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**Evaluating the Fiscal-Inflation Interaction as an Argument for Fiscal Rules
in the European Economic and Monetary Union**

by

Joseph Broach

B.A. University of Montana, 2002

presented in partial fulfillment of the requirements

for the degree of

Master of Arts

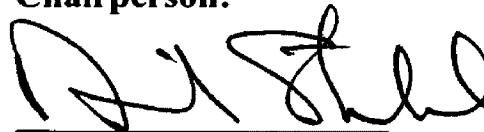
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Evaluating the Fiscal-Inflation Interaction as an Argument for Fiscal Rules
in the European Economic and Monetary Union

Director: Richard D. Erb, PhD 

There exists a strong historic notion among European central bankers that unchecked fiscal policy hampers the monetary policy goal of price stability. This notion underlies many important policies within the European Economic and Monetary Union (EMU). The fiscal rules of EMU—first outlined in the 1992 Maastricht Treaty and reinforced under the 1997 Stability and Growth Pact—lean particularly heavily on the fiscal-inflation interaction assumed by the central banker notion. Much debate emanates from the failure of European Union Institutions to provide adequate empirical support for the supposed fiscal-inflation interaction. The result has been, in part, a resistance to the fiscal rules by some member states and a general failure to apply the rules.

This paper purposes to provide a first attempt at comparing the fiscal rules to historic European experience. European Commission data for 15 countries from 1961-1991 are analyzed for evidence of fiscal effects on inflation performance. Both government deficit and debt ratios are examined. Also considered are real interest rates and real growth rates. Considered are both timing of variable movements within countries and variation across countries and select country groups. A brief examination of fiscal-inflation interactions from 1999-2003 under EMU is also included.

The empirical record from 1961-1991 presents little support for the central banker notion and the fiscal rules of EMU. Despite budgets close to balance on average—and with Germany providing one notable and important exception—the 1961-1969 period saw average inflation well exceed the ECB definition of price stability. The inflation surge of the early 1970s occurred despite improving budget balances on average. The subsequent disinflation of the late 1970s and 1980s occurred despite persistently high and rising deficit and debt ratios. Under EMU, fiscal balances do not function well as a signal of inflation pressures. Overall, the historic record does not support the argument for fiscal rules on price performance grounds. It is suggested that an argument with better support should be developed if the fiscal rules are to survive and function.

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[M]ore than ever before, 1965 showed the degree to which the effectiveness of credit policy depends on the development of public sector budgets, and that it cannot compensate, let alone overcompensate, for the expansionary effect of high government deficits. (Deutsche Bundesbank, 1965)¹

The lack of sufficient convergence of fiscal policies as reflected in large and persistent budget deficits in certain countries has remained a source of tensions and has put a disproportionate burden on monetary policy. (Delors Report, 1989)²

Central banks are often accused of being obsessed with inflation. This is untrue. If they are obsessed with anything, it is with fiscal policy. (European central banker, 1995)³

The Stability and Growth Pact supports price stability. (European Central Bank, 2002)⁴

The opening quotes highlight the powerful, longstanding belief among European central bankers that unchecked fiscal policy hampers the monetary policy goal of price stability. This central banker notion is not only pervasive in Europe but also surprisingly powerful.⁵ Driven by the goal of price stability, central bankers in Europe arguably have carried more weight than any other single group in shaping the emerging Economic and Monetary Union (EMU) since the late 1980s. And, the notion that lax government

¹ Qtd. in Kitterer (1999), p. 180.

² Committee for the Study of Economic and Monetary Union (1989), sec. 2, para. 5.

³ Qtd. in Buti (2003).

⁴ ECB (2002).

⁵ Throughout the paper “Europe” and the “European Union” refer to the 12 nations belonging to the EU at the time of the Maastricht Treaty signing in 1992, plus Austria, Finland, and Sweden, which joined in 1994. Including all 15 throughout the period studied makes sense as they were all potential members whose economic performance was known at the time. Not all of the countries belonged to the EU through the entire period covered by this paper. Also, it is not implied that what is said about them necessarily applies to other European nations.

budgets interfere with inflation goals has become an increasingly important element in central banker driven institutional arrangements. Despite the notion's policy importance, little or no empirical support has been forthcoming.

The central banker notion under discussion did not develop overnight. It was the result of a gradual development—accelerated during the 1970s and 1980s—from at least the 1960s until the Maastricht Treaty in 1991. Therefore, a careful study of relevant economic data from these years may provide some insight into the notion's origins. Relying on several important relationships in the data, the paper hopes to add to the discussion on fiscal-inflation interactions in Europe. Using the decisions on necessary fiscal policy restrictions from the Maastricht Treaty and the subsequent Stability and Growth Pact (SGP), as well as the theoretical and empirical evidence available in the literature reviewed in Section 2, this paper explores the historical record, seeking an empirical relationship underlying the EU fiscal limits.

Much of the analysis involves looking back over the experience of the tumultuous decades preceding the Maastricht Treaty. Given that the Treaty and Pact's framers themselves failed to present adequate empirical evidence for the limits, a simple, obvious relationship is not expected. Instead, we proceed with the knowledge that the relationship may be a complex one. Nevertheless, one would expect the data to at least suggest the shape of the fiscal restrictions which first the Maastricht Treaty and then the SGP deemed essential for the support of price stability and economic growth in the new Economic and Monetary Union.

While this paper can scarcely hope to settle a European debate that barely has begun, it can at least investigate the scattered facts that exist and try to organize and add

to them. The simple fiscal-inflation relationship from 1961-1991 supports only weakly the central banker notion that unchecked fiscal policy hampers price stability. Support for the specific fiscal limits of EMU is almost entirely absent. Introducing monetary policy performance does not alter that finding. Finally, the first 5 years of EMU demonstrate no significant strengthening of the fiscal-inflation relationship; in fact, preliminary data imply that the relationship may have weakened with EMU.

The paper is organized as follows. Section 1 provides some background on the development of the central banker notion that unchecked fiscal policy hampers the goal of price stability, focusing specifically on the institutions deriving from that notion. Section 2 reviews the literature for possible theoretical underpinnings for the central banker notion, and also briefly summarizes the status of empirical research in this area. Section 3 carefully analyzes the data on fiscal performance and inflation from 1960-1991 and finds at best a weak empirical case for the central banker notion and even less support for the specific fiscal rules of EMU. Historical experience demonstrates no systematic link running either way between fiscal performance and inflation. Section 4 introduces monetary policy performance into the analysis via real interest rates. Section 5 examines data related to the fiscal rules from the first five years of the Economic and Monetary Union (EMU). The last section concludes and suggests two areas meriting further research. An appendix includes referenced figures and tables from the text.

1. European Economic Background and the Development of EMU

The 1960s were prosperous times in Europe as the postwar recovery continued in full swing. Annual real GDP growth averaged 5.1 percent, unemployment averaged just above 2 percent, government obligations were remarkably low, and budgets were close to balance. Enter the 1970s and a macroeconomic horror show of Hollywood proportions. The breakup of the Bretton Woods system, two major oil price shocks, and less than optimal policy response to those events left European economies in relative shambles, mired in inflation and stagnation. Over the next two decades, annual real GDP growth averaged only 3 percent, average unemployment rates soared to 5.5 percent, government debt exceeded 30 percent of GDP on average, and mean deficits neared 3 percent of GDP. Over the first period, inflation rates averaged a moderate 3.7 percent. Over the second period, consumer prices were rising on average at an astonishing annual rate of 8.9 percent.⁶

While none argued that the unfavorable events of the 1970s derived from a single source, some European central bankers were quick to point a finger in the direction of finance ministries. Monetary authorities believed that part of their inability to control inflation over the period stemmed from deteriorating public budgets and exploding debt ratios. According to Kitterer (1999), in 1976 the Bundesbank was specifically “urging the consolidation of public sector budgets and a fundamental revision of public sector operations” (p. 188). The author also reminds that the Bundesbank “repeatedly stressed that the strain on monetary policy becomes unbearable if it has sole responsibility for

⁶ Source: EC Statistical Annex, Spring 2003. Averages for the first period are reported from 1961-1969, for the second period 1970-1991.

ensuring price stability and that the support of fiscal policy [. . .] is vital for avoiding inflation” (p. 207). During the 1980s, the Bundesbank ideology spread quickly through inflation-weary Europe. In fact, Favero (2003) finds that monetary policy in the major European economies fell into near lock step with Germany over the period 1980-1991. As inflation rates fell and economies stabilized across Europe, the importance of monetary leadership and fiscal discipline became firmly ingrained in the economic structure of the continent, and in the emerging Economic and Monetary Union (EMU).

Brief History of Economic and Monetary Union (EMU)

EMU was envisioned as a natural part of the steady progression of the European Community from a loosely bound customs and trade union to something with a more unified economic identity. Debate about the shape of a future EMU can be traced back to at least 1969. By then, the initial goals of the customs union largely had been achieved by the then six-member Community. This left the European Community wondering where to go next in order to protect and add to its gains on the customs and trade front. At the same time, the old Bretton Woods system of international payments fell under increasing strain. The dollar was increasingly stretched thin as the main backing of international transactions, and the exchange rate disruptions of 1968-1969 were just one symptom of this inescapable fact.⁷ Attempting to reduce exchange rate fluctuations within the Community seemed a natural choice.

At the 1969 Hague Conference, the Werner Committee was established to make initial recommendations for increased economic and monetary cooperation among the members of the Community. It is interesting to note that only 2 of 7 committee members

⁷ Ungerer (1997) p. 97-99.

hailed from central banks, a sharp contrast to the Delors Committee that would follow in the 1980s. The final version of the Werner Report included two major institutional visions. First, a central monetary authority and common currency (in function if not appearance) remarkably similar to the actual European System of Central Banks (under the ECB) and euro were outlined. The principal difference between the Werner Report's monetary authority and the realized ESCB is the former's emphasis on exchange markets and the almost complete absence of price stability among its stated goals and responsibilities. In addition, the Werner Report envisioned a second major institution that would have substantial power for national budget oversight and the common currency's exchange rate with the rest of the world.⁸ This recommended body never materialized as a unique entity, with those powers spread among the present-day Commission, the European Council, and the European Parliament.

Even before the events of the 1970s, the Werner Report perceived a need for the immediate convergence of fiscal policies along with a reduction in exchange rate fluctuations. Indeed, the report even alluded to "quantitative guidelines on [. . .] the direction and amount of balances"⁹, although no suggestions are provided for the levels of such guidelines. While the proposed fiscal convergence was mostly postponed, the Community's national monetary authorities immediately went to work on harmonizing exchange rates among members.¹⁰

The first attempt at a Community exchange rate system was dubbed "the Snake" and consisted of an agreement to limit the fluctuation of member currencies against one

⁸ Ungerer (1997), p. 107-113.

⁹ Werner Report, p. 15-24, qtd. in Ungerer (1997), p. 111.

¹⁰ Ungerer (1997), p. 114-116.

another to agreed upon maximums. Differing macroeconomic responses to the inflationary shocks of the 1970s, however, left the Snake with a checkered tenure when it was replaced by the European Monetary System (EMS) in 1979. Highlighting its tumultuous seven years, membership dropped from 11 to 6 members through many major exchange adjustments.¹¹

In addition to experience gleaned from the Snake, the successor EMS had several advantages that contributed to its general success through the 1980s. First, at least compared to the 1970s, external economic conditions were generally more stable. Second, the horrendous economic experience of Europe the decade before provided added motivation for countries to stabilize their economies. Finally, encouragement came rapidly in the form of disinflation and renewed—if still underwhelming—real growth. Ungerer (1997, pp. 192-193) also notes that many members of the EMS and its Exchange Rate Mechanism successfully used their membership as political ammunition for domestic policies to stabilize their currencies. The relative success of the EMS strengthened the position of central bankers and renewed interest in a more permanent and more ambitious economic and monetary union. It seemed that where national governments had largely failed on their own, the environment created by the union of central banks was succeeding.

In 1989, what is usually referred to as the Delors Committee convened with the task of envisioning practical steps toward monetary union. Under the direction of European Commission President Jacques Delors, the group's final composition reveals the new balance of power. Ungerer (1997) explains how suggestions for an independent

¹¹ Ungerer (1997), p. 119-131.

panel and for government representatives were rejected. The final selection included Delors and one other commissioner, an economics professor, two European private bankers, and all twelve national bank presidents.¹² If the odds were stacked in favor of central bankers, they did not disappoint.

The Delors report rendered interpretations of economic and monetary union that fit well with the Bundesbank-led monetary policy theory of the time. First, in addition to scolding the current state of fiscal budgets, the report specifically called for “binding rules for budgetary policies” (para. 25). The first of these binding rules would “impose effective upper limits on budget deficits” (para. 30). These rules, it would seem, were meant to replace the incentives of the EMS to avoid fiscal pressures on inflation and exchange rates. Second, the Delors Committee also envisioned a powerful central bank with a clear mandate and tool set. Mirroring the transformation in European central banks through the 1980s, the envisioned bank would subordinate all other goals to the maintenance of price stability. While the national central banks would still have a role in the day to day functions of the single currency, policy decisions would emanate from the central bank itself and would be completely disinterested in national politics. An inflexible prohibition on lending to member-states attempted to sever remaining ties between monetary policy and fiscal pressures.¹³ The vision of the Delors Committee would be largely realized in the subsequent Maastricht Treaty and the Stability and Growth Pact, especially with regard to the priority given to the monetary goal of price stability and to the supposed necessary subordination of fiscal policy.

¹² Committee for the Study of Economic and Monetary Union (1989), Annex I.

¹³ Delors Report (1989), para. 32.

Maastricht, The Stability and Growth Pact, and fiscal rules of EMU

Among other details, the Maastricht Treaty of 1992 quantified the Delors Report's "binding rules." As prerequisites for EMU entrance, the treaty established an annual limit on general government deficits of 3 percent of GDP. In addition, general government gross debt was to be maintained at or below 60 percent of GDP, or, if above that mark, falling toward the limit with appropriate speed.¹⁴ Each of these goals was to be reached no later than 1997. The hard limits assuaged Germany and other Bundesbank supporters that fiscal miscreants would not haunt the dreams of the new ECB.

On the other hand, the punishment of EMU exclusion would presumably not last forever, and then what would keep the fiscal reins taut? Led by German Theodore Waigel and a coalition of other finance ministers, and with the backing of the Bundesbank and other central bankers, the Commission drafted and the Council approved the Stability and Growth Pact 1997, the year in which the first-round EMU entrants were to have met all other Maastricht convergence criteria. In two Council regulations and one resolution, the SGP both strengthened the surveillance and response to the fiscal protocol of Maastricht and codified the now and forever penalties. In addition to respecting the 3 percent of GDP deficit limit, budgets were now to be maintained in balance or surplus over the medium term. Debts, which looked hopelessly far from 60 percent, were to be largely ignored, but the deficit limit of 3 percent of GDP now had the extra bite of a clearly delineated penalty procedure, enforced by the Commission. A government found in breach could face substantial pecuniary fines, as well as embarrassing publicity.¹⁵

¹⁴ Council and Commission of the European Communities (1992) Art. 104(c) and Art. 1 of Protocol on the Excessive Deficit Procedure.

¹⁵ Council of the European Communities (1997).

Despite the impressively precise nature of the new budget rules, no compelling economic argument was forthcoming from the European institutions. To be sure, there are many appealing arguments in favor of sustainable government finances. Few economists are opposed to fiscal rectitude, *per se*. However, if the suggestion of a theory with no empirical support makes economists nervous, the application of one as a concrete rule makes them cringe.¹⁶ Events from the 1970s and 1980s and the subsequent monetary-led recovery had allowed the notion that fiscal imbalances harm price stability to gain considerable acceptance, but little empirical evidence was brought forth in support. Begg and Schelkle (2004) declare the underlying model “opaque” (p. 86). Canzoneri and Diba (2000) note the lack of explanation for the SGP and label it an “albatross” (p. 2). Eichengreen states that “The ECB is still fighting the inflation wars of the 1970s and 1980s.”¹⁷ The Economist (2001) likens the rules to “monstrous chopping machines” and states flatly that the weakly supported arguments for them are “bogus” (p. 1). These are as close to fighting words as economists get, which begs the question, with so much criticism from outside, why was there so little internal resistance to the new rules?

One answer appears to lie in the European central bankers’ belief—branded into the European consciousness by the events of the 1970s and 1980s—that excessive fiscal laxity burdens the goal of price stability. The coupling of this notion with Europe’s relatively strong popular support for low inflation makes a formidable political duo. Straightforward evidence of this explanation is found in European Council and

¹⁶ And the SGP was, at least in its construction, decidedly concrete. The automatic exception clause for poor economic performance is so restrictive that the requirements would only have been met 9 times by EU members over the period 1970-1991.

¹⁷ Qtd. in Miller et al (2003).

Commission documents about the Pact and Treaty. For instance, the Council resolution adopting the SGP states that fiscal rules are important “to ensure that national budgetary policies support stability oriented monetary policies.”¹⁸ And, EC (2002) acknowledges that “The explicit goal of these provisions is to make fiscal policies contribute to the objective of price stability in the euro area” and “[f]iscal discipline is important to enhance the credibility of the price-stability oriented framework of monetary policy” (p.121).

The honeymoon of central bank and national government ideas, however, was not to last forever. Fiscal policy makers had often used the EMS and its Exchange Rate Agreement to their advantage in the 1980s to pass otherwise difficult budget reforms. Unless budget developments placed excessive burdens on member’s currency, however, such reforms were entirely voluntary. Under the SGP, fiscal balances become both a primary target and subject to mandatory adjustment. The resulting tension between national governments that found it difficult to stay within the fiscal limits and the SGP’s executors and backers perhaps partially explains the lack of firm fiscal commitments in the past.

Economic and Monetary Union was launched on January 1, 1999, and during its first six years, the fiscal rules of Maastricht and the SGP have rapidly decreased in popularity among many member governments. Budget projections for 2004 show that six of the twelve members will breach the deficit limit, and none of them are even close to the exceptional circumstances enshrined in the Pact.¹⁹ Meanwhile, the Council failed

¹⁸ Qtd. in Buti (2003), p. 3.

¹⁹ Source: EC Statistical Annex, Spring 2004.

to invoke the SGP's excessive deficit procedure against France and Germany, despite the Commission's recommendation.

The resulting scramble to patch up or modify the Pact has intensified speculation about its future. While some governments are ready to see the SGP out the door, the ECB and several finance ministers seem prepared to defend it.²⁰ In view of this paper, the most interesting point in the now raging debate is the one which is so obviously missing. That is, the unsettled empirical issue of whether loose fiscal policy really is a drag on the maintenance of price stability. The issue is complex, to be sure, but this paper proposes a question which would greatly focus the issue. Does historic European evidence suggest a link running from poor fiscal performance to increased inflation?

²⁰ Parker (2004).

2. Theory and Empirics Behind Fiscal Effects on Inflation

A sound first step in any exploration is to obtain a decent map. In exploring a seldom tread area like this one, the map may need to be drawn. To develop such a map to guide us through the central banker notion that fiscal discipline is important for price stability in Europe, we turn to the broader field of fiscal policy effects on inflation over the medium to long-run. In the short-run, one can easily see the potential for fiscal policy to affect price movements through, for instance, indirect tax and regulation changes. For Keynesians at least, excess demand pressures could be added to that short-list. Tracing the link through to the medium-term requires more footwork.

The literature naturally divides into three areas, and that division is followed here. First, a fiscal authority may directly pressure its central bank, using political leverage to aid the fiscal authority's goals or to patch up debt financing problems. Second, a fiscal authority may indirectly pressure its central bank through policies which spill over into monetary policy's variables of interest—including aggregate demand, interest rates, and exchange rates. Third, according to the recently developed Fiscal Theory of the Price Level, a fiscal authority may directly affect the price level, bypassing monetary policy entirely. Within these broad categories, there appear to be some theoretically credible channels through which fiscal policy, over time, could affect inflation performance.

Whether theory plays out in practice must be examined empirically. To this end, a brief survey of the sparse but relevant empirical work in this area is presented. Unfortunately, the majority of recent empirical work focuses on the developing world, which usually operates in a very different macroeconomic environment from that of modern Europe. Most relevant are studies by Campillo and Miron (1996) and Catão and

Terrones (2003), since they include most or all of the EU members in their data sets. Also relevant is a brief study by the Bank of Israel on fiscal and monetary interactions under fiscal rules. Existing empirical studies were not intended, nor are they adequate, either to explain or substantiate the central banker notion of interest in this paper. The empirical work does, however, offer some cursory evidence on fiscal-inflation interactions, and those findings and models provide a good base from which to launch this paper's investigation.

Direct Pressure by Fiscal Authority

Direct pressure on a central bank by a fiscal authority is perhaps the most straightforward channel through which fiscal policy might affect price stability. As debt and the subsequent repayment burden in a country increase, the option of inflating some of it away becomes increasingly more attractive. Canzoneri and Diba (2000) explain that while direct pressures to inflate are rare, pressures to lower interest rates or for a more favorable exchange rate are fairly common. If political pressure can successfully leverage a central bank into lowering rates, the resulting drop in interest payments on the debt can greatly improve the demeanor of government accountants. Additionally, less revenue leaking out of the coffers into debt repayment also frees up funds for more politically lucrative spending programs. Finally, lower interest rates—in the near-term—may support other government interests such as lower unemployment and higher growth. Given that political cycles for fiscal authorities tend to be relatively short, near-term results may be all that matters.

Accommodating a fiscal authority's pressure for lower interest rates harms the prospect of price stability in several ways. First, let us imagine a central bank with the

exclusive goal of price stability. This central bank would, we assume, have been maintaining interest rates in order to meet its inflation target over some time period. Now, assume the fiscal pressure is effective, and the bank acts to reduce interest rates in the economy. The resulting increase in loaned funds in the economy would place upward pressure on prices as output rose beyond its “natural” or inflation-neutral rate—the rate of output growth supported by actual productivity gains. If we assume the bank had chosen the right interest rate path in the first place, any deviation from that path must be price destabilizing.

In addition, a second blow to price stability occurs through a loss of monetary credibility. A central bank gains credibility through a variety of channels, and an important one is the bank’s perceived independence. If a bank caves in to political pressure and lowers rates despite contrary price evidence, it could quickly lose credibility. This would compound the problem by placing additional upward pressure on prices and possibly contribute to exchange rate instability and a sharply declining currency which could amplify the upward price pressures.

Finally, a bank which gives in to political pressure also fails in its role as a check on fiscal solvency. An anticipated interest rate rise represents one of the costs facing a government considering expanding deficits. A fiscal authority facing a strong central bank must take this reaction into account when setting budgets. If a central bank has a history of accommodation, this cost may fall or disappear altogether in the fiscal decision making process. The result would be a higher probability of increasing fiscal deficits in the future and the beginnings of a vicious circle.

Indirect Pressure via Fiscal Policy Effects

Next, even though a sufficiently independent central bank may successfully resist direct political pressure to lower rates, it may still not be immune to indirect pressures. In addition to measurable variables in the economy, a central bank must contend with inflation expectations. Canzoneri and Diba (2000) argue that as fiscal deficits and debt rise, inflation expectations also may rise. If this happens, a monetary authority is forced to make a choice. By raising nominal interest rates, a bank can attempt to hold inflation to its target rate, but the higher rates would likely have undesirable consequences on output and unemployment. Furthermore, higher interest rates combined with slowed output growth and unemployment could easily exacerbate the very deficit and debt problems that triggered the messy chain of events. Artis and Winkler (1999) offer the Reagan-Volcker clash in the U.S. and German reunification in Europe as examples of the sort of unsavory results that can be expected when monetary policy stays the course of price stability as fiscal deficits and debt rise.

Because of the high costs of maintaining price stability when excessively loose fiscal policy affects price expectations, Canzoneri and Diba (2000) argue that the most likely outcome is one of monetary policy choosing a middle ground. On the one hand, a central bank could stand firm to its interest rate targets as if nothing were happening and accommodate the inflation. On the other, it could tighten monetary conditions enough to completely choke off the added price pressures. The argument is that most central banks would raise interest rates enough to soften the blow to its inflation targets but not enough to completely maintain them. As long as the fiscal pressures remain, Canzoneri and Diba (2000) maintain, inflation will continue to drift away from the central bank's target.

ECB (1999) offers a related view of indirect fiscal pressure on a central bank with important differences. In the ECB scenario, a fiscal authority running consistent deficits begins to affect efficiency due to crowding out of more productive resources. As saving and investment in the economy decline, aggregate demand increasingly outstrips aggregate supply. Among other negative results, the excess demand pressures prices. As in the previous example, monetary policy must choose a course between accommodating the inflation or attempting to quash it by raising interest rates. Again, the higher rates could set off another round of problems.

