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FRANCESCO FARINA
ROBERTO TAMBORINI

Macroeconomic Stabilization Policies in Europe under the New Regime of Monetary Union

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Abstract - In Europe, the creation of interregional policy institutions is almost complete in the monetary domain, whereas in the fiscal domain policy institutions are still those inherited from national states albeit strictly constrained by a set of supernational rules. This apparent mismatch between monetary and fiscal institutions originates a hybrid regime that we call "constrained international regime". In this paper, we have sought to assess whether such regime is consistent as regards the objective of macroeconomic stabilisation. In section 2, we take issue with the dominant view that a "monetary giant" surrounded by "fiscal dwarves" offers better guarantee of central bank's independence, monetary stability, fiscal discipline and retrenchment of the public sector. The macroeconomic interregional model presented in section 3 shows that central monetary policy and national fiscal policies cannot be determined one independently from the other. Macroeconomic shocks are generally unevenly distributed across member countries, so that the efficient solution depends on: i) the degree of correlation of shocks across member countries, ii) the nature of structural interdependence among them. In section 4, estimations of the fiscal stances of EU governments in the last thirty years point to the conclusion that the dominant judgement of “fiscal indiscipline” should be substantially mitigated. In section 5, taking existing fiscal legislation as given, it is estimated that “country-by-country” stabilization following local shocks is likely to result in greater dispersion of per-capita incomes in the euro area, rather than reversion to the mean of per-capita incomes across member countries. Therefore, it is suggested that a step towards fiscal centralization should be moved, at least in the form of interregional mutual risk insurance schemes granting each country a chance to receive compensatory transfers whenever per-capita income falls below the EMU average.

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Francesco Farina, Dipartimento di Economia Politica, Università di Siena
Roberto Tamborini, Dipartimento di Economia, Università di Trento

Introduction

The single European currency was launched on 1 January 1999. The protracted and sometimes confused debate on the costs and benefits of a single currency, on Europe as an optimum currency area, and on the Maastricht parameters is, *for the time being*, a matter consigned to the historians of the European Union. The task now is to determine whether the edifice erected in the course of these long and difficult years of preparation is robust, well-designed and in accordance with the aspirations of the citizens who inhabit it.

The topic is an extremely broad one, and it has been investigated by innumerable studies both micro- and macroeconomic. The approach proposed here seeks to organize these multifarious matters by focusing on one specific detail in the picture: the change of 'political-economic' regime brought about for the countries belonging to the European Monetary Union (EMU). By 'political-economic regime' we mean the set of constraints, goals and opportunities of private and public agents from whom a country's economic and policy decisions spring. The liberalization of the circulation of goods, capitals and individuals, the adoption of a single currency, and the devolution of mon+etary sovereignty to an independent supranational institution, the introduction of a common 'economic constitution' in the form of the Treaty of Maastricht, and self-imposed fiscal discretion through the Stability and Growth Pact (SGP), have had profound repercussions not only on economic magnitudes and structures but also on the economic institutions that flank countries' markets.

Following these changes, the European countries are shifting from a well-defined political-economic regime – what we may call the *international regime* – to one still incipient, still uncertain in form, and with consequences difficult to predict. The *ancien régime* was founded on the following premises: i) the sovereignty of the economic policy authorities (EPAs) – the monetary authorities (MAs) and the fiscal authorities (FAs) – had the same geographical extension as that of state sovereignty; ii) geo-politics coincided with geo-economics, or in other words, the geographical boundaries of states and their organs coincided with economic areas which were internally homogeneous but mutually heterogeneous as regards a) national identity and definition of national interests, and b) economic-social structures. The superseding of the traditional international regime in Europe over the last twenty years has been driven by numerous factors. One of the most important is, in our opinion, the manifest collapse of both its premises. First, the experience of the European Monetary System (EMS) – and more in general the effects of the so-called 'globalization' of markets – have

shown that substantial political-economic 'sovereignty' no longer coincides with the formal sovereignty of the state, neither in terms of the geographical locus of the power to impose decisions, control and sanctions nor in terms of independence, nor in those of effectiveness. Second, the geo-economic map of Europe no longer exactly coincides with its geo-political map: i) economically homogeneous areas (in Euro-vocabulary the 'macro-regions') have boundaries which often cross two or more states, and this ii) tends to disrupt the coincidence between nationality and economic interests, and the consistency of government actions defined solely by the geographical domain of the state.

In the presence of these phenomena, the theory of public economics suggests that EPAs should be articulated into 'levels of government' hierarchically arranged according to their ability to regulate and control the interdependences and spatial externalities of public and private economic choices. This suggestion has been taken up in the past by those numerous nation-states that have devolved powers to their regions, and obviously also by the federal states. At least from a normative point of view, the process now ongoing in Europe may rearrange national EPAs into what we may call an *interregional regime*: that is, a system characterized by 1) a common currency, 2) the close integration of geo-economic areas which are internally homogeneous (but not necessarily homogeneous with each other), 3) the hierarchical organization of territorial economic policy competences, and therefore of economic policy bodies. The first evident step in this direction has been taken with the launching of the single currency and the creation of the European Central Bank (ECB). Among the many reasons adduced for this undertaking has been that of eliminating the division of economic space into sovereign monetary areas, given that this geo-political legacy would have raised substantial impediments – from the constraint of official reserves for each country to restrictions on capital movements, to the use of competitive devaluations – against the process of economic integration. To a large extent, the national MAs and the ECB are already operating in an inter-regional system which may not yet be thoroughly defined as regards the allocation of functions between centre and periphery, but is nevertheless solidly established.

Much more uncertain is the framework in which the national FAs operate. As yet, this framework is not remotely inter-regional in nature; nor does it look like becoming so in the near future. In its present form it is a hybrid between the old and new, what we call a *constrained international regime*. This institutional mismatch between MAs and FAs has been the cause of much concern for scholars and politicians in the countries of the European Union. It has led to the proposal of (to use our terminology) a 'complete' inter-regional regime for all European EPAs, and therefore first and foremost the creation of a central FA to parallel the ECB. This concern is by no means universally shared, however, given that there are those who argue that a 'monetary giant' surrounded by 'fiscal dwarves' is a better guarantee of the independence of the central bank, of monetary and financial stability, of restricted growth of the public sector, and of fiscal discipline.

The debate on the desirability of the current institutional set-up of the EMU and its possible evolution into a fully interregional system involves the multiple tasks assigned to FAs in modern market economies. In what follows we concentrate on macroeconomic stabilization policies in the new political-economic regime. Section 1 proposes a classification of the EMU regime according to the international/interregional pattern, which we use to introduce the issue of the

consistency of the EMU institutional system. More precisely: whether and to what extent the EPAs are in a position to effectively pursue the macroeconomic objectives assigned to them.

Section 2 is a review of the theories of fiscal policy in macroeconomics that have influenced the institutional design of the new economic policy institutions. They have highlighted in normative terms, and also by dint of empirical research on fiscal policies in recent decades, the need to impose 'fiscal discipline' on national FAs. In our discussion of the literature, we shall question the approprioateness of its theoretical premisses and of the methodology of its empirical findings, in particular as regards the thesis that there are no reasons of necessity or efficacy for Keynesian stabilization measures**,** and the presence of the so-called "non-Keynesian effects" of fiscal policy. For the purposes of the present work, the most serious fault in the dominant view is its tendency to run normative as well as positive analysis of fiscal policy *in vacuum*, that is to say with no reference to the mutual connections with the overall macroeconomic equilibrium of the economy and with the conduct of monetary policy.

In section 3, we shall examine the problem of stabilizing the EMU using a macroeconomic model characterized as an inter-regional monetary system with a single central bank on the one hand, but with independent and 'disciplined' FAs on the other. To favour comparison between our results and those in numerous studies of stabilization in the EMU, we elaborate one of the current versions of the AD-LM-AS model, with real and nominal stochastic fluctuations around potential output with a given rate of structural unemployment. With regard to treatment of macroeconomic shocks, following De Grauwe (2000) our model goes beyond the traditional dichotomy between 'symmetric' shocks (uniform for all countries) and 'asymmetric' shocks (in only one country) and uses the degree of correlation of shocks among countries as the discriminating parameter. The model is used to analyse the mechanisms that transmits shocks and economic policy measures across EMU members, and to highlight stabilization problems amid centralized monetary policy and decentralized fiscal policies in a context of well-behaving EPAs. We examine both automatic stabilizers and fiscal interventions at a country-by-country level, and we find that several likely circumstances exist such that under-stabilization is the result in the present EMU set-up.

We shall then move to the emprical ground in view of a reassessment of how fiscal policy has worked in the pre-EMU and will work in the EMU Europe. In section 4, we shall look at the pre-EMU experience, and, in line with our contention that fiscal policy should be examined in relation to the overall macroeconomic equilibrium, we shall dispute the view that the EU countries have shown a systematic tendency towards fiscal indiscipline. By means of elaborations of the so-called "Blanchard indicator" of fiscal stance, we shall argue instead that respect of the intertemporal budget constraint and of the stability of the debt/GDP ratio crucially hinges on the precondition of a monetary/fiscal policy-mix which does not penalize economic growth. Section 5 will present measures of the extent to which domestic fiscal stabilization policies may be effective in terms of reversion to the EU mean of per-capita incomes if implemented by each country on the basis of the existing legislation. The result will confirm our previous theoretical warning that under-stabilization (increase of per-capita income dispersion) may be the outcome of the country-by-country approach. In that section we shall also relate the stabilization topic to the debate

on fiscal centralization in the EMU and the quest for fiscal mechanisms typical of federal systems.

Section 6 will set out our main conclusions.

1. The new political-economic regime of the EMU countries

In this section we shall draw an essentially taxonomic, and highly schematic, picture of the new institutional context in which the EMU economies operate. This involves two lines of inquiry: 1) analysis of the change of political-economic regime for the EMU countries; 2) analysis of the consistency of the current system of economic policy institutions.

1.1. A proposed taxonomy

A political-economic regime is defined by:

- the institutional system of *economic policy authorities* (EPAs), which consist of the *fiscal authorities* (FAs) and the *monetary authorities* (MA), and their areas of *jurisdiction* (which for brevity we shall call 'political geography').
- the structural factors characteristic of the space of *economic activities* (which for brevity we shall call 'economic geography');
- the institutional constraints on the action of the EPAs.

The factors determining economic policy choices and how they change in the passage from one regime to the other can be summarized as follows.

1) *Structural factors*. These are the conditions external to economic policy choices which influence their outcomes. Besides the structural characteristics of the economy, they include the set of legislative rules that steer or constrain the behaviour of economic agents. To be sure, these rules themselves are in a broad sense part of economic policy choices, but in the field of macroeconomic policies they can be considered exogenous, or at any rate not modifiable in the short period.

i) The economic space

- legislation on the mobility of factors and goods
- legislation on competition
- mobility of factors and goods
- patterns of industrial specialization
- distribution (uniformity versus heterogeneity) of voter preferences.

ii) The monetary space

- monetary legislation
- exchange-rate regime
- monetary agreements.

2) *Institutional factors*. These broadly define the powers and constraints of the EPAs, specifically:

i) responsibility (the setting and achieving of objectives)

ii) powers

iii) instruments

iv) constraints.

The system of institutional factors can be determined:

- formally, usually by constitutional means or by authorities superordinate to the EPAs;
- informally, in both the choice of objectives and the extension of constraints, by three principal means:
  – 'market constituency', the influence of 'markets' on the EPAs;
  – 'policy mix', the reciprocal influence and interrelations among EPAs (FAs an MAs) in the same country;
  – 'policy coordination', the reciprocal influence and interrelations among EPAs in different jurisdictions.

In what follows we shall use two categories of political-economic regime in which the various factors introduced earlier can be combined in a variety of ways.

1) *International regime* (IN). This is a regime in which:
i) the jurisdiction of the EPAs coincides with the boundaries of the nation-state;
ii) economic geography coincides with political geography: in this case we can talk of internally homogeneous national economies, and the degree of integration (economic, financial and monetary) among them is important;
iii) the system of formal institutional factors is entirely determined by the constitutional organs of the nation-state.

2) *Interregional regime* (IR). This is a regime in which:
i) the jurisdiction of the EPAs

- coincides with a sub-set of the space of the nation-state;
- is devolved to a higher-order EPA for one of the EPAs or for certain functions of both EPAs.

ii) economic geography may not coincide with the political geography of the EPAs;
iii) the system of formal institutional factors is partly or wholly determined by constitutional organs superordinate to the jurisdiction of the EPAs

Obviously, there may be a variety of intermediate situations between IN and IR, of which EMU is one example. It is set out in Table 1, where we have included a number of salient indicators for each category of the features which, in our scheme, define a political-economic regime. The aspect to which we wish to call attention is the diversity of regime in which the MAs and FAs of the same country must operate.

National EPAs	**Structural factors**	**Formal institutional factors**	**Informal institutional factors**	**Classification**
MA	Complete monetary integration Very high financial integration	Complete upward devolution		IR
AF	High economic integration – high capital mobility – low labour mobility Very high financial integration Political geography incompatible with economic geography	Very limited upward devolution Superordinate constraints – Maastricht Treaty – Stability and Growth Pact	Very strong market constituency Very weak FA-MA policy mix Policy coordination ?	Constrained IN ('fiscal discipline'), with very strong externalities

1.2. The change of regime for the EMU countries

The past quarter of century has witnessed a substantiual erosion of the 'pure' IN regime formally in force among industrialized countries, particularly in the EU area. In the first place, the legislative changes listed above among structural factors – particularly liberalization and deregulation, both at the national and, especially, supranational levels – have enormously increased the weight of informal conditioning factors in the determination of economic policy choices. The 'subject' that has increased its power to the greatest extent is 'the market'. Although this anthropomorphic allusion is scientifically unconvincing, the weight that the EPAs rightly or wrongly give to market *expectations* of their behaviour, and the restrictions that EPAs self-impose on their own array of actions and instruments because of these expectations, represent a profound change in the management of economic policy today with respect to the past.[1]

Also the scope and intensity of interactions and reciprocal conditionings among the EPAs in different countries have been increased by the liberalization and deregulation of markets. The vehicle of this process is the mobility of goods, persons and capitals which propagates economic policy decisions among economic spaces under different jurisdictions. It is customary to associate these phenomena mainly with the financial sphere, where they have indubitably manifested themselves with exceptional intensity. But the 'real' sphere of production localization choices, and of trends in trade specialization, also plays a very important role. It has consequences on the distribution of incomes and growth rates, as well as on the processes of convergence and divergence among economic areas, which have no necessary relation with the jurisdictional boundaries of the EPAs. Europe adopetd a single currency at a time when its own 'economic geography' (affinities of wealth, growth, needs and preferences) was hardly coincident with 'political geography',[2] and national EPAs were increasingly forced to take account of the behaviour of EPAs in other countries, to coordinate themselves formally or informally with them, or to accept the *de facto* granting of decision-making autonomy to them.[3]

Public policy is said to be 'constitutionalized' when formally enacted factors are more extensive in their coverage. There is no doubt that there has been a forceful thrust in this direction during the last twenty years, and it is echoed in the 'economic constitution' embodied by the Treaty of Maastricht.[4] Overall, the joint formal and informal action of the phenomena just outlined has significantly reduced the powers and the instruments, and increased the constraints, of the national EPAs of the countries integrated into EU area and the world economic system.[5] This underlying tendency should be borne in mind when assessing the institutional structure of the EMU.

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[1] This change is also reflected very clearly (although it is difficult to establish whether it is a cause or an effect) in the radical turn in the theory of economic policy in the last twenty years: cf. Persson-Tabellini (1997).

[2] Cf. Padoa Schioppa (1992) Croci Angelini (2000), Facchini-Segnana (2000), Helg (2000).

[3] Suffice it to mention the recent experience of the countries belonging to the European Monetary System, as analysed in well-known studies by Giavazzi-Giovannini (1989), Padoa Schioppa (1992), Fitoussi (1995).

[4] For detailed analysis of this process see Padoa Schioppa – Padoa Schioppa (1987), Padoa Schioppa (1994), Persson-Tabellini (1997).

[5] It would be interesting to investigate whether this reduced 'supply' of economic regulation and management has been matched by any change in 'demand' (i.e. the factor termed 'responsibility' in our list). In principle, the reduced 'supply' of public intervention should be set in relation to pressures to this end applied by civil society, to which there should rationally correspond an equal reduction in 'demand' ("less state, more market" and similar slogans). To our knowledge, there are no systematic studies of this question, which we cannot deal with here.

After admission to the EMU, national MAs have moved into an IR regime which is substantially complete. By contrast, the transition of national FAs is largely incomplete. The formal difference between the two situations is evident: for the former, upward devolution has been accomplished, while for the latter it is almost negligible. The hybrid in which the FAs of the EMU countries operate has complex features which are still difficult to assess. We have called this hybrid *the 'constrained IN regime'* in order to stress that the FAs still dwell in the old IN regime as regards formal responsibility and power (the setting and achievement of objectives is still wholly restricted to the traditional constitutional circuit of the national states), but comes up against a very extensive system of higher-order institutional constraints (Treaty of Maastricht and SGP). Morever, the institutional relationships among EPAs are uncertain and ill-defined: this is the case of those between national FAs and the central MA, on the one hand, and among national Fas on the other, so that choices concerning policy mix and policy coordination are highly problematic.[6] To these are added the structural factors which, because of the historical trends outlined above, restrict the autonomy and efficiency of the EPAs' decision making in all the countries integrated into the world system.

1.3. Is the EMU politcal-economic regime consistent?

Is the EMU institutional hybrid a transitional phase towards a full-fledged inter-regional regime with a central FA parallel to the ECB or is it set to endure, amongst other things because there is insufficient pressure to supersede it? And given that this latter eventuality is not unlikely, is the current set-up of the EMU regime consistent? This question is widely asked in Europe, and it evokes with a certain concern the famous definition of **'**inconsistent quartet**'**, a term which aptly denoted the 'worm' eroding the long-period sustainability of the EMS regime, facing the member countries with the choice of either withdrawing, and thus lapse back into fluctuating exchange rates, or pressing ahead towards the single currency (Padoa Schioppa (1992)). On the other hand, there are those scholars who argue that although the EMU present institutional set-up constitutes a *unicum* in history**,** it may be desirable as regards monetary stability, fiscal stability, and therefore the system's long-term sustainability.[7]

A political-economic regime can be evaluated according to various criteria. Positive analysis observes the decisions that it produces and their effects. Normative analysis, according to current theory, is concerned to establish "what policymaking insitutions produce better policy outcomes" (Persson-Tabellini (1997), p. 2). The problem with this approach of normative analysis is that determination of "better policy outcomes" is a notoriously controversial undertaking. We are forced, therefore, to shift a step backwards. When we review what has been said and written during the construction of economic-monetary unification in Europe, we inexorably return to the point at which views on the economy began to diverge.

For more than two centuries there have been two opposing views of the capitalist economy. One stresse its virtues, and the efficiency with which prices carry information between consumers and producesrs, and allocate resources. The other spotlights the shortcomings of the market system, and particualrly its episodes of massive unemployment of capital and labor (Greenwald-Stiglitz (1987), p.119).

There can be no unequivocal answer, nor a merely 'technical' one, to the question that we have asked. For the advocates of the former view, a desirable institutional arrangement is one which essentially prevents economic interventionism of 'sovereigns' from hampering the

[6] We shall deal with this point in more detail in the following sections.
[7] For a summary of these arguments see Buti et al. (1998), Artis-Winkler (1999).

efficient workings of markets.[8] Today this argument is put forward with particular vigour by macroeconomists, who seem somehow to be immune against worries about 'market failures', whereas the latter are of constant concern to microeconomists. For the critics of this view, a desirable institutional arrangement is one which enables the EPAs to undertake appropriate measures to steer and control markets. The critical camp is composite and variegated, of course, but besides the schools traditionally averse to neoclassical theory and method, also methodologically orthodox research of the past twenty years has shown the "non-robustness of the Walrasian paradigm with respect to small variations in the hypotheses", particularly those relative to information and the organization of markets (Greenwald-Stiglitz (1986)), while at the same time important progress has been made in analysis of the missing link between 'microeconomic failures' and 'macroeconomic failures'.[9] Even though awareness of 'government failures' has also increased, the design of the economic policy institutions that springs from these contrasting views could not but be divergent.

