions:

- For most of the postwar period, fixed exchange rates were not used as a disciplinary device. Indeed, continuing inflation drift was systematically accommodated.
- This approach changed in the mid-1980s when ERM realignments were explicitly avoided and adherence to fixed nominal rates became the pre-eminent monetary policy anchor in many countries. Yet, as the "Franc fort" strategy of "competitive disinflation" well illustrate, stabilizing real exchange rates was the overarching constraint.
- The relaxed attitude of Europeans towards the shift from the Bretton-Woods system towards flexible exchange only concerned extra-European arrangements, consistent with little preoccupation with mostly stagnant extra-European trade. The view on intra-European trade and exchange rate regimes was sharply different.

#### **4. How It Was Done: Financial Repression**

The emphasis on fixed exchange rates should have implied a willingness to give up the use of monetary policy for domestic purposes. That has not been the case. Until the mid-1980s, most European countries fully intended to retain their monetary instrument. The first country to completely and explicitly give up monetary policy independence, the Netherlands, did so only after 1982. In fact, in a large number of countries, monetary policy was not only seen as a macroeconomic tool, but also as an

instrument to support fiscal policy through the financing of budget deficits, and even as one of the means used to conduct structural policies: bank lending was often directed to favored sectors and to firms identified as national champions, interest rates were kept low, often negative in real terms.

The conflict between fixed exchange rates and the active use of monetary policy was reconciled through internal and external financial repression, i.e. the use of widespread regulation limiting the normal activities of financial markets. Domestic financial repression included quantitative limits on bank credit, ceilings on interest rates, directed lending, priority to budget financing, limits on the development of stock markets, etc. External financial repression took the form of capital controls, including administrative restrictions on inflows and outflows, the interdiction to lend to non-residents, the banning of forward transactions, the obligation for exporters to remit foreign currency earnings, etc. Domestic financial repression allowed the authorities to control the interest rate independently of credit and money supply growth. External financial repression supported domestic repression by preventing arbitrage relatively to the world interest rate. It also limited the ability of markets to attack the currency.

While Europe has been quite fast at deepening its internal trade, it has been notoriously slow at liberalizing its financial markets, both internally and externally. Table 1 reports the final year of liberalization. Restrictions did not apply continuously, they were applied on and off according to perceived needs. Even in periods when restrictions were not enforced, the empowering legislation remained in place, no doubt reminding investors and citizens that the regime was *de jure* one of restraints. This section first documents and then interprets financial repression.

Table 1

#### **4.1. Domestic Financial markets**

Internal restrictions mostly took the form of credit ceilings and other limits on credit availability. These restrictions were designed to control the money supply while interest rates could be kept at non-market clearing levels, typically lower. The

outcome was a rationing of liquidity, with real interest rates remaining negative in real terms for extended periods of time as Figure 5 readily confirms for a few selected countries.<sup>6</sup> Officially, interest rates were kept low to promote investment but the real motivation was to permit a cheap financing of budget deficits. In fact, the authorities were quite explicit on that point. For example, the French authorities had established a queuing system for bond issues by the private sector, in particular hollowing out periods when the Treasury was issuing its own debt.<sup>7</sup>

Figure 5

## 4.2. Capital Account Convertibility

External liberalization occurred several years after internal liberalization (Table 1). Various measures were in place to restrict capital movements. They mostly relied on direct administrative controls affecting citizens, firms and financial intermediaries. Belgium operated a dual exchange market separating commercial from financial transactions. Full, unconditional liberalization was not mandatory until the Single Act of 1992, with accelerated effect on July 1990, except for Greece, Portugal and Spain which were granted grace periods.

The main aim was to keep domestic interest rates lower than implied by the interest parity condition. While it is often asserted that capital controls are ineffective, this has not been the case in Europe, as documented in Figure 6. The figure shows that the controls succeeded in creating long-lasting wedges between the two exchange rates (commercial and financial) in Belgium, and between the internal and external franc interest rates in France. Such deviations represent large profit opportunities. These unexploited opportunities are remarkable because they were riskless since they did not entail either exchange or maturity risk (the returns are in the domestic currency on identical assets). Of course, there was evasion and the measures never were 100% effective. Yet, the fact that the markets were unable to arbitrage away profit

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<sup>6</sup> The only country where real interest rates have not been negative during the postwar period is Germany.

<sup>7</sup> For a detailed discussion of this point, see Wyplosz (1999).

opportunities for significant periods of time --often more than one year-- is clear evidence that the controls were effective. The main reason is that evasion is costly, eating into arbitrage profits. The figure also indicates that, in quiet periods, the wedge disappeared. This corresponds to either temporary suspensions of the restrictions or to markets' ability to circumvent the capital controls given enough time.

Figure 6

### **4.3. Impact on domestic financial institutions**

Almost by definition, financial repression looks bad. Is it not the case that it hampers both saving and borrowing, that it thwarts competition in financial markets with associated efficiency costs, possibly even when breeding corruption and misuse of financial resources? The conventional answer is that financial markets are far from perfect, that the presence of information asymmetries leads to instability and occasional, catastrophic crises. It is hard to disagree with each of the opposing views. In the end, costs and benefits must be balanced. This section looks at the costs.

Beck et al. (1999) have developed a set of criteria of performance of financial systems. Using the associated database, there is no clear indication that European financial systems have been seriously inefficient, at least as far as bank overhead costs and interest margins are concerned. However, the detailed analysis in Wyplosz (1999) suggests that this favorable assessment conceals rent extraction by governments: banks have long benefited from an implicit state subsidy through protection from internal (e.g. interest rates were regulated) and external competition in exchange for deficit financing at attractive conditions. Good overall performance, therefore, has been achieved at the expense of bank customers unable to shop around for better deals. This is a clear case of crowding out of the private sector by the public sector.

There is no indication that the size of the central bank (and seigniorage) is generally higher<sup>8</sup> or that liquid liabilities (a measure of financial services provided by the

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<sup>8</sup> The notable exception is Italy in the 1970s and 1980s which increased seigniorage revenues by tightening credit ceilings and raising the required reserve ratio.

banking system) are out of line with the situation in the US. The main difference concerns the extent of intermediation by the financial sector. The upper part of Figure 7 reports credit to the private sector for selected countries and the US as a ratio to GDP. Given that total credit did not differ markedly, the figure provides further evidence of crowding out of the private sector to finance public spending. The lower part of the figure shows that share-financing did not make up for bank financing. This is also the case for bond financing of the private sector.

Interestingly, intermediation remains comparatively low one decade after liberalization. Stock market capitalization is also still low, except in the UK whose City compete with Wall Street as a world financial center, and bank lending has not yet caught up. It is not clear what is the reason for slow adjustment. Most studies emphasize regulation and entrenched market power.