The foreign sector may constitute another channel through which indirect fiscal pressure can gain leverage on a central bank's price stability goal. If a country's currency is significantly depreciating relative to major trading partners due to rising inflation differentials, a central bank would normally act to strengthen the currency by raising interest rates. However, if these events coincide with high and rising deficits, two potential pitfalls appear. First, the central bank may be forced or persuaded to attenuate the rate hikes due to fears of worsening the government's fiscal situation. Second, even if a strong central bank reacts with strong interest rate increases, the underlying inflation is unlikely to subside entirely without declines in deficit and debt ratios, since the rate increases will tend to worsen the government's fiscal position. Given time, it is argued, even the most respected of central banks will begin to feel pressure for lower interest rates from a large section of the economy. The high rates, if held over a considerable period, start to weaken investment, raise unemployment, and damage growth potential

over the longer-term. The result, again, might be a loosening of monetary policy and a unpleasant cycle of inflation fed by the foreign sector and mounting deficits and debt.²¹

Thus, indirect pressures—especially over time—may pose a credibility problem for even a relatively strong central bank. Forced to raise interest rates to protect price and currency stability, a bank could conceivably become more vulnerable to direct pressures. If the high rates correspond with declining output and rising unemployment, a fiscal authority could use the negative events as leverage in a public call for lower rates. Undesirable exchange rate movements may have a similar effect. Through the indirect pressure of high deficits and rising debt, even a strong central bank may lose some of its grip on inflation.

Fiscal Theory of the Price Level

Regardless of a central bank's reaction to fiscal policy, the Fiscal Theory of the Price Level (FTPL) suggests a channel through which fiscal policy can directly impact long-run inflation. In a standard macroeconomic model, the fiscal authority adheres over time to a budget constraint. The present value of government receipts must cover the present value of both government expenditure and debt. Price or interest rate changes in the present or anticipated in the future force spending or tax collection or both to adjust. But what if they do not adjust, or what if it is perceived that they may not? If a government begins running consistent deficits and accumulating large amounts of debt, the FTPL argues that the classic adjustment mechanism may be turned on its head. Instead of government balance adjusting to the price level and interest rates, prices and rates may begin adjusting to the government balance! In other words, it may become

²¹ Kitterer (1999).

expected that present government debt will be inflated away, and, in this case, monetary policy's choices do not matter. The FTPL argues that, in an extreme case of fiscal insolvency, monetary policy would lose all control over the price level.²² Thus, the rate of inflation would be determined by the government budgeting process. This extreme conclusion of the FTPL appears to wilt under criticism.²³ However, Wren-Lewis (2003) argues that the FTPL's finding is still relevant in further explaining how government solvency concerns might hamper a monetary authority in pursuit of stable prices.

Thus, the literature in this area provides some plausible ways in which fiscal policy might affect inflation rates over the medium to long-run. Unfortunately, theory has little if anything to offer on the timing of such effects. Much would seem to depend on how seriously economic actors view the threat of fiscal pressures—direct or indirect—on a central bank. This, in turn, would depend on perceptions of the relative power of the two, as well as on historic relations between them. One can imagine that a central bank with a history of caving to fiscal pressures, or a fiscal authority with a history of applying such pressures, might hasten and strengthen the response of inflation to lax fiscal policy. In brief, theory provides evidence neither of how powerful fiscal effects on inflation might be nor how long they might take to develop. Thus, the presented theories add to our exploratory map some trails which may no longer exist, or, indeed, which may never have existed. We turn for assistance to some empirical studies of fiscal balance effects on inflation.

²² Canzoneri et al. (2002).

²³ See, for instance, Blinder (2002).

Empirical Overview

Catão and Terrones (2003) provide a nice overview of the empirical literature in this area. Most studies attempt to explain the variation in inflation experience across countries. Unfortunately for the question at hand, most recent research has focused on the developing world and cases of very high or hyperinflation. While interesting, these results are not particularly relevant to current EU members. Among studies that included developed countries in the sample, the authors note that none found a statistically significant link between fiscal balances and inflation.

With previous findings and techniques in mind, Catão and Terrones attempt to remedy some perceived shortcomings. They estimate an ARDL model in which the budget constraint, and its theoretical link with inflation, is embedded. The data covers the period from 1960-2001, and it includes 107 countries, among them all of the 15 EU members.

The authors find a statistically significant but weak effect of fiscal balance on inflation outcomes in moderate-inflation countries, which by their definition include 8 of the 15 EU countries. Like previous studies, however, they uncover no statistically significant link between fiscal balances and inflation in low-inflation countries, which include the other 7 EU nations.²⁴ The extreme variety among countries—even within the different groupings—raises some questions about the study's findings, although the authors attempt to use techniques which attenuate these problems. Most interesting to

²⁴ Moderate-inflation countries include Denmark, Finland, Greece, Ireland, Italy, Portugal, Spain, and the UK. Low-inflation countries include: Austria, Belgium, France, Germany, Netherlands, and Sweden. Their divisions raise some questions. The divisions are made by lopping off the 25 highest and 25 lowest inflation countries, leaving the remaining 50 in the moderate category. This results in a rather large and sometimes odd juxtaposition of countries.

our inquiry is the result that fiscal effects on inflation seem to diminish as inflation rates fall in general. The result casts some doubt about the need for fiscal rules in EMU, given that the ECB's inflation target is one of the lowest in the world.

Campillo and Miron (1996) take a different approach in their study on cross-country inflation variation. They choose a regression model of average inflation on a host of explanatory variables plucked from the literature on inflation determinants. The data set covers the period from 1973-1994 and includes at least 10 of the EU members among the sample of 62. Of primary interest is the inclusion of a variable measuring debt level in 1975. The authors hypothesize that the initial debt level helps establish the required level of tax revenue over the period. One potential source of this revenue is through an inflation tax. Thus, they predict that a higher initial debt level will increase pressures on a central bank to inflate. Their results show that the initial debt level is strongly statistically significant and important in both the whole sample and in the high income subsample. Other significant determinants of inflation were average inflation over the previous period (1948-1972), Barro political instability, openness, income, income per capita, and quality of data. R^2 was reported as 0.58 for the whole sample and 0.87 for the high-income subsample.

One shortcoming of the Campillo and Miron study is that the specification does not allow for the effect of change in variables over the period. For instance, central bank independence changed markedly in certain EU countries (and possibly others) in the middle of the period. In addition, it seems likely that how a country's debt developed over the period would be at least as important as well as its initial level. A country which paid down its debt—or even maintained the level—would be expected to exert less

pressure on a central bank than one which allowed debt to expand through the entire period. Finally, the variable choice and resulting specification in some cases seems inappropriate for the high-income group. Furthermore, it is unclear why Barro's political instability index—based on the number of coups and revolutions—would be important in western Europe, the US and Japan from the 1970s. Nonetheless, the finding that initial debt levels are significant to inflation merits further inquiry.

The two studies provide some limited evidence on fiscal impacts on inflation in developed countries. Their samples also include most of the EU members, though neither study provides regional subsamples. Each has some deficiencies, especially for answering the questions this paper seeks to raise. Perhaps most surprising, however, is the dearth of such empirical studies. Indeed, only the Catão and Terrones study investigated the fiscal balance-inflation link explicitly. Especially given current tensions over the Stability and Growth Pact, one would expect such a key justification for the Pact to be under some empirical scrutiny.

Less rigorous in nature, a brief study by the Bank of Israel examines the effect of fiscal policy on inflation under fiscal rules. Sokoler (2002) traces the interaction of fiscal and monetary policy during the first ten years of a law limiting fiscal deficits. The similarities between the Israeli and EMU macroeconomic frameworks are compelling. The Bank of Israel is prohibited from direct lending to the government. A 1992 Budget Deficit Reduction Law established fixed rules for slowly bringing historically large deficits toward budget balance.²⁵

²⁵ Sokoler (2002).

The arrangements proved effective if imperfect until the worldwide slowdown in 2001. The Israeli deficit rose rapidly in its wake—from near balance in 2000 to 4.5 percent of GDP in 2001, and the result was a set of hard limits on deficits in 2002 and 2003 of 2.4 and 1 percent of GDP, respectively. At the same time, the Bank of Israel decided to lower interest rates in order to soften the blow of government contraction on the economy.²⁶

It quickly became apparent from projections that the government would not meet the planned deficit limit in 2002. The author links this to a quick reaction in financial markets. From 2001, inflation expectations rose to levels easily exceeding central bank targets. Meanwhile, the exchange rate depreciated significantly and worries arose about a potential major depreciation relative to the dollar.²⁷

Sokoler (2002) finds in these events evidence that “to maintain the price level and financial stability it is necessary to avoid fiscal dominance” (p. 4). While his analysis fits well with theories of fiscal effects on monetary policy targets, implications for Europe are still unclear. Foremost, it is unclear whether the degree of fiscal loosening was most important, or instead whether it was the failure to meet a fixed target that most contributed to the unpleasant financial events. Furthermore, the central bank lowered short-term interest rates considerably (2 percentage points) during 2001, and it is thus unclear how the monetary loosening contributed to events.²⁸ In other words, it is not evident whether the rising deficit itself or simply its surprise nature was to blame for the loss of price and currency stability that followed.

²⁶ Sokoler (2002).

²⁷ *Ibid.*

²⁸ *Ibid.*

Both theoretical and empirical studies in the area of fiscal effects on inflation are disappointing. The former for their lack of precision. They provide some logical answers to the “how” but cannot help with the “when” and “how much.” The latter disappoint for their scarcity and muddled findings. None of the studies provide a link between fiscal policy and inflation that approaches the concreteness of the Maastricht or SGP’s fiscal limits.

3. Pre-Maastricht Evidence on Fiscal Balances and Inflation, 1961-1991

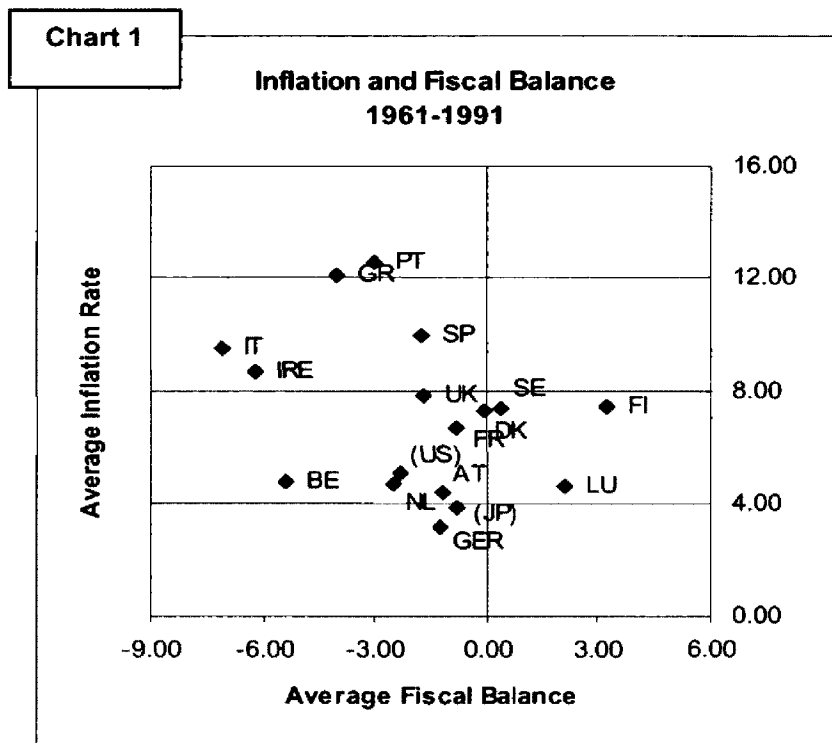
This section closely examines the empirical record leading up to Maastricht in 1991 for evidence supporting notion underlying the EMU fiscal rules that fiscal laxity harms inflation performance. Does fiscal performance appear to have significantly impacted inflation performance? Events during this period provided, by most accounts, the impetus that led to two important shifts in macroeconomic thought across Europe.

First, monetary policy, led by the Bundesbank, shifted price stability to the forefront of policy goals. Second, the corresponding idea that limits on government deficit and debt were necessary for price stability increased in importance.

Our analysis refers to annual data from EC (2003) from 1970-1991 and is presented in full in Appendix B. All 15 EU member-states are represented along with the US and Japan. The inclusion of the US and Japan seeks in part to determine whether historic evidence points toward some difference in Europe that necessitates fiscal rules. Also included are data averages from the 1961-1969 period derived from the same data set.

Close examination of the country annual data in Appendix B suggests a lack of correlation between fiscal deficits and

inflation. A Pearson correlation confirms the lack of a significant linear relationship at



the 10 percent level. Looking at country performances from 1961-1991, similar fiscal performances are compatible with a wide range of inflation outcomes. Relatively poor fiscal performance—even near or exceeding the SGP deficit limit on average—did not doom a country to relatively poor price performance as experiences in Belgium, the Netherlands, and the US demonstrate. Conversely, sound fiscal performance—even surpluses on average—did little to guarantee relatively strong inflation performance as experiences in Finland, Sweden and Denmark attest.

We carefully analyze the data from 1961-1991 to determine whether there is an empirical basis behind the fiscal rules. Much of the analysis takes place on carefully chosen sub-periods based on important shifts in the macroeconomic environment in Europe. Unfortunately, the lack of clear theoretical or empirical justification for the fiscal rules makes such an endeavor difficult. It is simply not clear from which trend or trends in the pre-Maastricht data the fiscal rules were derived.

Although we lack information about the underlying model, we do have some parameters with which to work. Although mysterious to most, we must assume that the 3 percent of GDP and 60 percent of GDP figures have some empirical relevance. We also know that the Maastricht framers had at their disposal similar data. By retrospectively including the Maastricht and SGP fiscal criteria in our analysis, we hope to reconstruct the empirical foundations of the argument for fiscal limits.

EMU Fiscal Limits in Historical Perspective

First, it is useful to sketch European fiscal performance over the period using the SGP fiscal criteria as benchmarks. The Maastricht and SGP fiscal criteria between them include three major clauses relevant to fiscal policy. First, and most important, fiscal

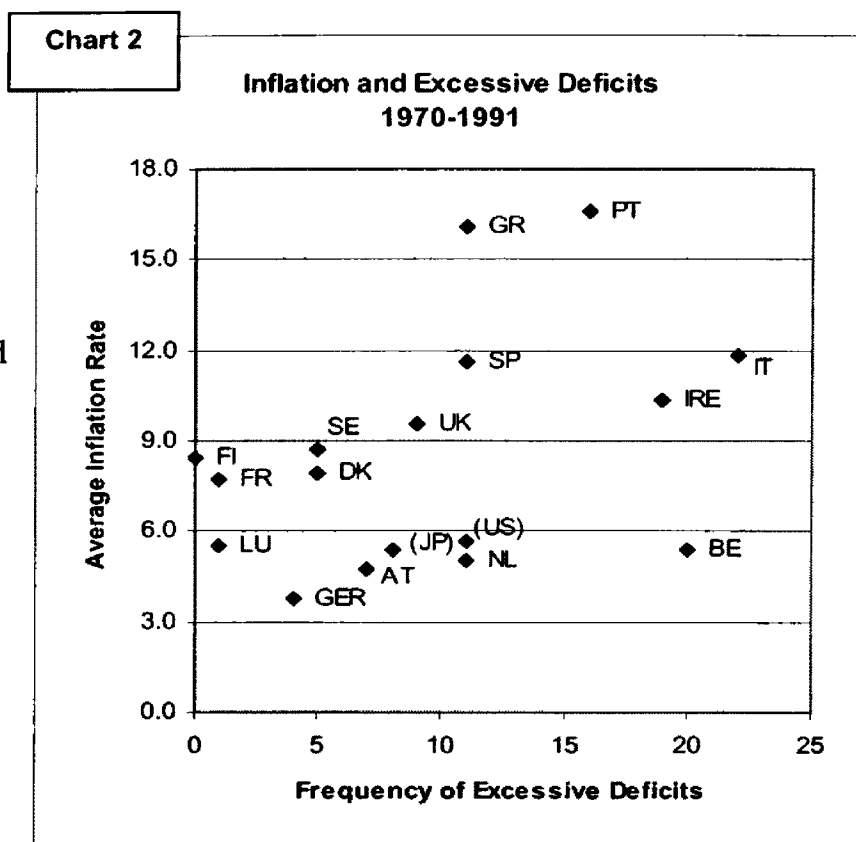
deficits are not to exceed 3 percent of GDP. From 1970-1991, the 15 European countries in our sample breached the deficit limit 142 times, or about 43 percent of the time. Second, debt ratios are not to exceed 60 percent of GDP. Over the same period 1970-1991, debt ratios exceeded 60 percent of GDP 85 times in the 15 European countries, or about one-quarter of the time. And, finally, budgets over the medium-term are to remain close to balance or in surplus. While this was achieved on average in the 1960s, only four countries met that goal over the 1970-1991 period.²⁹ Thus, the fiscal limits under discussion would appear to address a perceived historic problem in Europe and not just fears about future fiscal performance. That being the case, we can examine more precisely what exceeding the limits meant for inflation performance in the past.

Since the deficit rule has proven the most prominent of the three, it is worth examining deficit performance over the entire period in some detail. The frequency of excessive deficits varies substantially across countries. Experiences range from Finland, which never exceeded the limit, to Italy, which surpassed the limit in each of the 22 years. Appendix C presents the sometimes surprising results. The problem of excessive deficits as addressed by the Maastricht fiscal criteria is of staggering proportions when viewed over the 1970-1991 period. Excessive deficits are constrained neither to a small number of occurrences nor a small subset of countries. Indeed, even the US and Japan would have run afoul of the Maastricht and SGP deficit criteria nearly half of the time.

²⁹ The four countries (average budget balance as percent of GDP) were Denmark (-0.5), Finland (3.6), Luxembourg (2.3), and Sweden (0.5).

Certainly, some country performances fit with the idea that frequent excessive deficits contribute to poor price performance, but others are a difficult fit with the theory.

Germany turned in the best inflation performance and also relatively sound fiscal performance over the period. Greece, Portugal, Ireland, and Italy experienced 4 of the 5 worst inflation performances and also experienced 4 of the 5 highest excessive deficit frequencies. It should be noted, however, that among



the group of poor performers Ireland and Italy experienced significantly more periods of excessive deficits yet maintained substantially lower average inflation rates.

The rest of the ordering proves a puzzling match to the central banker notion. The Nordic countries and France present disappointing inflation performances despite a low occurrence rate of excessive deficits. Greece, Spain, the Netherlands (and the US) highlight an impressive range of average inflation rates (16.1 to 5.0 percent) corresponding to identical deficit performances (11 excessive deficit occurrences) across the countries. Meanwhile, the Benelux countries (along with the US and Japan) demonstrate a wide range of deficit performances (from 1 to 20 excessive deficit periods) compatible with roughly the same low average inflation rate (from 5.0 to 5.7 percent).

The correlation between excessive deficits and inflation performance proves no less diverse than between deficit levels and inflation.

With the fiscal limits in mind, two main analytical techniques are used to examine more closely each country and sub-period for which sufficient data is available. Emphasis is placed on the excessive deficit rule for several reasons. Debt ratios have been largely ignored in the fiscal rules process as evidenced by the number of EMU members that failed the debt ratio criteria upon entrance. The close to balance rule proves difficult to examine historically, since most European countries ran significant deficits over most or all of the period. The excessive deficit rule has also been the focus of the wider fiscal rules debate in the EU.

To examine the possibility that loose fiscal policy contributed to poor inflation performance in the three decades before Maastricht, this paper performs two main empirical tests. First, we examine inflation differences across countries grouped by similar fiscal performance based on the Maastricht and SGP guidelines during three distinct subperiods. Second, for the 1970-1991 period for which annual data is available, we examine the timing of major inflation and fiscal shifts in each country. The preponderance of evidence as analyzed supports neither the supposed link between fiscal performance and inflation nor the structure of the EMU fiscal rules.

1961-1969

Despite strong growth and low unemployment, the 1960s provides little evidence to justify the Maastricht and SGP fiscal criteria. Annual data are not available from EC

for this period; however, period averages for 1961-1969 can be constructed for 13 EU countries and provide some insight.³⁰

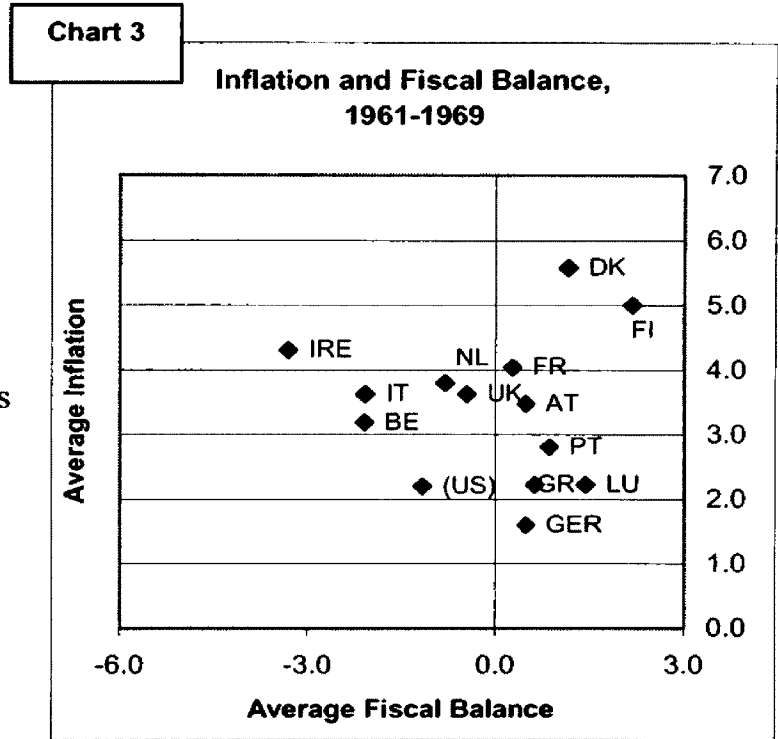
From an EU-wide perspective, the period from 1961-1969 saw an average fiscal budget close to balance at -0.1 percent of GDP. 8 of the 13 countries with available budget data (Spain and Sweden are unavailable) ran budget surpluses on average. Despite the relatively strong fiscal performance, inflation over the 1961-1969 period averaged 3.5 percent, well above the ECB's current interpretation of price stability as close to but less than 2 percent.

Only in Germany did inflation meet the ECB's price stability criterion; in fact, one might point to 1960s Germany as a close historic model to the EMU ideal. Germany averaged a budget surplus of 0.5 percent of GDP and an average inflation rate of just 1.6 percent over the period. Real GDP growth averaged 4.3 percent—somewhat below the European average of 5 percent—but much stronger than average growth during the other periods covered in this study. Given that performance, it is perhaps no surprise that Germany was the leading advocate for fiscal rules under EMU.

Real annual growth of GDP in the 15-country European sample averaged a robust 5 percent during the period, and unemployment averaged just 2.2 percent. As a reference point, the US over the same period registered averages of -1.2 percent of GDP budget balance, 2.2 percent inflation, 4.7 percent annual real GDP growth, and 4.7 percent unemployment.

³⁰ Fiscal data are unavailable for Spain and Sweden for the period.

To examine the correlation between fiscal deficits and inflation, the countries are divided into three groups by fiscal performance.³¹ Among the nine countries with budgets close to balance or in surplus for the 1961-1969 period, inflation averaged 3.4 percent.³² Among the three countries which ran mild budget deficits, inflation averaged 3.5 percent. Ireland, with an average deficit of 3.3 percent was the only country to



record average deficits exceeding 3 percent of GDP over the period. Irish inflation averaged 4.3 percent. The 1960s experience indicates that while excessive fiscal deficits

Table 1: 1961-1969

Fiscal Group	n	Inflation	Growth
Close to Balance/Surplus	9	3.4	5.0
Deficit	3	3.5	5.1
Excessive Deficit	1	4.3	4.4

may have a weak impact on inflation

performance, the effect is not pronounced.

Indeed, even in Ireland average inflation rates

were higher than the best fiscal performers by less than one percentage point.

Real growth numbers are included as a rough proxy of an extension of the central banker notion known as “macroeconomic stability.” Recently, some European central bankers have begun to point to a more complex link between fiscal performance and the

³¹ For the period 1961-1969, countries were grouped as follows: *Close to Balance/Surplus*: Austria, Denmark, Finland, France, Germany, Greece, Luxembourg, Portugal, UK; *Deficit*: Belgium, Italy, Netherlands; *Excessive Deficit* : Ireland.