Also as regards the theme of this paper – macroeconomic stability in the EMU – the debate involves conflicting positions which relate ultimately to the primitive question: *do macroeconomic fluctuations require economic policy interventions?* There are at least two main schools of thought on the matter: those who answer 'no', because fluctuations are the mode in which an economic system in constant equilibrium responds to changes in the 'deep parameters' (endowments, preferences, technologies); and those who answer 'yes', because fluctuations may give rise to inefficient allocations of resources, in particular the under-utilization of capital and labour, and because there are circumstances in which well-devised corrective measures may reduce or eliminate such inefficiencies. In section 2 we shall examine some of the views on the role of fiscal policy in macroeconomics that have accompanied the introduction of the new European economic institutions and, in some cases, significantly influenced their design. It will be shown that certain 'technical' disputes on the necessity and efficacy of fiscal stabilization policies should be more correctly traced back to the divide on the workings of markets. Unfortunately, the assumptions underlying the various positions are not always made sufficiently clear. As we shall see in section 4, this shortcoming has also influenced the presentation and interpretation of data on fiscal behaviour of the European governments used to support the claim that restraints should be imposed on their margin of manoeuvre. Reading data from the real world as if they were extracted from a model of perfect markets, and of public expenditure as 'pure waste', frankly leaves one perplexed; on the other hand, a model of this kind aside, identifying the limits of 'excess spending', and overcoming them, requires, we believe, more complex and deeper analysis than has hitherto been conducted.

We would also emphasise that recognizing legitimacy for fiscal policies requires revival of the traditional approach to the normative analysis of economic policy – associated with Tinbergen, Meade and Musgrave– centred on the *efficiency* of government action. In other words, it requires investigation of *whether responsibility for setting and achieving objectives is matched by powers and instruments able to achieve that objective under certain constraints.*[10] The key to efficiency is the criterion of *optimal assignment*, which consists of two requirements: i) a number of instruments equal to the number of objectives, ii) each instrument assigned to an objective in such a way that the impact on the objective is maximal[11]. Admittedly, this approach in its primitive version presented several acknowledged shortcomings: its failure to consider policy-makers as self-interested optimizing actors, and the possible conflicts of interest and efficiency with respect to public goals. Yet correction of these limitations does not justify, we believe, the opposite extreme of the total neglect of criteria for the efficiency of government action by current theory on the political-economic

[8] This involves the introduction of appropriate constraints and incentives to correct the self-serving decisions of the economic policy authorities. Cf. for example Persson-Tabellini (1997).
[9] Cf. for example Hahn (1981), (1982), Greenwald-Stiglitz (1987), (1988), Colander (1998).
[10] Analysis of the EMS as an 'inconsisten quartet' was of this kind.
[11] In a stochastic environment, this criterion may be replaced by that of variance minimization.

institutions. From this point of view, there are at least three issues on the agenda: i) the extent, frequency and type of the macroeconomic disturbances in the countries belonging to the EMU, factors which determine the scale, frequency and the optimal mix of stabilization measures;[12] ii) the effectiveness of centralized monetary policy in a system of national economies diverse in their exposure to shocks and/or in their in their monetary 'transmission mechanisms;[13] iii) the ability, if need be (e.g. in the case of asymmetric shocks or insufficient central stabilization), to stabilize the domestic economy solely by means of national fiscal instruments, taking account of the constraints imposed by the Treaty of Maastricht and the SGP.[14] The macroeconomic model of the EMU presented in section 3 presupposes that stabilization policies are necessary and beneficial, and it is suited to address the issues in the agenda.

The inhibition of 'indisciplined' behaviour by the central and national EPAs, therefore, does not exhaust assessment of the efficiency of the system of policy instruments. Our model highlights the need for much more detailed analysis than carried out to date of the criteria that assign measures to centralized monetary policy or to decentralized fiscal policies, according to the efficiency of stabilization. The current view, also put forward in European Commission documents (e.g. Buti-Sapir (1998)), to the effect that the EMU regime allows for a simple and straightforward *assignment rule* between centralized monetary policy, aimed at stabilizing Union-wide shocks, and national fiscal policies, aimed at stabilizing local shocks, strikes us as unwarranted and overly optimistic. As we shall see in section 3, in plausible circumstances, an allocation of this kind may produce substantial under-stabilization of the European economies. To this theoretical result, in section 5 we shall add evidence inferred from our estimates of country-by-country stabilization capacities compared to the EU average, in the presence of specific shocks and the fiscal legislation in force.

2. The role of fiscal policy in the spirit of EMU: a theoretical review

During completion of the single market and progress towards monetary union, intense theoretical debate has developed around fiscal stabilization policy, while stimulating numerous quantitative studies as well. These theoretical and empirical analyses have yielded interpretations which have profoundly influenced normative elaboration. The Treaty of Maastricht and the Stability and Growth Pact are the best known and most evident examples. In this section we review the main theoretical arguments underlying the present EMU institutional setup. Since the literature is large and varied, we have focused on the points that are more closely related to the issue of macroeconomic policies.

2.1. The "orthodox theory" approach to fiscal policy

As stressed in section 1, the design of "desirable" economic policy institutions for the EMU has strongly been influenced by general equilibrium schemes in a New Classical fashion[15]. The underlying hypothesis of complete and perfect markets removes any justification for the public sector, so that 'public consumption' is pure waste. In this world with one representative agent of infinite life, characterized by the intertemporal maximization of consumption, and by compliance with the intertemporal public budget constraint, 'Ricardian equivalence' therefore

[12] Cf. Weber (1991), Bayoumi-Eichengreen (1992), Kenen (1995), chap. 4, Obstfeld-Peri (1998), De Cecco-Perri (1996), Buti et al. (1997).
[13] Cf. IMF (1997), Dornbusch et al. (1998), Begg et al. (1999), Kenen (1995), chap. 5, Hughes Hallet-Piscitelli (1999), De Grauwe (2000).
[14] Cf. Van der Ploeg (1991), Goodhart-Smith (1993), Kenen (1995), chap.4, Buiter et al. (1993), Eichengreen-Wyplosz (1998), Buti et al. (1998), Allsop-Vines (1996), Hughes Hallet et al. (1999).
[15] Cf. Barro (1989).

holds: any change in the public budget does not produce effects on aggregate demand because it translates into compensatory changes in private demand induced by the expectation of variations in future taxation.[16]

Having eradicated reasons for "Keynesian effects" of fiscal policies, there remain two main long run social costs of fiscal deficits. First , even with a balanced budget, taxation and public expenditure drain resources from the private sector: the so-called "size of the public sector" matters for growth due to the incidence of taxation on factors supply. Second, if the private sector anticipates that the intertemporal public budget constraint is going to be violated, the inflation rate jumps immediately to the higher level consistent with the overall creation of money that will be necessary to fill future budget gaps. From this theoretical core, two lines of policy prescpritions for EMU have sprung. The first, on normative grounds, is the design of rules that tye the FAs hands. The second, more on positive grounds, is the necessity of fast "fiscal consolidations" in order to drive EMU public budgets towards zero. These two lines of thought are clearly reflected by the Maastricht Treaty and the SGP. The value one attaches to the former is entirely dependent on its theoretical premises, hence we have nothing to add to what already said in section 1. The latter prescription has been vehiculated by means of an interesting group of empirical works aimed at overcoming political resistance againts the SGP by showing that fiscal consolidations have in fact positive "non-Keynesian effects"

As long as Ricardian equivalence holds, it is obvious that a change of fiscal stance, for worse or for better, is unable to affect the equilibrium of the private sector unless the hypotheses are modified. One line of research, the so-called 'expectations view' of fiscal policy, uses the hypothesis of strong discontinuity in wealth at a 'critical' value of maximum accumulation of public debt. If a fiscal 'consolidation' (a budgetary retrenchment intended to deal with excessive public deficit and debt) is only temporary, its sole effect is to postpone achievement of the 'critical' value of public indebtedness with which consumers associate a major cutback in public consumption – which in the model corresponds to the increase in private consumption – so that a negative wealth effect arises with a consequent fall in private consumption.[17] If one then adopts the hypothesis of a representative agent with a finite temporal horizon, and if the budgetary change is perceived as permanent, the result of "Ricardian equivalence" is reversed: as in models of overlapping generations and non-altruistic consumers, fiscal consolidation via higher taxes gives rise to expectations of a higher level of wealth, so that private consumption increases across the life-span.[18]

The macroeconomic scheme used to assess fiscal stance prompts two observations. The first is that the increase in private consumption allegedly connected with cases of fiscal consolidation rests on consumer expectations as to the nexus between future fiscal policy and a 'critical' level of public indebtedness. Yet, this is a variable which is impossible to verify. The second observation is that the neoclassical analytical scheme prevents one from also considering – besides the effect of an increase in the value of consumers' wealth, which is fully consistent with stock-flow models *à la* Keynes – the fall in the risk premium following the decrease in the public debt, which lowers interest rates and stimulates investment. This theoretical shortcoming has been confirmed by an empirical survey of twenty OECD countries for the period 1970-95, which shows that the increase in aggregate demand consequent on

[16] It has also been argued that fiscal policy may have real effects: at the individual level, a wealth effect on leisure time and consumption which reduces the labour supply, and a substitution effect whereby a rise in taxes increases the labour supply. At the collective level, the supply side effect of fiscal policy consists in a loss of competitiveness due to the wage increases required to recover real purchasing power after income tax has been increased – unless, in case of high labour union centralization, the effects of the loss in competitiveness on employment are not internalized so that wage increases are restrained (Alesina – Perotti (1997a)).

[17] Cf. Bertola –Drazen (1993).

[18] Cf. Giavazzi –Pagano (1996); see also Giavazzi – Pagano (1990).

cases of strong fiscal consolidation has consisted much more in an increase in investments than in consumption (the so-called positive 'credibility effect' connected with the decumulation of the public debt).[19] Modification of the hypotheses adopted by this line of research in order to permit analysis of the impact of changes in fiscal stance on the equilibrium of the private sector, is therefore not entirely problem-free.[20]

Another line of research,[21] which uses a model with wage rigidity which also incorporates the traditional Keynesian effect implying higher income after an expansionary fiscal impulse,[22] differs from the previous models, insofar as the reaction of the private consumer to a change in the public deficit follows *endogenously* from the initial conditions of the intertemporal public budget constraint. With high public debt, and thus high present-discounted value of future taxation, an increase in public expenditure produces a net negative effect: the expansionary effect on income is more than offset by the non-Keynesian effect of a reduction in private consumption caused by the expectation of increases in future taxation. However, in case of agents under a liquidity constraint, the partial derivative of private consumption with respect to public deficit shows a positive sign. In fact, with constrained agents, after an increase in public deficit, the negative wealth effect linked to the expectation of higher future taxes does not apply, and the effect on consumption determined by the Keynesian multiplier prevails.[23] In addition, the initial conditions would affect the sign of the derivative of private consumption with respect to the public deficit also in case of a non-expected tax increase, with public expenditure unchanged. The net effect on demand is positive if the restrictive impact on consumption by constrained agents is more than offset by the positive impact by agents experiencing an inversion in the upword sloping path of taxation.[24]

This line of research contends that fiscal consolidation plans aiming at reducing public deficits after a period of "fiscal indiscipline", if they are implemented through expenditure cuts, are more likely to bring about: i) a drastic reduction in public deficit and debt and ii) an expansionary effect on income. In order to analyse the former claim, we shall refer to the first criterion used to assess the 'success' of a fiscal consolidation plan:[25] the reduction of the primary public deficit/GDP ratio[26]. One problem with this assessment method is its use of the

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[19] Cf. Dermott – Westcott (1996).

[20] This also applies to econometric estimates of 'non-Keynesian' effects, such as those relative to Ireland and Denmark in Giavazzi – Pagano (1990). The model used by these authors for their empirical verification has been criticised. For example, it is claimed that the model is unable to deal with the strong expansionary effect on the level of economic activity exerted by the devaluation which accompanied fiscal restraint in Ireland between 1987 and 1989 (cf. De Bonis – Thimann (1999), pp.629-33). Moreover, specification of the consumption function would imply constant interest rates, whereas in Denmark between 1983 and 1986 it was precisely a substantial reduction of short-term and long-term interest rates that gave rise to the expansionary cycle (through increased financial wealth in government bonds, which accounted for a large proportion of consumer portfolios) (Cf. De Bonis – Paladini (1998), pp.261-5).

[21] Alesina - Perotti (1995), Alesina – Perotti (1997a) and (1997b), Alesina – Perotti - Tavares (1998) and Perotti (1999).

[22] The reference models are those of Blanchard (1990) and Sutherland (1997).

[23] Perotti (1999), pp. 1407-8.

[24] Alesina – Perotti - Tavares (1998), pp.208-9.

[25] A period of fiscal restriction is defined as a year in which the primary deficit purged of the cycle diminishes by more than 1.5% of GDP; or it is a period of two consecutive years in which the primary deficit purged of the cycle diminishes by at least 1.25% in both years. A fiscal consolidation plan is deemed to be a 'success' if, in the three years following the tightening, the structural primary deficit/GDP ratio is at least 2% less than the value for the last year of tightening; or if in the three years after the last years of restraint, the public debt/GDP ratio falls below the level of the last year of tightening by 5% (See Alesina – Perotti (1997b), pp. 220-1).

[26] The other indicator, the public debt/GDP ratio is inevitably imprecise: by using this indicator, one ascribes the share of expenditure on interest in total debt to the behaviour of the fiscal authority, while

structural primary deficit/GDP ratio (i.e. the budget balance corrected for the cycle) both as a measure of fiscal restriction and as an indicator of the "success" of fiscal consolidation.[27] The assessment of success (a drastic reduction in the deficit/GDP ratio) of an episode of consolidation does not comply with the *ceteris paribus* conditions. In fact, the fiscal consolidation cannot be singled out from a subsequent restriction impressed by the government to the *fiscal stance*. Since consolidations – according to the method of calculation – are often consecutive and the change of fiscal stance in a given year is used both as a measure of the width of a consolidation and as a measure to judge a previous consolidation, in a period of fiscal restriction overlapping is very likely that episodes of success are overestimated. Awareness of the difficulties involved in devising a rigorous method to assess the effects of fiscal policy casts doubts as to the suitability of criteria which are unable to rigourously discriminate between causes and effects, as well as between planned effects and unanticipated effects.

As to the second claim, it is argued that the expansionary effect on income of fiscal consolidations is due not so much to the dimension as to the *composition* of the adjustment: a breakdown of public expenditure shows i) that the decrease in the *structural* public deficit in ratio to GDP is not much greater in cases of success than it is in cases of 'non-success' (2.74 compared to 2.18)[28]; and ii) that the 'successes' are 80% due to adjustments through expenditure cuts, while the 'non-successes' are associated with tax increases amounting to three times more than the reductions in expenditure. While the authors take them as confirming their thesis,[29] these results can reveal a typical case of *reverse causation*. In fact, they can also be used to argue the existence of a causal relationship between an upsurge in the growth rate and a fall of the deficit/GDP ratio. First, the small numerical difference between the percentage reduction in the public deficit/GDP ratio in 'successful' adjustment episodes and the same percentage in 'unsuccessful' ones raises questions as to the reasons for this result. Considering that the value of the numerator of the public deficit/GDP ratio should have necessarily undergone a different variation in the two cases, the similarity between the two graphs directs attention to the role that the denominator may have played.[30] There is a great deal of evidence suggesting the presence of a *reverse causation* [31]. For example, a breakdown of public expenditure in 'successful' cases (which is calculated by the authors on the budget uncorrected for the cycle, and is therefore an empirical evidence which incorporates the income dynamics) shows that negative variations in transfers are just as important as those relative to wages and public employment.[32]

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the price component of the debt service – the interest rate - is in the short period largely independent of changes in *fiscal stance* – on this point we shall expand further in section 4.).This is especially true in the case of the process of European integration. The extent to which the restrictive monetary policy imposed by the "asymmetric" EMS pushed up the debt service is well known. The importance of the interest rate in determining increases in public deficits and debts is acknowledged by the authors themselves, when they point out that "from 1974 onward Italy shows only two years of maior expansion, despite a change in the debt/GDP ratio from about 50% in 1974 to the current 125% " (Alesina – Perotti (1995), p. 217).

[27] For a similar critique, see A. Zaghini (2000), pp. 23-4.

[28] Alesina – Perotti (1995), p.227.

[29] Ibidem

[30] However, the authors do not accept this possibility: "An alternative interpretation is that adjustment is successful because growth is, for some exogenous reason, particularly high during these episodes. While our evidence cannot be conclusive on this point, the alternative interpretation, which argues that growth explains success, fails to explain the difference in composition between successful and unsuccessful adjustments" (Alesina – Perotti (1997b) p.228).

[31] See Table 12 in Alesina – Perotti (1995), p. 227.

[32] In support of the hypothesis of *reverse causation* it has been pointed out that "when there is a sustained acceleration in growth for reasons having little to do with fiscal policy, much of the induced reduction in the deficit takes the form of a fall in government transfers. (…) In any case, if one believes that, rather than the magnitude or the composition of the change in the deficit, it is the initial

Alternatively, the decrease in the public deficit/GDP ratio may have resulted from an exogenous increase in the economy's rate of growth. A restrictive fiscal impulse and a simultaneous acceleration of growth may have given rise to a reduction of the transfers connected with the social shock absorbers (which lowers the numerator of the ratio) and greater growth of GDP (which increases the denominator). Further support for the hypothesis of *reverse causation* is provided by cases of 'non-success': the estimated variation in the transfers component of public expenditure in fact has a parameter value (which is not significant) close to zero.[33] This constancy in the numerator of the public deficit/GDP ratio is a clear clue of a causal nexus from the stagnation of growth to an invariant social expenditure.

This line of research was right in directing attention to the importance of the 'initial conditions' in enabling fiscal consolidations to have non-recessionary effects and in determining their success. However, the models used for the econometric analyses, and the methods used to assess the effects of consolidations, have yet to yield estimates which employ reliable indicators and are convincing on theoretical grounds. This allows the following interpretation: in the countries that have implemented fiscal consolidation plans, an autonomous increase in the growth rate has brought about not only to 'successful' fiscal restrictions and expansionary effects on income but also the composition of reduction expenditure that prevailed in episodes of 'success'.

Theory and evidence in favour of the fiscal policy prescriptions discussed in this paragraph raise severals doubts. One on which we shall focus is twofold: i) *the macroeconomic connections of fiscal policy* are absent, and consequently ii) *the problem of the monetary/fiscal policy mix* is largely ignored. Recipes for "fiscal discipline" as well as stories of success or insuccess may be serioulsy misleading in the absence of analysis of the relationship between the numerator of fiscal indicators, their denominator (real GDP changes) and the determinant of the debt/GDP ratio dynamics (real interest rate and real growth rates). Sections 3 and 4 will put forward both theoretical and empirical arguments in accordance with this view.

2.2 The mix of monetary and fiscal policy as a 'chicken game'

As shown in section 1, one of the distinctive features of the current institutional structure of the EMU is the asymmetry between centralized monetary policy and decentralized fiscal policies. For some observers, although this arrangement is unusual, it may nonetheless be desirable for the purpose of macroeconomic stability and fiscal discipline as dictated by the general theoretical stance examined in the previous paragraph. We shall now investigate the theory underlying this positive assessment of the asymmetry between the MA and the national FAs in the EMU.

Also the model of relations between MA and FA has been profoundly influenced by New Classical economics. The latter has given an important contribution in establishing monetary stability as the priority in the EMU. The doctrine of central bank's credibility, indeed, has provided the theoretical basis on which – during the two decades of the EMS fixed exchanged rates – the central banks progressively converged on a restrictive, or at least non-accommodating, monetary policy stance. In the new monetary-union regime this theoretical background has played a crucial part in identifying the MA's full independence from FAs, as a means to enforce credibility, as the most efficient institutional arrangement for the achievement of the social welfare function's argument consisting of 'inflation close to zero'. Given the fears that unfettered budget policies may intertemporally threat independent determination of money supply (see above), the independence doctrine has been supplemented with the so-called "monetary dominance" prescription. A clear example of this 'theoretical

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conditions that are important, it is not entirely clear what to make of these results. Reverse causality is an issue here as well, and the authors go to considerable lengths to address it." (Eichengreen (1998), p. 256 and 260).