Figure 7

Three main conclusions emerge from this overview:

- Domestic financial repression affected financial intermediation, crowding out the private sector to the benefit of public sector financing.
- Domestic and external financial repression jointly allowed a segmentation of the domestic financial markets from world markets, delivering at times lower than market-clearing onshore interest rates.
- More than a decade after full internal and external liberalization, Europe's banking and financial markets are still undersized relatively to the US. Financial repression has long-lasting effects.

#### **4.4. Accidents**

What about the benefits from financial repression? One expected benefit is to shield fixed exchange rate regimes from speculative pressure, which matters a lot for the

stability of trading arrangements. Europe's history of frequent currency crises seems to dismiss that claim. Looking at the EMS, Table 2 reports the frequency of realignments, including the UK's and Italy's forced exits from the Exchange Rate Mechanism in 1992. Through the early 1990s, realignments were routine, in some years as frequent as the number of member of countries. Realignments almost disappeared after the signature of the Maastricht Treaty, when the implementation of stern convergence criteria severely constrained macroeconomic policies, in effect making exchange rate stability the overriding concern of most governments.

Table 2

Most of the realignments reported in the table were decided in the midst of speculative attacks. Many countries were unable to subordinate their policies to their fixed exchange rate commitments and sooner or later had to face the unpalatable choice between a devaluation and policy austerity. The repeated refusal to devalue when it is already too late to adjust the policy stance is the most frequent trigger of speculative attacks.

Is Europe special in this respect? One way to answer the question is to ask whether European countries have been particularly crisis-prone in comparison with similar countries in the OECD area. Table 3 presents an index of exchange market pressure built following the method developed by Eichengreen, Rose and Wyplosz (1995). The index is a weighted average of quarterly changes in the exchange rate, the interest rate and foreign exchange reserves with Germany serving the role of benchmark. The index is larger the more these variables move over each quarter.<sup>9</sup> Table 3 lists in decreasing order the fifty largest events recorded by the index over the period 1959 to 1998, indicating the corresponding country and quarter. Overall, European countries appear in 78% of the listed cases while they represent 76% of the OECD countries under study (15 out of 21). There is no indication that Europe, and the EMS in particular, has faced a proportionately larger share of currency crises than the other

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<sup>9</sup> The exact measure is  $\alpha(di-di^*) + \beta(de/de^*) - \gamma(dR/dR^*)$  where  $I$  is the short-term interest rate,  $e$  the log of the dollar exchange rate and  $R$  are foreign exchange reserves, with a star denoting Germany and the weights  $\alpha$ ,  $\beta$  and  $\gamma$  are the inverse of the sample variance of the relevant term.

OECD countries. Nor have the future EMU countries faced strong speculative pressure since the EMS switched to wide margins of fluctuations in August 1993. Unsurprisingly, the countries that have allowed their currencies to float are not present in the list.

### Table 3

It seems warranted to conclude that Europe's experience as a fixed exchange rate zone is unremarkable. What makes Europe stand out is its continuing attachment to a fixed exchange rate regime. Most other OECD countries have allowed their currencies to float as they were dismantling their domestic and external financial controls. Europe's response, instead, has been to strengthen exchange rate fixity by aiming at a currency union. This reaction to the conflict between monetary policy independence and fixed exchange rates in favor of the latter confirms Europe's paramount commitment to nominal exchange rate stability. This is in line with the view that the authorities have taken great care of not disruption trade within Europe.

## **5. Overall Assessment: How Bad Was It Really?**

The traditional macroeconomic development literature (see e.g., McKinnon, 1979), eventually enshrined as the 'Washington consensus', argues that financial repression hurts economic growth. This view is largely informed by the experience of developing countries, for example Latin America over 1950-1970. A possible problem with the conventional wisdom is that it is based on the experience of countries which simultaneously resorted to a wide array of extensive controls, often alongside serious political instability and many other potential impediments to growth, of which financial repression was just one component. In Europe instead, a quick look reveals that its best economic growth performance was achieved in the postwar period, fastest in the 1960s at the heyday of financial repression while goods markets and trade were being liberalized.<sup>10</sup>

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<sup>10</sup> South-East Asia too offers another counter-example to the conventional wisdom, see Rodrik (1997).

Section 3 argues that financial repression was, partly at least, driven by the trade-related concern with real exchange rate stability. Section 4 documents the effects of repression on financial markets. An assessment of Europe's strategy then requires tracking the impact of trade integration and financial repression on the growth performance. It could be that trade integration buoyed growth while financial repression slowed it down, with an overall favorable impact. It could also be that fast growth was simply a catch-up process after the damages of the war, too powerful to be blocked by financial repression. In that view, growth would have been even faster had financial markets be liberalized earlier.

This hypothesis can be formally tested using the now standard approach developed by Barro and Sala-i-Martin (1992). Since Europe stands out among the developed countries for its commitment to exchange rate stability, but otherwise differs little, it is natural to compare its performance with of the other OECD countries. The Appendix presents estimates carried out with a sample of 14 countries, chosen for data availability reasons.

So what is the verdict of the role of financial repression and the exchange rate regime? In contrast with conventional wisdom, internal financial repression --captured by the presence of credit constraints-- is found to have a *positive* effect on growth, adding on average one percentage point to the annual performance (measured by growth in per capita GDP). The effect of capital controls is not well established, possibly not significant, but certainly not adverse. The adoption of a fixed exchange rate regime has a small, negative but hardly significant impact on growth. Importantly, trade openness raises growth: a 10% increase in the ratio of the average of exports and imports to GDP is found to raise annual economic growth by 0.2%.

Europe was special by its widespread and long-lasting use of financial restrictions, as well as its attachment to fixed exchange rates. But rapid postwar growth may have been driven by the catch-up from extensive damages suffered during World War II. For instance, GDP per capita fell by more than 60% in France, Germany or the Netherlands, while it grew by almost 40% in the US. Could Europe's fast growth in



the 1960s be mistakenly attributed to contemporaneous financial repression?<sup>11</sup> This possibility is also explored, and rejected.

Overall, the conventional wisdom, that financial repression seriously hurts growth, is not supported by the postwar experience of the OECD countries. It may be that the survival of a fixed exchange rate regime requires financial repression, so we need to look at the overall package, financial repression *plus* fixed rate regime. The effect of such a package on growth is found to be positive. According to the estimates in Column (4), the combination of a fixed exchange rate, credit ceilings and capital controls adds annually 0.9 percentage points to growth, without even taking account the favorable effect of increased trade integration.

It is unclear what precisely lies behind these results. They certainly challenge conventional wisdom, but not accepted general economic principles. We know from second-best theory that there is no presumption that financial repression has negative effects in the presence of financial market imperfections, for example credit rationing or connected lending. More generally, other non-market distortions which often coexist with financial repression, may have strong adverse effects and contribute to the conventional wisdom. Europe indeed has long been characterized by widespread government intervention in the good and labor markets.<sup>12</sup> But the formal evidence presented here certainly does not support the view that financial repression *in and by itself* has hurt growth in postwar Europe.