³² Throughout this section, “close to balance or in surplus” is defined as a budget deficit ratio less than or equal to 0.5 percent of GDP. “Deficit” is defined as a budget deficit ratio to GDP greater than 0.5 percent.

monetary policy goal of price stability. Those central bankers view poor fiscal performance not as limiting the attainment of price stability but instead as increasing the “cost” of price stability in terms of economic growth or other macro variables. In the words of ECB (2004), fiscal policy’s effectiveness at maintaining macroeconomic stability “defines the environment in which monetary policy has to operate.”³³

Fiscal contributes to macroeconomic stability through two main channels. First, by allowing tax revenues to decrease (increase) and income-sensitive expenditures to increase (decrease) during a recession (expansion), government budgets provide automatic stabilization that smoothes income changes in the short-run. Second, avoiding excessive deficit and debt accumulation over the longer-term may foster macroeconomic stability by improving the decisions of economic actors, who would otherwise have to account for additional risks.³⁴

Government budgets that do not contribute to macroeconomic stability may result in lower potential for economic growth. The resulting environment may also require higher interest rates from a monetary policy authority for the same level of inflation. Because real growth rates are probably the end result of such an unsavory policy mix, and because interest rates are difficult to compare across countries, this paper employs real growth rates as a rough but useful first look at fiscal policies and macroeconomic stability.

There is little initial evidence from the 1960s that budgets close to balance or in surplus improve growth outcomes. Countries with mild deficits (0.8 to 2.2 percent of

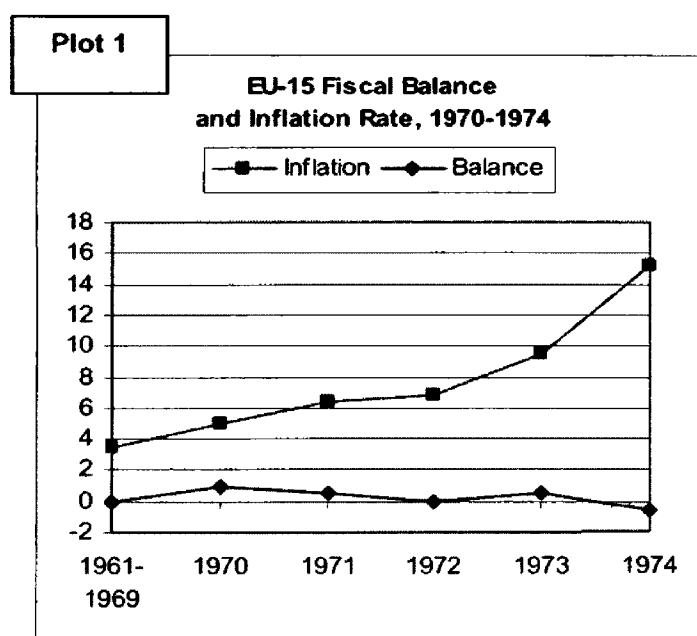
³³ p. 45.

³⁴ ECB (2004).

GDP) on average achieved slightly higher real growth rates than those countries with stronger fiscal positions. Ireland's below average growth performance leaves open the possibility for the interpretation that excessively loose fiscal policy reduce macroeconomic stability and thus reduce real growth rates. A more rigorous study of the effect on growth would examine country-specific factors in more depth. The direction of causality would also require examination. For instance, poor growth performance can lead to higher deficits due to increased non-discretionary and discretionary government spending during slowdowns. Finally, while not mentioned by ECB (2004), monetary policy could also act as a destabilizing force if monetary policy were inappropriate for macroeconomic conditions. Unfortunately, Irish interest rate data is unavailable from EC (2003).

1970-1974

The 1970s brought to Europe a rapid departure from the relatively strong growth and stability of the 1960s. Inflation surged between 1970 and 1974. Fiscal balances did not deteriorate until after 1974. By 1974 inflation rates in the EU countries averaged 15.3 percent, a more than fourfold increase from the 1960s average. The average deficit in EU countries in 1974 climbed only 0.5 percentage points, to a deficit of 0.6 percent. Given the average decline in real growth rates from the 1960s average to 1974 of 2.8 percentage points, such a decline would be consistent



with the functioning of automatic stabilizers. There is no evidence that fiscal balances were deteriorating significantly before the inflation peak. Using annual data for fiscal balances and inflation, we can examine this relationship more closely.

Even setting aside the issue of timing, fiscal performance proves unable to explain the variety of experiences during the initial inflation from 1970-1974; there simply is no systematic correlation between the two variables. Based on the central banker notion that poor fiscal performance hampers price stability, we would expect to find that countries running relatively high and rising deficits in the 1960s and early 1970s would experience relatively greater increases in inflation. As the notion would predict, most of the countries with better than average inflation performance from 1970-1974 also had sound public finances before and during the period. One exception among the above average inflation performers—Belgium—proves more difficult for the notion to explain. Despite poor fiscal performance in the 1960s and a deteriorating budget in the early 1970s, Belgium's inflation increase of 3.2 percent over the 1960s average was nevertheless well below the average increase of 4.9 percent in Europe. Since it is only one case, however, further research into country-specific factors might well explain the anomaly.

The larger weakness of the central banker notion in explaining the early 1970s experience lies in explaining the poor inflation performers. Of the 6 countries with worse than average inflation performance in the early 1970s, Ireland, Italy, and the UK had simultaneously deteriorating fiscal balances. However, Denmark maintained consistent surpluses, and, the two worst inflation performers in the early 1970s, Greece and Portugal, had relatively mild rises in fiscal deficits, comparable to those in Germany, the early 1970s best inflation performer.

Whether analyzing past or contemporaneous fiscal performance, balances do little to predict relative inflation performance during the early 1970s. In favor of the central banker notion, most of the better inflation performances came in countries with sound fiscal backgrounds. To the detriment of the notion, Belgium's strong inflation performance came despite a checkered fiscal past. Furthermore, half of the poor inflation performers—including the two worst—boasted relatively strong fiscal credentials from the 1960s and early 1970s. The fiscal rules of Maastricht and the SGP suggest that sound public finances make economies more resilient to price shocks such as those in the early 1970s. The historic record, however, is often at odds with that assertion.

Next, we more specifically test the Maastricht and SGP fiscal rules by grouping countries by fiscal performance relative to the 3 percent deficit criterion over the 1970-

Table 2: 1970-1974

Fiscal Group	n	Inflation	Growth
Close to Balance/Surplus	11	8.3	4.9
Deficit	1	9.4	2.7
Excessive Deficit	3	9.6	4.6

1974 period.³⁵ The results are similar to those for the 1960s, showing some, but not dramatic, difference in performance between those countries running budgets

close to balance or in surplus and those running deficits on average. Among the eleven countries averaging budgets close to balance or in surplus from 1970-1974, inflation averaged 8.3 percent. The UK experienced a mild average deficit of 0.8 percent over the period but saw the deficit ratio rise rapidly to 3.8 percent in 1974. The UK's inflation rate averaged 9.4 percent. Among the three countries averaging deficits greater than 3 percent of GDP, inflation averaged 9.6 percent. The data portray a potential correlation

³⁵ For the period 1970-1974, countries were grouped as follows: *Close to Balance/Surplus*: Austria, Denmark, Finland, France, Luxembourg, Portugal, Spain, Sweden; *Deficit*: Germany, Greece, Netherlands, UK; *Excessive Deficit*: Belgium, Ireland, Italy.

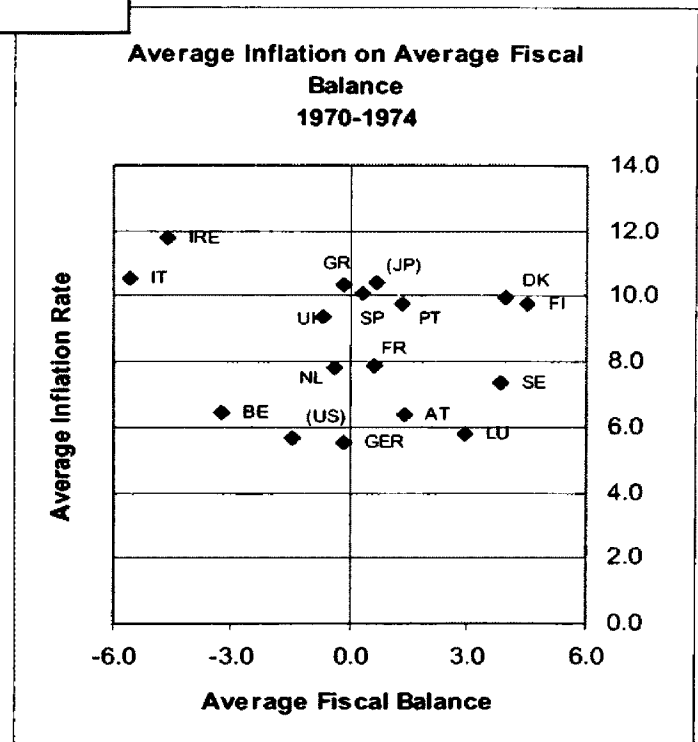
between poor budget performance and worse than average inflation outcomes. The effect, however, is hardly dramatic. First, among the three worst performers—with average deficits over the period of 4.5 percent, far exceeding the SGP maximum—an inflation premium of only 1.2 percent existed over the best fiscal performers. Second, no significant difference is evident between countries running surpluses and those running mild deficits. Finally, the experience of Belgium demonstrates that persistently high deficits do not rule out good inflation performance. While the experience from 1970-1974 lends some potential support to the central banker notion, the effects of even substantial excessive deficits are not as dramatic as the resulting fiscal rules' strictness suggests.

Of the two countries in breach of the 60 percent debt limit, the UK

performed somewhat worse than average with a 9.4 percent inflation rate and Belgium performed significantly better than average with an average rate of 6.4 percent. No significant correlation exists between average debt ratios and average inflation rates over the period across 13 European countries with available data.

Real growth figures do not reveal a significant correlation between high fiscal deficits and reduced growth, and the period length is probably too short to expect a trend. While the surplus countries achieved the highest average real growth rates, those

Chart 4



countries running excessive deficits on average nearly equaled that performance.

Examining data on a country basis reveals an even more mixed record and no obvious relationship. This result holds whether one looks at absolute growth rates or deviations from 1960s average rates.

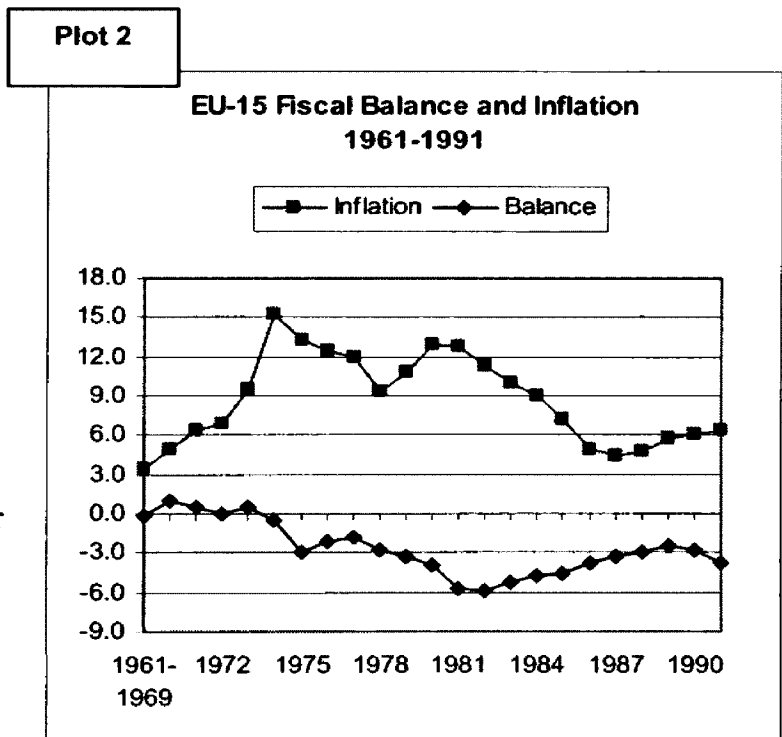
1975-1991

In the remainder of the 1970s and into the 1980s, two main trends of interest emerge. First, disinflation to approximately 1960s levels occurred—with varying speed—across every European country except Greece and Portugal. The costs of inflation became increasingly acknowledged in Europe and internationally. Real growth continued to decline and unemployment rose in most European countries into the 1980s. Following the lead of the Bundesbank, monetary policy tightened considerably—though with varying speed—throughout most of Europe. This tightening is evidenced by the dramatic shift in real interest rates from negative in every EU country in 1975 to strongly positive by the late 1970s and early 1980s in most countries. Second, budget balances deteriorated rapidly across most of Europe before stabilizing at high deficit levels. Only Finland avoided piercing the 3 percent of GDP deficit threshold at least once from 1975-1991, and by 1991 seven countries had debt to GDP ratios exceeding 60 percent.

Taken together, those two trends make the central banker stance a problematic fit with the European experience reflected by the data. Reconciling rapid disinflation with loose fiscal policy proves problematic under the assumption that fiscal laxity places upward pressure on inflation. This period of disinflation serves as an important piece of evidence, occurring as it does in the years directly preceding the Maastricht Treaty and its fiscal rules.

If fiscal performance were important for price stability, we would expect that countries with low and falling fiscal deficits and debt levels would on average find reining in inflation easier. The results here are no more supportive of the central banker notion and associated fiscal rules than those from the initial inflation from 1970-1974. Most EU countries saw the return of inflation to 1960s levels or below in the mid-1980s. As clearly evidenced by the plots in Appendix D, these disinflations largely occurred independently of significant improvements in government deficits or debt. Indeed, in many cases rapid disinflation took place despite deficits consistently in excess of 3 percent of GDP and rising debt levels above 60 percent of GDP. There is little or no evidence that low or substantially declining fiscal deficits and debt either preceded or aided the disinflation process over the period.

The data do offer some weak support for the central banker notion under discussion on two points. First, one notes that fiscal deficits remained very high in



Portugal and Greece, the two European countries which witnessed the most delayed and weakest disinflation through the 1980s. While true, the Maastricht and SGP fiscal rules would appear to be an unusually blunt solution to a problem of an occasional outlier or two. Additionally, as evidenced by more than a decade of high and negative real interest

rates, both countries saw particularly weak monetary responses to the inflation events of the 1970s. The looser than average monetary policy makes it more difficult to determine loose fiscal policy's role in persistent inflation in Greece and Portugal. Second, an argument can be made that while inflation declined to 1960s levels, the ECB's definition of price stability of 2 percent inflation was not achieved. Countering this is the fact that countries running average budgets in balance or surplus fared no better in meeting the ECB standard by the time of the 1991 Maastricht Conference. It appears that factors other than fiscal policy were more important limiters of disinflation.

To more explicitly test the Maastricht and SGP fiscal criteria for the 1975-1991 period, we can divide the countries into 3 groups based on fiscal performance.³⁶ In the 3 countries averaging budgets close to balance or in surplus, inflation averaged 7.6 percent over the period. In the 5 countries with average deficits, inflation averaged 6.5 percent. In the 7 countries with deficits averaging greater than 3 percent of GDP, inflation averaged 11.4 percent. Clearly, this period provides the strongest evidence of the three for the EMU excessive deficit rule. Those countries running consistently excessive deficits experienced inflation rates averaging more than 4 percentage points higher than the two other groups. The evidence, however, does nothing to support the close to balance rule and is mixed on the choice of 3 percent of GDP as the correct level for that limit.

³⁶ For the period 1975-1991, countries were grouped as follows: *Close to Balance/Surplus*: Finland, Luxembourg; *Deficit*: Austria, Denmark, France, Germany, Sweden, UK; *Excessive Deficit*: Belgium, Greece, Ireland, Italy, Netherlands, Portugal, Spain.

Table 3: 1975-1991

Fiscal Group	n	Inflation	Growth
Close to Balance/Surplus	3	7.6	2.6
Deficit	5	6.5	2.2
Excessive Deficit	7	11.4	2.7

countries running average budgets close to balance or in surplus over the period—

Sweden, Finland, and Luxembourg—only

Luxembourg performed significantly

better than average. None of the three

ranked among the top four inflation

performers.

Just as sound finances did not guarantee strong inflation performance, poor finances did not rule out strong inflation performance. While one can see the immediate appeal of a 3 percent of

GDP deficit limit, it would appear to be an overly simplistic rule. The seven countries (eight, including the US) with average deficits exceeding 3 percent of GDP over the period included some of the best inflation performers along with the worst. Belgium and the Netherlands (and the US) had average inflation rates similar to those of the top performers in Europe, each ranking within the top four. In reference to the 3 percent rule, it should be noted that among the worst performing group, deficits over the period averaged 6.8 percent, more than double the SGP's single-year limit. Most of the group experienced some years of deficits exceeding 10 percent. Thus, even if we assume that at

Table 4 displays average inflation and growth rates over the 1975-1991 period with countries ranked by average deficits. Among

Table 4: 1975-1991 Inflation and Growth by Budget Balance; source: EC (2003)

	Balance	Inflation	Growth
Finland	3.4	8.1	2.4
Luxembourg	2.1	5.5	3.7
Sweden	-0.4	9.1	1.8
France	-1.8	7.7	2.4
Denmark	-1.9	7.4	1.6
Germany	-2.5	3.3	2.5
UK	-2.6	9.6	2
Austria	-2.8	4.3	2.5
Spain	-3.3	12.1	2.4
Netherlands	-4	4.2	2.2
Portugal	-6.4	18.5	3.4
Greece	-7.6	17.8	2.2
Belgium	-7.8	5.1	2.1
Ireland	-8.3	10	3.9
Italy	-10.2	12.2	2.6
EU-avg	-3.6	9	2.5
US	-3.8	5.6	2.9
JP	-1.7	3.9	4.1

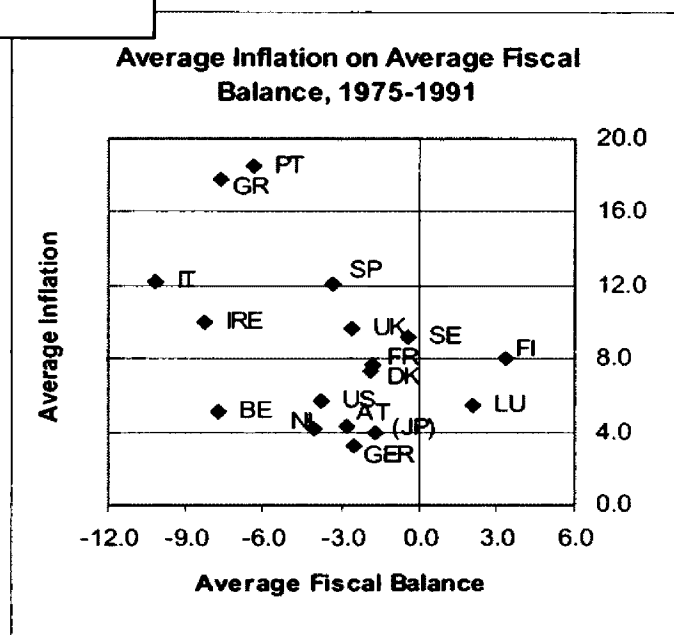
least part of the poor price performance in those countries owes to large fiscal deficits, the choice of 3 percent of GDP as the bound remains puzzling.

Debt ratios exceeding 60 percent of GDP do not appear to have been important for inflation over the 1975-1991 period.

Among the four countries with average debt ratios over the period exceeding or very close to 60 percent of GDP, average inflation was 7.9 percent, lower than the 9 percent average for the EU. Nor does evidence support the combined

importance of the deficit and debt ratios. One might predict that deficit effects in a

Chart 5



country with an already high or excessive debt ratio would be higher than deficit effects in a low debt country, all else equal. In 1970s Europe, those countries with poor deficit performance also tended to have high debt ratios. However, debt performance does not help to explain inflation performance variation among countries with similar deficit performance. Specifically, Belgium and the Netherlands maintained debt ratios considerably higher than did Greece, Portugal, and Spain and similar to those in Ireland and Italy. Yet, with similar deficit performance, the two Benelux countries maintained substantially lower inflation rates than the other nations. Examining deficit and debt ratios simultaneously does not improve our understanding of the fiscal-inflation link.³⁷

³⁷ A similar result is obtained using the 1970-1974 data, but the comparison is less conclusive due to generally low debt ratios. Among the high deficit countries, Belgium's debt ratio was considerably higher than either Ireland or Italy, but Belgium maintained one of the lowest inflation rates over the period.

Finally, we return to the concept of macroeconomic stability over the 1975-1991 period. We might expect to find higher real growth rates in countries which avoided high and excessive deficits. The results are inconclusive. Real growth in Europe over the period averaged 2.5 percent. Of the above average performers, 3 of the 4 countries ran excessive deficits on average (the US also exceeded the European growth average while running an average deficit exceeding 3 percent of GDP). Among the below average growth performers, only 4 of the 9 countries ran excessive deficits on average.

On the other hand, examining changes in growth with 1960s averages as a baseline, some correlation between fiscal balances and growth emerges consistent with the macroeconomic stability theory. Countries averaging excessive deficits lost an average 1 percentage point more growth from their 1960s average rates than did countries running only mild deficits on average. Substantial variation remains within groups, however. Plots are provided in Appendix E.

A more detailed analysis would be necessary to control for monetary policy differences and direction of causality. It still may be the case that the correlation exists because fiscal balances respond to changes in real growth, instead of the other way around. An initial attempt to account for monetary policy differences across countries is introduced in Section 4.

Based on our analysis of inflation and fiscal performance, the subperiod data present at best a weak case for a link between fiscal performance and inflation. Debt ratios—even in excess of 60 percent of GDP over many years—demonstrated no discernible effect on inflation outcomes. Based on fiscal balances, the difference in inflation performance between countries running average surpluses and those running

deficits averaging less than 3 percent is also negligible over all three periods. There is little historic basis for maintaining budgets “close to balance or in surplus” based on inflation performance from 1961-1991. The data do suggest some fall off in price performance in countries with extremely poor fiscal performance; that is, countries in which even the average deficit over many years exceeds the SGP’s single-year limit. Even so, only in the third period is the inflation premium for those countries dramatic, and the 3 percent limit appears unduly strict.

Then, there is the issue of timing. Even though in extreme cases a correlation exists between large fiscal deficits and inflation relative to the rest of Europe, the movements of the two variables do not suggest that deficits cause or even precede inflation movements. Sharp inflations from 1970-1974 were preceded by generally strong fiscal performance in the 1960s and either limited or no fiscal weakening in the early 1970s. In addition, the subsequent disinflation in the 1980s coincided with consistent fiscal laxity in most of Europe. Thus, the empirical evidence leading up to Maastricht does not reveal a systematic historic link between fiscal and inflation performance in Europe, nor does it suggest the EMU fiscal rules.

The best case for the Maastricht and SGP fiscal rules is perhaps one of nostalgia. While inflation returned to 1960s levels by 1991, real growth and unemployment never did. Strong growth, moderate inflation, and low unemployment in the 1960s were accompanied by budgets close to balance and low debt ratios. It should not prove surprising, then, that critical fingers have been pointed at fiscal policy laxity. The leading variables in the early 1970s, however, were not fiscal balances or debt ratios but instead inflation and real interest rates. Little evidence exists based either on variation across

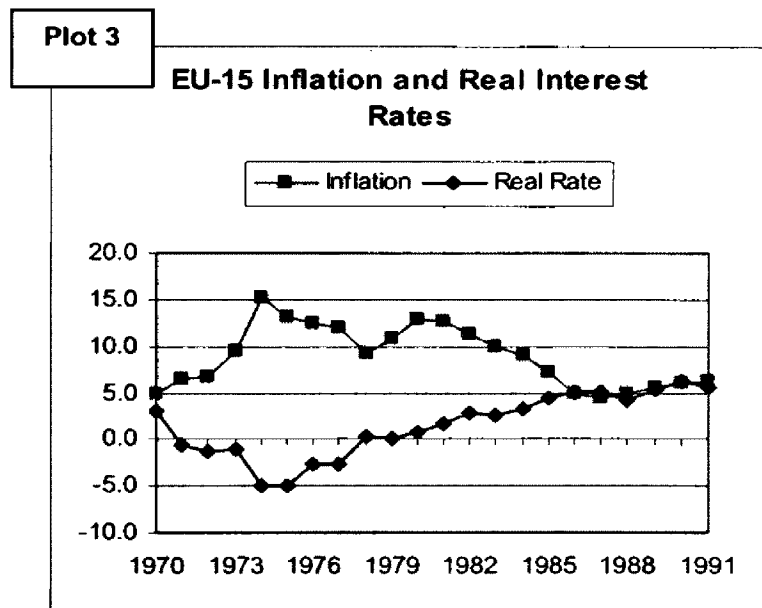
countries or timing within countries to suggest that fiscal balances or debt caused these movements in inflation or interest rates. If one agrees that the rapid rise in and persistence of inflation over this period imposed most of the macroeconomic cost in Europe, then a return path to 1960s prosperity does not go through fiscal policy. Instead of a cause of the 1970s troubles, deteriorating budgets are perhaps better seen as just another result of the troubles.