[33] Cf. Alesina – Perotti (1995), p. 227 and Alesina – Perotti (1997b), p. 230.

apriorism' is provided by the choice of the 'chicken game' as the device to analise the interaction between AM and FAs in a monetary union. The underlying hypothesis is that both economic policy authorities (EPAs) have an incentive to coordinate themselves, but there is a conflict of interest. In fact is it *assumed a priori* that i) governments would prefere an expansionary fiscal stance, and ii) coordination of the EPAs on expansionary policies yields a lower social pay-off than does coordination oriented to restriction.

Table 1

		FISCAL POLICY	
		Restriction	*Expansion*
	Restriction	4 , 2	– 1 , –1
CENTRAL BANK			
	Expansion	0 , 0	1 , 3

In the chicken game shown in table 1,[34] the Pareto-optimal equilibrium between the central bank and each of the FAs consists in the restriction/restriction Nash equilibrium.In fact, on the basis of the above mentioned hypotheses the 'monetary dominance' Nash equilibrium – common restriction, where the MAs have the maximum pay-off (see figure 4) – is presented as 'virtuous', while the other Nash equilibrium – common expansion, where the pay-off for the FAs is maximum – is presented as 'vicious'. Once the existence of a monetary union is hypothesised, and once the FAs have been attributed the opportunistic behaviour proposed by "public choice theory" (politicians maximize their personal utility by increasing public indebtedness), there is a danger that the game will conclude with the worse outcome for both authorities: the pay-off pair (– 1, –1) corresponding to fiscal expansion and monetary restriction. The only way by which the central bank can avoid being 'exploited' by the FAs is to undertake the 'pre-commitment' of declaring – in a credible manner, whence the importance of its reputation – that, between the two possible Nash equilibria, it prefers the restriction/restriction outcome. Consider the free-riding behaviour of a government which, in an inflationary situation, seeks to maximize its welfare function by means of a strategy of fiscal expansion while simultaneously exploiting the increase in aggregate demand and the cooperative behaviour of the other countries, which in adopting a restrictive fiscal stance forgo a share of demand commensurate with their degree of openness. The underlying message of this literature is that when the central bank is faced by opportunistic behaviour of this kind, in order to evade the pressure applied by the government for a common expansionary strategy, it must act as a Stackelberg leader, forcing that government to pursue the Pareto-optimal solution of responding to the monetary restriction with the cooperative behaviour of fiscal restriction. If the MAs are resolute in their adoption of a rigidly restrictive stance, a restrictive one in fiscal policy as well is the only strategy that averts the worst outcome for all.

This game-theory framework of the relationship between the two authorities supports the widely-held opinion that a *country by country* relationship between the ECB and single national FAs strengthens monetary dominance, on the one hand the ECB would minimize the risk of a fiscal policy bias towards inflationary expansion of public deficits,[35] on the other hand

[34] The example of the game in figure 4 is taken from Artis – Winkler (1999). Since the strategy of fiscal expansion is deemed Pareto-inferior *a priori*, without reasons being given for this judgement except for rhetorical assertions (fiscal policy in Europe is first called "unsustainable" (p. 159), then "irresponsible" (p. 161), and finally "indisciplined" (p. 163), the negative verdict on the European countries' FAs is compatible with various macroeconomic models.

[35] See, for example, the model which argues "that monetary unification without coordination among decentralized FAs may actually reduce the inflation bias and the bias towards public spending. (…) The

the ECB would encounter less resistance when it is necessary to impose on governments a cooperative strategy of simultaneous restrictions so to give rise to the lower interest rates which are necessary to foster investments (that is, a change in the public-sector equilibrium condition such to compensate the effect on aggregate demand of the annulment of public deficit).[36] In a monetary union regime the Pareto optimal solution of the conflict of the preference between MA and each FAs – as a result of the attributed payoffs – corresponds to prevalence of monetary dominance on fiscal dominance.[37]

Even if one accepts that monetary dominance is an efficient solution for conflict of interest and/or coordination problems between AM and FAs in conditions requiring fiscal restrictions, there is nothing in this literature to guarantee that it is also an efficient solution when stabilization measures are necessary. As concluded in previous section, overall macroeconomic conditions are absent. In the presence of a cyclical phase of recession common to several countries, and of an institutional set-up that makes expansionary budgetary policies costly, a 'beggar-thy-neighbour' strategy pursued by means of a neutral policy would amount to *free riding*.[38] If all governments decided to adopt *free-riding* behaviour so as not to expand their public spending, leaving it to other countries to engage in the cooperative behaviour of fiscal expansion, the macroeconomic failure of 'under-stabilization' would come about.[39] Accordingly, a monetary policy strategy which simply subsumes fiscal policy, compelling governments to adopt – *whatever the macroeconomic environment* – an acyclical fiscal stance, incurs the risk of serious distortions in the monetary/fiscal policy mix.

3. Macroeconomic stabilization policies in an interregional system

Our purpose in this section is to present a macroeconomic model of the EMU as an interregional system with a single independent central MA and national FAs for each member country. We wish to use this model to assess conditions and extent of validity of our contentions raised against the dominant views favouring the present EMU insitutional setup emerged form previous sections, namley that i) fiscal policy prescriptions cannot be given irrespective of the general macreoconomic scenario, ii) the fiscal-monetary mix matters the most in this scenario, iii) the simplistic "labour division" between ECB taking care of symmetric shocks and national FAs taking care of asymmetric shocks is far from being reassuring for macroeconomic stabilization in the EMU.

As explained in section 1, assessment of the functionality of the EMU's political-economic regime to the goal of macroeconomic stability requires definition of the theoretical frame of reference. Beside the pure neoclassical framework examined in the previous section, the debate on the problem of stabilization in the EMU has proceeded on the basis of a theoretical approach whose main ingredients can be summed up as follows. 1) The real variables of the economy (output and employment) fluctuate in response to variations in the determinants of aggregate demand and supply, which for the sake of simplicity are treated as

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reason is that a large union containing many non-cooperating fiscal players strengthens the strategic position of the common central bank, which favours lower inflation than the fiscal players do because it does not internalize the beneficial impact of unanticipated inflation in relaxing government budget constraints" (Beetsma –Bovenberg (1998), pp. 240-1).

[36] "Within the EMU (…) fiscal restraint by an individual country will not be offset by interest-rate and/or nominal exchange rate changes unless all others consolidate at the same time: Thus, the output and employment costs of unilateral consolidation are likely to be much larger within EMU than outside it" (Allsopp – Vines (1998), p. 10).

[37] Canzoneri –Diba (1996).

[38] In this way the costs of fiscal expansion in terms of higher taxation and to enjoy the benefits of a trade surplus are not met by the country and the benefits of a trade surplus are enjoyed; (the non-expansion in the domestic components of aggregate demand is off-set by the increase in exports).

[39] Allsopp –Vines (1998), p. 99 and p. 103.

exogenous random shocks. 2) Fluctuations take place around a long-period value of domestic output ("potential output") corresponding to full use of the factors net of any "structural unemployment". 3) The economic system responds to shocks with variations in quantities and not solely in prices because of imperfections in the organization of markets, in the transmission of information or of disincentives by economic agents against price changes. 4) Fiscal or monetary measures (typically targeted on aggregate demand) may minimize fluctuations and their real costs. 5) Neither fiscal nor monetary interventions on aggregate demand are able to alter the level of potential output and the structural rate of unemployment permanently; rather, their only effect would be to raise the average level of inflation above "core inflation". 6) The EPAs must respond to an objective function such that (or they must be constrained so that) *fluctuations* around potential output and core inflation are minimized, but without manipulating the "market" combination of potential output and core inflation.[40]

The model (of AD-LM-AS type) that we present reproduces the essential components of the conventional wisdom set out above. Compared to similar studies, our model introduces, explicitly and in detail, the monetary implications of belonging to an interregional system. These implications are reflected mainly in the endogenous determination of the domestic money supply via the interregional balance of payments, and it highlights the transmission mechanisms of shocks and monetary and fiscal interventions.

The model admits to the possibility that each domestic economy may be subject to unexpected changes in both demand and supply able to generate real fluctuations. However, as regards analysis of economic policy, we shall deal only with demand shocks. The modern theory of economic policy has concentrated almost exclusively on (negative) supply shocks, for the very good reason that these give rise to the well-known dilemma between reducing inflation or reducing unemployment. There are two reasons for our focus on demand shocks. The first is that they are just as important as supply shocks and, according to various studies, more significant and frequent. The second is that our concern in this paper is to bring out the problems of 'division of labour' among different-level EPAs in the stabilization field**.** To this end, we shall seek to spotlight the problems that may arise *even in the absence of the inflation/unemployment trade-off*, or from another point of view, *regardless of the preferences (or conflicts of preference) of the EPAs with regard to that trade-off*. For this reason, we assume that all the EPAs, both central and national, are free from "inflation bias", that is to say they abstain from using macroeconomic policies intended to manipulate the long-period equilibrium levels of inflation, output and unemployment, and that their sole objective is to stabilize the level of economic activity with respect to shocks.[41] Since these are demand shocks, so that fluctuations in demand and output are positively correlated with those in prices, this objective is coherent with that of price stability set by the EMU treaties and guaranteed by the ECB, In this context it is unnecessary to specify what the EPAs' preferences are.[42]

3.1. A macroeconomic interregional model

The model depicts the EMU as an open system consisting of two countries with the following characteristics:

- production of a single good, either consumed or exported, which differs in each of the two countries; the good may be exported intra-EMU or extra-EMU;

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[40] These are the main components of what has been aptly called "the new neoclassical synthesis" (Goodfriend-King (1997)) where 'new' refers to the broad array of microfoundations for incomplete adjustments of prices and/or wages as at point 3: see also AEA (1997), Blanchard (2000).

[41] For a similar analysis see De Grauwe (2000).

[42] It can be shown that if one posits a traditional quadratic additive loss function with respects to variations in prices and to variations in output (employment), and if one introduces demand shocks, one obtains complete stabilization of prices independently of the 'weight' assigned to the variation in output.

- capital mobility;
- absence of labour mobility;
- structural symmetry
- one national FA for each country;
- one MA for the EMU.

The rest of the world (ROW) is not specified except for the following characteristics in relation with the EMU:

- mobility of commodities and capital;
- absence of labour mobility;
- free floating currency regime.

Definitions

All the variables are defined in logarithms (unless stated otherwise) and they represent *temporary deviations* from long-period equilibrium values in the EMU[43].

Countries (i = 1, 2)

π_i change in the price level (temporary inflation)

y_i change in aggregate demand

g_i cyclical component of the budget

δ_i demand shock

z_i change in output

ε_i supply shock

m^d_i change in money demand

m_i change in the money stock

λ_i money demand shock

μ_i money supply shock

θ_i spread on the EMU interest rate

q_i change in the terms of trade (effective real exchange rate)

$r_i = r + \theta_i$ total variation in the domestic interest rate

All shocks are i.i.d. with zero mean.

EMU:

r change in the interest rate

π, π^e inflation and expected inflation

z change in output

m change in money supply

x, x^e change, and expected change, in the euro exchange rate (euro x 1 unit of foreign currency)

ROW:

r_w change in the interest rate

π_w, π^e_w inflation and expected inflation

The EMU countries

The following equations (i = 1, 2, $j \neq i$) are given for each EMU country.

Aggregate demand

[43] For details on this technique see also Eichengreen-Wypolosz (1993), Allsopp-Vines (1996).

(3.1) $y_i = -y_q q_i + y_z z_j - y_r(r_i - \pi^e) - g_i + \delta_i$

which depends on
- intra-EMU and extra-EMU foreign trade in function of the domestic terms of trade, $y_q q_i$, of the other EMU country's output, $y_z z_j$, and of world demand shocks included in δ_i
- consumption and investment dependent on the domestic real rate of interest, $y_r(r_i - \pi^e)$
- government budget, g_i
- exogenous shocks δ_i

Terms of trade (effective real exchange rate)

(3.2) $q_i = \alpha(\pi_i - \pi_j) + (1 - \alpha)(\pi_i - (x + \pi_w))$

which is calculated as the weighted average of the terms of trade intra-EMU, $\pi_i - \pi_j$, and extra-EMU, $\pi_i - (x + \pi_w)$, where α is the weight of intra-EMU trade.

Aggregate supply

(3.3) $z_i = z_\pi(\pi_i - \pi^e) + \varepsilon$

which depends on
- (unexpected) changes in domestic inflation with respect to the inflation expected for the EMU, $z_\pi(\pi_i - \pi^e)$;[44]
- exogenous shocks ε_i.

It is also possible to distinguish different *labour market regimes*:
- 'structural unemployment' (e.g. positive NAIRU), $z_\pi > 0$: output increases (decreases) with respect to the previous level in the presence of unexpected domestic inflation (deflation);
- 'Keynesian unemployment', $z_\pi \to \infty$: output varies one-to-one with aggregate demand;
- 'full employment' (NAIRU equal to zero), $z_\pi = 0$: output is constantly at the full employment level.

Money demand

(3.4) $m^d{}_i = \pi_i + m_z z_i - m_r r_i + \lambda_i$

which depends on
- domestic price level, π_i
- output, $m_z z_i$
- rate of interest on domestic bonds, $m_r r_i$
- exogenous shocks, λ_i

Domestic money stock

(3.5) $m_i = -y_q \alpha(\pi_i - \pi_j) + y_z(z_j - z_i) + m_\theta \theta_i + \mu_i$

Because it is part of the EMU, an individual country has only two channels of money creation: its intra-EMU balance of payments,[45] and the banking channel, i.e. financing of the domestic banks by the ECB. Overall, the determinants are:

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[44] It is therefore also assumed that, in long-period equilibrium conditions, there is a uniform inflation rate, zero or otherwise, in the EMU countries. This condition does not conflict with the productive specialization of the countries (for which the equilibrium price *level* is not the same), in that it implies that relative prices remain constant.

[45] Strictly speaking, each country also has the channel of the extra-EMU balance of payments. In order to make the model more compact and manageable, we assume that the reserves in extra-EMU currency are entirely centralized at the ECB, so that imbalances in a country's extra-EMU payments do not have effects on the domestic money stock.

- intra-EMU foreign trade, which depends on the intra-EMU term of trade, $y_q\alpha(\pi_i - \pi_j)$ (see equation (3.2) above) and on the other country's output, $y_z z_j$, net of the imports induced by domestic activity, $y_z z_i$;
- net intra-EMU capital movements in function of the interest differential on domestic bonds, $m_\theta \theta_i$
- exogenous shocks including the financing of domestic banks by the ECB, μ_i.

Moreover, the two traditional *capital market regimes* can be distinguished:
- 'complete financial integration', $m_\theta \to \infty$: all intra-EMU bonds are perfect substitutes and in equilibrium pay the same interest;
- incomplete financial integration', $m_\theta > 0$: intra-EMU bonds are imperfect substitutes (for example, in relation to a residual country risk), and in equilibrium capital inflows into a country (increase in its stock of intra-EMU debt) requires a positive interest differential.

Equilibrium of the output market

(3.6) $y_i = z_i$

Equilibrium of the domestic market

(3.7) $m^d{}_i = m_i$

The Union

The following conditions must hold for the EMU as a whole:

Equilibrium of the money market:

(3.8) $(\Sigma m^d{}_i - m) + (\Sigma\lambda_i - \Sigma(-g_i)) = 0$

Monetary equilibrium is expressed in relation to financial general equilibrium (Walras' law), where demand for bonds is represented as a shock to the domestic money demand of each country *vis-à-vis* the supply of bonds, which is equal to aggregate government deficits.[46] Given the bonds market equilibrium, equilibrium of the money market requires

(3.9) $\Sigma(\pi_i + m_z z_i - m_r r_i) = m + \Sigma g$

Equilibrium of the EMU money market, $\Sigma m^d{}_i = m$, and equilibrium of domestic money markets, $m^d{}_i = m_i$, in their turn entail the condition

$$\Sigma m_i = m$$

i.e. that the aggregate change in domestic money stocks must coincide with change in the EMU money supply. But, as explained above, Σm_i is given by the sum of intra-EMU balances of payments and by the sum of bank financings μ_i. The sum of intra-EMU balances must be nil by construction, which entails:

$$\Sigma\mu_i = m$$

$$\theta_i = \theta_j$$

That is to say, the change in the EMU money supply is equal to the sum of the changes in domestic money stocks due to bank financing by the ECB. Intra-EMU balances of payments are the channel through which individual countries are able to *redistribute a given quantity of*

[46]We consider g_i to be a net addition to both domestic demand and to financial wealth. To the extent that g_i is strictly understood as a temporary deviation from the balanced budget, this is also consistent with the Barro-Ricardo approach.

money among themselves. If a country presents excess money demand, $m^d_i > m_i$, it may increase its money stock by means of an inflow of funds from the other country. Depending on the financial regime in force, this may make a domestic interest differential necessary. Because the zero-sum constraint of intra-EMU balances and the hypothesis of structural symmetry yield $\theta_i = \theta_j$ the equilibrium condition of the EMU money market (3.9) is :

(3.10) $\quad 2\pi + m_z z - 2m_r r = m + \Sigma g_i$

Uncovered real interest parity

(3.11) $\quad x = r_w - r + x^e$

The euro exchange rate must be constantly aligned to uncovered interest parity with respect to the ROW.[47] There is therefore appreciation $x < 0$ (depreciation, $x > 0$) if, *ceteris paribus*,

– the world interest rate, $r_w \lessgtr 0$, decreases (increases);

– the EMU interest rate, $r \gtrless 0$, increases (decreases);

– expectation forms of appreciation (depreciation), $x^e \lessgtr 0$.

Let us assume that exchange rate expectations are led by the expected inflation differential between EMU and ROW;[48] that is,

$$x^e = \pi^e - \pi^e_w$$

Substituting this relation in the previous one, we obtain the uncovered real interest parity:

(3.12) $\quad x = (r_w - \pi^e_w) - (r - \pi^e)$.

To sum up, the model has:

– three exogenous variables determined by the EPAs of the EMU:

g_i, m

– two exogenous variables determined by the ROW:

r_w, π_w

– four exogenous shock variables for each EMU country:

δ_i, ε_i, λ_i, μ_i

Equations (3.6)-(3.7) for each country, and (3.10) for the EMU, determine

– three endogenous variables, respectively:

π_i, θ_i, r

– from which one obtains the further endogenous variables

z_i, q_i, r_i, π, z, x.

3.2. Characterization of the economies

As has been shown, the model allows various characterizations of the economies in relation to the labour market and capital market regimes. Given the issues addressed in this paper, and

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[47] Strictly speaking this condition does not conflict with the possibility of incomplete financial integration regime within the EMU. It is sufficient for at least one of the bonds issued in the EMU to be perfectly substitutable with the representative security of the ROW. The world operators will negotiate the EMU's benchmark security *vis-à-vis* the ROW's benchmark security, and all the other bonds will pay a risk premium with respect to the world benchmark yield.

[48] This assumption, of course, does not necessarily entail purchasing power parity, which in this model would conflict with the productive specialization attributed to each country. However, if the relative price between the EMU 'good' (the basket of goods produced by each EMU country) and that of the RoW is also included among the long-period equilibrium conditions, *deviations* from this equilibrium due to the inflation differential should be off-set by the exchange rate..

bearing in mind the models in the literature, it is plausible and useful to introduce the following specifications:

- labour market: we consider a 'structural unemployment' regime, $z_\pi > 0$, NAIRU > 0;
- capital market: we consider a regime of complete financial integration, $m_\theta \to \infty$; this entails $\theta_i \to 0$, $r_i = r$, all i

To explore the model's properties we begin with the solutions of the endogenous variables (π_i, z_i, r), with all the other variables taken as given:

(3.13) $\pi_i = [-g_i + \alpha y_q \pi_j + \alpha y_z z_j - (y_r + y_q(1-\alpha))(r - \pi^e) + z_\pi \pi^e + \delta_i - \varepsilon_i]\Delta_1^{-1}$

(3.14) $z_i = z_\pi \pi_i + \varepsilon_i$

(3.15) $r = \pi / m_r + [m_z z - \Sigma g_i - m]/2m_r$

$\Delta_1 \equiv [\alpha y_q + z_\pi]$.

Domestic inflation and output in each country (π_i, z_i) depend on three channels of influence by other variables (the signs of the effects of these variables are obvious and do not require particular explanation):

– the domestic channel represented by the fiscal component g_i and exogenous shocks, δ_i , ε_i
– the intra-EMU channel represented by the other country's inflation and output, π_j, z_j, via bilateral trade measured by the weight α
– the EMU channel represented by the real interest rate, i.e. by the nominal interest rate r and by the expected inflation rate π^e, and indirectly by the real euro exchange rate: the real interest rate produces the usual Mundell-Fleming compound financial effect, $y_r + y_q(1-\alpha)$, where y_r measures the crowding-out of domestic demand, and $y_q(1-\alpha)$ measures the crowding-out of foreign demand via the real exchange rate, weighted with extra-EMU trade.