## **6. Lessons From Europe: Different Models for the External Regime in the Growth Process**

Taking stock of the results presented above, continental Europe emerges as having adopted a development strategy quite different from that chosen by the UK and the US. The commitment to fixed nominal exchange rates, and the readiness to repress

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<sup>11</sup> I am grateful to Barry Eichengreen for pointing out the possibility that the results are spurious in this sense, as well as for suggesting the way to check it out.

<sup>12</sup> Studying the French postwar experience, Sicsic and Wyplosz (1996) conclude that public subsidies and directed lending have had a sizeable negative impact on growth.

the financial markets as a way to ensure survival of the regime until the adoption of a full-fledged monetary union, stand out.<sup>13</sup>

Are there lessons for the next wave of countries catching up? Before jumping to any conclusion, two series of questions need to be addressed. First, what can be safely inferred from Europe's postwar experience? Second, is today's world different from what it used to be when Europe grew fast?

Looking at the interpretation of Europe's growth experience, it is fair to presume that the empirical evidence presented above will fail to convince the skeptics. The paper does not attempt to establish once more a link between trade and the exchange rate regime. Section 3 argues that the general failure to establish such a link can be interpreted as suggesting either that there is no such link, or that we have not looked at the effects of long cycles of misalignment, most likely the latter. At any rate, in reaction to the debacle of the interwar period, European policymakers wanted to eliminate the suspicion that the exchange rate was being manipulated to achieve beggar-thy-neighbor advantage. They were particularly anxious to do so as they were engaged in far-reaching, historical efforts at forging a single market for goods and services, which implied politically delicate decisions.

Europe's evidence also runs against the view that financial markets ought to be liberalized and if that means giving up the exchange peg, so be it. The strategy adopted in Europe put exchange rate stability at center stage and if that means delaying financial liberalization, so be it. There is no evidence that Europe's strategy has had an adverse effect on its growth performance. Critics argue that the strategy was only possible because it was carried out with objectives much wider in mind than just a common market. They claim that the required political will was steadied by the ambitious vision of a monetary union, possibly even a federal union yet to be achieved. This is a revisionist view. For example, the 1971 Werner Plan for a monetary union was unanimously greeted by the larger countries as unrealistic, and they proceeded to scuttle at the first possible occasion. As late as 1988, when the idea

<sup>13</sup> A puzzling issue, not studied here, is the fact that European (and British) goods and labor markets have been far from free for most of the postwar period --and remain quite rigid in several countries.

of a monetary union resurfaced, it was widely seen as still unrealistic.<sup>14</sup> It took an exceptional event, the collapse of the Berlin Wall, to trigger a deep reassessment that no political leader would have predicted just a few weeks before. Europe's integration has always been characterized by a process of muddling-through, two steps forward and one step backward, with deep and lingering divergences as to what the end objective is. This is still the case.

Next, does the European lesson still apply in today's world? It seems easy to make the case that the answer is negative. The size of financial markets is several times what it used to be back in the 1960s. The information technology revolution makes borders obsolete. Financial flows are far too large to be stopped, and international lending far too convenient to be shunned by countries with massive capital needs. Why should any country decide to blunt such a powerful engine of growth, that not only provides resources on a scale unavailable at the domestic level, but also works as a channel for technology transfers? These arguments are far from definitive. The very sophistication of markets can be used to harness them; the authorities too can, if they so wish, use the information technology to monitor and regulate capital movements. Useful capital flows are foreign direct investments, not hot capital that comes and goes. Capital flows have a tendency to be destabilizing in the wake of rapid liberalization, as Argentina, Chile, Mexico, Korea, Malaysia and many other emerging market countries have discovered much to their grief.<sup>15</sup>

A reasonable reading of Europe's strategy goes as follows. Like any price-fixing scheme, pegged exchange rates may result in mispricing and inefficiency in the allocation of resources and trade. On the other side, the experience with deep and long-lasting misalignments should act as a sobering reminder that financial markets, including the foreign exchange markets, are open to problems of asymmetric information and the resulting distortions. Misalignments of floating exchange rates

<sup>14</sup> Economic principles establish that the monetary union became logically unavoidable once it had been decided to free all capital movements while keeping the ERM. It bears noting that the prime force behind the liberalization push was Margaret Thatcher who failed to see the economic logic, and came to bitterly regret it as it directly prompted her ouster.

<sup>15</sup> For an overview, see Calvo, Leiderman Reinhart (1996).

often exceed those found in fixed exchange rate regimes, this is certainly the OECD experience. Fixing the exchange rate is a time-honored response to these distortions.

The choice of an exchange rate regime is not a black or white issue, but one that involves trade-offs, and that remains poorly understood. Rightly or wrongly, most European countries have determined early on that misalignments are harmful to trade, and that the benefits from trade are first order ones, too large to be jeopardized by long-run exchange rate uncertainty. In contrast, financial repression carries at worst second-order negative effects. The postwar record does not indicate that this has been a policy mistake.

In fact, the choice of an exchange rate regime ought to be considered as part of a package that may include, if needed, some degree of financial repression. Because indeed pegged exchange rate regimes are inherently unstable in a world where financial shocks eventually challenge the hardest commitment of the monetary authorities. Given enough time, pegged exchange rate regimes ultimately collapse. Financial repression is a useful backup to reduce the incidence of financial shocks and make fixed exchange rate regimes more manageable and longer lasting.<sup>16</sup>

While this conclusion has become less heterodox since the Asian crisis, the policy implications remain controversial. One view, developed in Eichengreen (1999), is that in a world of capital mobility, the only exchange regimes that should be considered for adoption are the polar ones of free floating or hard pegs (currency boards, dollarization or monetary unions). An alternative view is that the costs associated with the polar regimes may be excessive for developing small open economies and therefore the full capital mobility assumption may not be as self-evident as it is often made to be.

The European experience does not bear out the view that full capital mobility is sacrosanct. It also provides support for a strategy of regional trade opening within a broader political framework that may inspire other areas in the world. Small open

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<sup>16</sup> As noted above, fixed exchange rates and financial repression were also instrumental in countries that sought to channel domestic savings towards preferred use, such as the financing of endemic budget deficits or of particular industries. This aspect is not taken into account in the present discussion.

developing countries may well find it a legitimate choice to aim for fixed, adjustable exchange rates, possibly on the way to monetary union. If this strategy clashes with full capital mobility, the European experience suggests that the choice is not a foregone conclusion.

Once this view is accepted, the choice is between the polar extremes and the middle ground. Freely floating exchange rates tend to fluctuate to the point of disturbing trade competition in a way that is soon perceived as unfair, feeding suspicion among tightly integrated countries. What is good for the US or Japan does not fit the needs of small open economies which aim at replacing centuries-old regional rivalries with welfare and peace-enhancing economic cooperation. Hard pegs constitute deep and politically costly commitments which may benefit countries with a troubled record of monetary mismanagement (Argentina, Bulgaria), newcomers with no record at all (Estonia, Bosnia), or countries which have gone a long and cautious way towards integration (Europe). For the others, traditional pegs backed by some restrictions of financial markets remains a perfectly acceptable option.