4. Accounting for Monetary Policy

Fiscal policy does not operate in a macroeconomic vacuum, especially with regard to inflation, which is widely agreed to be a monetary phenomenon. To this point, we have largely ignored differences in monetary policy across countries, but this variable is certainly important, and particularly so regarding the inflation experiences across countries.

In the early 1970s, the rapid decline of real interest rates to negative values across

Europe suggests that monetary authorities were losing control of inflation.³⁸ As Plot 3 shows, average real rates among EU countries fell from 3.1 percent in 1970 to -4.9 percent by 1974. Trends were similar in the US and Japan, though the decline was less dramatic in the US,



where real rates fell from 1.6 to -2.4 percent over the same period. Certainly, most would agree in hindsight that monetary policy did not respond nearly strongly enough to the early 1970s inflation pressures. Unlike movements in fiscal variables, real interest rates fell before the inflation peak in 1974 in all EU countries except Ireland, where rates were already significantly negative to begin the decade. Thus, loose monetary policy appears to have greater potential to explain the rapid inflation in Europe from 1970-1974 than does loose fiscal policy.

³⁸ Short-term real interest rates are calculated as nominal interest rate less present inflation rate.

After the early 1970s, when monetary policy loosened across Europe, central banks varied in the speed with which policies were tightened—as indicated by real interest rates returning to positive levels. This presents an interesting natural experiment which can deepen our analysis of fiscal policy and inflation. By grouping countries according to how quickly monetary policy responded to inflation with a tighter stance, we control—at least partially—for monetary policy’s effect on inflation over the period. We would expect countries with swifter monetary tightening to enjoy quicker disinflation and thus lower average inflation rates over the 1975-1991 period. Within these groups, we can examine more precisely whether excessive deficits hampered monetary efforts to disinflate.

Three natural groups exist in the data as shown in Table 5.³⁹ In the first group, monetary policy tightened quickly after inflation peaked in 1974-1975, and real interest rates were positive in all cases by 1978. In the second group, monetary policy tightening

Table 5: 1975-1991

Monetary Group	n	Inflation	Fiscal Balance	Balance Range
Tighten by 1978	7	5.4	-1.9	-7.8, 3.4
Tighten by 1982	6	10.1	-4.4	-10.2, -0.4
Tighten by 1988	2	18.2	-7.0	-7.6, -6.4

lagged significantly behind the first group, with interest rates returning to positive values only

by 1982. Monetary policy in the remaining two countries, Greece and Portugal, failed to return to positive interest rates until the mid to late 1980s.

As expected, average inflation rates vary significantly from group to group over the 1975-1991 period. In the seven European countries comprising the first group, inflation averaged 5.4 percent. The second group of six countries averaged 10.1 percent.

³⁹ *First group*: Austria, Belgium, Denmark, Finland, Germany, Luxembourg, Netherlands; *Second group*: France, Ireland, Italy, Spain, Sweden, UK; *Third group*: Greece, Portugal.

In the third group, inflation averaged 18.2 percent. Reactions of monetary policy appear to have had a powerful effect on inflation outcomes. Both the US and Japan would fall in the first group, and their inclusion leaves the average inflation rate essentially unchanged.

Inflation rates in the first group of countries returned to 1960s levels by 1986 without exception, and fiscal performance does not immediately appear to have affected the relative difficulty of disinflation. Given the supposed fiscal-inflation interaction, we would expect that countries with higher fiscal deficit and debt ratios would find it more difficult to disinflate. However, the members of the first group disinflated to 1960s levels with similar speed despite significantly different fiscal histories. Average deficits for the 1975-1991 period ranged from a 7.8 percent deficit in Belgium to a 3.4 percent surplus in Finland. Evidence also fails to point to a more complex “macroeconomic stability” effect of fiscal performance on country economies in the first group.

Based on the macroeconomic stability argument, monetary authorities could return inflation to target levels despite a lack of fiscal support, but the results might be higher real interest rates and lower real growth for a time. The data reveal no systematic correlation between poorer fiscal performance and either higher interest rates or lower growth across countries. Whether examining average or peak real interest rates, good fiscal performers such as Denmark and Finland have similar or higher real interest rates and similar or lower real growth rates than poor fiscal performers such as Belgium and the Netherlands. Only in Luxembourg did above average real growth seem to coincide

with good fiscal performance.⁴⁰

Among the second group of countries, real inflation rates returned to positive values on average about four years behind the first group. Unlike the first group, a return to 1960s level inflation rates was not universal. Of the six countries, only three achieved such disinflation by 1991. Fiscal performance does not seem to have systematically affected the success of disinflation. Among the three that achieved disinflation to 1960s levels, France's deficit averaged 1.8 percent, but Ireland and Spain consistently exceeded 3 percent of GDP deficit ratios and Ireland exceeded a 60 percent of GDP debt ratio over the entire 1975-1991 period. Of those countries which failed to disinflate to 1960s levels, Italy's deficit averaged 10.2 percent, the UK's deficit averaged 2.6 percent with a falling debt ratio, and Sweden's 0.4 percent deficit ranked among the best fiscal performers in Europe over the period. It should be noted that Sweden experienced large swings in budget performance however, with a range of 6.8 percent deficit to 5.2 percent surplus. Poor fiscal performance did not consistently coincide with poor disinflation performance, nor did good fiscal performance coincide with good disinflation performance. In fact, the relatively low average real interest rates in Italy and the UK over the period suggest that poor monetary policy commitment to disinflation may have played the dominant role in the failure to disinflate to 1960s levels. Sweden's prolonged recession during the late 1970s and early 1980s complicates analysis.

In Portugal and Greece, monetary policy commitment to disinflation was weaker still, with real interest rates remaining negative until 1985 and 1988, respectively, and

⁴⁰ Data necessary for calculating real interest rates for Luxembourg over the period were missing from EC 2002. The US experience supports the notion that fiscal performance did not matter much during the 1980s disinflation. US real interest rates were low and real growth rates high by European standards despite average fiscal deficits of 3.8 percent from 1975-1991.

reaching minimum rates of -18.2 and -14.4, respectively. It is not surprising that neither country achieved disinflation to 1960s levels. Given the calamitous economic situation in each country, it is perhaps no surprise that fiscal performance was poor in both cases. In Greece, average real growth from 1975-1991 had fallen 6.2 percentage points from its 1960s average, and in Portugal 2.9 percentage points. Even in these cases, however, the data provide little support for a determining role of fiscal policy. Both Greece and Portugal began the 1970s as low debt countries, and both maintained debt ratios just below the European average of 48.1 percent over the period. Furthermore, experiences in Belgium, Ireland, and the Netherlands demonstrate that similar or even higher fiscal deficits were still compatible with disinflation and modest drops in real growth. Available data point to a delayed and weak monetary response as a more likely explanation for the persistently high inflation and sharply reduced growth in Greece and Portugal.

By accounting for different monetary stances, some interesting results emerge. A swifter response from monetary policy, as indicated by a quicker return to positive real interest rates, coincided with substantially lower average inflation over the 1975-1991 period. Relative fiscal performance appears mostly unrelated to either disinflation success—as indicated by a return to 1960s level inflation rates—or the concept of macroeconomic stability. Furthermore, fiscal performance appears to correlate neither with the speed nor the magnitude of monetary policy response. Countries that failed to achieve disinflation commensurate with our standard shared the traits of slower and weaker monetary policy response but otherwise resembled successful countries in terms of fiscal performance.

A true accounting of monetary policy differences among countries would require a much more rigorous analysis. However, a cursory examination of the evidence supports neither the central banker notion nor the fiscal rules of EMU. The picture that emerges is one of strong monetary dominance. Fiscal performance plays little obvious role in either the achievement or the cost of disinflation. Given the construct of the fiscal rules and their support, we would expect to find at least some evidence that large fiscal deficit or debt ratios consistently worsen inflation results. Instead, the picture that emerges is one in which a determined monetary authority can return an economy to price stability despite deficit and debt ratios up to twice the EMU fiscal limits on *average*. And, as evidenced by the experiences of Belgium and the Netherlands, monetary authorities have achieved those results without significantly greater costs in terms of real interest rates or real growth when compared to better fiscal performers. Given this picture from historic data and the swift and strong response to inflation deviations expected under the ECB, the price stability argument for the strict fiscal rules of EMU requires serious re-examining.

5. Early Evidence from EMU

Eleven EU countries entered the Economic and Monetary Union in 1999, and Greece joined as the twelfth member in 2001. After a decade of convergence efforts, it was decided that the members' economies were similar enough to share a common monetary policy. Nominal short-term interest rates are now identical across the 11 (later 12) countries. Budget balance policy—though governed by the rules and guidelines of Maastricht and the SGP—continues to be set by national governments. Members' inflation rates also continue to partially reflect national conditions with the ECB's aim for inflation below 2 percent based on a weighted average of the 12 economies.

Although decisions about the fiscal rules were already made, the first five years of EMU data prove useful to further test the rules' importance. After all, some of the conditions argued to necessitate the fiscal rules were not in place until monetary union was achieved. With a single monetary authority adjusting interest rates primarily to average conditions, the ECB is more limited in its potential response to loose fiscal policies than a national central bank would be. Following the central banker notion, it was hoped that the Maastricht and SGP rules would keep members with excessively loose fiscal policies from placing upward pressure on average European inflation.

The majority of evidence from EMU's first 5 years does not support the fiscal rules of Maastricht on inflation grounds. In fact, the data—presented in Appendix F—highlight some of the arguments for a modification of the rules. According to EC (2003), EMU members have exceeded the 3 percent of GDP deficit limit 6 times from 1999-2003. Inflation exceeded the ECB's stated upper limit for price stability of 2 percent in

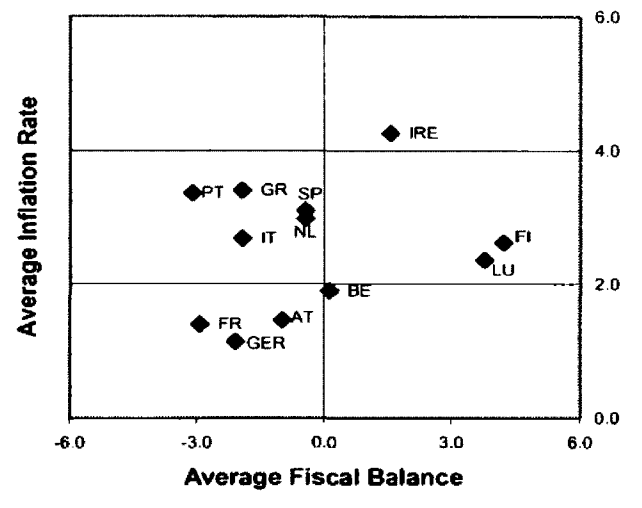
only one of those six instances. As our analysis of historical European data would predict, excessive deficits have not served as a good indicator of inflation performance.

In fact, the data exhibit a weak positive correlation—not significant at the 10 percent level—between average fiscal balances and average inflation rates over the period. All three countries averaging

significant surpluses over the period also averaged inflation rates above the ECB target of 2 percent. Of the three countries averaging budgets close to balance, two experienced average inflation rates above 2 percent. Among the six countries averaging significant deficits, three had average inflation rates above 2 percent.

Chart 6

Average Inflation and Average Fiscal Balance, 1999-2003



France and Germany were the only countries to pierce the 3 percent limit twice over the period. Each had average inflation rates well below 2 percent. Only in Portugal, which experienced a one-year deficit of 4.4 percent of GDP in 2001 with inflation at 3.8 percent the same year, does the excessive deficit rule appear to make sense on inflation grounds.

These findings under EMU are not new, and a lively literature has developed around them. Most relevant for this paper is that the link between fiscal performance and inflation performance has not noticeably strengthened with monetary union. Indeed, the results of our brief analysis indicate a continuation of the historical pattern described in this paper. If anything, the relationship between fiscal and inflation performance seems to have broken down further as indicated by the positive correlation between fiscal

balances and inflation. As the historical evidence suggests, it would appear that targeting fiscal deficits is not an effective means of safeguarding price stability under EMU.

6. Conclusions and Further Issues

The notion underlying the fiscal rules of EMU is that fiscal laxity makes price stability more difficult to achieve. None of the EU institutional authorities have made clear exactly how that notion should be interpreted. This paper argues that one popular interpretation—that fiscal laxity results in higher inflation—is not strongly supported by historic European data. The case proves especially weak under a monetary authority that responds relatively quickly to rising inflation. Preliminary evidence from EMU indicates that monetary union has not discernibly altered the findings.

European central bankers and other supporters of EMU's fiscal rules have failed to present adequate evidence for the rules' necessity in a monetary union. From 1961-1991, fiscal balances and relative debt levels account for neither the timing nor the cross-country variation of inflation performance in any systematic way. Almost without exception, inflation across European countries rose dramatically in the early seventies following balanced budgets in the 1960s and preceding significant budget deterioration in the 1970s. Furthermore, cross-country variation in the rate of inflation acceleration in the early 1970s appears independent from fiscal policy changes with a given fiscal stance compatible with a wide range of inflation outcomes.

Next, the disinflation of the late 1970s and the 1980s happened despite consistently high deficits and high and growing relative debt levels. Neither did the level of disinflation vary systematically with fiscal developments. While it is true that countries failed to reach the ECB's defined level inflation for price stability, this result held even among countries running balanced budgets or surpluses on average.

The only evidence from 1961-1991 that supports the notion that unchecked fiscal policy hampers price stability emerges under especially unusual conditions. Countries running extraordinarily high deficit levels for many years may have paid an inflation premium in certain cases. This premium was—in most cases—not dramatic and the effect was usually complicated by correspondingly loose monetary policy.

Finally, early returns from EMU do not suggest inflation in individual countries has become any more sensitive to fiscal policies under monetary union. If anything, fiscal policy outcomes are an even poorer predictor of inflation performance under the single currency.

The results here, of course, do not rule out alternate interpretations of the original notion. Implicit in the central banker notion is a paradox which its proponents could not ignore forever. If fiscal discipline were necessary for price stability, then is this not a confession by central bankers that they are not in control of long-run prices? Few modern central bankers would openly admit to such powerlessness.

And, still there exists the unshakable notion that excessively loose fiscal policies make a central banker's life mightily difficult, if not downright unbearable. A new formulation is emerging that reconciles the old notion with the growing confidence of central banks on the price-stability front. Padoa-Schioppa (2003), a member of the European Central Bank's governing council, states the new synthesis succinctly: "With lax fiscal policies, price stability does not become impossible but the cost of achieving it may rise" (para. 4). It may be that outliers like Belgium, which consistently achieved strong inflation performance despite huge deficits and debt, were after all paying the price for fiscal imbalances, just not in terms of price stability. Likewise, countries like

Finland, which had relatively weak inflation performance despite solid public finances, may have reaped benefits elsewhere in the economy. A first look at results in this area, presented in this paper under the term “macroeconomic stability,” fail to show a systematic effect of fiscal policy on real growth separate from the effects of monetary policy. Nevertheless, it certainly seems plausible that the policy mix effects are not confined to the monetary-fiscal-inflation triad. There could instead be complex trade-offs among the entire raft of macroeconomic variables, including some we do not measure well. Future research would be well served by beginning to lay out and precisely measure those potential effects.

Next, there is the tricky notion of “price stability.” In this paper, we generally viewed price stability as inflation performance relative to the rest of Europe. But, the ECB defines price stability much more precisely as close to but less than 2 percent annual inflation. Though not a primary concern of our study, the ECB’s definition of price stability—and its origins—should also be on the research agenda. Data gathered for this study raise questions about the ECB’s low target level. The strong growth and low unemployment of the 1960s occurred with an average inflation rate nearly twice that of the ECB target. Like the fiscal limits, the ECB’s inflation target has not been sufficiently supported empirically.

Finally, it should be noted that this paper does not intend to argue against fiscal responsibility in general or even against the current EMU fiscal rules. There are many potentially sound and persuasive economic arguments for some limits on fiscal deficits and debt. Given the lack of empirical support for fiscal effects on inflation, however, arguing for fiscal limits based on this relationship is counterproductive. Central bankers

and other promoters of responsible budgets would do well to better articulate arguments for which there is empirical support. Considering the current disrespect for the SGP fiscal rules among member states, the arguments for fiscal discipline may soon be put to the test. In such circumstances, an argument poorly conceived may be worse than no argument at all.

Appendix A: Annual Data Summary, 1970-1991

Sources: EC (2003), see Appendix B for details

* Calculated as Nominal Rate minus Inflation Rate

** Variables missing more than 3 observations are unreported

				Short-term	
<i>Means</i>	Fiscal			Real	Real
Country	Balance	Inflation	Debt	Int. Rate*	GDP
					Growth
Austria	-1.9	4.8	37.8	1.93	3.2
Belgium	-6.8	5.4	92.8	3.82	2.8
Denmark	-0.5	8.0	39.8	2.98	1.8
Finland	3.6	8.4	12.6	3.09	3.1
France	-1.3	7.7	**	2.02	2.9
Germany	-2.0	3.8	31.7	3.21	2.7
Greece	-5.9	16.1	39.1	**	3.0
Ireland	-7.4	10.4	83.4	0.99	4.0
Italy	-9.1	11.9	68.1	0.94	3.0
Luxembourg	2.3	5.6	10.5	**	4.0
Netherlands	-3.2	5.0	**	2.04	2.8
Portugal	-4.6	16.6	42.6	-3.61	4.0
Spain	-2.5	11.7	25.8	**	3.3
Sweden	0.5	8.8	41.8	**	2.1
UK	-2.2	9.6	55.1	1.64	2.2
EU-avg	-2.7	8.9	44.7	1.73	3.0
US	-3.3	5.7	**	1.90	2.9
JP	-1.2	5.4	**	1.69	4.5

Appendix B: Main Data Table, 1961-1991

Source: EC (2003), Statistical Annex, Spring: Government Net Lending/Borrowing (Fiscal Balance), Private Consumption Deflator (Inflation)
 1961-1969 averages calculated from published 1961-1973 averages by subtracting out 1970-1973 annual data

* Calculated as Short-term Nominal Interest Rate minus Private Consumption Deflator

		Fiscal			Short-term	
Country	Year	Balance	Inflation	Debt	Real Int. Rate*	Real GDP Growth
AUST	1961-1969	0.5	3.5			4.5
AUST	1970	1.2	3.9	19	1.7	7.1
AUST	1971	1.5	5.0	18	-0.6	5.1
AUST	1972	2.0	6.5	17	-1.3	6.2
AUST	1973	1.2	6.6	17	0.3	4.9
AUST	1974	1.2	10.0	17	-2.7	3.9
AUST	1975	-2.4	7.9	23	-2.4	-0.4
AUST	1976	-3.6	6.5	27	-1.8	4.6
AUST	1977	-2.3	5.6	29	1.9	4.9
AUST	1978	-2.7	3.9	33	2.5	-0.4
AUST	1979	-2.3	4.3	35	1.3	5.3
AUST	1980	-1.7	5.7	36	4.6	2.2
AUST	1981	-1.7	6.9	38	4.5	-0.1
AUST	1982	-3.3	5.5	40	3.3	2.1
AUST	1983	-3.8	4.0	45	1.4	2.9
AUST	1984	-2.5	5.1	47	1.5	0.4
AUST	1985	-2.4	3.5	49	2.7	2.4
AUST	1986	-3.6	1.7	54	3.6	2.1
AUST	1987	-4.2	1.2	58	3.2	1.6
AUST	1988	-3.0	1.5	59	3.1	3.4
AUST	1989	-2.8	2.6	58	4.9	4.2
AUST	1990	-2.4	3.3	57	5.2	4.7
AUST	1991	-3.0	3.5	58	5.6	3.3
	1961-1969	0.5	3.5			4.5
	1970-1974	1.4	6.4	18	-0.5	5.4
	1975-1991	-2.8	4.3	44	2.7	2.5

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
BELG	1961-1969	-2.1	3.2		1.8	4.7
BELG	1970	-2.2	2.6	65	5.5	6.2
BELG	1971	-3.2	5.3	65	0.1	3.8
BELG	1972	-4.5	5.6	64	-1.4	5.3
BELG	1973	-3.7	5.9	62	0.7	6.1
BELG	1974	-2.8	12.7	58	-2.1	4.2
BELG	1975	-5.0	12.5	60	-5.5	-1.3
BELG	1976	-5.7	7.8	60	2.5	5.7
BELG	1977	-5.7	7.2	64	0.2	0.6
BELG	1978	-6.1	4.3	67	3.0	2.8
BELG	1979	-6.9	3.9	70	7.0	2.3
BELG	1980	-8.6	6.7	79	7.6	4.4
BELG	1981	-12.5	7.4	92	8.2	-0.3
BELG	1982	-10.7	7.1	102	7.2	0.6
BELG	1983	-11.4	7.1	113	3.3	0.3
BELG	1984	-9.4	5.6	117	5.9	2.5
BELG	1985	-8.9	5.0	122	4.6	1.7
BELG	1986	-9.3	0.4	128	7.7	1.8
BELG	1987	-7.6	1.7	132	5.4	2.3
BELG	1988	-6.7	1.2	132	5.5	4.7
BELG	1989	-6.1	3.8	129	4.9	3.5
BELG	1990	-5.4	2.7	129	7.1	3.1
BELG	1991	-6.2	2.8	131	6.6	1.8
	1961-1969	-2.1	3.2		1.8	4.7
	1970-1974	-3.3	6.4	63	0.6	5.1
	1975-1991	-7.8	5.1	102	4.8	2.1
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
DENM	1961-1969	1.2	5.6		1.0	4.9
DENM	1970	4.0	7.4		1.6	2.5
DENM	1971	3.8	7.4	12	0.2	2.6
DENM	1972	3.8	9.3	11	-2.0	4.5
DENM	1973	5.1	11.5	8	-3.9	3.6
DENM	1974	3.1	14.3	6	-4.3	-1.4
DENM	1975	-1.3	11.5	7	-3.5	-1.7
DENM	1976	-0.2	11.0	11	-1.7	6.4
DENM	1977	-0.6	9.9	14	4.8	1.1
DENM	1978	-0.3	9.3	24	6.1	1.8
DENM	1979	-1.6	10.2	30	2.3	3.1
DENM	1980	-3.2	9.6	37	7.2	-0.6
DENM	1981	-6.7	12.2	48	2.7	-2.1
DENM	1982	-8.8	9.8	60	6.6	2.7
DENM	1983	-6.9	7.4	69	4.5	1.7
DENM	1984	-4.0	7.0	73	4.5	3.5
DENM	1985	-2.0	4.5	70	5.5	3.6
DENM	1986	3.3	2.8	62	6.3	4.0
DENM	1987	2.3	4.8	58	5.1	0.0
DENM	1988	1.5	4.6	60	3.7	1.2
DENM	1989	0.3	4.7	58	4.9	0.2
DENM	1990	-1.0	2.9	58	8.0	1.0
DENM	1991	-2.4	2.8	63	6.9	1.1
	1961-1969	1.2	5.6		1.0	4.9
	1970-1974	4.0	10.0	9	-1.7	2.4
	1975-1991	-1.9	7.4	47	4.3	1.6