Expectations and the economic policy regime

Before proceeding, solution must be given of the determination of EMU inflation expectations π^e. It will be remembered that EMU inflation is the average of changes in national prices π_i. One can deduce from equation (3.13) that, in general, the reduced form of EMU inflation has the following structure:

(3.16) $\pi = \mathbf{k_v v'} + k_r \pi^e + \mathbf{k_\omega \omega'}$

where $\mathbf{v'}$, $\boldsymbol{\omega}'$ are the vectors of the macroeconomic policy variables (g_1, g_2, m) and of the shocks, and $\mathbf{k_v}$, $\mathbf{k_\omega}$ are the vectors of their coefficients. Hence expectations of EMU inflation, determined rationally on the basis of (3.16) must embody the determination rule of the policy variables.

We define a *pure stabilization regime* as one in which the only objective of each national FA and the BCE is to stabilize, respectively, (π_i, z_i) and (π, z) with respect to shocks. Therefore, as mentioned in section 3.1, we exclude that the EPAs use macroeconomic policies to alter the long-period equilibrium variables of the system.[49] Consequently, in general, the policy variables are a linear function of shocks, so that the rational expectation concerning π – that is, the expected value of (3.16) – is:[50]

[49] In particular, the objective of national fiscal policies – and of centralized fiscal policy, in a mutual risk insurance set-up – is not redistribution but stabilization (see section 5).

[50] Obviously, further conditions can be introduced so that the EMU's long-period equilibrium inflation is positive (core inflation).

(3.17) $\pi^e = E(\pi) = 0.$

The correlation of shocks

We have already mentioned the close attention paid to the nature, magnitude and correlation of macroeconomic fluctuations among the EMU countries. In fact, the features of fluctuations significantly affect the optimum choice of stabilization policies. This remains true even if analysis is restricted to fluctuations which originate from aggregate demand, as happens in our exercises.

A particularly important feature pointed out by the literature is the degree of symmetry or asymmetry of fluctuations. If one interprets – as we do – fluctuations as resulting from linear stochastic shocks, it is more appropriate to speak of shock correlations. Drawing on a recent work by De Grauwe (2000), we introduce the correlation coefficient of shocks in the various countries. This enables compact treatment of various hypotheses on the correlation of shocks more general than the two extreme cases discussed in the literature: asymmetric shocks (in a single country) or symmetric shocks (equal in all countries). Since the prevalent nature of these shocks is an empirical question, and also a controversial one, we believe that analytical treatment without *a priori* prejudgement is required. We would also maintain that it is probable that macroeconomic fluctuations do not occur to an equal extent either in a single country or in all countries; rather, they arise in distributed form, with *different degrees of intensity*, in the countries belonging to the system. Moreover, our formalization enables treatment of a case that may be of importance in Europe but has not received adequate attention: bilateral asymmetric shocks due to intra-EMU trade (a shift of demand from one country to another).[51]

If $var(\delta_i)$ is the variance of demand shocks in country *i*, and $cov(\delta_i\delta_j)$ is the covariance of shocks in two countries, then

$$\rho_{ji} = \frac{cov(\delta_i\delta_j)}{\sqrt{var(\delta_i)var(\delta_j)}}$$

is the correlation coefficient of the shocks. Therefore, in the case of two countries, we may say that if we observe δ_1, we may expect, up to some random error,

(3.18) $\delta_2 = \rho\delta_1$

We may thus characterize the three cases typically treated in the literature in terms of correlation:

- $\rho = 1$, symmetric demand shocks (e.g. a fall in world demand), $\delta_1 = \delta_2 = \delta$
- $\rho = 0$, unilateral asymmetric demand shocks (e.g. a fall in domestic consumption), $\delta_1 \neq 0$, $\delta_2 = 0$
- $\rho = -1$, bilateral asymmetric demand shocks (e.g. a redistribution of intra-EMU trade), $\delta_2 = -\delta_1$

Interdependence

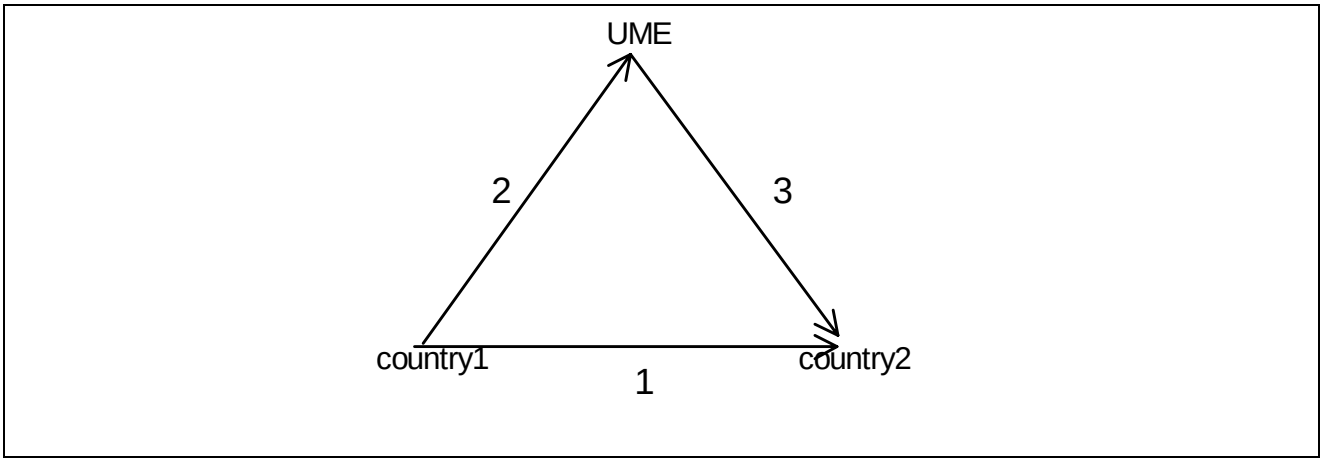
The crucial aspect of the economic system represented by equations (3.13)-(3.15) is *interdependence among countries*. Interdependence arises when the choices of an economic actor affect the factors determining the choices of another actor, or its well-being. Although well known to scholars of European monetary unification, interdependence linkages have not

[51] For a model hinging on bilateral demand shocks, and discussion of their importance in the EMU, see Tamborini (2000).

yet been thoroughly analysed. The system examined here displays the three forms of interdependence depicted in figure 1:

- *direct horizontal interdependence*: the direct influence of each country on the other, which coincides with the intra-EMU channel of the variables π_i, z_i; we may therefore also talk of *trade interdependence*;
- *vertical interdependence*: the influence exerted by each country's variables g_i, π_i, z_i on the EMU variables π, r, x, and vice versa;
- *indirect horizontal interdependence*: the influence exerted by each country's variables g_i, π_i, z_i on the other country through their repercussions on the EMU variables π, r, x; for this reason we may also talk of *financial interdependence*.

Figure 1. Interdependencies from country 1 to country 2



From the point of view of policy instruments, this system of interdependences entails that, for example, a fiscal expansion in country 1 which (temporarily) increases domestic output and inflation has a 'direct horizontal' effect of the same sign on output and inflation in country 2, and a 'vertical effect' on EMU in that it gives an impulse of positive sign to the union's output, inflation and interest rate, and hence also an appreciation impulse to the euro. Finally, it has a further 'indirect horizontal effect' of negative sign on country 2 because of the repercussions of the increase in the EMU interest and exchange rates.

Direct horizontal interdependence is the best known and most thoroughly studied form of reciprocal macroeconomic relation among open economies, its prototype being the Keynesian international trade multiplier. Consequently, although it is a phenomenon of great importance for the European economies, it is not a specific form of interdependence due to membership of the EMU – except for the fact that it now hinges on irrevocably fixed exchange rates among countries. Above all, however, *because* of EMU membership, this form of interdependence is no longer the *only* macroeconomic linkage among countries.

The distinctive feature of participation in a monetary union and of the move into an interregional regime is vertical interdependence. The first reason for this is the creation of a single money market and of a single MA, which centralizes determination of the interest and exchange rates. The single money market collects the impulses from individual countries and transmits them back.[52] Some features of this 'bottom up' transmission, and vice versa, of

[52] It might be objected that vertical interdependence may also exist in an international regime with fixed exchange rates and complete financial integration – at least for countries able to influence the common monetary aggregates – and which was already in force as such among the EMS member-countries. This objection can be met by pointing out that moving into an interregional regime entails a difference of degree, not of substance, in vertical interdependence. However, in the light of experience of

economic policy decisions have already been examined by studies concerned mainly with the institutional structure of the System of European Central Banks**,** with the process of monetary policy decision-making by the ECB in relation to the economic information forthcoming from individual countries, and with the mechanism that transmits those decisions through the money markets of the various countries. To these should be added a number of further – and no less important – aspects to do with institutional and operational relations between the ECB and the national FAs, and in particular the reciprocal repercussions of their economic policies, which are the subject of this paper.

On the other hand, unlike in the previous international regime, the national EPAs cannot insulate their economies against backwash effects from the single money market, given that they are no longer able to adjust the exchange rate or to undertake independent monetary policy manoeuvres. Generated through vertical interdependence, therefore, is the third form of interdependence distinctive of an interregional regime: namely, indirect financial horizontal interdependence. Also this aspect of interactive mechanisms within the EMU has already been analysed. Indeed, one of these mechanisms – the one that works through the common interest rate – has been identified as so potentially damaging that it has justified adopting the system of fiscal rules in the SGP. Financial interdependence, therefore, is a matter of importance which warrants more thorough analysis.

Before discussion begins, however, two specifications are in order. The first is that vertical interdependence, and the financial interdependence to which it gives rise, cannot be analysed without introducing hypotheses or information about the behaviour of the ECB. This seems obvious, given the nature of the problem described above, but many current studies address the topic of interdependence within the EMU, either analytically or normatively, as if it were of direct concern to individual countries alone, without involving the behaviour of the ECB, or independently of it.

The second specification is terminological, but not solely. As said, the concept of interdependence has been part of the baggage of international economics for some time, and it has been recognized as closely conditioning economic policy choices (cf. Cooper (1967)). More recently, and especially in the literature on the EMU, the term 'interdependence' has almost entirely disappeared, with much use being made instead of the term 'externality'. Externalities are forms, or better consequences, of the interdependence among economic actors, but not all the forms of macroeconomic interdependence among the EMU countries can be classified as externalities. An externality in the strict sense only occurs in the presence of two specific conditions: i) the effect on the other actor (or actors) is unintentional; ii) this effect is not conveyed by the price system. Therefore, a system of markets in competitive general equilibrium is certainly dense with interdependences, but it does not have externalities (because condition ii) does not apply). A consumer who demands pears helps push up their price, which is certainly not to the benefit of other consumers who demand pears. The same obviously applies to a private financial operator or public agency demanding capital, given the effect of this demand on the interest rate and on other capital-demanding operators. However, there is no reason to call these price effects 'negative externalities'; indeed it is incorrect and misleading to do so. In short – as Buiter and Kletzer (1988), for example, pointed out some time ago – the term, and therefore the concept, of 'externality' has been abused in the debate on the EMU. It is for this reason that we prefer to use the term 'interdependence', which may be somewhat obsolete but is nevertheless more in keeping with our conceptual framework.

With these specifications of the model, we shall examine the problem of stabilization policies in the EMU from the particular point of view of the 'triangular relation' between national FAs and the central MA set out above. To be borne in mind is what seems at present

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the EMS, it should be borne in mind that an international regime has two major differences from an interregional one. The first is the presence of formally independent MAs, which means that compensatory domestic monetary policies might be implemented; the second is that it is possible to realign exchange rates.

to be the predominant opinion among the supporters of the arrangement described in section 3.1: namely, the possibility that stabilization policies can be effectively implemented through a 'division of labour' between the ECB (which concerns itself with Union-wide shocks) and the national FAs (which concern themselves with local ones), taking advantage of the 3% deficit margin allowed by the SGP. We shall address two topics. The first concerns the operation of *automatic stabilizers*, i.e. endogenous anti-cyclical budget adjustments. The second concerns the possibility of *anti-cyclical fiscal intreventions*, i.e. fiscal operations performed after the onset of undesired macroeconomic shocks.

3.3. Automatic stabilizers

We shall analyse the effects of automatic stabilizers by means of the interregional model set out in the previous section. A large part of current studies seek to determine whether the automatic stabilizers operating in each country are of sufficient scale to dampen macroeconomic shocks, bearing in mind the constraint of the 3% maximum amount of deficit allowed during recessions. This is obviously a crucial aspect of the problem. It does not seem possible to deal with it correctly, however, without proper understanding of the macroeconomic mechanisms through which the stabilizers operate, and of their repercussions on a EMU scale. In order to tackle this problem, we very simply assume that automatic stabilizers are such that the budget of each country g_i has an elasticity g_z to fluctuations in economic activity z_i according to the relation

(3.19) $\quad g_i = g_z z_i$

We begin by fixing a benchmark result: the effect on each country's output of demand shocks correlated according to relation (3.18). Substituting relation (3.19) in the output equation (3.14) we obtain:

(3.20) $\quad z_1 = [-y_{rq} r + (\Delta_2 + \Delta_3 \rho)\delta_1]\Delta_4^{-1}$

(3.21) $\quad z_2 = [-y_{rq} r + (\Delta_2 \rho + \Delta_3)\delta_1]\Delta_4^{-1}$

$\Delta_2 \equiv [\alpha y_q + z_\pi(1+g_z)][2\alpha y_q + z_\pi(1+ \alpha y_z + g_z)]^{-1}$

$\Delta_3 \equiv [\alpha(y_q + z_\pi y_z)][2\alpha y_q + z_\pi(1+ \alpha y_z + g_z)]^{-1}$

$\Delta_4 \equiv (1 - \alpha y_z + g_z)$

$y_{rq} \equiv y_r + y_q(1-\alpha)$

Let us examine the sign of coefficient Δ_4, which is

$\text{sign}(1 - \alpha y_z)$

where αy_z is the intra-EMU trade multiplier, which is assumed to be less than 1 for the usual requirement of the system's overall stability, so that $\Delta_4 > 0$. Hence fluctuations in output (and in employment and prices) have the same sign as the shocks. Obviously, the most interesting problems arise if at least one country is hit by a negative shock, say $\delta_1 < 0$.

The second important result is that the shock's impact on output in each country consists of two parts: the domestic part (Δ_2) and the imported one (Δ_3). The import of shocks is due to the trade interdependence between countries, as one infers from the weight α of intra-EMU trade in the numerator of coefficient Δ_3. The total impact in each country obviously depends in increasing measure on the correlation of the shocks. Positively correlated shocks have an amplified effect which reaches its maximum in the case of symmetric shocks ($\rho = 1$). Negatively correlated shocks have a damped effect (the country with a positive shock

compensates for the one with a negative shock) which reaches its minimum in the case of bilateral shocks ($\rho = -1$).

A third result to emphasise is that the transmission of shocks persists even in the textbook case of unilateral shocks ($\rho = 0$). If only country 1 undergoes a shock, country 2 still imports its effects measured by coefficient Δ_3.

Having defined these general properties, the next question to address is the effectiveness of automatic stabilizers in each country. It is evident from the above equations that the greater g_z, the less the impact of δ. Note, however that unless $g_z \to \infty$, the operation of the automatic stabilizers is never enough to stabilize the economy completely in any country.

The point to examine, therefore, is the interaction between national automatic stabilizers and interventions by the ECB. To this end, we calculate the effect of shocks on the EMU variables (π, r, x), using equations (3.13) and (3.15), and bearing in mind that $\pi = \Sigma\pi_i/2$:

(3.22) $\pi = [-y_{rq}r + (1+\rho)\delta_1/2]\Delta_5^{-1}$

(3.23) $r = [1 + z_\pi(m_z - g_z)]\pi/m_r - m/2m_r$

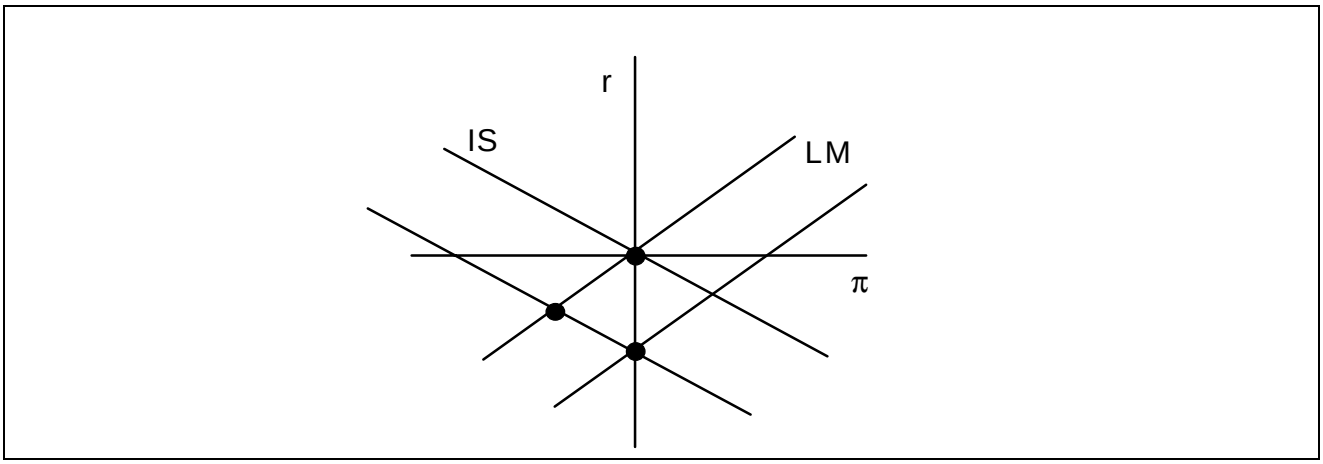
(3.24) $x = -r$

$\Delta_5 \equiv [z_\pi(1 - \alpha y_z + g_z)]$

To be noted first is that national shocks have repercussions on the EMU variables via the vertical interdependences described above. National shocks change output, prices and gevernment budgets. Each of these variables co-determines the corresponding aggregate EMU variable, which in its turn influences the EMU money market. The variation in output and prices affects money demand, while that in the budgets affects bonds supply. *Ceteris paribus*, the interest rate should change as well, and also the euro exchange rate, which react back onto national economies.

The system formed by the two equations (3.22)-(3.23) yields a useful geometric representation of evident resemblance to the IS-LM model appropriately translated into the space (and logic) of variations in interest rate and prices (r, π). The two equations represent the geometric locus of the values (r, π) corresponding respectively the equilibrium of the EMU's goods market and its money market. The initial point of equilibrium must satisfy the expectation of zero inflation ($\pi = \pi^e = 0$).[53]

Figure 2. IS-LM curves in space (r, π)



[53] Or more in general, $\pi = \pi^e$ = *core inflation*

The slope of the IS curve is negative because of the usual compound effect of r on aggregate demand, y_{rq}; its gradient depends *inter alia* on the elasticity of the automatic stabilizers, g_z, which for the reasons already given is expected to be of finite value. The slope of the LM curve is of indeterminate sign depending on

$$\text{sign}(m_z - g_z)$$

or in other words, on the relative magnitude of the elasticity of money demand, and of the automatic stabilizers, with respect to variations in output, z_i. The usual positive slope requires $m_z > g_z$, and consequently that, in the presence of fluctuations in output, variations in the money demand are greater than those in the supply of bonds. The positive slope of the LM curve implies that endogenous variations in r dampen the effects of shocks on the IS and vice versa. Shifts in the curves are due respectively to demand shocks and to variations in the money supply. The overall effect of a negative shock is illustrated by figure 2, which shows that, at the EMU level, a negative shock engenders a deflationary and recessionary impulse, $\pi < 0$, $z < 0$, and a decrease in the interest rate with depreciation of the euro, $r < 0$, $x > 0$, which attenuate, but do not eliminate, the initial recessionary effect.