An open mind would therefore investigate the following questions:

- If fixed exchange rates and full capital mobility are both deemed desirable, what are the costs and benefits of adopting a hard peg to a major currency? The experience so far with such arrangements is too short to reach robust conclusions. Hong Kong has suffered a blow after many highly successful years. Argentina is struggling with a strongly overvalued currency and seeks an exit option. The longest experience with hard pegs is that of the CFA countries of Western and Central Africa; the record is not particularly encouraging (World Bank, 1994).
- If a hard peg to a major currency is deemed undesirable, is a regional monetary union desirable and feasible? The European experience suggests a positive answer but also a warning that such a step requires careful and lengthy preparation. Admittedly the process can be sped up, but monetary unions are unlikely to be set

up in a matter of a few years, if only because they require fairly exacting political commitment.

- If a regional monetary union is the ultimate aim, how to get there? The choice is between full capital mobility with floating rates and regional exchange rate pegging with restrictions on capital mobility. The European experience, including Britain's reluctance to a regional peg, is that the shorter road to monetary union is unlikely to involve exchange rate flexibility.
- The remaining strategy is one of full capital mobility along with flexible exchange rate. Europe has little to report on this option. Britain and Switzerland have mostly followed that strategy since the breakup of the Bretton Woods system, even though full capital liberalization came later in both countries. Both have successfully integrated themselves into Europe. Britain's experience has been checkered, suggesting passing dissatisfaction with the chosen strategy. The current overvaluation of Sterling is a useful reminder of the perils of misalignment. Switzerland has been quite successful, but it is arguably an idiosyncratic case.

## **Appendix: Growth Estimates**

This appendix presents estimates of growth of GDP per capita in the OECD area following the approach developed by Barro and Sala-i-Martin (1992). The approach accounts for catch-up by including the beginning-of-period GDP per capita. It then adds a variety of variables which, theory predicts and previous empirical investigations often confirm, affect a country growth performance. These variables usually include a measure of education (to proxy for investment in human capital), demography, health, trade openness, saving behavior and infrastructure factors. The approach uses panel data for two reasons: it looks for general sources of growth, shunning national idiosyncrasies; and in order to eliminate shorter-run aspects, it uses low-frequency data which severely limit the number of observations per country, hence the need to increase the sample size which is achieved by pooling as many countries as possible.

As the aim is to study Europe's experience relatively to other similar developed countries, the sample includes the 14 OECD countries for which adequate data is available: Australia, Belgium, Denmark, France, Germany, Ireland, Italy, Japan, Netherlands, New-Zealand, Spain, Switzerland, United Kingdom, United States. the period 1960-95. As is customary, cyclical effects are eliminated by using low frequency observations, five-year periods.

Given the similarity of OECD countries, several of the variables found significant in the empirical growth literature which includes both developed and developing countries, play no role here and are left out. On the other hand, the specificity of Europe and the issues at hand suggest adding two institutional aspects: the weight of government --measured as its share of total employment-- and the independence of monetary authorities --approximated by the inflation rate.<sup>17</sup> The focus, however, is set on the role of financial repression. Internal and external repression is captured by two dummy variables developed in Wyplosz (1999) and extended here for the non-

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<sup>17</sup> There is much evidence linking inflation and central bank independence, see e.g., Cukierman and Lippi (1999). For an opposite view, see Posen (1993).

European OECD countries. A dummy measuring the exchange rate regime is also included.

The results are displayed in Table 4. Neither the fixed effects nor the time dummies (when used) are reported. The first four columns present different estimations of the same model with country-specific fixed effects, depending on whether subperiod-specific intercepts are allowed or not, and with or without cross-section weights (GLS estimation). The last two columns include additional variables as explained below.

The estimates appear to be very robust to the choice of estimating procedure, and generally in line with the literature. The credit constraint dummy is everywhere highly significant and precisely estimated to raise average annual growth by 1%. The capital controls dummy is also found to have a positive effect on growth but it is only significant at the 10% confidence level in columns (1) and (2), and not significant in columns (3) and (4). Operating a fixed exchange rate regime appears to reduce growth, but this effect is not systematically significant in column (3).

Although the catch-up effect is captured by the beginning-of-period level of GDP per capita, it can be argued that Europe's distinctive experience may be driven by the additional need to make up for World War II destruction, spuriously captured by the financial repression dummy variables. In order to check this possibility, two additional variables have been added: column (5) includes the gap in per capita GDP vis a vis the USA, and column (6) further adds the drop in GDP between 1938 and the trough year between 1940 and 1947.<sup>18</sup> The results remain largely unchanged, certainly for the variables of interest, while the additional variables are never significant at the 5% confidence level.

Table 4

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<sup>18</sup> When there was no decline in GDP per capita over 1938-1947, the end-of-war year is conventionally set in 1945.



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**Table 1. Year of Liberalization in postwar Europe**

	Internal	External
Austria	1981	N.A.
Belgium	1978	1990
Denmark	1980	1988
Finland	1970	
France	1985	1989
Germany	None	1981
Ireland	1969	1992
Italy	1983	1990
The Netherlands	1981	1986
Norway	1984	
Portugal	??	1992
Spain	1966	1992
Sweden	1983	
Switzerland	1975	1980
United Kingdom	1971	1979

Sources: Exchange controls from Bakker (1996), p. 220; credit ceilings from Cottarelli et al. (1986), unpublished appendix.

**Table 2. EMS realignments**

	Realignments	Number of countries	Realignment/country
1979	3	7	0.43
1980	0	7	0.00
1981	4	7	0.57
1982	6	7	0.86
1983	7	7	1.00
1984	0	7	0.00
1985	7	7	1.00
1986	6	7	0.86
1987	3	7	0.43
1988	0	7	0.00
1989	0	8	0.00
1990	1	9	0.11
1991	0	9	0.00
1992	6	7	0.86
1993	3	7	0.43
1994	0	7	0.00
1995	2	8	0.25
1996	0	8	0.00
1997	0	9	0.00
1998	0	10	0.00