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
FINL	1961-1969	2.2	5.0			4.5
FINL	1970	4.2	1.7	12	8.9	7.5
FINL	1971	4.4	6.7	11	1.4	2.4
FINL	1972	3.8	8.5	10	-0.7	7.7
FINL	1973	5.6	12.2	8	-2.9	7.0
FINL	1974	4.5	19.7	6	-9.3	3.2
FINL	1975	4.5	16.1	7	-4.4	1.8
FINL	1976	7.0	14.0	6	-1.6	-0.1
FINL	1977	5.4	11.3	8	0.5	0.3
FINL	1978	3.1	8.2	11	0.4	2.3
FINL	1979	2.6	8.0	11	0.5	6.8
FINL	1980	3.3	11.1	12	2.7	5.1
FINL	1981	4.4	11.7	12	1.0	2.1
FINL	1982	2.5	8.7	14	5.0	3.1
FINL	1983	0.9	8.0	16	6.2	2.7
FINL	1984	2.7	6.9	16	8.9	3.4
FINL	1985	2.8	5.5	16	7.3	3.1
FINL	1986	3.3	2.8	17	8.9	2.5
FINL	1987	1.0	3.1	18	6.9	4.2
FINL	1988	4.0	4.8	17	5.2	4.7
FINL	1989	6.2	5.3	15	7.3	5.1
FINL	1990	5.3	5.5	14	8.5	0.0
FINL	1991	-1.5	5.9	23	7.2	-6.3
	1961-1969	2.2	5.0			4.5
	1970-1974	4.5	9.8	9	-0.5	5.6
	1975-1991	3.4	8.1	14	4.1	2.4
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
FRAN	1961-1969	0.3	4.0		0.9	5.5
FRAN	1970	0.9	5.0		3.6	5.7
FRAN	1971	0.6	6.0		0.0	4.8
FRAN	1972	0.6	6.3		-1.0	4.4
FRAN	1973	0.6	7.4		1.9	5.4
FRAN	1974	0.3	14.8		-1.8	3.1
FRAN	1975	-2.3	11.8		-4.2	-0.3
FRAN	1976	-0.7	9.9		-1.2	4.2
FRAN	1977	-0.8	9.4	20	-0.3	3.2
FRAN	1978	-2.0	9.1	21	-1.3	3.4
FRAN	1979	-0.8	10.5	21	-0.8	3.3
FRAN	1980	0.0	13.0	20	-1.0	1.6
FRAN	1981	-1.9	13.0	22	2.3	1.2
FRAN	1982	-2.7	11.6	26	3.0	2.6
FRAN	1983	-3.1	9.6	27	2.9	1.5
FRAN	1984	-2.7	7.8	29	3.9	1.6
FRAN	1985	-2.8	5.8	31	4.2	1.5
FRAN	1986	-2.7	2.6	31	5.1	2.4
FRAN	1987	-1.9	3.2	33	5.1	2.5
FRAN	1988	-1.6	2.8	33	5.1	4.6
FRAN	1989	-1.2	3.8	34	5.6	4.2
FRAN	1990	-1.5	3.0	35	7.3	2.6
FRAN	1991	-2.0	3.5	36	6.1	1.0
	1961-1969	0.3	4.0		0.9	5.5
	1970-1974	0.6	7.9		0.5	4.7
	1975-1991	-1.8	7.7	28	2.5	2.4

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
GERM	1961-1969	0.5	1.6		3.0	4.3
GERM	1970	0.2	3.5	18	5.9	5.0
GERM	1971	-0.2	5.1	18	2.0	3.1
GERM	1972	-0.5	5.6	19	0.1	4.3
GERM	1973	1.2	6.5	18	5.7	4.8
GERM	1974	-1.3	7.1	19	2.7	0.2
GERM	1975	-5.6	6.0	24	-1.1	-1.3
GERM	1976	-3.4	4.2	26	0.1	5.3
GERM	1977	-2.4	3.3	27	1.0	2.8
GERM	1978	-2.4	2.6	28	1.1	3.0
GERM	1979	-2.6	4.2	29	2.7	4.2
GERM	1980	-2.9	5.8	31	3.7	1.0
GERM	1981	-3.7	6.2	35	6.2	0.1
GERM	1982	-3.3	5.1	38	3.7	-0.9
GERM	1983	-2.6	3.2	39	2.6	1.8
GERM	1984	-1.9	2.5	40	3.5	2.8
GERM	1985	-1.2	1.8	41	3.6	2.0
GERM	1986	-1.3	-0.6	41	5.2	2.3
GERM	1987	-1.9	0.5	42	3.5	1.5
GERM	1988	-2.2	1.3	42	3.0	3.7
GERM	1989	0.1	2.9	41	4.2	3.6
GERM	1990	-2.1	2.7	42	5.7	5.7
GERM	1991	-2.9	3.7	40	5.5	5.0
	1961-1969	0.5	1.6		3.0	4.3
	1970-1974	-0.1	5.6	18	3.3	3.5
	1975-1991	-2.5	3.3	36	3.2	2.5
Country	Year	Balance	Inflation	Debt	Real Rate*	Growth
GREE	1961-1969	0.6	2.2			8.4
GREE	1970	0.7	3.4	20		8.9
GREE	1971	0.1	2.9	20		7.8
GREE	1972	0.0	4.4	21		10.2
GREE	1973	-0.1	16.1	18	-6.8	8.1
GREE	1974	-1.3	24.9	23	-14.4	-6.4
GREE	1975	-2.9	12.8	20	-3.4	6.4
GREE	1976	-1.7	14.8	20	-4.6	6.9
GREE	1977	-2.5	12.8	20	-3.3	2.9
GREE	1978	-2.9	13.2	26	-3.2	7.2
GREE	1979	-2.4	16.2	25	-5.0	3.3
GREE	1980	-2.6	22.5	25	-6.1	0.7
GREE	1981	-9.0	23.2	30	-6.4	-1.6
GREE	1982	-6.8	21.1	34	-2.2	-1.1
GREE	1983	-7.5	19.4	39	-2.8	-1.1
GREE	1984	-8.3	19.3	46	-3.6	2.0
GREE	1985	-11.6	19.6	54	-2.6	2.5
GREE	1986	-9.4	22.4	56	-2.6	0.5
GREE	1987	-9.1	17.2	63	-2.3	-2.3
GREE	1988	-11.4	15.1	68	0.8	4.3
GREE	1989	-14.2	13.6	72	5.1	3.8
GREE	1990	-15.9	19.8	80	0.1	0.0
GREE	1991	-11.4	19.7	82	3.0	3.1
	1961-1969	0.6	2.2			8.4
	1970-1974	-0.1	10.3	20	-10.6	5.7
	1975-1991	-7.6	17.8	45	-2.3	2.2

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
IREL	1961-1969	-3.3	4.3			4.4
IREL	1970	-3.9	12.4	54		2.7
IREL	1971	-3.8	9.4	51	-2.9	3.5
IREL	1972	-3.8	9.7	48	-2.6	6.5
IREL	1973	-4.2	11.6	45	0.6	4.7
IREL	1974	-7.5	15.7	56	-1.1	4.3
IREL	1975	-11.5	18.0	64	-7.1	5.7
IREL	1976	-7.8	20.1	69	-8.4	1.3
IREL	1977	-7.0	14.2	65	-5.8	8.1
IREL	1978	-8.9	8.2	68	1.7	7.1
IREL	1979	-10.5	15.1	74	0.9	3.1
IREL	1980	-11.6	18.6	75	-2.4	3.1
IREL	1981	-12.2	19.6	81	-2.9	3.3
IREL	1982	-12.6	14.9	91	2.6	2.3
IREL	1983	-10.7	9.5	102	4.5	-0.2
IREL	1984	-8.9	7.3	107	5.9	4.3
IREL	1985	-10.2	5.1	110	6.9	3.1
IREL	1986	-10.1	3.7	122	8.7	0.3
IREL	1987	-8.1	2.4	123	8.7	4.7
IREL	1988	-4.2	4.0	118	4.1	4.3
IREL	1989	-1.7	4.0	108	5.8	6.2
IREL	1990	-2.2	2.1	102	9.3	7.6
IREL	1991	-2.3	2.7	103	7.7	1.9
	1961-1969	-3.3	4.3			4.4
	1970-1974	-4.6	11.8	51	-1.5	4.3
	1975-1991	-8.3	10.0	93	2.4	3.9
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
ITAL	1961-1969	-2.1	3.6		-0.1	5.8
ITAL	1970	-3.3	5.0	38	0.3	5.3
ITAL	1971	-4.8	5.3	43	0.4	1.9
ITAL	1972	-7.0	6.2	49	-1.0	3.2
ITAL	1973	-6.5	14.5	51	-7.5	6.5
ITAL	1974	-6.4	21.6	51	-6.7	5.3
ITAL	1975	-10.5	15.9	57	-5.5	-2.0
ITAL	1976	-8.0	18.1	56	-2.1	6.5
ITAL	1977	-7.1	16.9	56	-2.9	2.4
ITAL	1978	-8.7	12.5	62	-1.0	3.7
ITAL	1979	-8.4	15.8	61	-3.8	5.5
ITAL	1980	-8.7	20.8	58	-3.9	3.5
ITAL	1981	-11.5	18.0	60	1.3	0.8
ITAL	1982	-11.3	17.0	65	2.9	0.6
ITAL	1983	-10.6	14.9	70	3.4	1.2
ITAL	1984	-11.6	11.6	75	5.7	2.8
ITAL	1985	-12.5	9.1	82	5.9	3.0
ITAL	1986	-11.6	6.4	86	6.4	2.5
ITAL	1987	-11.0	5.2	90	6.2	3.0
ITAL	1988	-10.7	5.9	93	5.4	3.9
ITAL	1989	-9.8	6.7	95	6.0	2.9
ITAL	1990	-11.0	6.4	97	5.9	2.0
ITAL	1991	-10.0	7.0	101	5.2	1.4
	1961-1969	-2.1	3.6		-0.1	5.8
	1970-1974	-5.6	10.5	46	-2.9	4.4
	1975-1991	-10.2	12.2	74	2.1	2.6

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
LUXE	1961-1969	1.5	2.2			3.6
LUXE	1970	2.8	4.3	19		1.7
LUXE	1971	2.2	4.7	19		2.7
LUXE	1972	2.0	5.1	17		6.6
LUXE	1973	3.3	4.9	14		8.3
LUXE	1974	4.6	10.0	11		4.2
LUXE	1975	1.0	10.2	12		-6.6
LUXE	1976	1.8	9.3	11		2.5
LUXE	1977	2.9	5.7	11		1.6
LUXE	1978	4.4	3.4	10		4.1
LUXE	1979	0.6	4.9	10		2.3
LUXE	1980	-0.4	7.5	9		0.8
LUXE	1981	-3.1	8.6	10		-0.6
LUXE	1982	-1.0	10.6	10		1.1
LUXE	1983	2.0	8.3	10		3.0
LUXE	1984	3.2	6.5	10		6.2
LUXE	1985	6.3	4.3	10		2.9
LUXE	1986	4.4	0.3	9		10.0
LUXE	1987	2.8	0.9	8		4.0
LUXE	1988		2.3	7		8.5
LUXE	1989		3.2	5		9.8
LUXE	1990	4.7	3.6	4		5.3
LUXE	1991	1.8	3.4	4		8.6
	1961-1969	1.5	2.2			3.6
	1970-1974	3.0	5.8	16		4.7
	1975-1991	2.1	5.5	9		3.7
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
NETH	1961-1969	-0.8	3.8		-0.2	4.9
NETH	1970	-1.1	4.4		1.8	5.8
NETH	1971	-1.0	7.7		-3.2	4.5
NETH	1972	-0.4	8.0		-5.3	3.1
NETH	1973	0.7	9.4		-1.9	5.0
NETH	1974	-0.2	9.5		0.9	4.1
NETH	1975	-2.7	10.0	41	-4.6	0.2
NETH	1976	-2.5	9.0	41	-1.6	4.8
NETH	1977	-0.8	6.1	40	-1.3	2.3
NETH	1978	-2.2	3.8	41	3.2	2.4
NETH	1979	-2.9	4.9	43	4.7	2.2
NETH	1980	-4.1	7.4	46	3.2	1.2
NETH	1981	-5.2	7.1	50	4.7	-0.5
NETH	1982	-6.4	5.5	55	2.7	-1.2
NETH	1983	-5.6	3.7	61	2.0	1.7
NETH	1984	-5.3	2.9	66	3.2	3.3
NETH	1985	-3.5	3.0	70	3.3	3.1
NETH	1986	-4.9	0.2	72	5.5	2.7
NETH	1987	-5.7	0.2	75	5.2	1.4
NETH	1988	-4.4	0.9	77	3.9	3.0
NETH	1989	-4.6	1.4	77	6.0	5.0
NETH	1990	-4.9	2.2	77	6.5	4.1
NETH	1991	-2.8	3.3	77	6.0	2.5
	1961-1969	-0.8	3.8		-0.2	4.9
	1970-1974	-0.4	7.8		-1.5	4.5
	1975-1991	-4.0	4.2	59	3.1	2.2

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
PORT	1961-1969	0.9	2.8			6.3
PORT	1970	2.9	3.2		0.8	7.6
PORT	1971	2.1	7.0		-2.7	6.6
PORT	1972	1.0	6.3		-1.9	8.0
PORT	1973	1.7	8.9	15	-4.5	11.2
PORT	1974	-1.0	23.5	15	-18.2	1.1
PORT	1975	-4.0	16.0	22	-9.2	-4.3
PORT	1976	-5.4	18.1	27	-9.7	6.9
PORT	1977	-4.0	27.3	29	-16.2	5.5
PORT	1978	-6.0	21.3	32	-5.8	2.8
PORT	1979	-5.6	25.2	36	-9.1	5.6
PORT	1980	-8.4	21.6	32	-5.3	4.6
PORT	1981	-12.4	20.2	41	-4.2	1.6
PORT	1982	-8.3	20.3	44	-3.5	2.1
PORT	1983	-6.7	25.8	49	-4.9	-0.2
PORT	1984	-10.2	28.5	54	-6.0	-1.9
PORT	1985	-10.1	19.4	62	1.6	2.8
PORT	1986	-5.7	13.8	60	1.8	4.1
PORT	1987	-5.3	9.9	58	4.0	6.4
PORT	1988	-3.4	11.5	58	1.5	7.5
PORT	1989	-2.3	12.8	56	0.9	6.4
PORT	1990	-4.9	11.6	58	5.3	4.0
PORT	1991	-5.8	11.8	61	5.9	4.4
	1961-1969	0.9	2.8			6.3
	1970-1974	1.3	9.8	15	-5.3	6.9
	1975-1991	-6.4	18.5	46	-3.1	3.4
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
SPAI	1961-1969		5.7			7.7
SPAI	1970	0.6	6.1	15		4.2
SPAI	1971	-0.5	7.7	16		4.6
SPAI	1972	0.2	7.7	14		8.1
SPAI	1973	1.1	11.3	13		7.8
SPAI	1974	0.2	17.7	12		5.6
SPAI	1975	0.0	15.5	12		0.5
SPAI	1976	-0.3	16.4	12		3.3
SPAI	1977	-0.6	23.7	13	-8.2	2.8
SPAI	1978	-1.7	19.1	13	-1.5	1.5
SPAI	1979	-1.6	16.5	15	-1.0	0.0
SPAI	1980	-2.5	15.7	17	0.8	1.3
SPAI	1981	-3.7	14.1	21	2.1	-0.1
SPAI	1982	-5.4	14.4	26	1.9	1.2
SPAI	1983	-4.6	12.3	31	7.8	1.8
SPAI	1984	-5.2	10.6	37	4.3	1.8
SPAI	1985	-6.2	8.1	42	4.1	2.3
SPAI	1986	-5.5	9.3	44	2.4	3.3
SPAI	1987	-3.7	5.5	44	10.3	5.5
SPAI	1988	-3.3	4.8	40	6.8	5.1
SPAI	1989	-3.5	6.7	42	8.3	4.8
SPAI	1990	-4.2	6.6	44	8.6	3.8
SPAI	1991	-4.3	6.4	44	6.8	2.5
	1961-1969		5.7			7.7
	1970-1974	0.3	10.1	14		6.1
	1975-1991	-3.3	12.1	29	3.6	2.4

Country	Year	Balance	Inflation	Debt	Real Rate*	Growth
SWED	1961-1969		4.0			4.4
SWED	1970	4.3	5.0	27	2.4	6.5
SWED	1971	5.0	7.6	28	-0.4	0.9
SWED	1972	4.3	6.4	28	0.9	2.3
SWED	1973	3.9	7.6	27	-0.2	4.0
SWED	1974	1.9	10.3	27	-2.5	3.2
SWED	1975	2.6	10.9	27	-2.1	2.6
SWED	1976	4.4	11.0	25	-1.7	1.1
SWED	1977	1.6	10.8	27	-1.1	-1.6
SWED	1978	-0.5	11.6	31	-1.5	1.8
SWED	1979	-2.8	7.9	36	2.6	3.8
SWED	1980	-3.9	12.4	40	-0.7	1.7
SWED	1981	-5.1	12.1	48	1.4	-0.2
SWED	1982	-6.8	10.2	58	3.1	1.2
SWED	1983	-4.9	11.3	62	0.1	1.9
SWED	1984	-2.9	7.6	63	4.3	4.3
SWED	1985	-3.7	6.9	62	7.3	2.2
SWED	1986	-1.2	4.6	62	5.2	2.7
SWED	1987	4.1	5.2	55	4.5	3.3
SWED	1988	3.4	5.9	49	4.3	2.6
SWED	1989	5.2	6.9	44	4.7	2.7
SWED	1990	4.0	9.7	42	4.1	1.1
SWED	1991	-1.1	10.5	51	1.3	-1.1
	1961-1969		4.0			4.4
	1970-1974	3.9	7.4	27	0.0	3.4
	1975-1991	-0.4	9.1	46	2.1	1.8
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
UK	1961-1969	-0.5	3.6		2.5	3.1
UK	1970	3.0	6.0	79	2.1	2.3
UK	1971	1.3	8.7	75	-2.5	2.1
UK	1972	-1.3	6.5	70	0.3	3.6
UK	1973	-2.7	8.5	65	3.3	7.2
UK	1974	-3.8	17.2	65	-3.8	-1.6
UK	1975	-4.5	23.2	61	-12.6	-0.6
UK	1976	-4.9	15.7	61	-4.1	2.8
UK	1977	-3.2	14.7	60	-6.7	2.3
UK	1978	-4.4	9.5	57	-0.1	3.3
UK	1979	-3.3	13.7	54	0.2	2.6
UK	1980	-3.4	16.2	53	0.6	-2.1
UK	1981	-2.7	10.9	54	3.2	-1.5
UK	1982	-2.5	8.4	52	3.8	2.0
UK	1983	-3.4	5.1	53	5.0	3.6
UK	1984	-3.9	5.1	55	4.9	2.5
UK	1985	-2.9	5.3	53	6.9	3.6
UK	1986	-2.5	4.2	51	6.7	3.9
UK	1987	-1.6	4.4	49	5.3	4.5
UK	1988	0.7	5.2	42	5.1	5.2
UK	1989	1.0	6.3	37	7.6	2.2
UK	1990	-0.9	7.5	34	7.3	0.8
UK	1991	-2.3	7.9	34	3.6	-1.4
	1961-1969	-0.5	3.6		2.5	3.1
	1970-1974	-0.7	9.4	71	-0.1	2.7
	1975-1991	-2.6	9.6	50	2.2	2.0

Country	Year	Balance	Inflation	Debt	Real Rate	Growth
EU-15	1961-1969	-0.1	3.5		1.3	5.0
EU-15	1970	1.0	4.9	33	3.1	5.3
EU-15	1971	0.5	6.4	31	-0.7	3.8
EU-15	1972	0.0	6.8	31	-1.3	5.6
EU-15	1973	0.5	9.5	28	-1.2	6.3
EU-15	1974	-0.6	15.3	28	-4.9	2.2
EU-15	1975	-3.0	13.2	31	-5.0	-0.1
EU-15	1976	-2.1	12.4	32	-2.8	4.1
EU-15	1977	-1.8	11.9	32	-2.7	2.6
EU-15	1978	-2.8	9.3	35	0.3	3.1
EU-15	1979	-3.2	10.8	37	0.2	3.6
EU-15	1980	-3.9	13.0	38	0.8	1.9
EU-15	1981	-5.8	12.7	43	1.7	0.1
EU-15	1982	-5.8	11.3	48	2.9	1.2
EU-15	1983	-5.3	10.0	52	2.6	1.5
EU-15	1984	-4.7	9.0	56	3.4	2.6
EU-15	1985	-4.6	7.1	58	4.4	2.7
EU-15	1986	-3.8	5.0	60	5.1	3.0
EU-15	1987	-3.3	4.4	60	5.1	2.8
EU-15	1988	-3.0	4.8	60	4.1	4.4
EU-15	1989	-2.4	5.6	58	5.4	4.3
EU-15	1990	-2.8	6.0	58	6.4	3.1
EU-15	1991	-3.7	6.3	60	5.5	1.9
	1961-1969	-0.1	3.5		1.3	5.0
	1970-1974	0.3	8.6	30.2	-1.0	4.6
	1975-1991	-3.6	9.0	48.1	2.2	2.5
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
US	1961-1969	-1.2	2.2		1.9	4.7
US	1970	-2.0	4.7		1.6	0.2
US	1971	-2.8	4.3		0.0	3.4
US	1972	-1.3	3.5		0.7	5.5
US	1973	-0.2	5.4		1.8	5.9
US	1974	-1.0	10.3		-2.4	-0.6
US	1975	-5.2	8.2		-2.4	-0.3
US	1976	-3.3	5.5		-0.5	5.6
US	1977	-2.2	6.6		-1.3	4.7
US	1978	-1.3	7.1		0.3	5.6
US	1979	-0.9	8.9		1.2	3.2
US	1980	-2.6	10.8		0.8	-0.2
US	1981	-2.2	8.8		5.2	2.5
US	1982	-4.9	5.7		4.9	-2.1
US	1983	-5.6	4.3		4.4	4.3
US	1984	-4.8	3.7		5.8	7.3
US	1985	-5.1	3.5		4.0	3.8
US	1986	-5.3	2.4		3.6	3.4
US	1987	-4.4	3.8		2.1	3.4
US	1988	-3.7	3.9		3.0	4.2
US	1989	-3.3	4.4		4.0	3.5
US	1990	-4.4	4.6		3.2	1.7
US	1991	-5.0	3.8		1.7	-0.5
	1961-1969	-1.2	2.2		1.9	4.7
	1970-1974	-1.5	5.6		0.3	2.9
	1975-1991	-3.8	5.6		2.4	2.9