Secondly, the magnitude of the effect of national shocks on the EMU variables depends on the automatic stabilizers and on the type of correlation of shocks. Given that automatic stabilizers do not have, generally speaking, a complete effect, it is interesting to analyse the role of the correlation of shocks. As explained above, the aggregate impact of national shocks increases with their degree of correlation, and it is maximum for symmetric shocks ($\rho = 1$) and nil for bilateral shocks ($\rho = -1$) (cf. equation (3.22)). Consequently, for any value of $\rho > -1$, every national shock, even if unilateral ($\rho = 0$) has to some extent an impact on the EMU variables. This impact is nil only in the case of a bilateral shock ($\rho = -1$), but paradoxically the apparent absence of aggregate effects conceals a common shock.

We may sum up the conclusions reached as follows:
1) automatic stabilizers do not guarantee complete effects at the level of the individual country;
2) it is not possible to distinguish the fluctuations of a particular country from those of the rest of the EMU because of horizontal and vertical interdependences.

These conclusions have major implications for stabilization policies in the EMU. The first is that there is no solid theoretical or empirical basis for propounding a 'division of labour' between national and central EPAs on the basis of local versus global shocks. It is difficult to identify in this context a) the grounds for a neutral stance by the ECB in the presence of national shocks, and b) the correct indicators for intervention. The first problem relates to implementation of the principle of the ECB's independence and therefore, according to some scholars, to its credibility.[54] On paper, the ECB is committed to abstaining from measures targeted on individual countries, but whether this commitment is respected is difficult to *observe* if it is not possible to precisely distinguish local from global shocks because of the phenomena described above. If a recession which begins in one country is propagated to others and gives rise to an EMU-wide recession, why should the ECB abstain from intervening? If the aim of the ECB is to stabilize the EMU economies,[55] its task in this case is unequivocal: alter the interest rate to bring output and inflation back to their previous levels. The solution to this problem is given by setting (3.22) equal to zero and solving for r:

$$(3.25) \qquad r^* = (1+\rho)\delta_1 / 2y_{rq}$$

[54] In a similar context, this problem has also been discussed by De Grauwe (2000).
[55] Remember that in the presence of aggregate demand shocks, there is always complete stabilization of output and prices independently of the preferences of the ECB or any other EPA.

Consequently, in the presence of a fall of demand in a country, $\delta_1 < 0$, the ECB should reduce the interest rate, $r < 0$, to an extent proportional to shock δ_1 and its degree of correlation, and inversely proportional to the total effect of the interest rate on aggregate demand, y_{rq}.[56] To the extent that the interest rate can be controlled via the money supply, on the basis of equation (3.23), the requisite manoeuvre is an increase in the money supply equal to (cf. also figure 2):

$$(3.26) \qquad m^* = -m_r(1+\rho)\delta_1 / y_{rq}$$

Hence in a EMU economy is which local stabilization is based solely on automatic stabilizers, one is likely to find the joint use of local stabilizers and common monetary policy, except in the case of perfectly bilateral shocks ($\rho = -1$).

The problem is the overall effectiveness of these measures *for each individual country*. In order to obtain a preliminary measure of this, one need only substitute the value of r^* given by (3.25) in the equations z_i, obtaining:

$$(3.27) \qquad z_i = [\rho_{ji}(\Delta_3 - 1/2) + \Delta_2 - 1/2]\delta_i\Delta_4^{-1}$$

The important result is that *even the joint effect of the automatic stabilizers and the common monetary policy may not be enough to ensure the complete stabilization of individual economies*. The outcome for each economy depends crucially on the extent to which shocks are correlated.[57] Since $\Delta_3 < 1/2$ e $\Delta_2 > 1/2$ (see (3.20)-(3.21)), stabilization of each economy is increasing with respect to ρ_{ji}, i.e. to the presence of correlated shocks in the rest of the EMU. In other words, the degree of stabilization for an individual country is greater, the more widespread the shock, because this induces larger intervention by the ECB. Conversely, a local shock may produce a recession which is locally large but small on the EMU scale. When the signal at the EMU level is considered negligible, the system produces insufficient stabilization for individual countries.[58] The extreme and paradoxical case is the one already mentioned of a bilateral shock (aggregate demand shifts from one country to the other, $\rho_{ji} = -1$) such that one country enters recession while the other expands and nothing is registered at the EMU level. Our conclusion is that stabilization is complete in each economy only in the case of a global shock ($\rho_{ji} = 1$). In all intermediate cases ($-1 < \rho_{ji} < 1$), stabilizing action by the ECB is not enough to stabilize output, as well, in each country (the reason being that the ECB's target is the *average* of price variations, not that of each country). The situation is depicted in figure 3.

The unbroken line shows the variation in z_1 after a negative shock δ_1 according to the degree of correlation ρ in the rest of the EMU and to the consequent stabilizing action of the ECB. The dotted line illustrates the favourable effect, *ceteris paribus*, of a greater elasticity of the automatic stabilizers.

We would stress that this pessimistic implication of our analysis does not necessarily depend on the SGP budget constraint, not does it have anything to do with the ideology of the ECB; rather, it is due to the institutional role of the EPAs in the monetary union. It might be objected that *in practice* the national automatic stabilizers have been created with the passage of time by each country and have presumably been designed to ensure sufficient, albeit We would stress that this pessimistic implication of our analysis does not necessarily depend on

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[56] If fact, it is well known that the greater the dependence of demand on the interest rate and the exchange rate, the greater the expansionary effect at every point of reduction in *r*.

[57] A similar result has been obtained by De Grauwe (2000).

[58] Concretely, it is entirely plausible that the ECB has margins of tolerance for deviations from the target-values of the variables below which it is not efficient to intervene. In this regard, suffice it to remember Tinbergen's concept of the 'operating costs' of economic policy to conclude that a manoeuvre is efficient if the benefit is greater than the cost.

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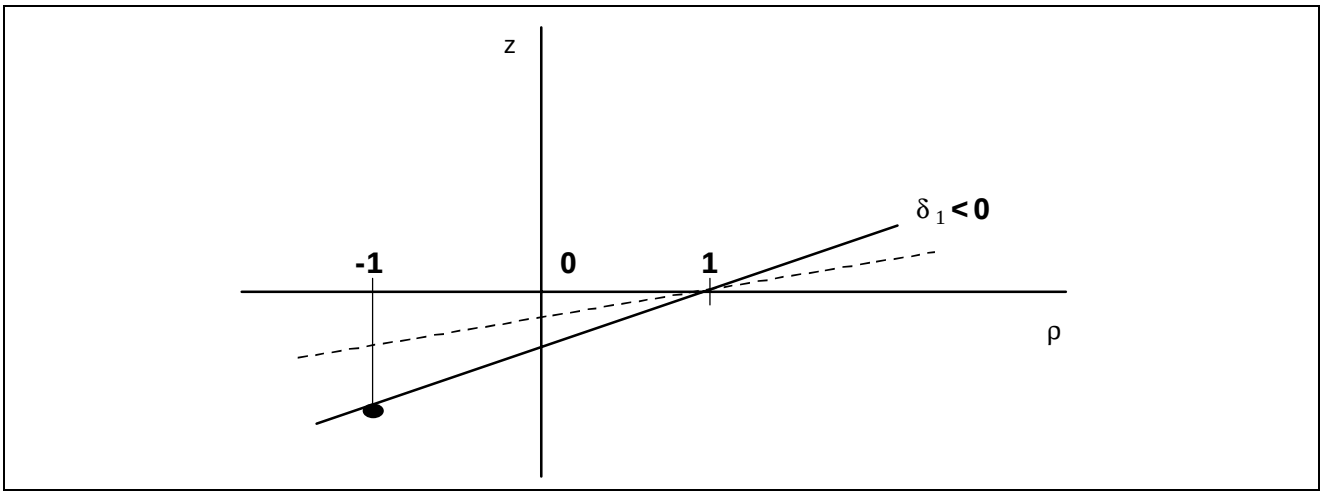
Figure 3. The relationship between local stabilization and shocks' correlation



3.4. Fiscal anti-cyclical interventions

Examination of the automatic stabilizers has led us to conclude that the EMU system tends to produce insufficient stabilization in individual countries when their shocks are loosely or negatively correlated. It is consequently necessary to examine the possibility of anti-cyclical fiscal interventions, or in other words measures like tax relief, extraordinary transfers, and so on, resorted to because of an unexpected change in the level of economic activity. In some countries, Italy among them, more use seems to be made of these measures than of automatic stabilizers. However, it is well known that measures of this kind suffer from the problems of identification, decision-making and implementation highlighted many years ago by Friedman. We do not include these aspects in the model, on the assumption that there are no delays between the shock, decision on the measures to be taken, and its effects. Moreover, for the sake of simplicity, we do not distinguish between these interventions and the automatic parts of budget changes g_i. We consider them to be entirely exogenous, as in the base model set out in section 3.2.

The analysis in this section follows the same logic as that in the previous section: the EMU economies are hit by national shocks with a certain degree of correlation; in general, shocks have effects on output and national prices, and therefore on EMU output and prices; thus also involved are the common money market, the EMU interest rate and the exchange rate. As usual, we start with the system of equations (3.13)-(3.15) which after substituting for r, gives the following values for inflation rates:

(3.28) $\pi_1 = [-\Delta_1 g_1 - \Delta_6 g_2 - y_{rq}(\Delta_1+\Delta_6)r + (\Delta_1+\Delta_6\rho)\delta_1][\ \Delta^2{}_1 - \Delta^2{}_6]^{-1}$

(3.29) $\pi_2 = [-\Delta_6 g_1 - \Delta_1 g_2 - y_{rq}(\Delta_1+\Delta_6)r + (\Delta_1\rho+\Delta_6)\delta_1][\ \Delta^2_1 - \Delta^2_6]^{-1}$

(3.30) $\pi = (\pi_1 + \pi_2)/2$

(3.31) $r = (1/m_r + 2m_z z_\pi)\pi - (\Sigma g_i - m)/2m_r$

$\Delta_1 \equiv [\alpha y_q + z_\pi]$

$\Delta_6 \equiv \alpha(y_q + z_\pi y_z)$

$[\ \Delta^2_1 - \Delta^2_6] > 0$

The stabilization problem now presents a few intrincacies that depend on three orders of factors: i) the interdependence between countries, ii) the degree of correlation of shocks ρ, iii) the interaction among the national fiscal instruments g_i and the central monetary one m.

Who should stabilize? After substituting r, only two of the equations are linearly independent, and one instrument is redundant. Hence there can only be two alternative answers to the question: *either* the ECB *or* the two national FAs should stabilize[59]. However, since the ECB aims at the EMU inflation rate π and not at the national π_i's (exactly the same problem discussed in the previous section), the first solution cannot be efficient locally unless a symmetric shock occurs (ρ = 1), as can be seen by setting π = 0, g_i = 0, and solving for m:

(3.32) $m^* = -[m_r(1+\rho)/2y_{rq}]\delta_1$

(3.33) $\pi_1 = (1-\rho)[2(\Delta_1+\Delta_6)]^{-1}\delta_1$

(3.34) $\pi_2 = -(1-\rho)[2(\Delta_1+\Delta_6)]^{-1}\delta_1$

Hence our first result seems to be in line with conventional wisdom: symmetric shocks should be stabilized by the ECB by monetary expansion against a negative shock or by monetary contraction otherwise.

Yet it is worth inspecting what may happen if the FAs intervene. Technically this alternative solution is equally possible by setting π_i = 0, m = 0, and solving for g_i. For ρ = 1, we can compare the two alternative solutions for full stabilization

(3.35) $g^*_1 = g^*_2 = [m_r/(m_r - y_{rq})]\delta_1$

(3.36) $m^* = -[m_r/y_{rq}]\delta_1$

Should we conclude that we are indifferent between monetary and fiscal stabilization?. Probably no, as the history of the "assignment problem"suggests[60]. As is well known, in the early Tinbergen-Meade approach (see also section 1), efficient assignment requires that for any target variation dy the instrument x_i that has to be assigned to y satisfies

$$\min(|\partial x_i/\partial y|,\ |\partial x_j/\partial y|,\ \ldots)$$

Implicit in this assignment principle are considerations on the "cost of the instrument". Friedman's famous warnings against the "long and variable lags" of policy interventions were of similar nature. More up-to-date considerations, more relevant to stochastic environments, focus on how much of the variability of shocks is transimetted to policy variables. For example, recent studies on the conduct of monetary policy in industrialized countries (e.g. Clarida et al.

[59]The case of the ECB and one FA can be excluded because it would give rise to a problem of "country specificity" against the ECB intervention.

[60]Notably, most current analyses of stabilization policies in the EMU do not address this issue. For instance Dixit and Lambertini (2000) reach a result similar to ours (in the absence of conflicts of objectives among EPAs, it is always possible to stabilize each and all countries by natinal fiscal policies) but do not examine whether this assignment is also efficient *vis-à-vis* the monetary one.

(1999)), highlight the preference of central bankers for smooth changes in interest rates. Today's commitment to "price stability" may be extended to asset prices and the exchange rate. In our model, both monetary and fiscal instruments have repercussions on the EMU interest rate and exchange rate. Using equations (3.35) and (3.36), we can compute how much variability is transmitted to the interest rate by the two alternative policies. Denoting with σ^2_δ and σ^2_r the variance of the shocks and of the interest rate, respectively, we obtain

$$\sigma^2_r \mid g^*_i = \sigma^2_\delta/(m_r - y_{rq})^2$$

$$\sigma^2_r \mid m^* = \sigma^2_\delta/y^2_{rq}$$

In this view, monetary stabilization is to be preferred to fiscal stabilization if $\sigma^2_r \mid m^* < \sigma^2_r \mid g^*_i$, or $y_{rq} > m_r/2$, i.e. fiscal policy is inefficient when the open-economy "crowding-out" coefficient is large relative to the interest elasticity of money demand. This condition is, unsurprisingly, akin to the well-known Mundell-Fleming assignment solution in an open economy with flexible exchange rate. On the other hand, if $y_{rq} < m_r/2$, the variance-minimization criterion would make national fiscal stabilization preferable than central monetary stabilization.

These results relate to the role of interdenpendence among countries, depending on the weight of the channel of indirect financial effects. An expansion (recession) in one country, by raising (lowering) the EMU interest rate and appreciating (depreciating) the euro rate, feeds some crowding-out (crowding-in) effect *in all the economies*. In fact, as can be seen from equation (3.35), if the crowding-out coefficient is exceedingly large, $y_{rq} > m_r$, the sign of the fiscal responses to shocks is reverted: a negative shock should be counteracted by a surplus in both countries, and vice-versa. As stressed previously, the presence of these negative financial effects plaied an important role in favouring the SGP. If it is believed that these effects will be large, then centralized monetary stabilization is the efficient assignment.

However, this is not the end of the problem. In fact, we have seen above that centralized monetary policy achieves full stabilization for each and all countries only after symmetric shocks. Otherwise, stabilization should be obtained locally by means of fiscal policies. The stabilizing national fiscal policies computed for $\rho < 1$ are:

(3.37) $$g^*_1 = (2m_r - y_{rq}(1-\rho)]\Delta_9^{-1}\delta_1$$

(3.38) $$g^*_2 = (2m_r\rho - y_{rq}(\rho - 1))]\Delta_9^{-1}\delta_1$$

$$\Delta_9 \equiv [2(m_r - y_{rq})]$$

This outcome prompts some important considerations

1) If it is believed that negative financial effects are large in the EMU, then decentralized fiscal stabilization *is not an efficient assignment for asymmetric shocks either*. This point can easily be seen from equations (3.37)-(3.38), where the larger is y_{rq}, the larger should be the budget responsiveness to a given shock in both countries[61]. From this analysis, the imposition of the deficit ceiling in the SGP results contradictory for two reasons. First, one rationale for the deficit ceiling has been the presumption that national governments have incentives to run budget deficits to ripe benefits at home while exporting costs abroad due to the negative financial effects. But our analysis shows that this double coincidence may hardly materialize: if negative financial effects are large in the EMU, then *fiscal policy is ineffective locally too*, so that no government has an incentive to abuse of it. Second, if it is believed that

[61]As an example, let us consider the case of unilateral shocks in country 1, $\rho = 0$. Let us take as a measure of efficiency the ratio of the cyclical budget variation to the shock g^*_1/δ_1. Then, equation (3.37) implies that $\partial(g^*_1/\delta_1)/\partial(y_{rq}/m_r) > 0$, i.e. efficiency decreases as the ratio of y_{rq} to m_r increases.

negative financial effects are large, and at the same time governments are forced to stabilize locally by means of fiscal policy, it should follow that they should be granted larger, not smaller, room for cyclical budget variations. In the case of negative shocks, the SGP constraint on cyclical deficit imposes $g^*_i \geq -3\%$, i.e.

$$(3.39) \qquad |\delta_i| \leq 3\% \frac{2(m_r - y_{rq})}{2m_r - y_{rq}(1-\rho_{ij})}$$

This is the amplitude of the shock that each individual economy can 'afford' to accommodate locally without breaching the SGP constraint. A number of exercises and simulations have recently been conducted to determine if the SGP constraint is excessively stringent for stabilization purposes (e.g. Buti et al. (1998), chaps. 8-9). We would point out that, on the basis of condition (3.39) calculation of the margin of stabilization provided by the SGP cannot be performed by taking the country concerned in isolation. Instead, such calculation must take account of: i) the contemporaneous fiscal position of the other country, ii) the monetary position of the ECB, iii) the correlation of the domestic shock with the other countries. In particular, our formula confirms that if the ECB does not intervene, and all governments stabilize locally, then $|\delta_i|$ decreses (the deficit ceiling is more binding) as i) the negative financial effects are larger, ii) the correlation of shocks is smaller

2) In the presence of a shock which hits any country, *all the national FAs must intervene to some extent to stabilize the economy*, whatever the degree of correlation. The latter determines only the magnitude of the individual measures according to the principle shown earlier; in other words, since the impact of shocks on the aggregate demand of each country increases with the degree of correlation, the measures, too, must increase with respect to ρ. Hitherto we have assumed that all governments obey this rule of behaviour. However, it is clear that this assumption involves the solution of *fiscal coordination problems* in the EMU (e.g. Van der Ploeg (1991), Goodhart-Smith (1993), Van Rampuy et al. (1991)).

It has frequently been pointed out in the literature on fiscal policies in an open economy that stabilization in only one country is less efficient than if pursued in all countries. This is evident in our model as well, though we do not show it here, because if country 1 is affected by a unilateral negative shock ($\delta_1 < 0$, $\rho = 0$), and country 2 does not intervene ($g_2 = 0$), the fiscal deficit of the former country must be larger than would be necessary if the latter country too were (correctly) to run a deficit. Coordination is important if there are shared advantages which cannot be appropriated, or negative externalities which cannot be internalized, should each actor stick to individual optimization. However, coordination may be costly. In order to reduce or to eliminate the costs of coordination *ex post* – that is, after the onset of a shock – it may be desirable to have *ex-ante* rules which prescribe the behaviour of all actors in specific circumstances. One of these rules has been incorporated into our model. It states that any EPA must undertake complete stabilization of the economy following any demand shock (cf. above section 3.2).[62] If this rule is credibly applied, then the Nash equilibrium of national fiscal stabilization as given by equations (3.37) and (3.38) equals the coordination equilibrium

To sum up, the choice of efficient stabilization policy in the EMU depends on two major factors: i) the degree of correlations of shocks across member countries, ii) the nature of interdependence among them. Combinations of specifications of these factors can be summarized in the following double-entry table.

[62] Obviously, this rule, like any other, is consistent if it has a dominant result for each participant. In our model, this is ensured by the fact that no EPA would gain a long-period advantage from not stabilizing the economy, whatever its preferences might be.

Efficient stabilization policies

	High correlation	Low correlation
Net positive interdependence	National, fiscal	Stabilization commitment / Central, fiscal
Net negative interdependence	Central, monetary	?

Whereas the solutions in the second column are well defined, those in the third column are more problematic. Low correlation of shocks may give rise to understabilization for "small" countries because i) the aggregate signal perceived by the ECB is too small when monetary policy is more efficient, ii) policy coordination may be too costly when fiscal policy is more efficient. A solution to the former problem may not exist, whereas a solution to the latter may require more complex institutional operations, such as a credible commitment to full stabilization in each and countries or centralized fiscal policy.