Note: participation is at end of year

**Table 3. Exchange market pressure 1959-1998:  
50 strongest cases**

1	1994.1	Ireland	EMS	26	1985.2	Australia	
2	1971.2	Spain		27	1974.2	Sweden	
3	1971.2	Switzerland		28	1978.4	Netherlands	
4	1992.3	Sweden		29	1969.2	France	
5	1978.3	Spain		30	1980.4	Canada	
6	1994.3	Greece		31	1977.2	Portugal	
7	1985.1	New Zealand		32	1976.1	Italy	
8	1974.2	Italy		33	1992.3	Italy	EMS
9	1996.1	Greece		34	1973.3	USA	
10	1992.4	Ireland	EMS	35	1974.1	Denmark	
11	1983.4	Portugal		36	1976.1	Spain	
12	1998.1	Greece	EMS	37	1992.4	Norway	
13	1977.3	Spain		38	1974.2	Norway	
14	1974.2	Spain		39	1968.3	France	
15	1982.4	Spain		40	1980.1	UK	
16	1986.3	Australia		41	1975.1	Norway	
17	1967.4	Finland		42	1977.3	Denmark	
18	1985.4	Greece		43	1973.3	Japan	
19	1973.3	Ireland		44	1979.3	Denmark	EMS
20	1964.4	UK		45	1992.3	Canada	
21	1978.1	Finland		46	1972.3	UK	
22	1973.3	Netherlands		47	1973.3	Canada	
23	1976.3	Netherlands		48	1992.3	New Zealand	
24	1973.1	Greece		49	1983.1	UK	
25	1983.1	Greece		50	1959.4	New Zealand	

Source: author's calculation from *IFS* data

**Table 4. Financial repression and growth performance****Dependent variable: average annual growth rate of GDP per capita**

	OLS No time dummies (1)	GLS No time dummies (2)	OLS With time dummies (3)	GLS With time dummies (4)	GLS With time dummies (5)	GLS With time dummies (6)
GDP per capita	-0.050 **	-0.054 **	-0.043 **	-0.048 **	-0.139 *	-0.062
Beginning of sub-period	-4.172	-4.511	-3.372	-4.375	-2.539	-1.980
Capital controls	0.007 1.760	0.004 1.839	0.002 0.699	0.003 1.532	0.006 ** 4.708	0.001 0.304
Credit constraints	0.010 ** 2.977	0.010 ** 3.409	0.011 ** 4.280	0.010 ** 5.175	0.010 ** 6.369	0.008 ** 2.964
Fixed rate regime	-0.007 * -2.135	-0.008 ** -3.593	-0.006 -1.764	-0.004 * -2.375	-0.004 -1.615	-0.003 -1.235
Inflation	-0.207 ** -5.150	-0.198 ** -7.585	-0.179 ** -4.045	-0.186 ** -5.588	-0.187 ** -8.017	-0.122 * -2.377
Openness	0.021 * 2.067	0.019 * 2.343	0.025 ** 2.713	0.023 ** 3.943	0.021 ** 3.545	-0.006 -1.942
Size of government	-0.014 -1.038	-0.009 -0.980	-0.016 -1.589	-0.018 ** -2.962	-0.028 ** -5.256	-0.009 * -2.440
Higher education	0.004 0.441	0.003 0.419	0.001 0.115	0.002 0.528	0.009 3.140	0.008 ** 3.003
Fertility	-0.012 -1.419	-0.014 * -2.463	-0.014 -1.080	-0.009 -0.990	-0.004 -0.372	-0.002 -0.135
Saving ratio	-0.001 -0.259	-0.004 * -0.899	-0.002 -0.564	-0.007 ** -2.704	-0.008 ** -3.339	-0.001 -0.233
GDP/capita gap (relative to US)					0.251 1.938	0.052 0.721
World War II						-0.003 -0.747
Adjusted R2	0.716	0.825	0.822	0.959	0.941	0.962
S.E.R.	0.009	0.009	0.007	0.007	0.006	0.009
N. observations	83	83	83	83	83	83

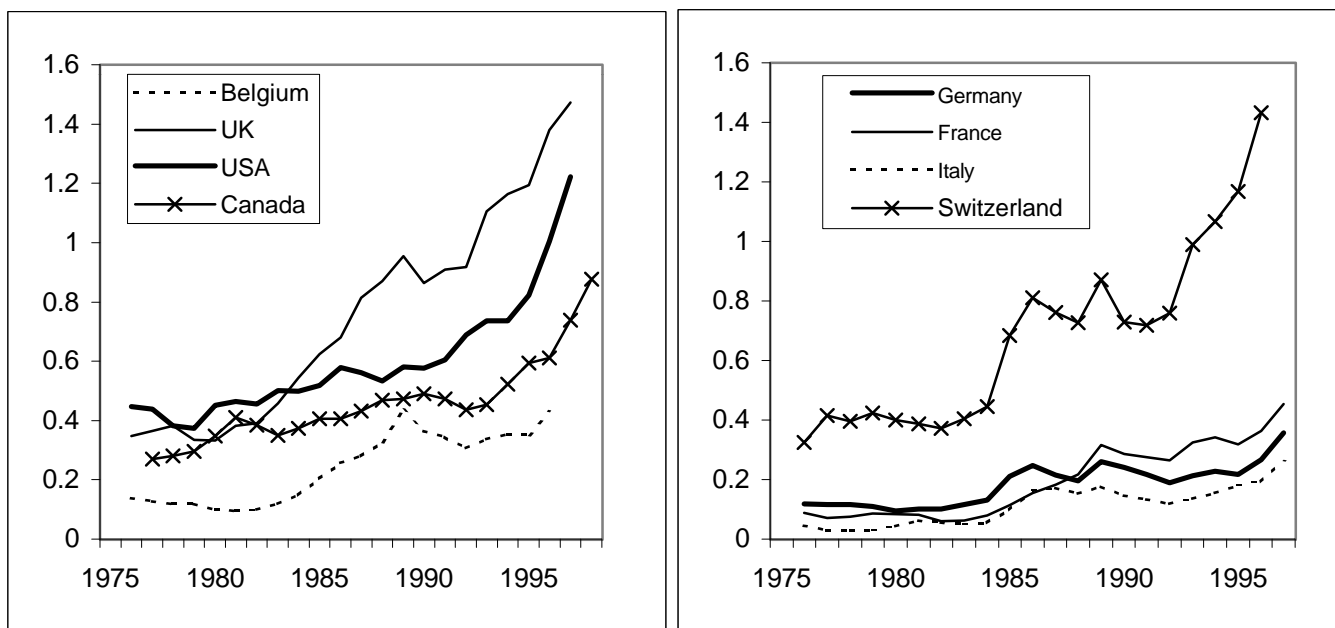
Sources: GDP, openness (exports plus imports of goods and services as a share of GDP), size of governments (ratio of public employment to total employment) and saving ratio: *OECD Economic Outlook*, December 1999; Capital controls and credit restraints: Wyplosz (1999); fertility and higher education: Barro-Lee data base from World Bank web site; inflation: *IFS*; World War II drop in GDP per capita from Appendix C in Angus Maddison, *Monitoring the World Economy, 1820-1992*, OECD Development Centre, Paris, 1995.

Notes: t-statistics in second line, \*\*(\*) significant at the 1% (5%) confidence level; White heteroskedastic-consistent standard errors. Fixed effects allowed.