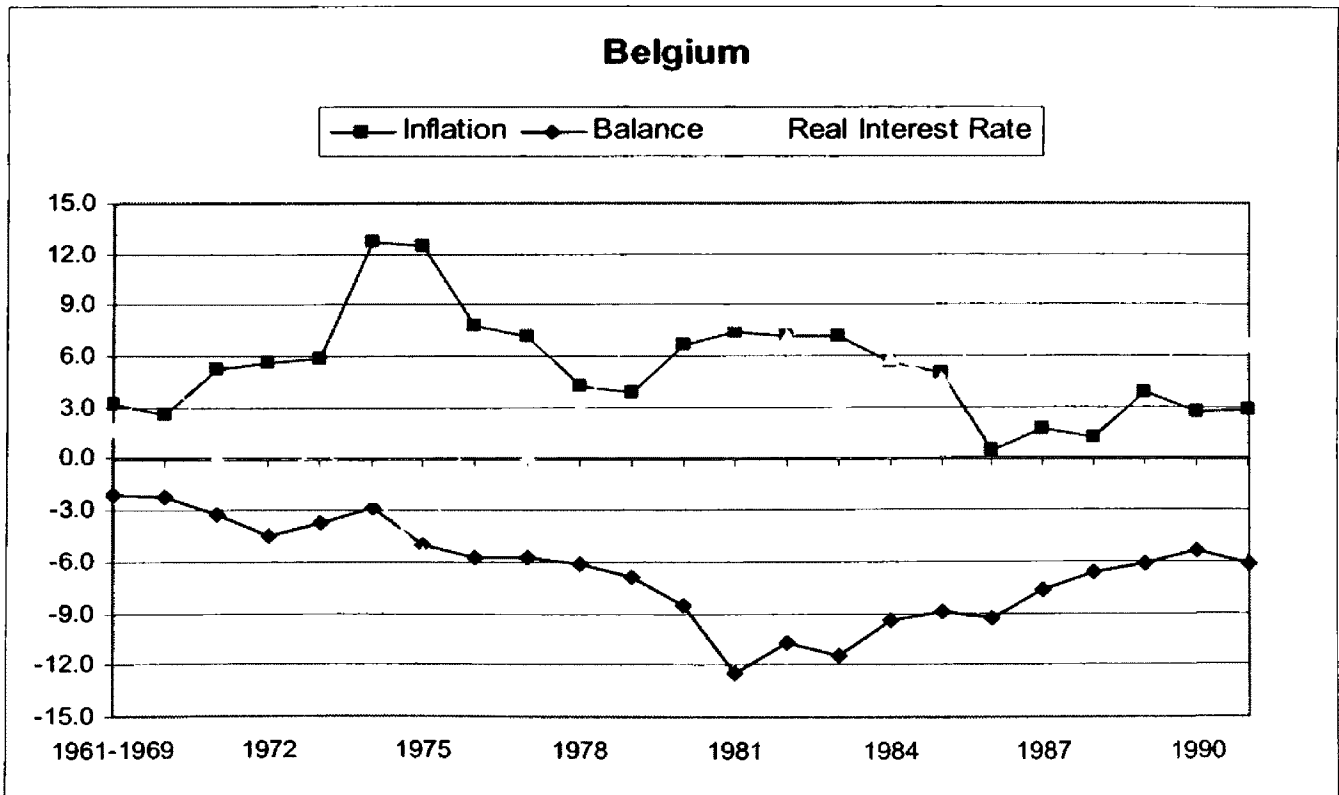
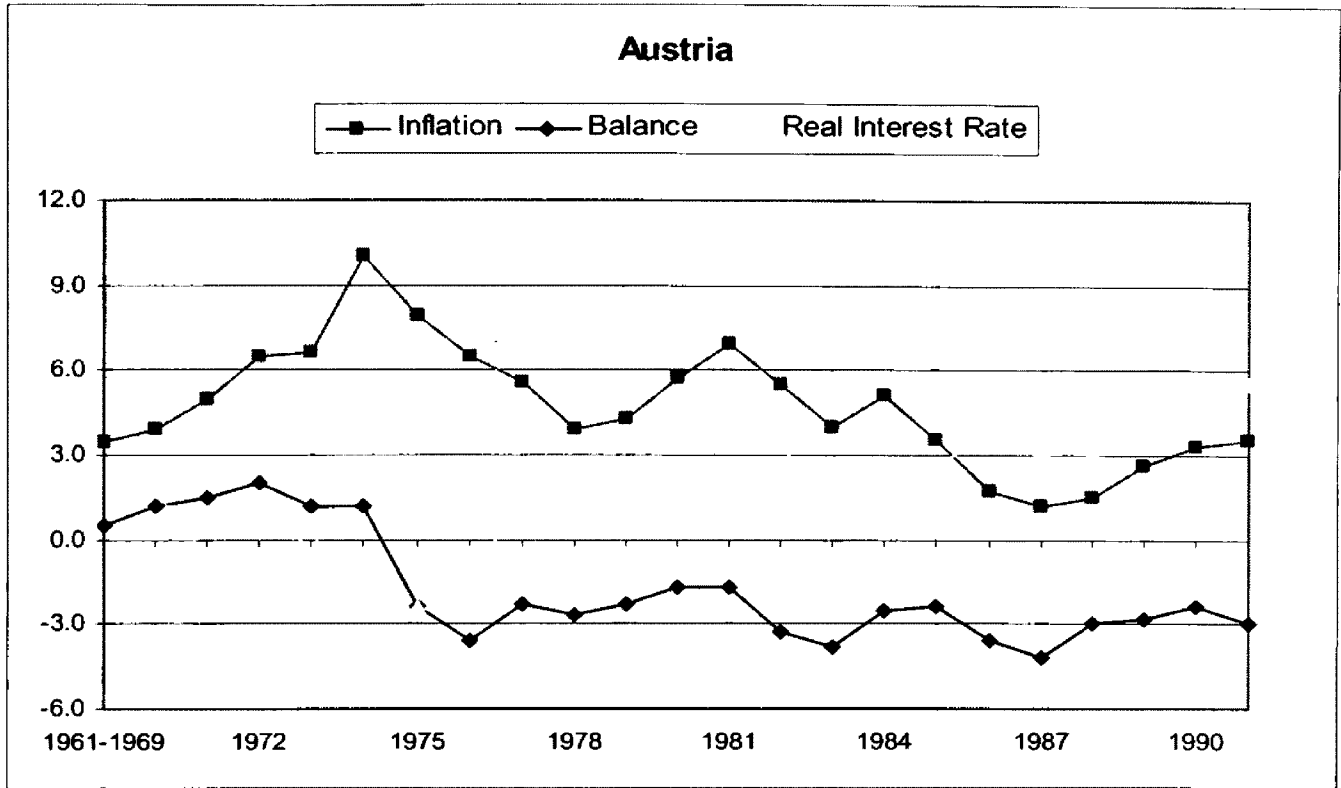
Country	Year	Balance	Inflation	Debt	Real Rate	Growth
JP	1961-1969		5.4			10.1
JP	1970	1.6	7.2		1.1	10.3
JP	1971	1.1	6.9		-0.4	4.4
JP	1972	-0.1	5.9		-0.7	8.4
JP	1973	0.5	11.1		-2.8	8.0
JP	1974	0.4	21.0		-6.3	-1.2
JP	1975	-2.7	11.3		-1.2	3.1
JP	1976	-3.6	9.8		-2.5	4.0
JP	1977	-3.8	7.5		-1.1	4.4
JP	1978	-5.4	4.6		0.5	5.3
JP	1979	-4.7	3.6		2.3	5.5
JP	1980	-4.3	7.5		3.2	2.8
JP	1981	-3.8	4.9		2.5	2.8
JP	1982	-3.5	2.8		4.1	3.2
JP	1983	-3.6	2.3		4.2	2.3
JP	1984	-2.0	2.7		3.6	3.8
JP	1985	-0.8	1.8		4.7	4.6
JP	1986	-0.9	0.7		4.3	2.9
JP	1987	0.5	0.4		3.5	4.4
JP	1988	1.5	0.6		3.4	6.5
JP	1989	2.4	2.1		3.3	5.2
JP	1990	2.8	2.6		5.2	5.2
JP	1991	2.8	1.2		6.2	3.3
	1961-1969		5.4			10.1
	1970-1974	0.7	10.4		-1.8	6.0
	1975-1991	-1.7	3.9		2.7	4.1

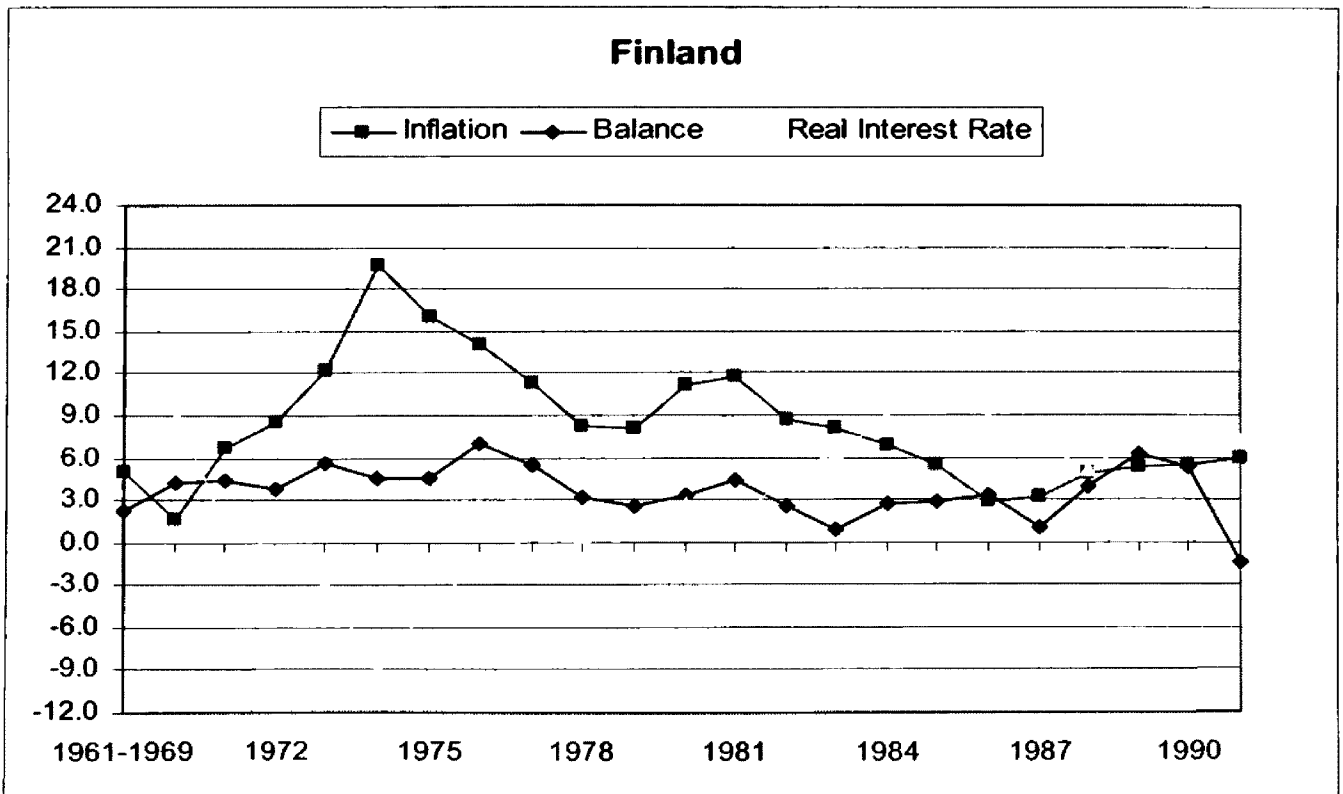
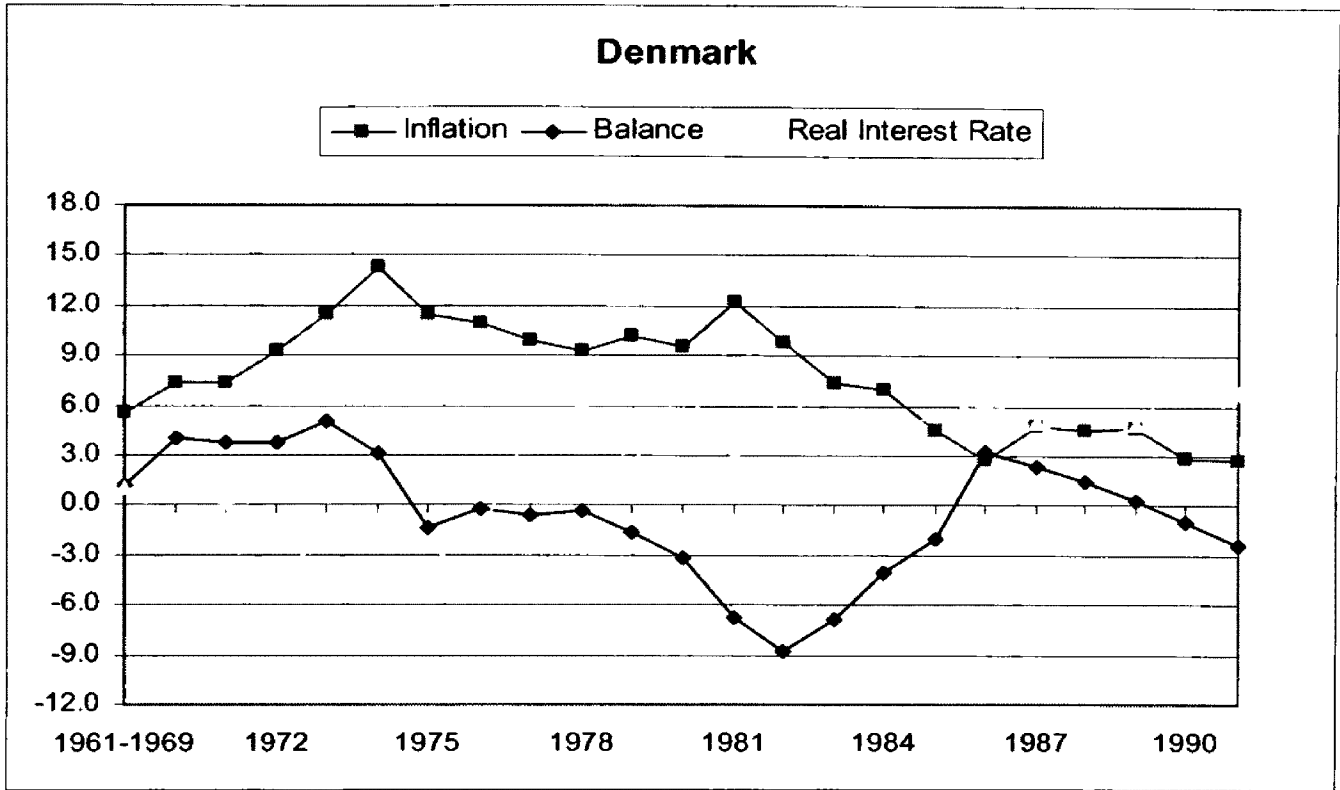
Appendix C: 1970-1991 Performance with Respect to Selected EMU Fiscal Criteria

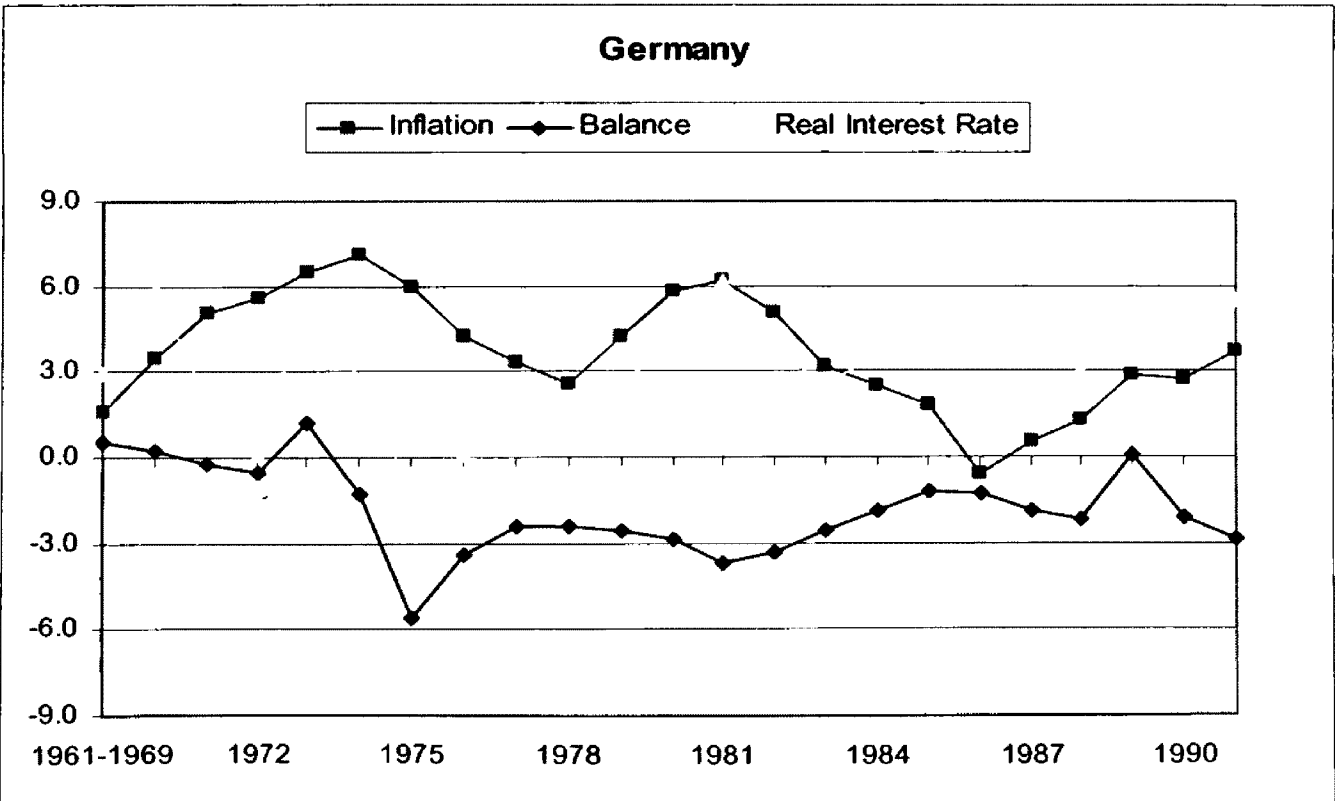
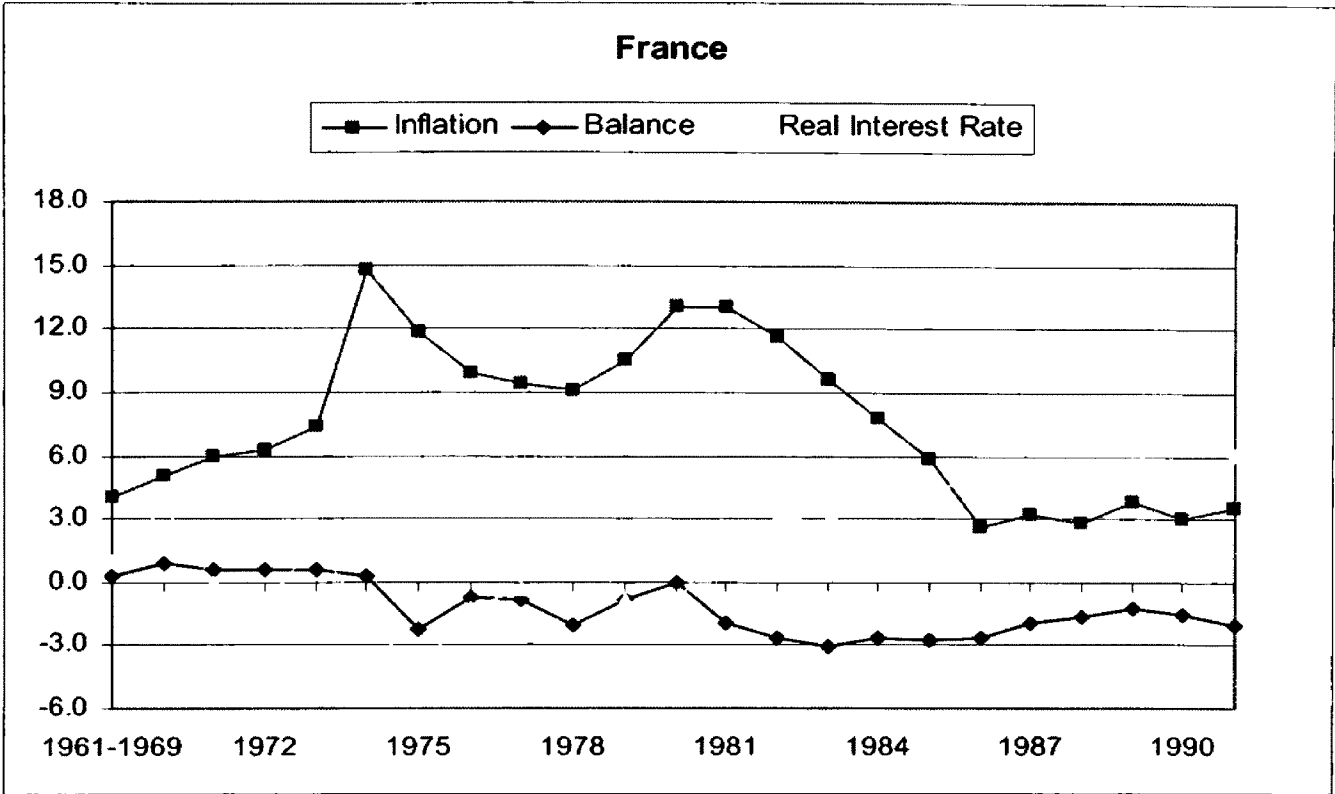
Sources: EC (2003), see Appendix B for details

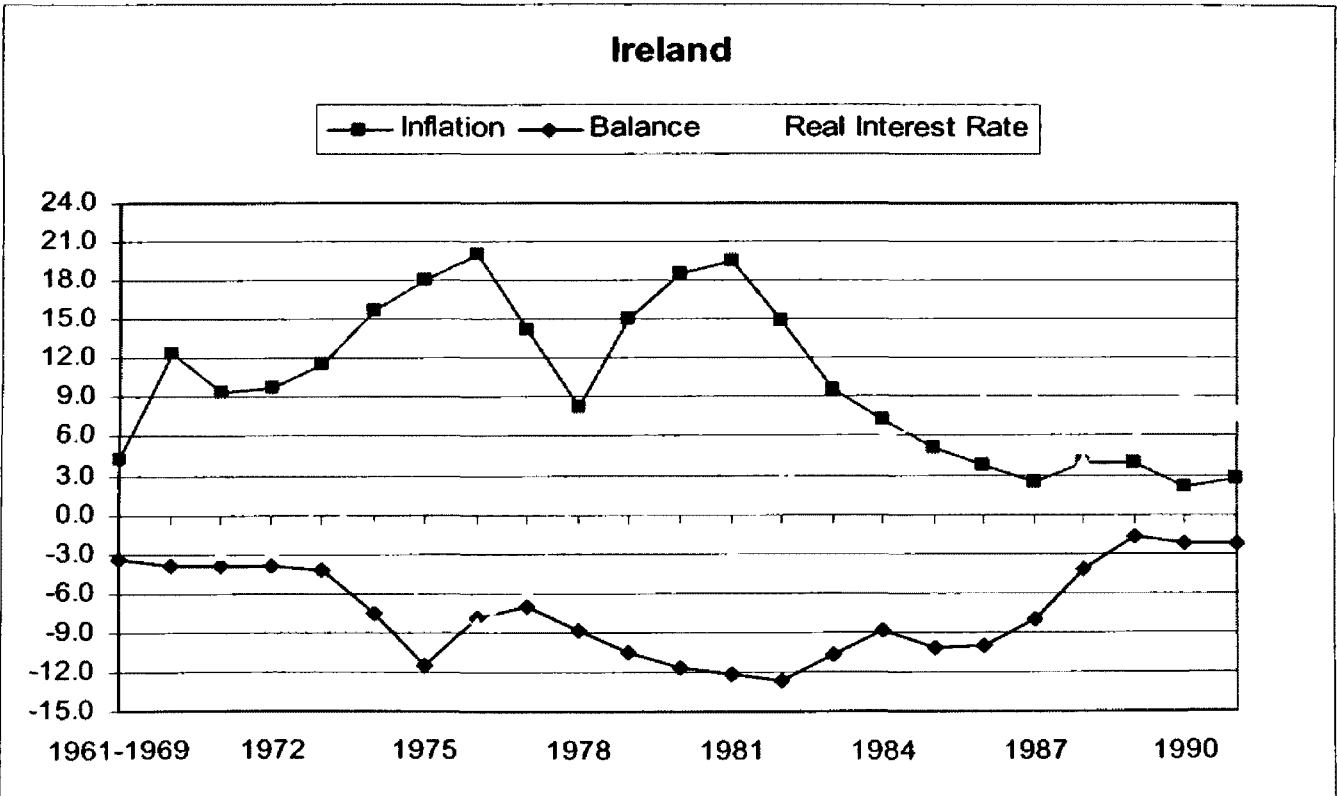
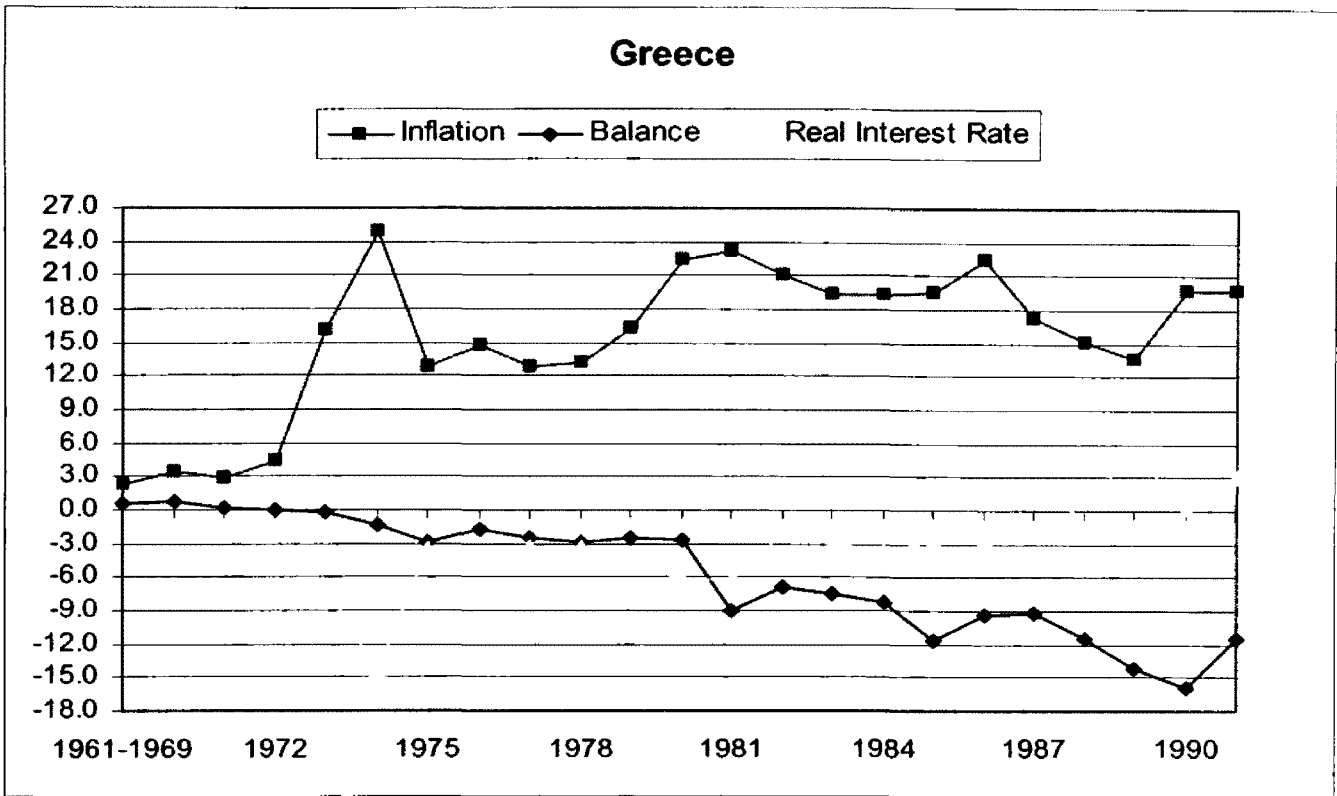
	# years deficit ratio	# years debt ratio	Avg	Avg	Avg
Country	exceeded 3% GDP	exceeded 60% GDP	Inflation	Balance	Real Rate
Finland	0	0	8.4	3.6	3.09
France	1	0	7.7	-1.3	2.02
Luxembourg	1	0	5.6	2.3	**
Germany	4	0	3.8	-2.0	3.21
Denmark	5	7	8.0	-0.5	2.98
Sweden	5	4	8.8	0.5	**
Austria	7	0	4.8	-1.9	1.93
UK	9	7	9.6	-2.2	1.64
Greece	11	5	16.1	-5.9	**
Netherlands	11	9	5.0	-3.2	2.04
Spain	11	0	11.7	-2.5	**
Portugal	16	3	16.6	-4.6	-3.61
Ireland	19	17	10.4	-7.4	0.99
Belgium	20	20	5.4	-6.8	3.82
Italy	22	13	11.9	-9.1	0.94
EU-avg		5.7			1.7
US	11	**	5.7	-3.3	1.90
JP	8	**	5.4	-1.2	1.69