4. Fiscal stance and fiscal-monetary policy mix in the EU: a look at the past

The macroeconomic interregional model examined in the previous section pointed out rigorously why fiscal and monetary policy prescriptions in a monetary union cannot be given in isolation one from the other, and in isolation from a fully specified macroeconomic scenario, if stabilization is to be achieved efficiently. By contrast most of the prescriptions ruling the EMU policy institutions and their choices ignore this requirement. Likewise, main empirical works that have been produced to purport such prescriptions suffer from the same fault. We have in mind works aimed at showing the tendency of unfettered pre-Maastricht European governments towards "fiscal indiscipline", on the one hand, and the adequacy of domestic stabilizers within the SGP limits on the other. In this second part of the paper we shall refer to the same empirical basis of these works to substantiate our different view.

In this section we wish to show that correct consideration of fiscal policy within the overall macroeconomic environment gives rise to an assessment of the fiscal policies pursued by the European governments that is less severe and one-sided than the one usually put forward.

4.1. Macroeconomic equilibrium in the countries of the EU

To begin with, let us recall the macroeconomic identity that views the surplus of the private sector as equal to absorption by the public sector and current account:

(4.1) $$S - I = (G - T) + (X - M)$$

As will be seen from graph 1,[63] for all the countries of the European Union (except Luxembourg) between 1971 and 1999 the surplus of saving on investment has been mainly matched by the public sector deficit. In most countries, the foreign sector is less important and it is almost always in surplus. Indeed, unlike the United States and the phenomenon of that country's 'twin deficits' of the early 1980s, the foreign sector has never been a constraint on growth in the European Union. Rather, it has been the resources not utilized by the two

[63] In this figure relative to the euro-zone as a whole, as well as in subsequent graphs relative to the individual countries of which it is composed, the graphs for the private sector have been inferred from the time series for the other two sectors.

domestic sectors that have financed the foreign sector. Since the war, there has been no instance in which the financing of growth has depended on the foreign sector – as has instead been the case in a country with negative private saving like the United States. During the 1990s in particular, reduction of the public debt – which in the highly-indebted EU countries continued apace with the construction of monetary union – was not matched by a revival in investments; instead, public sector surpluses reappeared as assets on current account in that they 'financed' a country's export demand.

[Graphs 1 - 15]

At a disaggregate level (see graphs 2 – 15), to be noted first is that no country displays a marked tendency for the public sector to run a long-period imbalance. For example, the three countries which at the beginning of the EMS recorded the highest values of deficit and public debt on GDP – Belgium, Ireland and Italy – from the mid-1980s onwards began to reduce their primary deficits. An indirect proof of the increasing correlation of business cycles among the EU countries[64], one observes quite similar macroeconomic trends in Germany, Austria, the Netherlands and Denmark, and also, to some extent, in France. The absence in these countries of large public deficits means that their private-sector surpluses are largely offset by the foreign-sector. The two other large European economies display trends more closely tied to domestic features of the market and economic policies, partly because they joined the EMS only belatedly. In the United Kingdom, the public sector moved into surplus in concomitance with substantial private-sector surpluses in the 1980s, and then lapsed back into deficit during the first half of the 1990s. In Spain, the 1986-89 expansionary cycle saw a marked reduction in public-sector surplus, off-set mainly by the surplus of the foreign sector, which indirectly confirms that foreign investments are an important factor in that country's industrial expansion. It is also apparent that the remaining countries are detached from the business cycle of continental Europe. Sweden and Finland had surpluses in their trade balances and deficits in their public sectors until – following the collapse of the Soviet Union – they entered severe recession. In the first half of the 1990s, to the excess of saving on investment high public-sector surpluses corresponded. Finally, there is the particular cases of Greece, where only in 1996 (after the decision to join the process of European monetary integration) did the national budget begin to recover, with a corresponding rapid change from high surpluses to deficits in the private sector; and of Portugal, a country noteworthy for the private sector's continous "financing" of the foreign sector and for its low public indebtedness.

Obviously, the foregoing considerations prompted by the evolution of the macroeconomic variables cannot be used to infer anything about the causal relations which operate among the various sectoral equilibrium conditions. There are therefore two possible views as to the evolution of the time series of the large-scale aggregates of the private and public sectors of the European Union countries, each relative to one of the two possible causal relations. To assume a causal nexus from a budget deficit to excess saving on investment is to believe that an excessive public deficit raises interest rates and crowds-out private investments. To assume a causal nexus operating in the opposite direction, from the surplus of saving on investment to the budget deficit, is instead to maintain that the cause of public deficits is an insufficient volume of aggregate demand, so that the bond financing of deficit spending absorbs the excess demand for financial activities. Under the former interpretation, the fiscal stance adopted by the country's FAs contributes to provoking excessive public deficits which hamper growth. Under the latter interpretation, the monetary stance adopted by the country's MAs provokes a stagnation of growth which causes financial resources to flow back into the public sector. In the two sections that follow, we shall examine these two interpretation against the data.

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[64] As well-known, it has been estimated thet in the EU, differently from the U.S., supply shocks are wider , more frequent and less correlated, while demand shocks are narrower and, again, less correlated. However, the Core EU countrie' shocks are apparently more correlated than those of the Peripheral Europe (See Bayoumi – Eichengreen (1993)).

4.2. The European Commission approach to fiscal stance

We take as representative of the "fiscal indiscipline" view the approach followed by some scholars in the European Commission. Their approach, though inspired to the theories presented in section 2, is eminently empirical and studies the coherence of the fiscal stances of the European countries with the principle of tax smoothing.[65]

This principle holds that, after a deficit created in recession in order to sustain demand, the budget should be driven to a surplus during the subsequent expansion, so to keep it on balance on average and avoid accumulation of debt. As income recovery is accompanied by the reduction in the deficit/GDP ratio, two consequencies at the same time should follow. The desired adjustment (the fall in this ratio) and the absorption of the output gap (after the contractionary effects of the restoration of budget balance). One might then ask whether fiscal stance variations pursued in the last decades by FAs of EU countries were oriented to confirm the intertemporal public budget constraint. The European Commission aims at assessing the extent of 'fiscal discipline' observed in the EU and at evaluating the conditions under which in the EMU government succeed in achieving the medium term budgetary position 'close to balance or in surplus'. In the light of the Treaty of Maastricht and the SGP, compliance with this constraint, which would make the 3% margin for public deficit creation fully operative, is viewed as the prerequisite for restoring to fiscal stabilization policies their role of sustaining demand in periods of recession.[66]

First, it is necessary a brief excursus on statistical method, in order to clarify the difficulties arising when one seeks to grasp the strategy pursued by FAs. Measurement of fiscal stance, as an indicator of the actual behaviour of FAs, is obtained by purging the budget of cyclical effects (in other words, by separating the structural component of the budget from the cyclical one). This *structural* balance is the product of the output gap (the difference between actual and trend output)[67] and the elasticities of tax revenue and public expenditure. Trend output is estimated by applying the Hodrick-Prescott filter[68] to the series of gross actual output. However, calculation of trend income, although it is less arbitrary than calculation of potential income,[69] is particularly unsatisfactory as regards the current cyclical phase, because

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[65] Cf. Buti - Franco -Ongena (1997) and (1998).

[66] "If countries want to pursue an active counter-cyclical policy in addition to letting the automatic stabilizers play, a supplementary safety merging around the medium-term budgetary positions would need to be ensured." (see Buti - Franco - Ongena (1998) p.88.

[67] The usual method for identifying the components of the budget involves:

i) use of real GDP (Yt) as the variable for the cyclical component of the budget;

ii) identification of the cyclical component of GDP by means of the Hodrick-Prescott filter (intervals formed by weighted moving averages centred on the year of reference) and measurement of the 'output gap' ($\Delta\tilde{Y}_t$) as deviation by real income from the potential or trend GDP ($\overline{Y}$); for example: $Y_t = \overline{Y} + \Delta\tilde{Y}_t$

iii) identification of the cyclical component of the budget by regressing the total budget/GDP ratio with respect to the output gap; for example: $F_t / Y_t = a + b\,\Delta\tilde{Y}_t + u_t$

iv) identification of the structural component by means of the deviations from the previous relation estimated.

[68] The Hodrick-Prescott filter is used to minimize a weighted average of the gap between actual output and trend output. If the beginning and end of the period do not reflect similar phases, the calculation is distorted because the trend will differ excessively or insufficiently from actual output, in proportion to the value of the parameter that determines how 'smoothed' the trend should be. See Giorno et al. (1995), pp. 8-9, and European Commission (1995), pp. 39-41.

[69] The OECD and the IMF use the Hodrick-Prescott filter to calculate potential income. This estimation is considerably affected by pre-analytical assumptions. When calculating potential income assumptions must be made concerning the determinants of technical progress and of structural unemployment (a two-factor production function is estimated to calculate the TFP and the value of the labour force is corrected according to the gap between actual unemployment and an estimate of the NAWRU).

the Hodrick-Prescott filter operates through the redistribution of the weights on years for which observations is available, and thus the influence of more recent years is unduly underweighted. A problem with this approach, therefore, is that the measurement of the output gap may be affected by the use of a value for GDP which - besides being a 'pure' statistical measure - is subject to a distorted estimation. Since the output gap is used both to appraise the behaviour of the FAs (the assessment of the public deficit/GDP ratio relies on the output gaps the indicator of the cycle) and to calculate the *structural* deficit, the results may suffer from an evaluation of fiscal stance which may be flawed.[70]

Although the European Commission's approach to analysis of fiscal stance does not explicitly refer to a macroeconomic model, it is not immune from theoretical problems. In fact, the fiscal stance pursued by the government is correctly measured by the *structural* primary deficit, but its coherence with the principle of tax smoothing is checked by looking at how discretionary interventions affect the *overall* public deficits. The understanding of tax smoothing implicit in this way of evaluating the fiscal stance is not free from interpretative ambiguities. Even when the primary balance is re-equilibrated after a primary deficit caused by recession, tax smoothing may not result because the overall deficit/GDP ratio – far from remaining constant – is augmented by the rate of interest and/or by a growth rate which is unsufficient to cover the debt service. It is exactly this possible outcome to be ignored in claiming that "(I)n the last decades EU countries did not behave in accordance with the prescriptions of tax smoothing. (…) The average deficit and debt ratios kept going up although at a slower pace in periods of positive output gap".[71]

As for the public deficit/GDP ratio, it is acknowledged that during severe recessions, from which many EU countries suffered in 1980-82 and in 1991-93, no incresing trends of the deficits is found.[72] However, FAs are then charged with failing to exploit the chances, offered (mainly in 1986-90) by mild expansions, to lower public deficit and debts. Yet the origin of the increasing trend of the two ratios is not tackled. The assessment of the fiscal stances stemming from the view on tax smoothing adopted by the European Commission is then not an evaluation about the FAs' rigorousness in dealing with primary budget. Rather, governments are taken responsible of undermining the sustainability of the fiscal stance – and thus compliance with the public budget intertemporary constraint – even though this target is beyond their reach as to the debt service. As it is well known, the overall deficit/GDP does not depend solely on the behaviour of the FAs; it also depends on the impact on the interest rate of monetary policy and/or world financial conditions. The asymmetric EMS, in particular the German macroeconomic conditions ruling on the whole EMS through the Bundesbank restrictive monetary policy[73] was not the appropriate environment for a fiscal policy leading to fully restrictive monetary fiscal policy mix.

As for the debt/GDP ratio during non-recession periods, the European Commission view on tax smoothing argues that FAs did not engage in guaranteeing the sustainability of this ratio. It is stressed that in the EU countries (except Luxembourg, the UK, Finland Ireland and Sweden) "most of the increase in the debt ratio took place in non-recession periods when budgetary policies did not counterbalance the effects of the recession on debit dynamics,

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[70] By construction, the deviations of actual income from trend income are symmetric (the average value of the output gaps – positive and negative – is zero), and this enables interpretation of a fiscal expansion starting from a balanced budget as a positive output gap.

[71] Buti – Sapir (1998) p.148.

[72] "Taking the average of all recessions episodes, the structural primary balance remained virtually unchanged. There was thus non systematic tendency on average to losen budgetary policy during severe recessions over the past decades." Buti – Franco –Ongena (1997) p.335.

[73] Although econometric estimates are unable to split the upward push on interest rates due to monetary policy from the increase in risk premia, the high values of EMS real interest rates do not seem to be traceable to the country risk and the currency risk linked to public debt sustainability. On monetary policy and interest rates in the EMS, see Farina (2000) pp.297-302.

but even further increased the debt ratio."[74]This interpretation can be contended in that debt/GDP ratio stabilizes (in the absence of monetary financing and primary surplus) only if the growth rate equals the interest rate. However, in the last two decades the real interest rate in Europe, differently from the US has been continuously higher than the growth rate. (Real interest rates were higher in Europe than in the United States throughout the decade 1985-95, and in the 1989-93 period in particular, short-term rates outstripped long-term ones).[75] Therefore in the main recessions incurred by the EMS countries (1980-82 and 1991-93), the excessive monetary restrictions were detrimental for growth with negative effects on the public deficit/GDP ratio with regard both to the numerator (for the increase in the debt service) and the denominator (for the slow down of the GDP).

As for the debt/GDP ratio during recession periods, evidence showing the stability of the ratio in almost all countries leads the European Commission to the conclusion that FAs did not violate the principle of tax smoothing. When this ratio is pushed up by the sluggishness of the denominator, governments allegedly try avoiding a further increase in public debt by discretionary interventions aimed at reducing the *structural* primary deficit.[76] Also this interpretation is not fully endorsable. It is worth stressing that the prudent behaviour of FAs cannot be traced to an autonomous decision not to accelerate the public debt dynamics but simply manifested how subsumed was fiscal policy due to the Bundesbank's "monetary dominance" on the other EMS countries'monetary and FAs until the virtual abandonment of fixed exchange rates in 1993 (and due to Maastricht criteria afterwards). In the analysis of the European commission it is observed that "member states with higher budgetary imbalances (…) even had to implement pro-cyclical retrenchment policies during recessions in order to prevent their budget deficits from getting out of hand"[77]. Yet, no causal relation is established between the monetary fiscal policy mix of the first half of the 1990s on the one hand and public deficit/GDP ratios and fiscal stances on the other hand.

Here the following alternative interpretation is maintaned. The restrictive monetary stances (further exacerbated during speculative tensions leading to the EMS crises of September 1992 and summer 1993) played a relevant role in determining growth stagnation. During the 1991-93 recession the gap between the real interest rate and the growth rate widened in all countries (except Germany only for the two years immediately after unification).[78] This orientation of monetary policy, in provoking the further fall of growth rates[79], has generated two consequences: on the one hand it made it difficult to restrain the working of automatic stabilizers and thus the deficit dynamics; on the other hand, it was impeding that the dynamics of the denominator of the public debt/GDP ratio could overtake the dynamics of the numerator, thus threatening it put a threat on the success of the

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[74] Buti – Franco – Ongena (1997) p.343.

[75] "Even more important is the fact that a restrictive fiscal policy would be difficult to justify. Public deficits and unemployment have been increasing because an inadequate monetary policy has, if not caused, at least accelerated the slowdown of growth" (Fitoussi (1998), p. 122).

[76] "(…) countries with deficit and debt ratios above EU average were forced to tighten their fiscal stance by reducing thier structural primary deficits by 1.2 percentage points of GDP" (Buti – Franco – Ongena (1998) p.93).

[77] Buti – Franco – Ongena (1997), pp. 360.

[78] "Whatever the institutional framework, one can conclude that the EU-11 followed significantly more restrictive monetary policies than the United States during the first half of the 1990s. Comparing the monetary and fiscal policies of the EU-11 and the United States, we conclude that the EU-11 policy mix can be characterized by monetary and fiscal restriction. The United States, on the other hand, followed quite a different policy mix, combining fiscal restriction with monetary ease. The difference between the EU-11 and the United States was thus monetary policy. (…) We conclude that the policies of monetary restriction applied during the first half of the 1990s have probably intensified the recession to a considerable degree" (De Grauwe (1999), pp. 340-1).

[79] It has been estimated that in the period 1991-93 "the monetary restriction introduced in the countries of the euro-zone at the beginning of the 1990s led, at its peak, to an annual loss of output amounting to 1.4%" (Ibidem).

retrenchment from the public debt planned by FAs. The tangle between restrictive monetary stances and fiscal stances constrained by the Maastricht Treaty caused a social welfare loss in Europe: directly, following a slowdown in the growth rate, and indirectly because the reduction in the public deficit /GDP ratio due to drastic discretionary policies – such as to determine a budget primary surplus in most countries – was circumvented by the GDP stagnation.

4.3. An alternative assessment of fiscal stances in pre-Maastricht EU

We shall now present an alternative computation of fiscal stances which, unlike those discussed above, enables the behaviour of the FAs to be assessed by taking full account of the macroeconomic environment**.**

We begin with the statistical side of the question. When employing the method which seeks to identify the cyclical component of the balance by means of the output gap, one should remember that budgetary variations connected with the business cycle result from government decisions. These decisions are based on the following variables and information other than the output gap (we replicate the taxonomy used in the model of section 3): i) *the predetermined institutional mechanisms* – i.e. the 'automatic stabilizers' – which determine increases (decreases) in expenditure and decreases (increases) in revenue in relation to simple increases (decreases) in the *level* of unemployment or economic activity with respect to the previous period; and/or ii) anti-cyclical measures – i.e. fiscal support or restriction measures (like tax relief, incentives, one-off transfers, etc.) – implemented in relation to *unexpected* variations in unemployment or economic activity. The output gap – which is a pure, unobservable statistical construct – cannot plausibly affect either of the two components of the two budgetary decisions, but it does affect the *observable values* of the pertinent variables.

An alternative method is the index proposed by Blanchard[80] which identifies the behaviour of the FAs net of the effects of the cycle, measuring what would have been the change in fiscal stance with respect to the previous period *if the unemployment rate had remained unchanged*.

This indicator has numerous advantages. First, Blanchard's index does not require inductive evaluation of the fiscal stance; i.e. depending on a statistical estimate of the potential or trend income. Second, the index enables a stable evaluation of the budget purged of the cycle, unlike measurements based on the Hodrick-Prescott filter, which entails variability of the estimate in relation to the availability of new observations on the past period. Third, the decomposition of the structural and cyclical components of the budget is performed on the primary balance only. As we have pointed out on several occasions, by excluding debt service, the primary balance is the accounting item which records, *for every period*, the decisions directly taken by the FAs, and therefore provides the most appropriate indicator of fiscal stance.

However, we believe that unemployment is a variable whose effects on those budgetary items which are sensitive to the cycle is too indirect. Hence, our application of Blanchard's method replaces the unemployment rate with the income's *first differences*. In fact numerous studies show that in all market-economies, one of the main automatic stabilizers, namely progressive direct taxation, operates on the revenue side. GDP is a good approximation of the tax base; unemployment is not. Moreover, in some countries, including Italy, the automatic stabilisers on the expenditure side depending on variations of the unemployment rate – in particular unemployment benefits – are less developed than elsewhere; vice versa, anticyclical discretionary measures are used more frequently, even in the course of the year. FAs are likely to be sensitive to unexpected GDP variations, (GDP data are produced with more frequency and accuracy that those on unemployment).

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[80] Blanchard (1990).

The index is calculated on the basis of the following assumptions:

i) the budget, on both the revenue and expenditure sides, responds directly to the *first differences* in GDP measured by the real growth rate ($g_t = Y_t / Y_{t-1} - 1$);

ii) the variation of the *structural* component of the budget (or 'fiscal impulse') is measured by the difference between the budget at time *t* and the budget at time *t–1*, the cyclical impulse remaining equal. Therefore, considering also a trend component *t* and the error *u*:

(4.2) $G_t / Y_t = a_1 + b_{11}(gt) + b_{12}t + u_{1t}$

is the relation between total expenditure and GDP, and

(4.3) $T_t / Y_t = a_2 + b_{21}(gt) + b_{22}t + u_{2t}$

is the relation between total revenue and GDP. By using the coefficients of (4.2) and (4.3) it is possible to compute the overall balance *F* which would have resulted at time *t* had the GDP remained constant (i.e. if its value were that of the previous year). The overall balance as a ratio of the GDP is then:

(4.4) $F_t(Y_{t-1}) / Y_t = (\hat{a}_2 - \hat{a}_1) + (\hat{b}_{21} - \hat{b}_{11})\, g_{t-1} + (\hat{b}_{22} - \hat{b}_{12})_t$

Therefore,

(4.5) $F_t(Y_{t-1}) / Y_t - F_{t-1} / Y_{t-1}$

is the variation of the *structural* budget or 'fiscal impulse'. This change of *fiscal stance* indicates a fiscal restriction independent of the cycle if the value is positive, and a fiscal expansion if the value is negative. We shall use *f* to denote the ratio between *F* and GDP, and $f\hat{}$ to denote the ratio between $F_t(g_{t-1})$ and GDP.