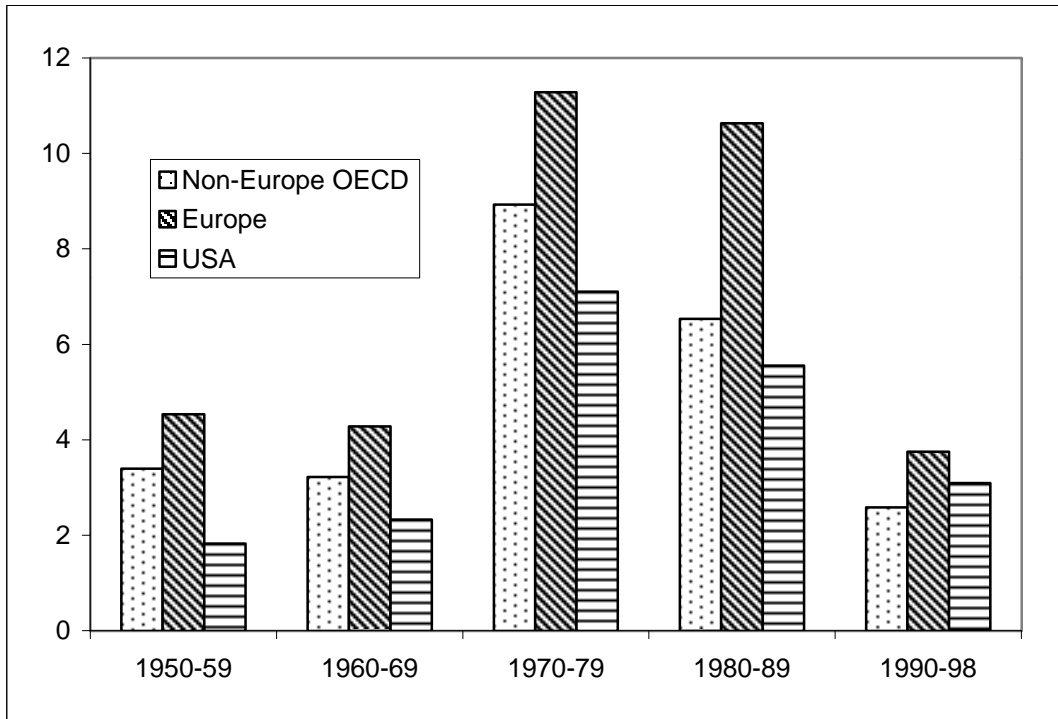
Estimation period: 1960-1995 with 7 five-year sub-periods. Not reported: country-specific (fixed effects) and period dummies. All variables in logs.

Unbalanced panel of 14 OECD countries: Australia, Belgium, Denmark, France, Germany, Ireland, Italy, Japan, Netherlands, New-Zealand, Spain, Switzerland, United Kingdom, United States.