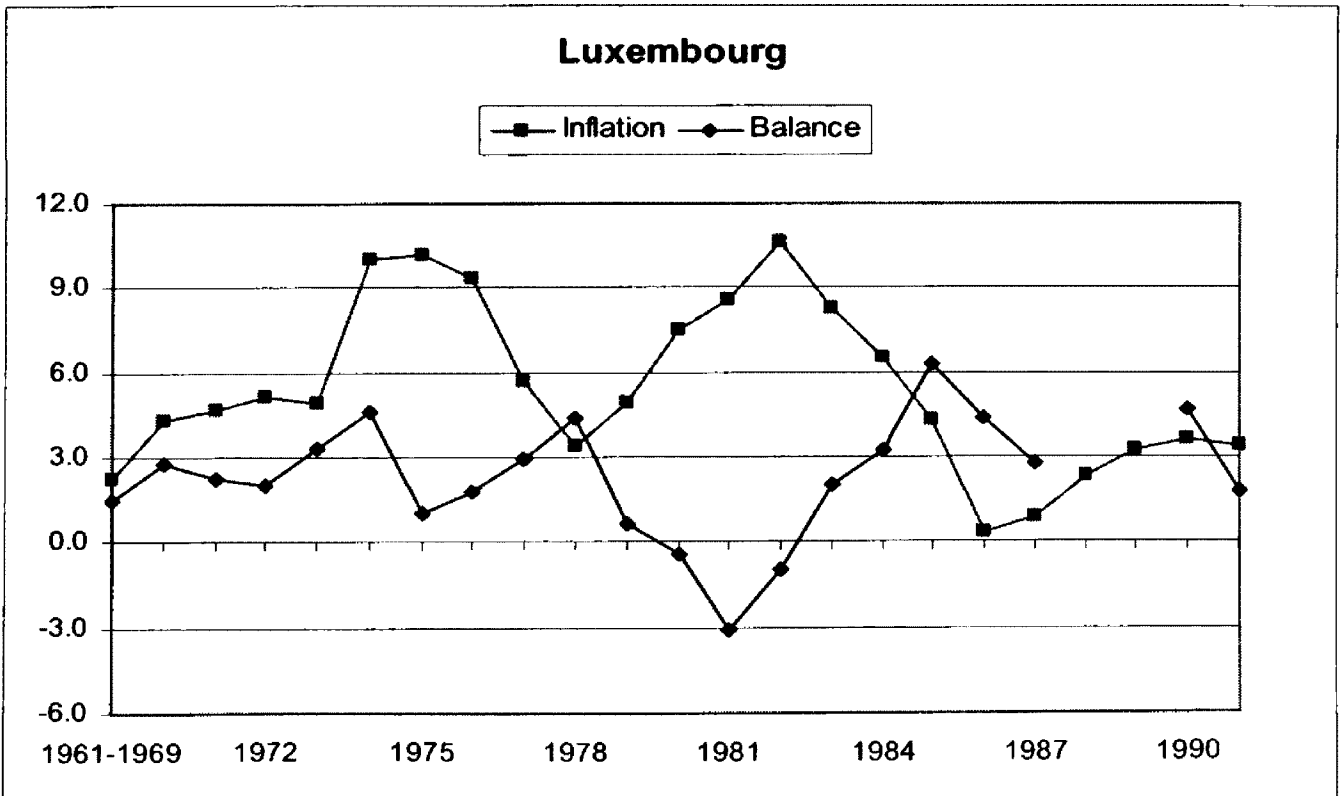
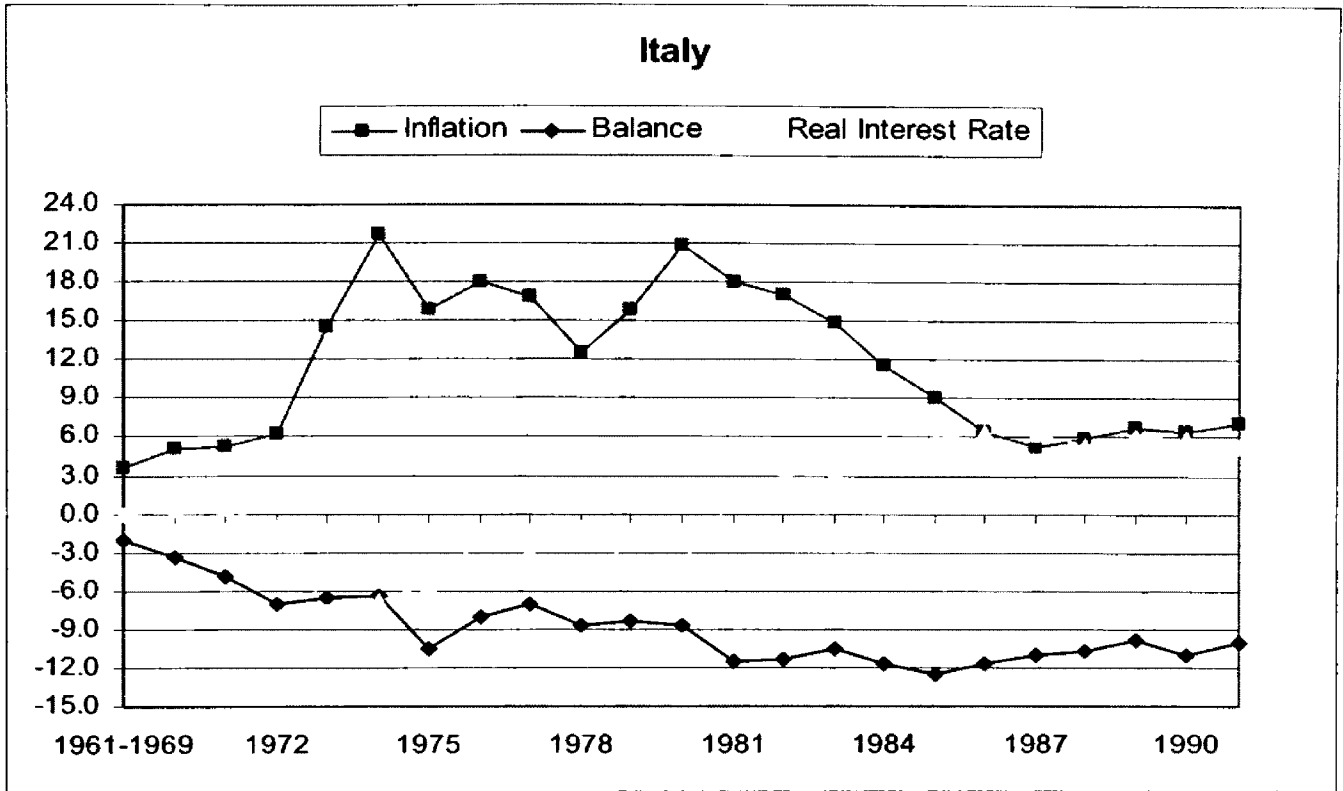
Appendix D: Inflation, Fiscal Balance, and Real Interest Rate Country Plots

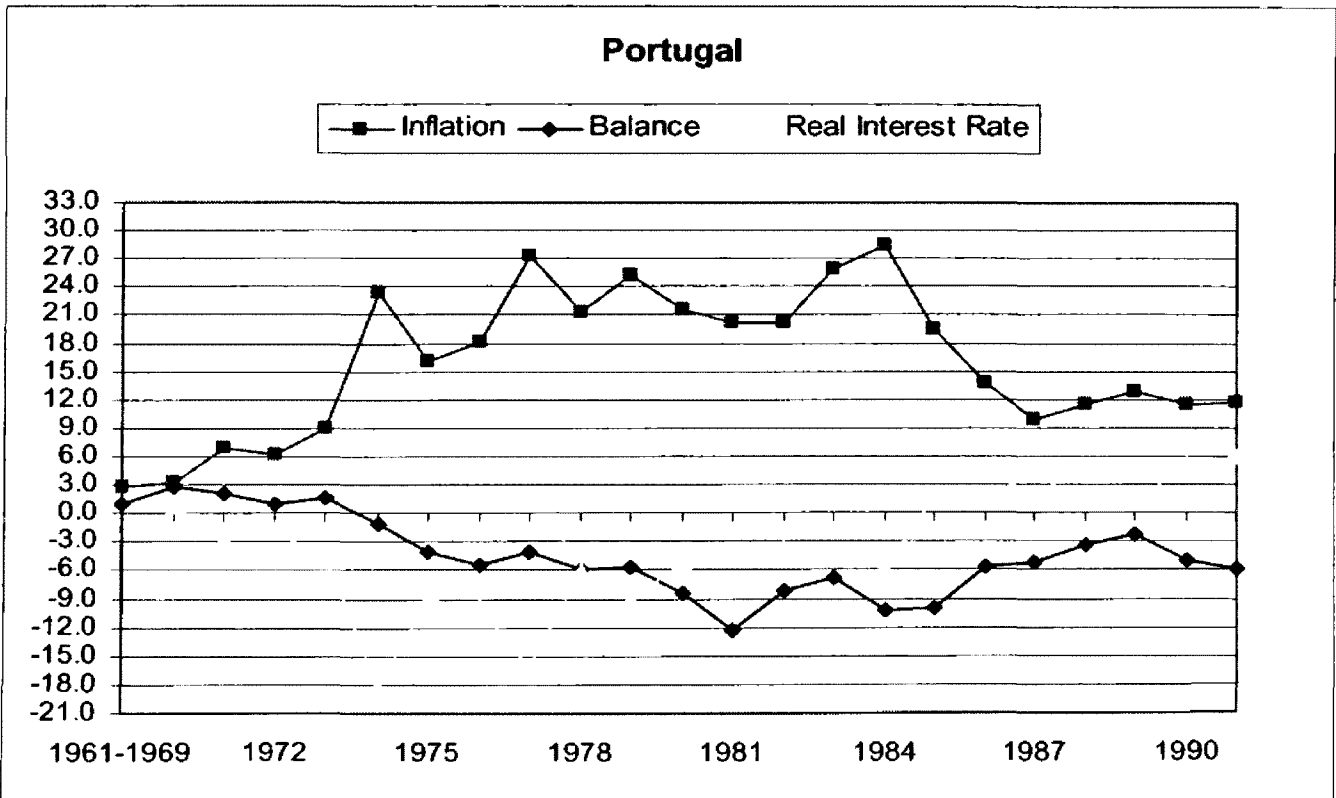
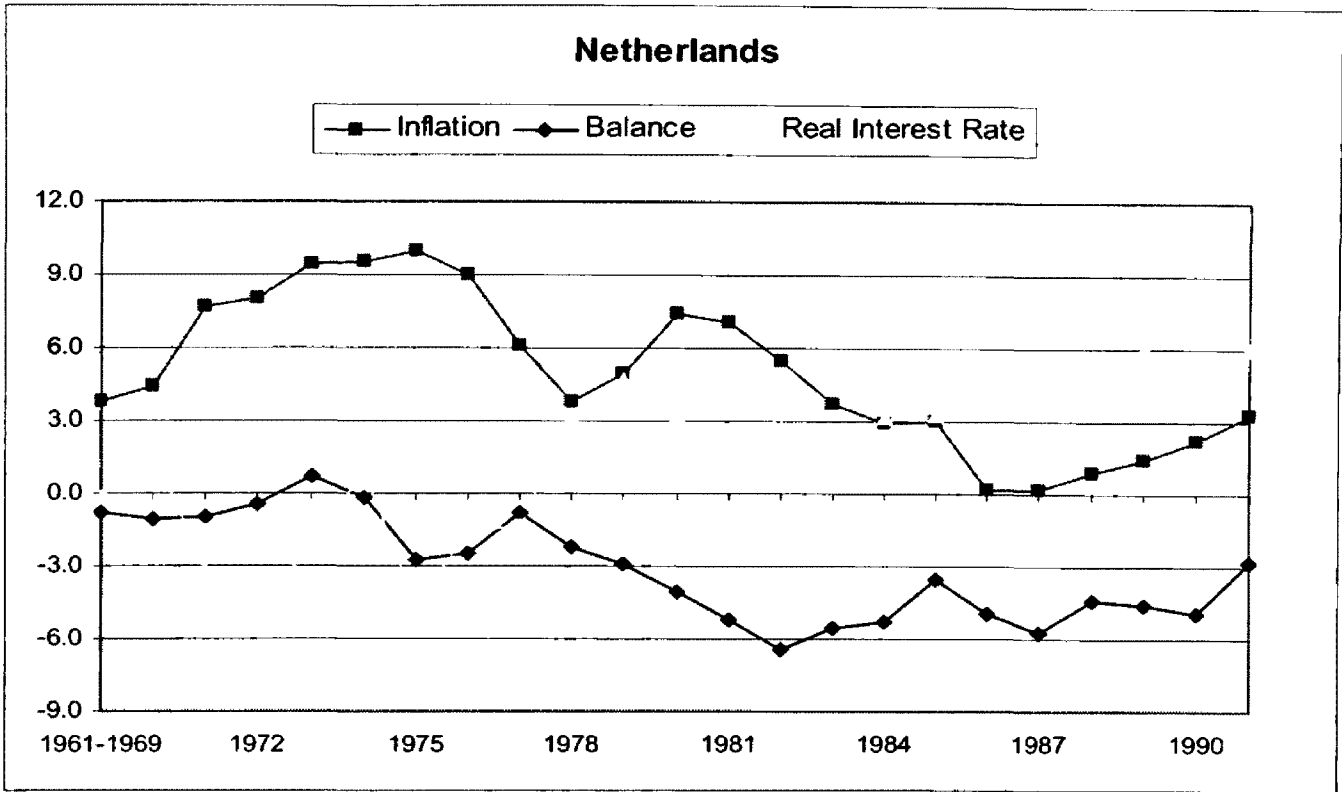


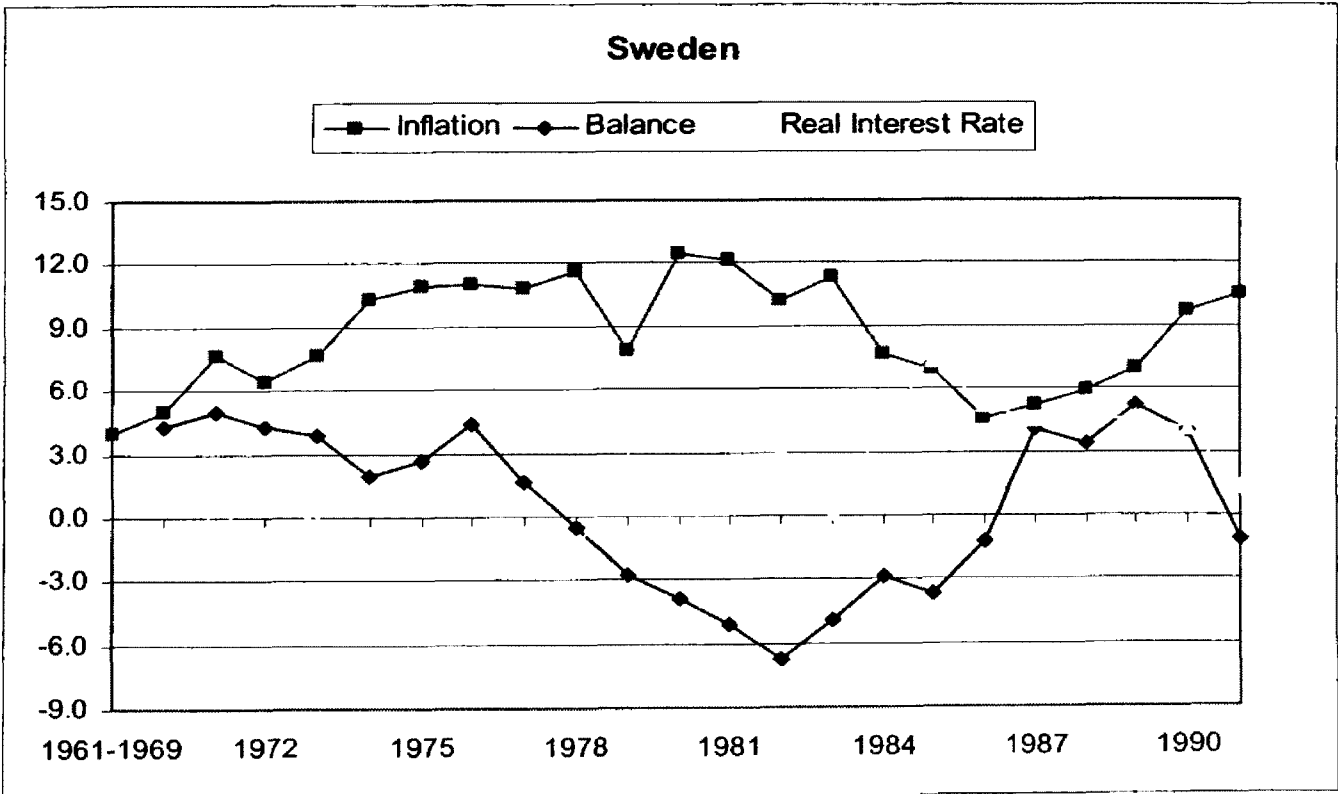
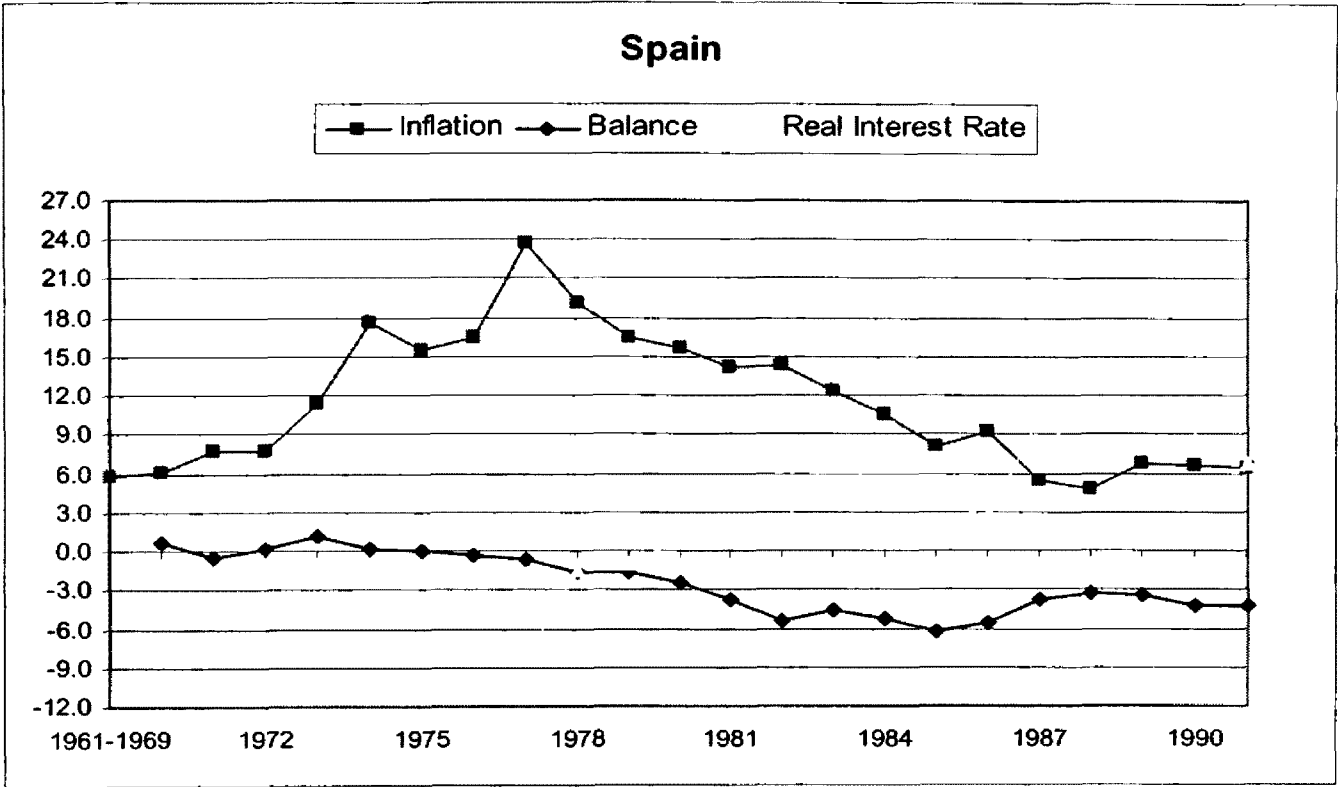