The indicator of *fiscal stance* changes measured for the majority of the EU countries (see graphs 16-25, 'Fiscal impulses') reveals a picture of discretionary policies adopted by FAs which differs from the one depicted by the European Commission's approach. Overall, fiscal impulses seem to have complied with the logic of *tax smoothing* in almost all years. For example, an actual budget balance f_{t-1} of expansionary sign (the line of the actual budget balance lies below the neutral budget line) gives rise to restrictive discretionary measures (the histogram of the fiscal impulse is above the neutral budget line). The more pronounced a variation of the budget balance tends to be, the greater is the subsequent change of fiscal stance ($f\hat{}_t - f_{t-1}$).

[Graphs 16- 25]

In Italy in particular, throughout the period 1976-91, the expansionary tendency of public deficits (constantly negative values of the actual budget balance) was matched by compensatory variations of fiscal stance. This shows that the Italian FAs were not inclined to allow public spending to expand unrestrictedly. On the contrary, the long-period trend consisted – in the presence of actual public deficits – of fiscal impulses of the restrictive *structural* primary balance (until – after the primary budget balance/GDP ratio returned to surplus from 1991 onwards – discretionary measures of positive sign were required by a depressed demand). The graphs for Germany and France depict a different scenario: although the lines of fiscal impulses are specular to the one for the actual budget balance in those two countries as well, they oscillate around the neutral budget line, and therefore do not replicate the long-period trend characterizing the Italian case.

Overall, these results show that fiscal authorities in EU countries have been determining fiscal stances according to tax smoothing, although in some cases, like the Italian one, they considered compliance with this principle a long-run target. This conclusion is just the opposite of the "no-tax-smoothing" thesis that we discussed in the previous paragraph. The European Commission view maintains that tax smoothing means promptly to annul the

overall public deficit, whatever was its source. This very demanding conception of tax smoothing may be considered as the commitment to stabilising the public debt / GDP ratio by avoiding any further bond financing of public deficits. Let us then verify that this commitment was shaping the fiscal authorities' behaviour. To empirically investigate whether fiscal stances in the EU countries were oriented to stabilise the public debt / GDP ratio, a more detailed analysis of the 'pure' fiscal impulse is required. To this extent, the GDP-referred Blanchard's method will now be applied to the measurement of that part of the budget directly traceable to governments, the primary balance.

Starting from the customary definition of the public budget constraint:

(4.6) $G - T + rB = dB/dt + dM/dt$

with nil monetary financing of the deficit, setting $b = B/Y$, and considering that:

(4.7) $b' = (B'/Y - B/Y') / Y^2$,

it is obtained:

(4.8) $B' = b' Y + b Y'$

(where the time derivatives are indicated by a prime),

Substituting (4.8) in (4.6) and setting $f = (T/Y - G/Y)$ and g = growth rate of GDP, we may write:

(4.9) $b' = f + (r - g) b$.

Equation (2.9) tells us that, in each year, the public debt/GDP ratio is stabilized ($b' = 0$) if the *primary* budget balance is $f = (r - g) b$. Dividing, the primary budget balance into its *structural* component $f\hat{}$ and its cyclical component fc, we can write the value of the *structural* primary balance of each year t which stabilizes the public debt at the level of $t - 1$ ("stabilizing public debt " *structural* primary balance : $f\hat{}^*$):

(4.10) $f\hat{}^* = (r - g)b - fc$

Equation (4.10) while showing the pressure exerted on the discretionary behaviour of governments by the amount of public debt, also highlights that this behaviour is impossible to judge on the basis of the budget balance alone. In fact, only in the presence of a real interest rate and growth rate with 'normal' values, the fiscal stance is able to stabilize the public debt 'easily' – that is, with non-recessionary restrictive discretionary impulses. And it is universally acknowledged that these crucial variables have shown values anything but 'normal' in the last two decades.

Graphs 26-28 compare the graphs of the primary *structural* balance and the 'stabilizing public debt' *structural* primary balance. In Germany, the *structural* primary balance oscillates around the neutral line and then shows restrictive variations of fiscal stance, especially in the 1990s, when the high values reached by the public debt give rise to very high peaks in the new indicator (the 'stabilizing public debt' *structural* primary balance). In France, by contrast, fiscal impulses do not seem to have been influenced by the trend in the public debt/GDP ratio, which was kept under control at least until the end of the 1990s. Variations of fiscal stance, in fact, do not display any correlation with these new debt stabilization indicator, not even when the accumulation of interest expenditure and the stagnation of growth have raised the secondary deficit/GDP ratio. Very high peaks reached by the new indicator in the first half of the 1990s would suggest the necessity to deal with this increase in the overall public deficit on GDP by using drastic discretionary restrictions. However, intervention by the FAs instead were designed to create expansionary impulses to sustain low levels of aggregate demand. The freedom of manoeuvre apparently enjoyed by the French government is a further example of the differing degrees to which the Maastricht constraints have been enforced, and of the major extent to which the reputation of the central bank restrains or gives free rein to governments.

[Graphs 26 - 28]

In Italy, the picture is completely different. The trend of less and less expansionary fiscal impulses, which began in 1976 and continued almost uninterruptedly until the shift to restrictive variations of fiscal stance in 1988, lies below the graph of the *structural* budget surplus that would have been necessary – between 1980 and 1989 – to stabilize the public debt (the values of the new indicator changed direction only once in the second half of the 1990s when interest rates started falling). The hypothesis put forward earlier is confirmed: since the 1980s, the benchmark for the FAs' discretionary measures has been short-run compensation of expansionary budget deficit, with a view to a 'gradualistic' fulfilment of public debt stabilization. On the other hand, the wide gaps between the actual fiscal stance and the fiscal stance which would have been needed to offset autonomously growing public debt/GDP ratio are clearly telling. Had FAs pursued the objective to push fiscal restrictions, to the extent to offset any autonomous impulse augmenting this ratio would have determined – given the restrictive monetary stance – a considerable recessive drift.

Of course, under the European Commission view of tax smoothing, this behaviour cannot be considered 'virtuous'. 'Tax smoothing' would require that the automatic stabilizers should not be allowed to operate freely: in recession, compensatory restrictive discretionary policies should be implemented in order to prevent the public deficit/GDP ratio from increasing; in expansion, the high-debt countries should create the budget surpluses that serve to extinguish the public debt[81]. On this same rationale the SGP is grounded. However, as it has been already stressed, the principle of tax smoothing fails to take account of the fact that public deficits accumulate from two sources (only the primary component of the deficit depends directly on governments) and the public deficit/GDP ratio is mainly determined by the interest rates and the growth rate.[82] In the light of the estimate of changes in the *structural* primary budget balance brought about by governments, one may say that the increase in the public debt/GDP ratio since 1995 has been due less to an undisciplined management of fiscal stance. This temporary upward trend of the ratio should instead be traced back to the impossibility of achieving the huge primary surpluses required to stabilize a rise in the public debt mainly driven by the secondary deficit – that is, by the self-aggravating effect of the debt due to high levels of the real interest rate.

To sum up, our analysis of the linkage between fiscal impulses and the public debt/GDP ratio has emphasised the importance of assessing the fiscal stance adopted by the FAs not *in vacuo* but in close relation to the macroeconomic environment, and primarily to the real interest rate and to the economy's rate of growth. The results obtained using the fiscal stance indicators developed above – the *structural* primary balance and the 'public debt stabilization' *structural* primary balance – suggest an interpretation of the fiscal stances pursued by the European countries in recent decades which is different from that of 'fiscal indiscipline' propounded by the approache discussed above. These results seem to show that reduction in the deficit/GDP and debt/GDP ratios in the European countries has come about under two conditions: the growth recovery and/or the relevant fall in the real interest rates.

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[81] "While all EMU countries will have to respect the close-to-balance rule, it can be argued that, in addition, high-debt countries should ensure a sufficiently fast reduction in their debt ratio. (…) Such an additional condition may require that the high debt member states would have to go beyond the budgetary targets these countries would need simply to satisfy the deficit criterion [the 3% constraint]" (Buti – Franco – Ongena (1998), p. 89).

[82] Assessment of fiscal stance is too often conducted in isolation from the rest of the economic magnitudes. The following example is emblematic: "Had fiscal automatic stabilizers been allowed to work without any discretionary adjustment in the euro area, the simulations suggest that 1999 budget deficits would on average be six times as high as their current levels." (van der Noord (2000), pp.11).

5. The question of fiscal policy centralization in the EMU: a look at the future

In this section we wish to assess on empirical grounds another element in the current optimistic view that our model disputes: the assignment of the stabilization of symmetric shocks to the ECB and of asymmetric shocks to each FA. Of course, the short-lived EMU existence offers insufficient stastical basis for inference; thus we have sought to measure what degree of correction of domestic shocks – i.e. what degree of reversion to the EMU mean – can be granted by the existing fiscal systems in the EMU countries, on the assumption that these fiscal systems will remain the sole anti-cyclical device in the future too. As is well known, the counterpart of the "monetary-giant" with "fiscal dwarves" story, and of do-it-yourself stabilization is fiscal centralization, an issue on which we shall conclude the section

5.1. An econometric estimation of the degree of stabilization in the European Union

The features of fiscal stabilization policy differ according to whether it is implemented in a mono-jurisdictional system (with a single level of government endowed with fiscal autonomy) or a multi-jurisdictional one (a two tier system with a national government and a federal government such as the one of the US). The main difference concerns the different objective that is pursued by each of the two system in implementing stabilization policies. In the former system, from the point of view of the intertemporal budget constraint, a fiscal stabilization policy takes the form of an inter-generational insurance contract designed to absorb a shock that has hit the incomes of the country's residents, and therefore consists in bringing private consumption in line with that corresponding to the country's potential income, however this magnitude is measured. In a multi-jurisdictional system, which would come about in Europe if fiscal union were to flank monetary union, centralized fiscal stabilization policy is intended to off-set cyclical deviations of jurisdictional incomes from fluctuations in the average federal income.

In this paragraph we present two types of econometric estimation of fiscal stabilization policies in the European Union countries relative to the period 1971-99 (for the first estimate) and to the periods 1971-89 and 1971-99 (for the second one). The method consists in computing the correlation between the independent variable represented by first differences of per capita national income normalized with the per capita average income of EU countries and, as dependent variable, the same ratio referred to disposable income (income plus the algebraic sum in three different specifications of taxes, taxes and social contributions and taxese, social contributions and transfers). Two types of estimates have been performed: for 14 countries as a whole (*pooling*) and for each country taken alone.[83] The estimated equation is the following:

$$\Delta\left(\frac{Yi - Si}{Ye - Se}\right)_i = \alpha + \beta\Delta\left(\frac{Yi}{Ye}\right)_i + \varepsilon_i \qquad (5.1)$$

[83] An alternative method is the so-called elasticity method, which points to singling out the stabilization intervention working through the federal budget (which is measured by multiplying the taxes and transfers of the various states by the estimated values of their respective elasticities) in order to insulate the specific net flow of taxes and transfers relative to each state. This method is the one used by Sala-i-Martin and Sachs in their analysis of federal stabilization in the United States (see Sala-i-Martin –Sachs (1992) in particular pp.206-8). Income elasticities, once computed by regressing the regional GDP percentage variation as a ratio of federal GDP on percentage variation on regional tax and transfers as a ratio of federal tax and transfers, have been used to determine the disposable income change in a state which has been hit by an asymmetric shock. In other words, these authors estimate the degree by which the state income is modified by tax and transfers. However, this indirect estimate of the degree of stabilization is not appropriate to the European case, as a federal fisacl policy aimed at riequilibrating the European macroeconomy as a whole does not exist.

where *S* is equal in turn to one of the three following specifications: *T* (taxes), *T+CS* (social contributions) and *T+CS-TR* (transfers). In equation (5.1), the elasticity *beta* (relative to the term after the constant) expresses the percentage in which the shock persists 'after' the fiscal stabilization policy. Therefore, the difference between *beta* and unity measures the degree to which the shock has been absorbed by the public intervention.

To clarify the meaning of the regressions, two remarks are needed. The first is that the method of estimating the *first differences* among the variables rather than their *levels* is meant to exclude the function of redistribution from the analysis of fiscal policy intervention, so as to single out the stabilization policy. The choice of variations to conduct estimates instead capture the objective of stabilization, in that they appraise measures intended to absorb temporary shocks on the regional income with respect to changes in the national income, measures which are probably compatible with incentives. The second is that, in the econometric analysis that follows, the method of weighing the GDP, taxes, contributions and transfers of the 'lower-level' jurisdictions (the individual EU member-states) respectively for the GDP, taxes and transfers of the 'central' jurisdiction (the set of EU countries) enables measurement of the changes brought about in the magnitudes of individual states by fiscal stabilization policy relatively to the same magnitudes for the European Union as a whole. In other words, the stabilization policy is not evaluated from the viewpoint of the fulfillment of the objective (how rapid the recovery, after a deviation from the potential or trend income), but as regards the dispersion around the average EU income.

Table 2. 'Aggregate' stabilization in the European Union (1971-99)

2SLS ESTIMATES ON POOLED DATA, PERIOD 1972-99						
	β	s.e.	t-statistic	P-value	Adj.R^2	D.-W.
T	.7603	.0451	16.84	[.0000]	.9654	1.827
T+CS	.6871	.0697	9.864	[.0000]	.9278	1.754
T+CS-TR	.9327	.0609	15.32	[.0000]	.9048	2.420
2SLS ESTIMATES ON POOLED DATA, SUBPERIOD 1972-89						
	β	s.e.	t-statistic	P-value	Adj.R^2	D.-W.
T	.7301	.0598	12.20	[.0000]	.9611	1.923
T+CS	.6356	.0939	6.766	[.0000]	.9222	1.773
T+CS-TR	.7669	.0594	12.91	[.0000]	.9513	1.867

Econometric estimates have been performed with three stages least squares (3SLS) as for the regressions relative to single countries and with the method of two least squeares (2SLS) for the *pooling* ones. The constant, trend and prime differences in per-capita income delayed by one period were used as instrumental variables. Consideration of this last variable should solve the problem of simultaneity that may arise when estimating the correlation between income on the one hand, and income plus the algebraic sum of taxes, social security contributions and transfers on the other. Besides, errors might not be homoskedastic (or uncorrelated among countries); the correction of White has then been applied.

The first estimate[84] is a *pooling* (time series, cross section) in which the imposing of a single *beta* enabled verification of the extent to which national fiscal stabilization policies have

[84] Since the base data were at current prices and in national currencies, the values of national per-capita incomes (Y_i) and of fiscal variables (*T*^=taxes, *CS*^=social security contributions, *TR*^=transfers) were multiplied by the nominal exchange rate between the ecu and the national currency (e_i) and then divided by the PPP coefficients (p_i) published by the OECD. The symbols in Tables 2 and 3 are

absorbed a shock: that is, the difference between the national GDP and the EMU average. The economic rationale of this type of exercise mimics a federal fiscal institution which merges all cyclical and discretionary national stabilization impulses (with respect to potential or trend income) into a single 'European budget', and then divides them equally among the EU countries. On the basis of the various national *beta* values, therefore, different degrees of coverage of national shocks are determined in function of the size of the initial deviation from the EU average. Thus, this econometric exercise identifies the centralized stabilization policy that would be adopted by a hypothetical European federal government which respect the tax law of each state in the federation (without forcing any kind of harmonization) and thus simply puts together the national fiscal stances.

As the results for the overall stabilisation show (the third specification in Table 2), the degree to which the shocks affecting the European countries are absorbed is rather low if we consider the period 1972-99: the *beta* value is less than 7%.As well known, in a mono-jurisdictional system stabilization is narrower than in a multi-jurisdictional system. In fact, interventions by the local government of the first system are much less important than the anticyclical intervention activated by a state belonging to a federation.[85] However, in the EMU case, the weaker stabilization of jurisdictions which are not linked in a two tier federal system is supplemented by the circumstances that the SGP constraint imposed on the national budget are nested in an institutional framework which is already hampered by an understabilization bias.[86] To test this hypothesis the regressions have been run on a shorter period, by excluding the 1990s. The virtual elimination of fiscal policies of stabilization caused by the Maastricht Treaty first and the SGP after, is confirmed. In the period 1972-89, the degree of stabilization was around 23%, a value significantly higher than the one obtained on the entire period. This evidence is an indirect confirm of the interpretation of stabilization policies implemented in Europe in the last decades which was presented in section 2 and supports the critical remarks of the current monetary/fiscal policy mix in the EMU.

The second estimate instead concerns the specific *betas* of single EU countries. In other words, it was no longer assumed that a federal fiscal institution centralizes national flows of taxes, social security contributions and transfers. The rationale is the following: although policies are devised in order to deal with the effects of an 'internal' shock (the difference between income and what the national fiscal authority deems to be the potential or trend value), the beta measures the degree of coverage of a national shock with respect to the European average.

This method only apparently gives rise to a 'spurious' estimate. In fact the estimate considers national fiscal stabilization policies 'as if' the flows of taxes, social security contributions and transfers envisaged by the various national fiscal systems were intended to absorb a shock with respect to the EU average rather than with respect to the national potential or trend income. It can then be said that the estimates exactly reproduce the Maastricht Treaty point of view to leave national FAs to cope with asymmetric shocks.

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therefore calculated as follows: $T = T\wedge(e_i/p_i)$; $CS=CS\wedge(e_i/p_i)$; $TR=TR\wedge(e_i/p_i)$. The value of the per-capita income of the euro-zone considered (Y_e) is invariant because it is expressed in ecus and multiplied by the factor of conversion to PPP equal to 1.

[85] It has been calculated that in the US stabilization attributable to state FAs approximately amounts to 14% (see Bayoumi – Eichengreen (1995) , pp.34-41).

[86] "If the provisions of the Treaty prevent national governments from adjusting their budget to the cycle, post-Maastricht Europe may enjoy significantly less fiscal stabilization and experience greater output volatility then has been the historical norm." Ibidem p.46.