**Figure 1. Stock Markets Capitalization**  
(ratio to GDP)



**Figure 2. Inflation in the OECD area**

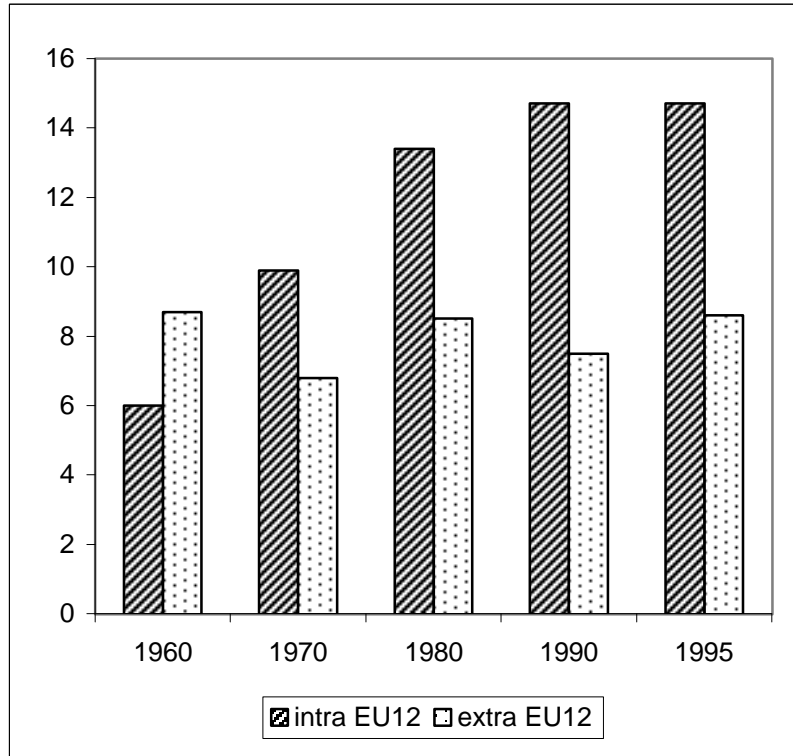


Non-Europe is Japan, Canada, Australia, New Zealand, Switzerland and the UK

Source: IFS



**Figure 3. Intra and extra-European Trade**  
(EU 12 - % of GDP)



Source: European Commission

Figure 4. Exchange rates: actual and PPP

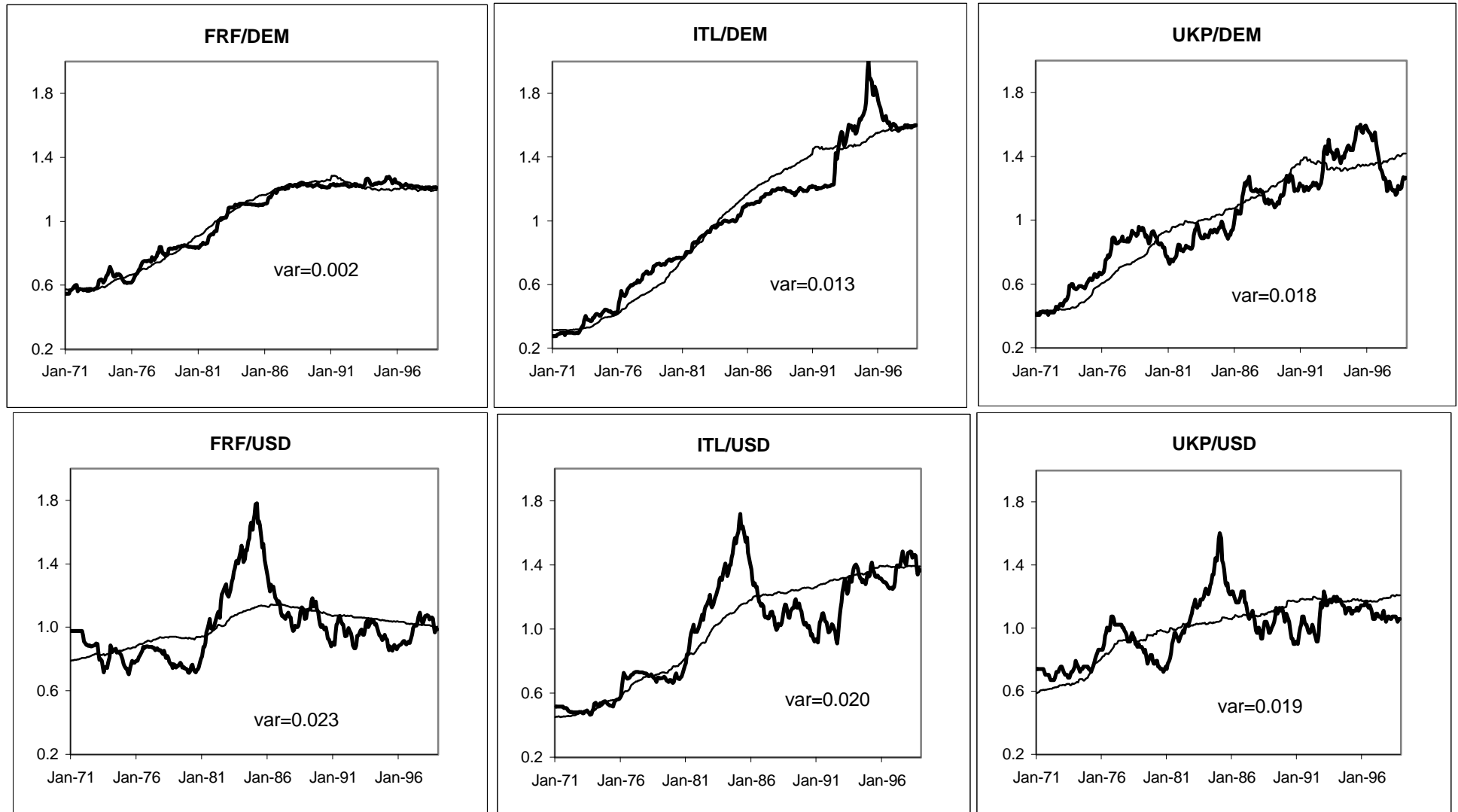
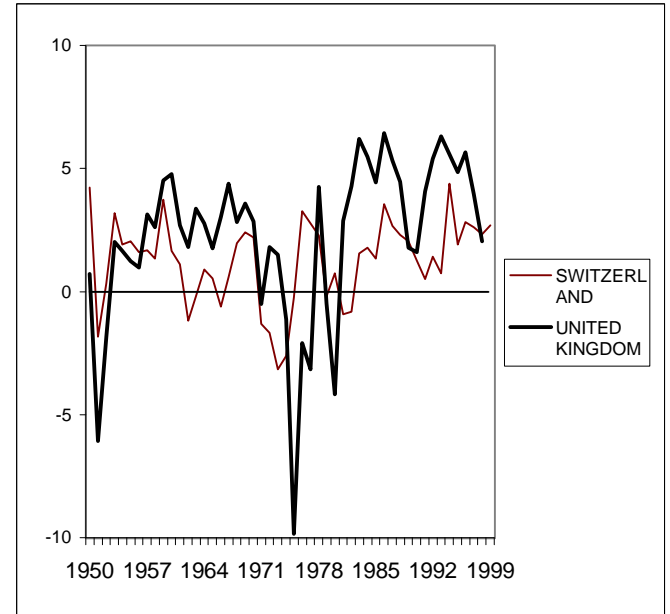
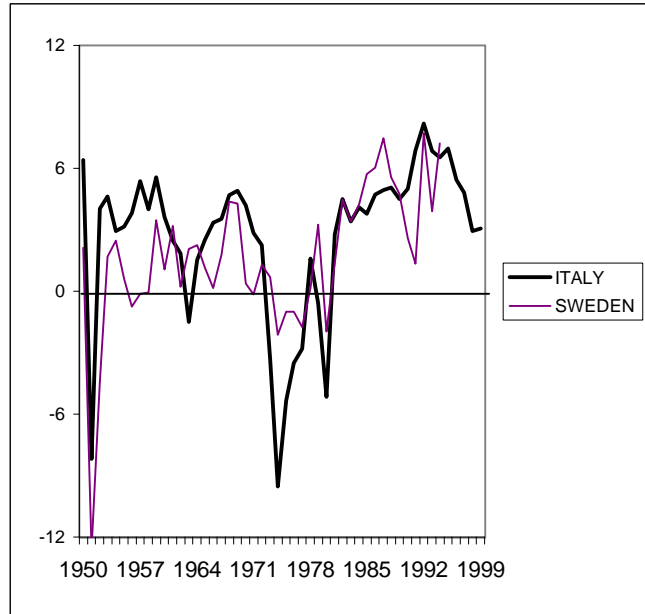
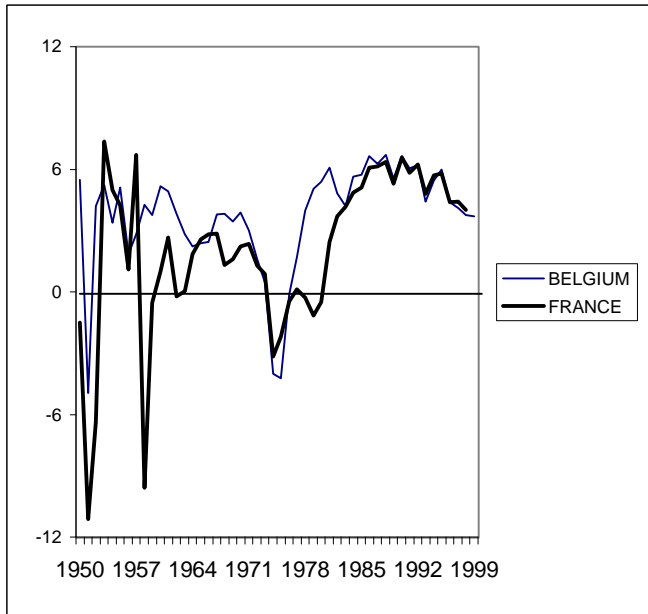