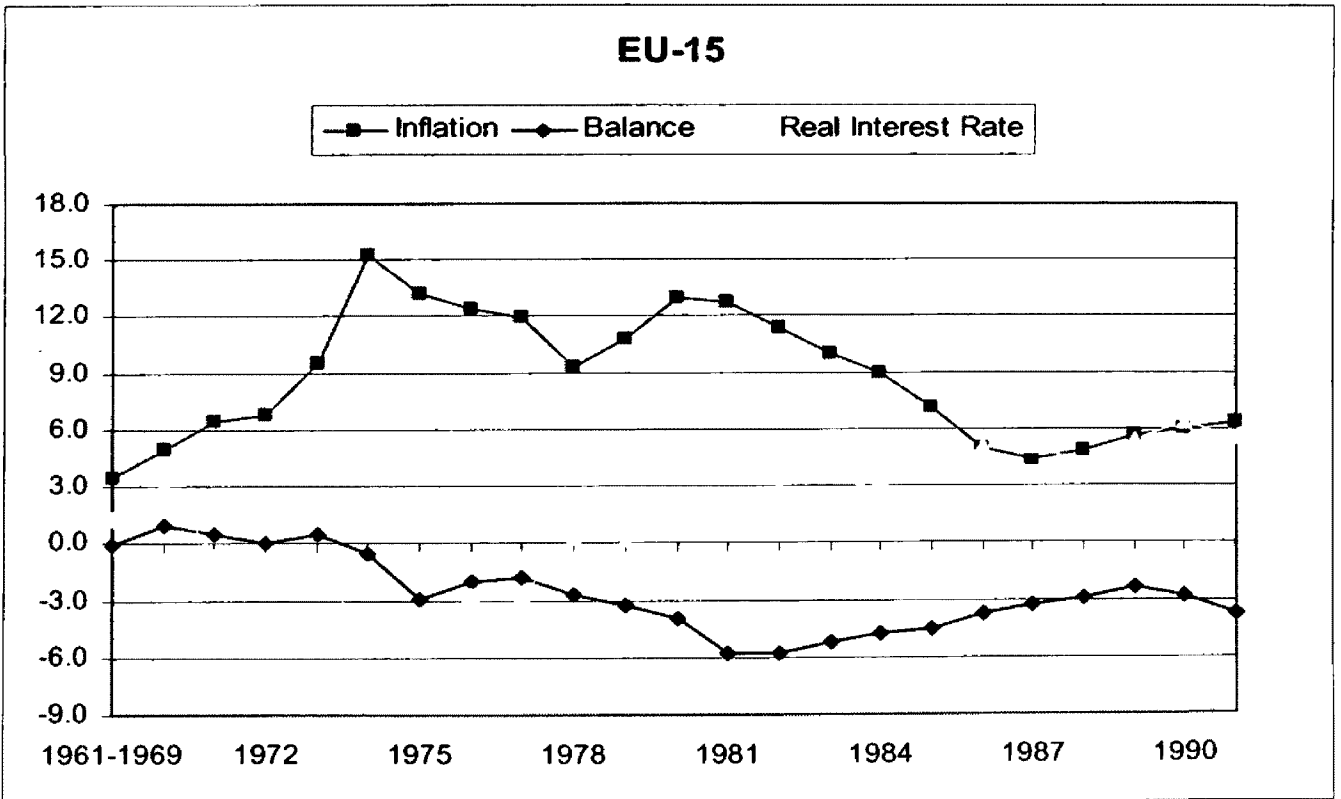
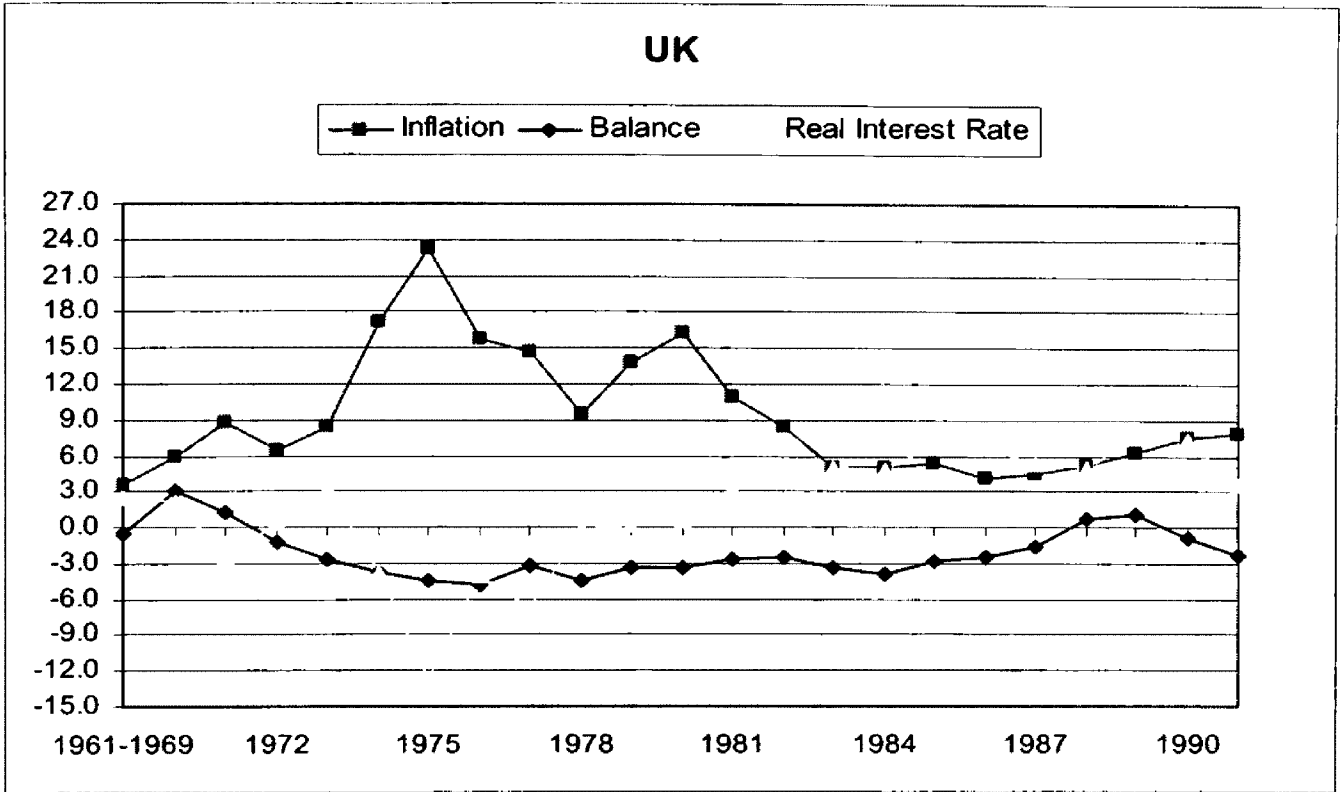


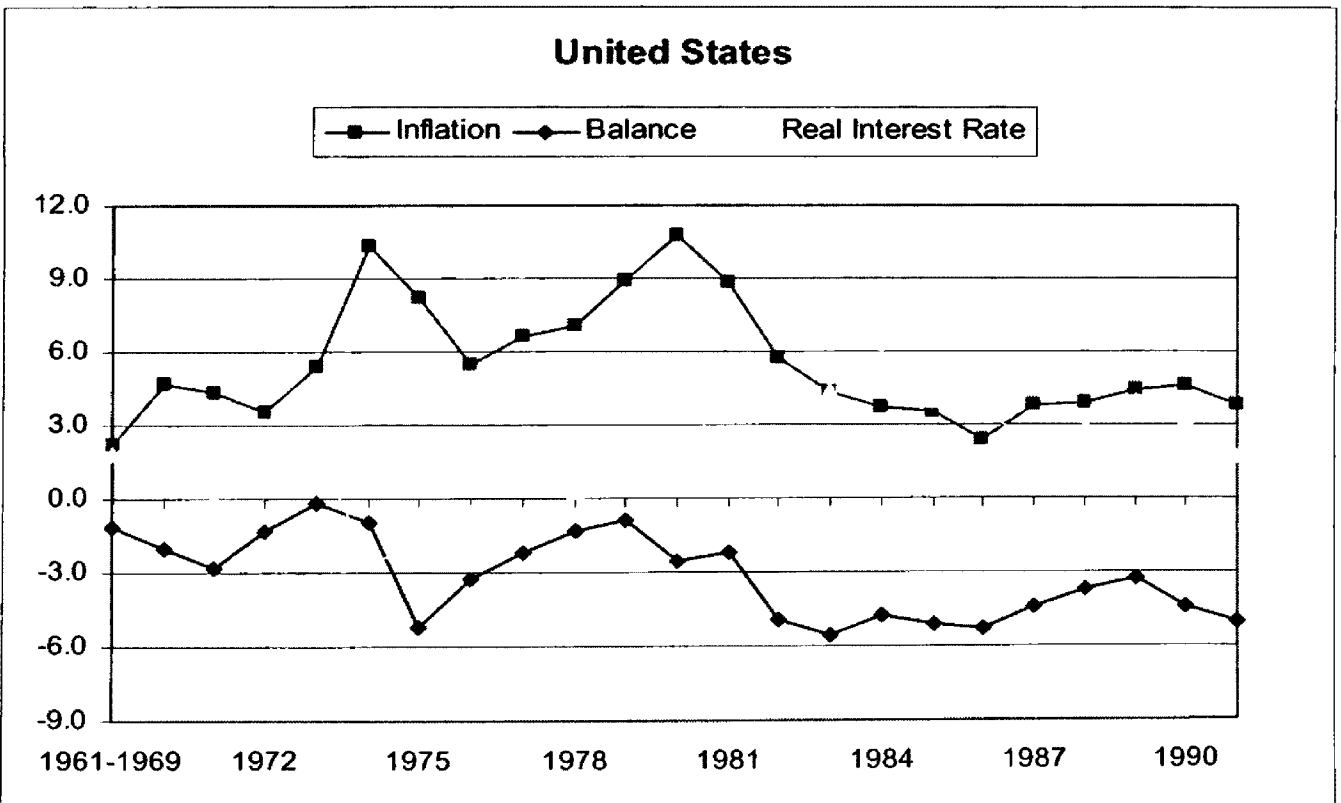
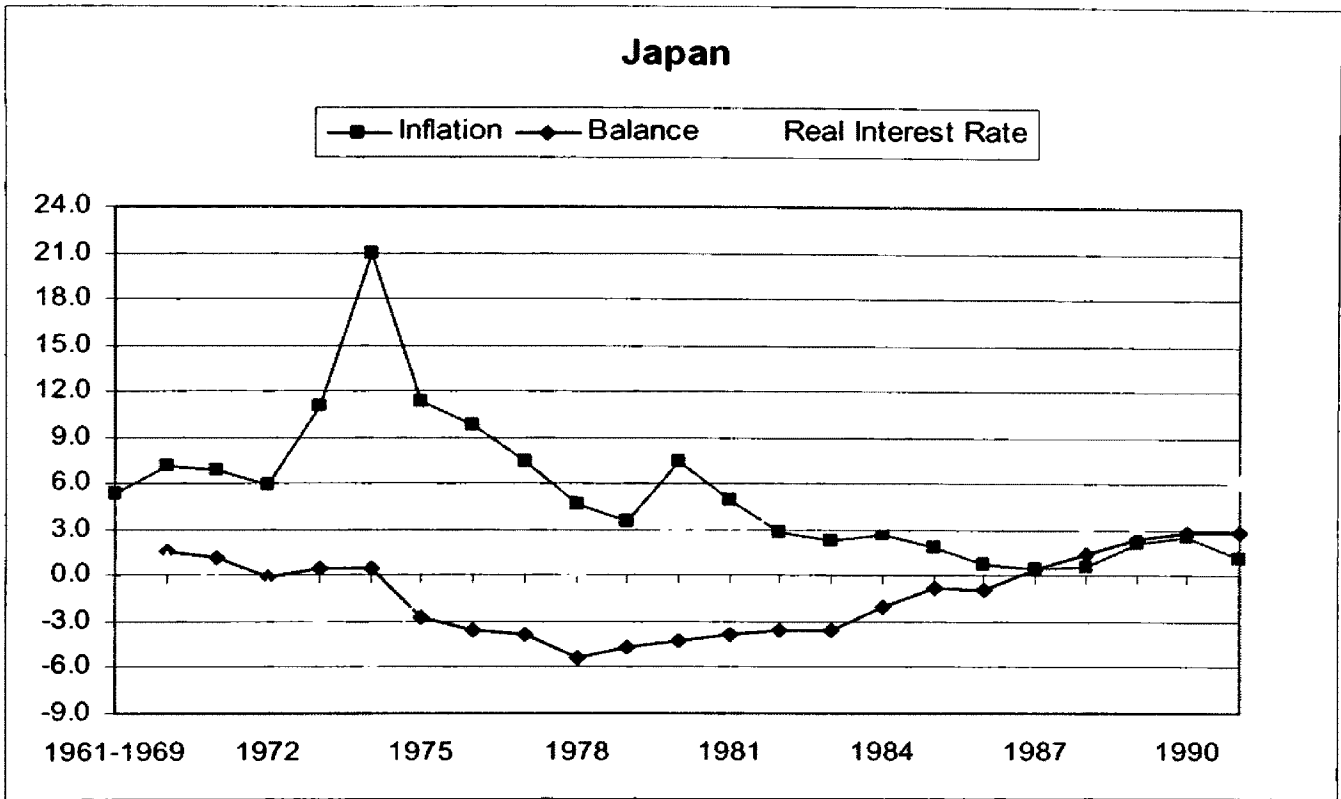




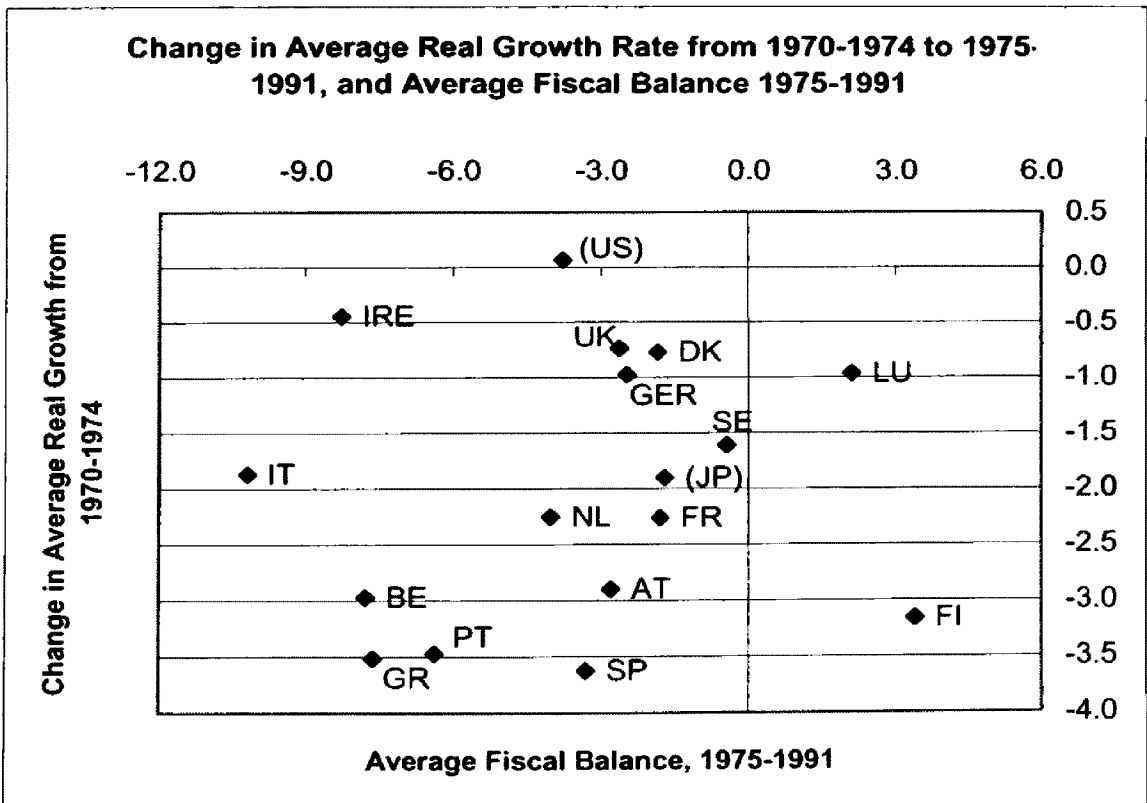
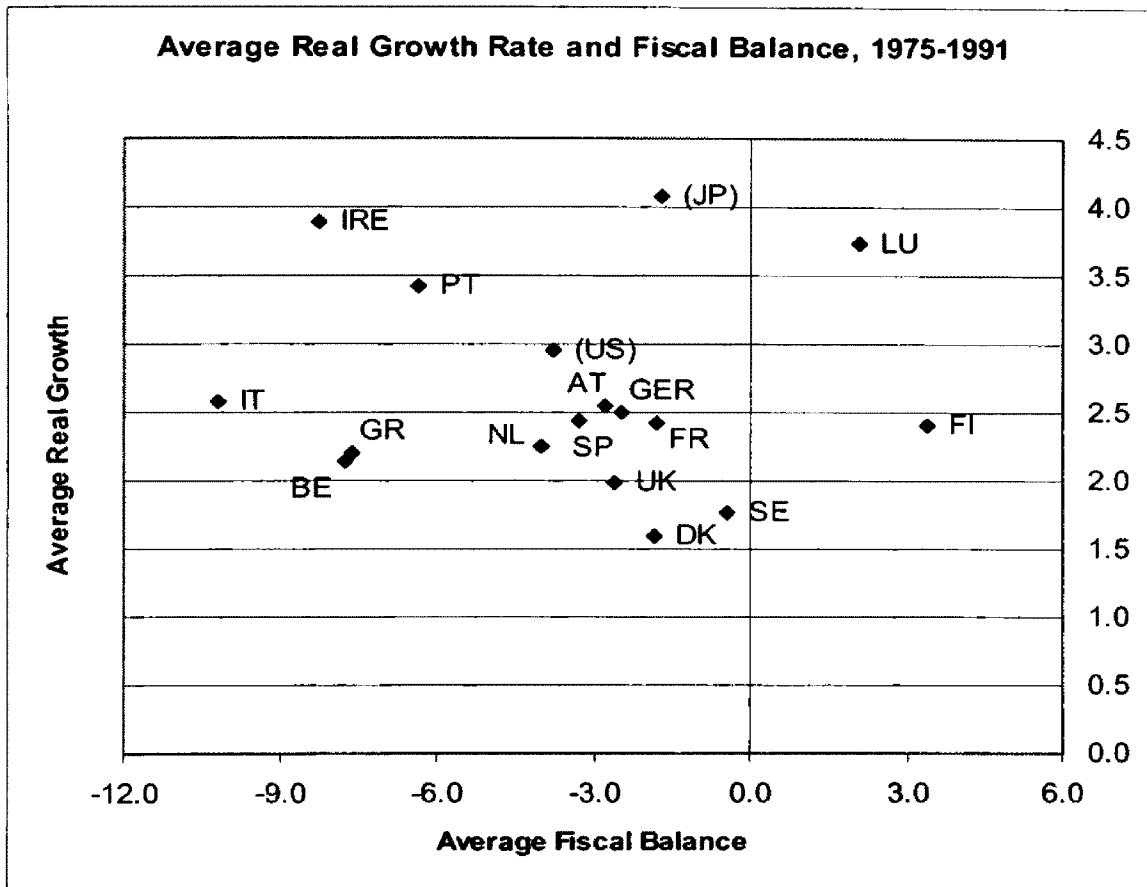


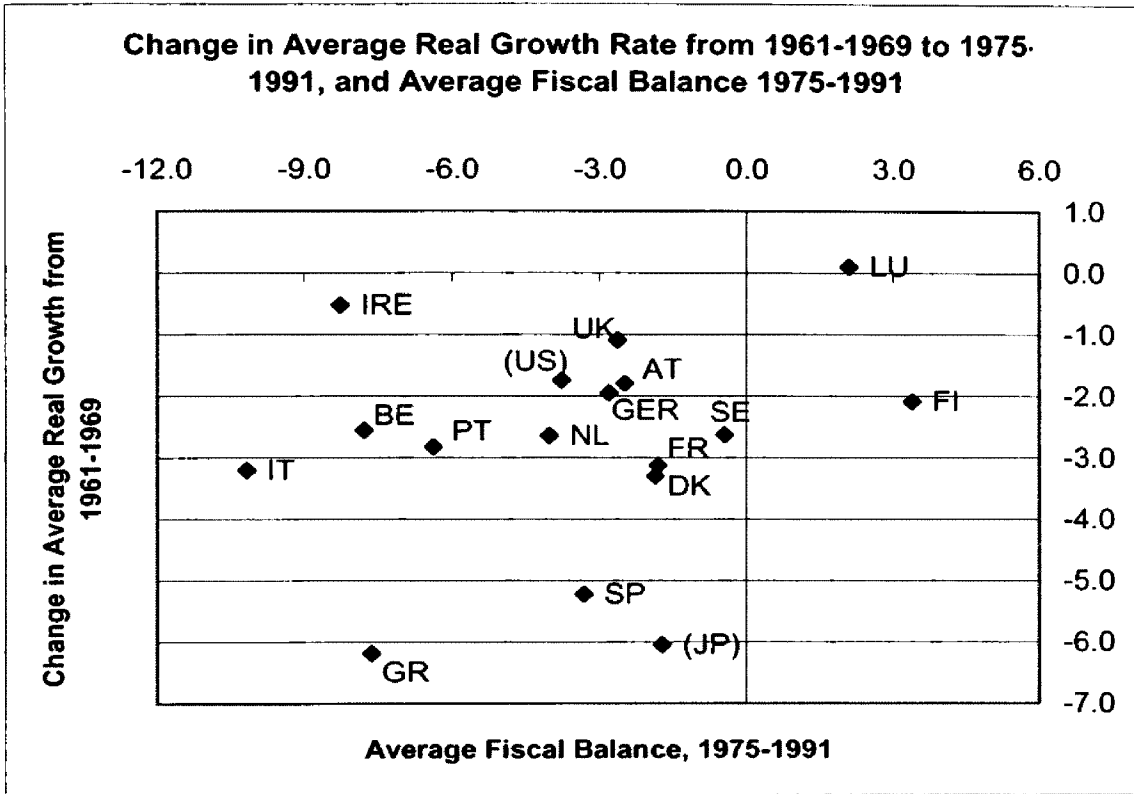






Appendix E: Fiscal Balances and Real Growth Rates





Appendix F: Fiscal Balance and Inflation in EMU

Source: EC (2003), for definitions see Appendix B

Country	Year	Balance	Inflation
AUST	1999	-2.3	0.8
AUST	2000	-1.5	1.4
AUST	2001	0.2	2.2
AUST	2002	-0.2	1.1
AUST	2003	-1.1	1.8
AUST	1999-2003	-1.0	1.5
BELG	1999	-0.4	1.2
BELG	2000	0.2	2.3
BELG	2001	0.5	2.5
BELG	2002	0.1	1.7
BELG	2003	0.2	1.8
BELG	1999-2003	0.1	1.9
FINL	1999	2.2	1.2
FINL	2000	7.1	3.6
FINL	2001	5.2	3.5
FINL	2002	4.3	3.1
FINL	2003	2.3	1.7
FINL	1999-2003	4.2	2.6
FRAN	1999	-2.2	0.4
FRAN	2000	-2.3	1.5
FRAN	2001	-2.4	1.6
FRAN	2002	-3.8	2.0
FRAN	2003	-3.9	1.5
FRAN	1999-2003	-2.9	1.4
GERM	1999	-1.5	0.3
GERM	2000	1.3	1.5
GERM	2001	-2.8	1.6
GERM	2002	-3.5	1.3
GERM	2003	-3.9	1.0
GERM	1999-2003	-2.1	1.1
GREE	1999		
GREE	2000		
GREE	2001	-1.4	3.3
GREE	2002	-1.4	3.4
GREE	2003	-3.0	3.5
GREE	1999-2003	-1.9	3.4
IREL	1999	2.4	3.1
IREL	2000	4.4	4.1
IREL	2001	1.1	4.3
IREL	2002	-0.2	6.0
IREL	2003	0.2	3.8
IREL	1999-2003	1.6	4.3

Country	Year	Balance	Inflation
ITAL	1999	-1.7	2.1
ITAL	2000	-0.6	2.9
ITAL	2001	-2.6	2.8
ITAL	2002	-2.3	3.1
ITAL	2003	-2.4	2.5
ITAL	1999-2003	-1.9	2.7
LUXE	1999	3.7	1.5
LUXE	2000	6.3	2.6
LUXE	2001	6.3	3.3
LUXE	2002	2.7	2.3
LUXE	2003	-0.1	2.1
LUXE	1999-2003	3.8	2.4
NETH	1999	0.7	1.8
NETH	2000	2.2	3.3
NETH	2001	0.0	4.7
NETH	2002	-1.9	3.1
NETH	2003	-3.2	2.0
NETH	1999-2003	-0.4	3.0
PORT	1999	-2.8	2.1
PORT	2000	-2.8	3.3
PORT	2001	-4.4	3.8
PORT	2002	-2.7	4.2
PORT	2003	-2.8	3.4
PORT	1999-2003	-3.1	3.4
SPAI	1999	-1.2	2.4
SPAI	2000	-0.9	3.2
SPAI	2001	-0.4	3.3
SPAI	2002	0.0	3.5
SPAI	2003	0.3	3.1
SPAI	1999-2003	-0.4	3.1
EU-11	1999	-1.3	1.1
EU-11	2000	0.1	2.2
EU-12	2001	-1.6	2.4
EU-12	2002	-2.3	2.4
EU-12	2003	-2.1	2.0
EU-11/12	1999-2003	-1.4	2.0

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