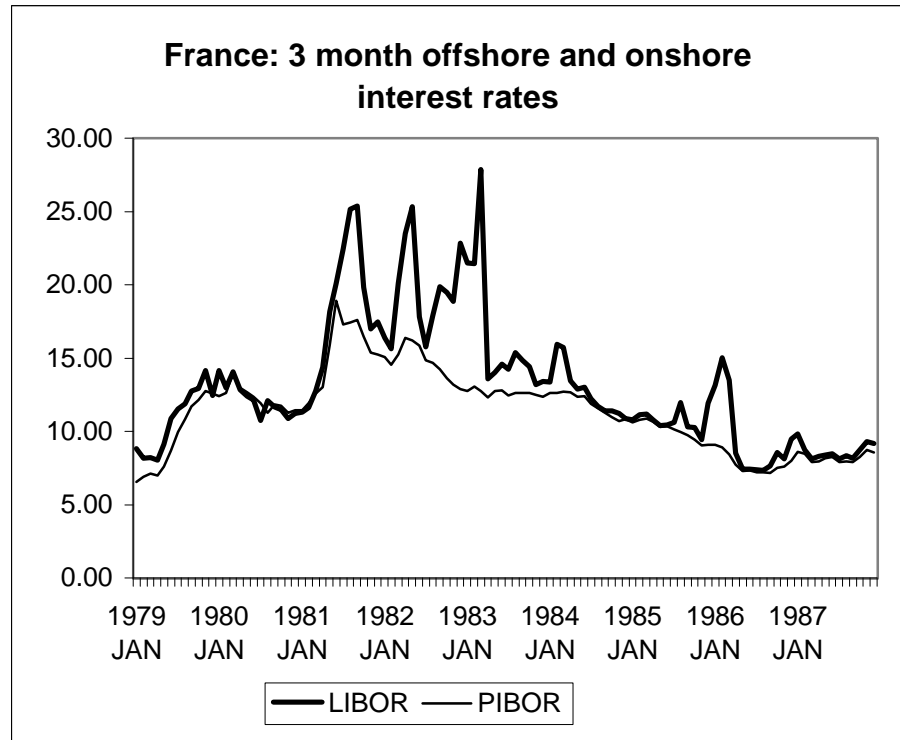
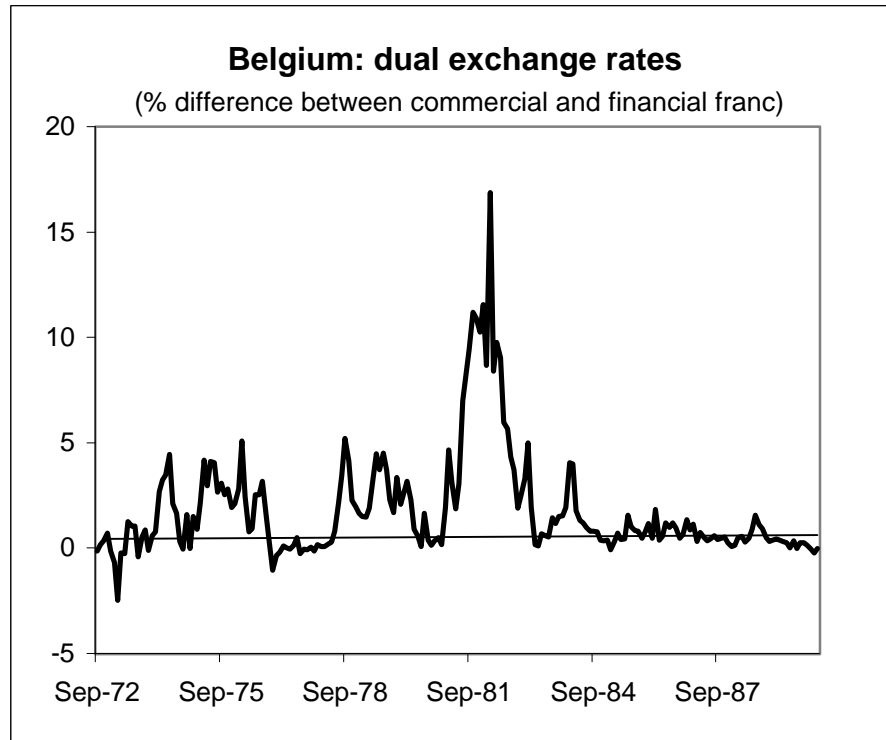
Figure 5. Real long-term interest rates



Source: IFS

Note: Ex post annual rates on treasury bonds

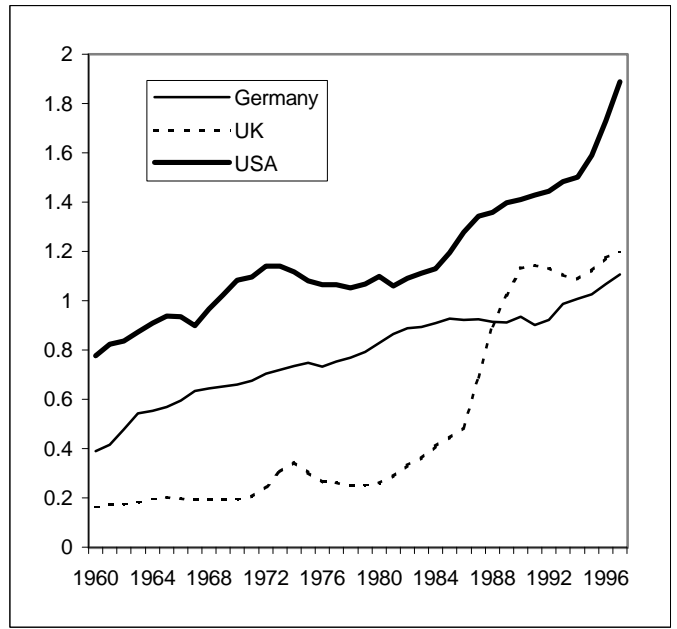
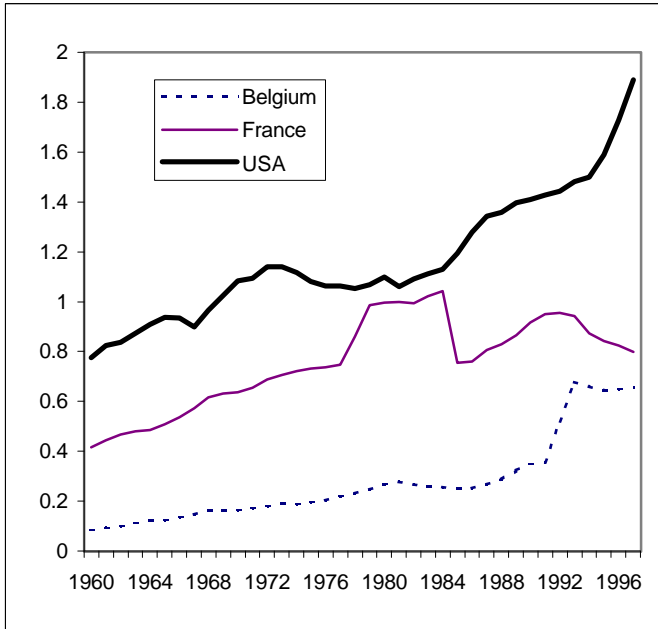
**Figure 6. Effectiveness of capital controls**



Sources: Belgium: Bakker (1996); France: Burda and Wyplosz (1997)

**Figure 7. Intermediation**

**Private Credit by Deposit Money Banks and Other Financial Institutions  
(ratio to GDP)**



**Stock market capitalization to GDP  
(ratio to GDP)**