Table 3 'National' stabilization in the European Union countries (1972-1999)

	β	s.e.	t-statistic	P-value	R^2	D.-W.
Austria						
T	.9684	.0292	33.12	[.000]	.9625	1.716
T+CS	1.081	.0369	29.25	[.000]	.9244	1.868
T+CS-TR	1.051	.0312	33.75	[.000]	.9529	1.906
Belgium						
T	.9942	.0252	39.39	[.000]	.9622	1.567
T+CS	.9963	.0275	36.22	[.000]	.9377	1.821
T+CS-TR	1.004	.0291	34.49	[.000]	.9457	2.172
Germany						
T	.9514	.0181	52.50	[.000]	.9895	2.316
T+CS	.9425	.0184	51.21	[.000]	.9769	2.247
T+CS-TR	.9148	.0161	56.82	[.000]	.9776	1.890
Denmark						
T	.7563	.0508	14.88	[.000]	.8649	1.414
T+CS	1.038	.0631	16.45	[.000]	.8514	1.451
T+CS-TR	.8791	.0652	13.47	[.000]	.8746	1.297
Spain						
T	1.090	.0297	36.73	[.000]	.9836	1.884
T+CS	1.106	.0316	34.95	[.000]	.9615	1.947
T+CS-TR	1.045	.0223	46.95	[.000]	.9777	2.424
Finland						
T	.8861	.0106	83.77	[.000]	.9881	2.724
T+CS	.9013	.0166	54.29	[.000]	.9605	2.327
T+CS-TR	.9398	.0553	16.98	[.000]	.7946	2.985
France						
T	.9782	.0205	47.80	[.000]	.9808	1.944
T+CS	1.012	.0297	34.01	[.000]	.9510	1.788
T+CS-TR	1.009	.0249	40.53	[.000]	.9509	1.921
Greece						
T	1.116	.0200	55.94	[.000]	.9833	1.997
T+CS	1.193	.0378	31.57	[.000]	.9729	1.859
T+CS-TR	1.143	.0179	63.76	[.000]	.9839	1.982
Ireland						
T	1.079	.0607	17.77	[.000]	.9470	2.109
T+CS	1.199	.0649	18.46	[.000]	.9407	2.140
T+CS-TR	1.061	.0283	37.42	[.000]	.9735	2.734
Italy						
T	1.043	.0211	49.34	[.000]	.9883	2.066
T+CS	1.039	.0260	39.95	[.000]	.9654	2.247
T+CS-TR	1.025	.0275	37.33	[.000]	.9795	2.751
Netherlands						
T	.9608	.0298	32.27	[.000]	.9460	1.807
T+CS	.8860	.0405	21.89	[.000]	.8708	1.768
T+CS-TR	1.030	.0228	45.19	[.000]	.9445	2.227
Portugal						
T	1.073	.0266	40.33	[.000]	.9769	1.907
T+CS	1.147	.0354	32.41	[.000]	.9647	1.776
T+CS-TR	1.060	.0295	35.88	[.000]	.9647	2.149
Sweden						
T	.8308	.0229	36.31	[.000]	.9754	1.321
T+CS	.7912	.0327	24.19	[.000]	.9221	1.243
T+CS-TR	.8423	.0294	28.70	[.000]	.9532	1.240
UK						
T	.9199	.0154	59.58	[.000]	.9914	1.688
T+CS	.9769	.0218	44.80	[.000]	.9817	2.160
T+CS-CR	.9462	.0157	60.38	[.000]	.9902	1.944

Table 4. 'National' stabilization in the European Union countries (1972-1989)

	β	s.e.	t-statistic	P-value	R^2	D.-W.
Austria						
T	.9694	.0254	38.13	[.000]	.9593	1.624
T+CS	1.062	.0319	33.31	[.000]	.9008	1.848
T+CS-TR	1.050	.0246	42.73	[.000]	.9468	1.974
Belgium						
T	.9760	.0196	49.71	[.000]	.9626	1.506
T+CS	.9870	.0225	43.85	[.000]	.9388	1.582
T+CS-TR	1.042	.0173	60.34	[.000]	.9718	1.969
Germany						
T	.9398	.0135	69.42	[.000]	.9893	1.580
T+CS	.9474	.0145	65.56	[.000]	.9762	1.571
T+CS-TR	.9031	.0101	89.57	[.000]	.9823	1.529
Denmark						
T	.7512	.0368	20.43	[.000]	.8845	1.564
T+CS	.9421	.0345	27.28	[.000]	.8643	1.500
T+CS-TR	.9131	.0477	19.16	[.000]	.8767	1.327
Spain						
T	1.149	.0145	78.99	[.000]	.9903	1.172
T+CS	1.205	.0145	82.91	[.000]	.9812	1.234
T+CS-TR	1.101	.0142	77.54	[.000]	.9874	2.293
Finland						
T	.9394	.0241	39.02	[.000]	.9802	2.747
T+CS	.9675	.0325	29.77	[.000]	.9427	2.264
T+CS-TR	.8783	.0303	28.97	[.000]	.9630	2.802
France						
T	.9883	.0149	66.14	[.000]	.9844	2.027
T+CS	.9686	.0229	42.32	[.000]	.9442	1.838
T+CS-TR	.9953	.0158	62.81	[.000]	.9721	2.287
Greece						
T	1.116	.0101	110.5	[.000]	.9905	1.914
T+CS	1.171	.0178	65.72	[.000]	.9828	1.734
T+CS-TR	1.116	.0088	126.5	[.000]	.9892	1.921
Ireland						
T	1.020	.0338	30.18	[.000]	.9297	2.158
T+CS	1.138	.0362	31.40	[.000]	.9034	2.291
T+CS-TR	1.051	.0227	46.21	[.000]	.9596	3.015
Italy						
T	1.029	.0143	71.84	[.000]	.9882	1.598
T+CS	1.028	.0209	49.28	[.000]	.9664	1.219
T+CS-TR	1.050	.0123	85.22	[.000]	.9896	1.655
Netherlands						
T	.9544	.0208	45.92	[.000]	.9721	1.805
T+CS	.8635	.0396	21.78	[.000]	.9252	1.870
T+CS-TR	1.030	.0200	51.50	[.000]	.9770	1.663
Portugal						
T	1.094	.0181	60.47	[.000]	.9834	1.473
T+CS	1.204	.0301	40.00	[.000]	.9693	1.425
T+CS-TR	1.168	.0293	39.81	[.000]	.9780	1.717
Sweden						
T	.8389	.0171	49.10	[.000]	.9736	1.301
T+CS	.7852	.0307	25.60	[.000]	.9166	1.367
T+CS-TR	.8038	.0153	52.54	[.000]	.9627	1.361
UK						
T	.8833	.0117	75.76	[.000]	.9915	1.639
T+CS	.9563	.0181	52.70	[.000]	.9875	1.848
T+CS-CR	.9417	.0131	72.11	[.000]	.9905	1.443

However, it is not stated that governments should cooperatively commit themselves to render their economic cycles more coherent with that of a hypothetical EU average economic cycle. The policy perspective of the Treaty is thus exactly reflected by this second type of econometric estimates. It consists of a counterfactual test of the degree in which the fiscal stances pursued by the European countries in the last decade would have absorbed asymmetric shocks with respect to the EU average, had the monetary union already been in place. In fact, one minus the various *beta* values expresses the degree of shock absorption with respect to the EU average, with fiscal policy of each country targeting their own national stabilization.

The results in Tables 3 and 4 show that when one considers national fiscal policies one by one – that is, without the *pooling* of stabilization policies performed in the first type of exercise by the federal government –the finding is that the values for the degree of shock absorption is rather poor. In synthesis, the results suggest the following remarks:

1)In most countries, a certain degree of stabilization turns out in the first specification of the estimates (taxes). The value of one minus beta values are greater than 10% in the three Scandinavian countries (Denmark, Finland and Sweden) or close to 10% (in the Netherlands and in Germany). As regards the other two specifications the values of beta are often higher than unity in both estimated periods. This indicates that stabilization policies by FAs – understood as interventions aimed at absorbing a shock-induced divergence from the European average – accentuate, rather than reduce, that divergence. The inadequacy of national fiscal policies to cope with the objective of annulling the effect of asymmetric shocks is an indirect clue of difficulties encountered by EU countries in the last decades on the way of improving the degree of correlation among the national business cycles. The various national FAs seem then to be unable to cope with asymmetric shocks.

2) In countries where it has been found a certain degree of stabilization, the *beta* values relative to the period 1972-99 are lower than those for the period 1972-89. It is thus confirmed the result already obtained in the first type of estimate that the Maastricht constraints on public deficit and debt, have further weakened shock absorption by national fiscal policy;

3) The breakdown for the different specifications of fiscal intervention (*T, T+CS, T+CS-TR*) allows stressing peculiarities accruing to different countries. Generally, transfers do not seem to significantly affect the success of stabilization. Besides, in passing from the first to the second specification, the raising degree of shock absorption in Sweden and the Netherlands (expressed by falling beta values) suggests that social protection in those countries plays a relevant role also as for the function of stabilization performed by the public intervention.

The conclusion is that national fiscal authorities alone seem unable to cope with asymmetric shocks. Therefore, the 'European convergence' - taken as the progressive reduction in dispersion around the average E.U. per capita income, from which a single European business cycle should derive – was poorly favoured by national fiscal policies. The Maastricht view on the completion of the integration process, whereby the subsidiarity principle leaves to national FAs the task to cope with asymmetric shocks, is apparently based on the expectation that the "European convergence" will be led by market forces. It remains to be seen whether the mere working of market mechanisms is capable of promoting a sufficient integration of European productive structures such to generate in the near future a single European business cycle. In addition to the gloomy econometric estimates presented above, numerous hints – for instance the gap between 'strong' and 'weak' areas that could be aggravated by agglomeration factors, institutional diversity (as for labour market legislation, social protection systems, natural monopolies), etc. – make us think that the completion of the European integration process with the achievement of the 'real convergence' may be undermined by an insufficient degree of governance.

5.2. Fiscal policy centralization by interregional mutual risk insurance

The patent asymmetry in powers and responsibilities between FAs and MA in the EMU, the hybrid "constrained international regime" in which the member countries are embedded, the serious deficiency that stabilization policies may present in such a regime, as we have examined them hitherto, are only a few among the arguments that lie behind the quest for a centralized FA raised by a part of scholars and politicians in Europe. For the reasons explained in sections 1 and 2 and other, perhaps more powerful, political motivations, progress towards the goal of a centralized FA is hard and highly uncertain. As far as economic arguments are concerned, we observe the blatant schizophrenia with which the issue of levels of government is treated.

The Treaty of Maastricht asserts the principle of subsidiarity as the keystone of the EMU economic policies: the Community shall take action "only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by Member States and can therefore, by reason of the scale or effects of the proposed action, be better achived by the Community".[87] The declared objective consists in enabling an effective democratic control over economic policy decisions: the point is that local communities can elude both the "rent-seeking" behaviour and soft budget constraint policies of central governments, by electing their representatives to the lower-level governmental bodies. In this way, the probability that greater transparency and effectiveness of decisions lead to the full satisfaction of their preferences would increase. On the other hand, the further political decentralization proceeds, the greater the fragmentation of decision-making prerogatives. The complex spillover effects that would originate by more and more local decisions would ask for the recourse to a higher government levels to be regulated. However, in the current EMU regime, a plurality of 'small' local governments with limited powers due to scant resources, is not confronted by a fiscal union but by homologating power of the '*one money, one market*' pair.

The single currency plus market coordination not only restricts the field of intervention of monetary policy but also it rules collective decisions in such a way to affect the path towards devolution. As a consequence of the single currency (that is, the renounce to devaluations) and central government deprived of instruments of economic policy, the so-called "market constituency" could easily prevail on the idiosyncratic preferences of the many regional jurisdictions in which the EU might split out. Therefore, the prerogatives of local governments may be crushed by a power even more pervasive then a central government (in particular, if idiosyncratic preferences and different levels of wealth will generate distributive conflicts).[88] On the other hand, the asymmetry whereby the centralization of monetary policy is an exception to the subsidiarity principle - which instead regulates fiscal policy - is explained by the more impelling requirement of the ECB's independence propounded by the New Classical Economics. This infringment of the subsidiarity principle has yet to be remedied by the institutional measures that should impose accountability on the ECB and thus guarantee, at least indirectly, the democratic tenet set out in the principle.

Let us start by recalling the theoretical arguments that can be put forward to support centralization of fiscal policy of stabilization in the EMU. We can think of these arguments as pointing to counteracting under-stabilization. We can distinguish among three factors of under-stabilization: i) increased uncertainty caused by globalization, which inevitably reduces

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[87] Maastricht Treaty, art. 3b.

[88] The question is a highly controversial one, as witness the different opinion that follows: "As international trade becomes more and more free, and the world economy more integrated one of the benefits of size disappears. Under free trade even a small country will have a large market: the world. The connection between 'economic' borders (i.e. market size) and 'political' borders disappears. Therefore the optimal size of a country falls, as economic integration progresses. Regional, linguistic, cultural and religious minorities may enjoy the benefits of political independent, and avoid having to share policies and public goods provision with people whose preferences are very different from theirs, without having to bear the cost of smaller markets." (Alesina – Wacziarg (1999), p. 15).

the ability of nations of sub-continental size to deal on their own with shocks that may be of great magnitude; ii) interdependences and externalities to the pervasiveness of which the mere coordination of national fiscal policies seems unable to cope with; iii) the consumer behaviour according to the 'Ricardian equivalence'.

As regards the first category, one of the reasons why globalization may increase the likelihood and magnitude of shocks on the EMU countries is the growing interdependence among currency areas. Phenomena like high volatility and bandwagon effects among markets may transform local shocks – whose destabilizing effects are confined to the currency area of origin – into systemic crises. The globalization of financial markets and increasing correlation among economic cycles are major destabilizing factors which impinge on the institutional level at which fiscal policy should be organized. This increase in systemic uncertainty on the one hand, requires government capabilities which match the supranational character of these phenomena, which are at the moment markedly lacking (there is a wide-spread complaint about the so-called 'international institutional deficit'); on the other, it suggests that single currency areas like the EMU could benefit from the centralization of fiscal policies of stabilization into a system of mutual risk insurance (entrusted to a federal system of government) able to absorb the shocks that hit individual countries.

As regards the second category, a centralized fiscal policy would help eliminate the negative interdependences and externalities created in the EMU by the discretionary measures of national FAs. It is well known that monetary union works through numerous channels of interdependence to propagate the effects of national policies throughout the area. We showed in section 3 that, because of efficiency problems in the allocation of policies, mere coordination between the monetary authority and the various FAs may not be enough – in at least two cases – to ensure an effective response to a negative shock which has differing effects across the European countries: i) a negative financial interdependence may cause an absence of reaction to asymmetric shocks because the national fiscal authority has no incentive to implement an expansionary policy; ii) in the presence of a positive trade interdependence, it may be impossible to impose a credible rule for 'complete' stabilization on the national fiscal authority when it has no incentive to do so because the SPG costs are greater than the benefits.

It is possible to distinguish two types of externality. The first, as is well known, derives from the fact that the 'lower' levels of government – the individual countries belonging to the EMU – have no incentive to implement stabilization policies following a negative shock. Because the multiplier effects spread through an area wider than the jurisdictional boundaries of the institutions in charge of them – an area which can be identified with the euro-zone as a whole – even the simple coordination of national fiscal policies intended to internalize the externality may prove difficult to achieve because the negotiation costs are too high.

A second type of externality concerns public policies to compensate for market failures:[89] the production of public goods (infrastructures, education, telecommunications) and systems of social insurance and shock absorbers (health, pensions, temporary redundancy funds, training for the long-term unemployed) may bring about spillover effects across

[89] Put briefly, models which connect public intervention with the existence of market failures single out the following tasks for policies implemented by the public sector. Stabilization policies must make up for the absence of complete forward capital and credit markets (which guarantee the intertemporal substitution of consumption), seeking to neutralize the effects of the economic cycle on subjects with liquidity constraint by smoothing consumption over time. 'Pay-as-you-go' social security and welfare policies prevent private insurance companies and private pension funds from exposing economical 'weak' subjects to, respectively, policy premiums much higher than those charged by the public health system and the risk of serious current-account losses in financial markets. Lastly, redistribution policies ensure against the risk of strongly negative externalities (for example, being born in a poor area or household).

countries. In this regard, a first externality problem is the possibility that full financial capital mobility and the increasing human capital mobility give rise to fiscal competition mainly in the European countries with more developed welfare institutions. These countries have introduced reforms intended to retrench welfare spending in order to prevent the increasing costs of social insurance and shock absorbers from provoking eventually loss of capital, and the greater coverage and quality of transfers and public services vis-à-vis the EU countries may lead to the gradual replacement of the skilled population by an unskilled one. The higher demand of public policies coming from the latter which are low income individuals may cause the outflow of financial and human capital thus reducing the tax base method for funding national welfare state. The second externality problem relative to public policies is closely connected with the first, in that it consists of the substantial political weight acquired in a context of growing mobility by demands for increased freedom of individual choice. This demand takes concrete form in calls for lower taxation, a decline in demand for social protection programmes, and a shift towards collective decisions increasingly less targeted on the production of public goods. The devolution of central-government powers extends the range of public decision-making delegated to lower levels of government, and it tends to restrict the reach of redistributive policies intended to foster social cohesion – the traditional source of legitimacy for central governments. The smaller the size of the region or the state, the more homogeneous the distribution of income, the more attenuated the conflicts of interest, and the more similar the preferences of the population; hence the more important individual preferences become in reducing the value that the community attributes to standardized public services which merge decision-making opportunities into a single undifferentiated choice for all. In a not too distant future, the states – or perhaps the regions – of the EMU may find themselves competing for capital and residents by reducing taxation and social services. Therefore fiscal competition and devolution the two externality factors of recent appearance on the European Union stage together account for the tendency of governments to reduce the amount, extent and quality of welfare.

The third argument supporting fiscal policy centralization concerns agents behaving according to the 'Ricardian equivalence'. Any stabilization policy implemented by a system of mutual risk insurance (MRI) is not exposed to this cause of stabilization failures. In a centralized fiscal system, instead of intergenerational redistribution realized by 'regional' stabilization which the 'Ricardian' consumer could neutralize – the MRI working determines an intertemporal redistribution for the regions as a whole. While 'regional' stabilization could vanish due to consumers internalization of higher future taxes in the intertemporal budget constraint federal stabilization is free from this problem. The average negative balance (transfers minus contributions) in jurisdictions with a growth rate higher then the federal mean – differently from the 'Ricardian equivalence' – is not perceived as a deficit to which the expectation of higher future taxes correspond. Pairwise, the average budget surplus (transfers minus contributions) in jurisdictions hit by a negative shock does not put forward the perception of too low taxes and thus of future increases in taxation, but the expectation of a negligible tax increase because it will be applied to all jurisdictions. The main feature of a MRI system is that neither the expectation of higher future taxes in regions in recession or the expectations of tax reductions in regions in expansion materialize. The intertemporal budget constraint is not modified by the mechanism of contributions and transfers, as it concerns the aggregate federal budget where surplus and deficits mutually cancel.[90]

We will now analyse the role that a fiscal union could play in the EMU. The MRI among jurisdictions – activated by a federal central authority together with local governments – is theoretically grounded in the capital and credit markets which impede the intertemporal substitution of consumption.[91] The task to smooth the income levels of individuals residents in

[90] For an analysis of the impact of 'Ricardian equivalence' on stabilization policies in a federal system, see Bayoumi –Masson (1998).

[91] For the difficulties encountered by New Classical Economics in assessing the consumption intertemporal substitutability, see Farina (1988), pp. 157-62. In addition to the theoretical dispute on

regions or nations[92] hit by negative shocks could be performed by an MRI agreement by which all jurisdictions should have equal chances of drawing on a common fund (cooperatively financed according to appropriate coefficients): if the rate of income growth in one jurisdiction falls below the 'federal' average, the jurisdiction is supported by transfers – activated by the central institution responsible for the MRI system – from the jurisdictions with growth rates above the federal average. Of the sustainability of an MRI is mainly warranted by the 'strong' jurisdictions that is with probability to incur in asymmetric shocks lower than federal average and with a growth rate higher than the federal average (which amounts to contributing most to the common fund).

The main problem of a system of MRI in the EU is represented by distributive conflicts that put a threat on the agreement among countries and, what is more, their compliance with it.[93] First of all, it is worth delimiting precisely the application boundaries of mutual risk insurance. An important aspect is the distinction between action to stabilize a temporary shock and redistribution measures intended to counteract long-period shocks, in particular the persistent structural backwardness that hampers the growth of certain areas. Programmes intended to close regional gaps with respect to the national average tend to foster moral hazard, with negative effects on incentives. Thus a centralized fiscal policy should be limited to the stabilization function with respect to the effects of temporary shocks.

A fiscal union should also avoid the tendency, which is present in many European fiscal systems, to extend the period of stabilization interventions. These interventions too often become hidden redistribution which reintroduce distortions in the market (the labour market especially) in the form of moral hazard due to the public support. However, even in a centralised fiscal union which restricts itself to a stabilization policy, the MRI system among jurisdictions may incorporate elements of redistribution.[94] In fact, redistribution is strictly embedded in the fiscal system. The reciprocal insurance against shocks can be achieved by two alternative systems: (i) with centralized taxes and transfers conditional on the onset of regional negative shocks, which can be called a state contingent (SC) system (transfers to residents in these regions may be delivered directly in the case of a unified system of taxation – that is, a fiscal union – or indirectly via regional programmes which provide retraining for the jobless due to the shock and support for recession-hit incomes); (ii) with taxes and transfers that pass directly through the interpersonal redistribution undertaken by the system, which can be called state non-contingent (SNC).

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perfect capital markets opinions diverge as to whether it is appropriate to add public interventions to market mechanisms which rule on the intertemporal smoothing of income and consumption. Asdrubali –Sorensen –Yosha (1996) calculate that in the United States 39% of shocks are absorbed by the capital market and 23% by the credit market (ibid. ,pp. 1081-110). Melitz and Zumer (1999) develop a model to test Asdrubali – Sorensen –Yosha (1996) which supports the hypothesis that markets play an important role in providing insurance against shocks. See, however, Sorensen –Yosha (1996), who argue that it is mainly government stabilization measures that absorb shocks in the EMU, with a coverage of around 25% after three years. This low percentage induces the authors to conclude that the 3% public deficit margin set by the Treaty of Maastricht is insufficient.

[92] Henceforth, regions and nations will also be named 'jurisdictions'.

[93] Von Hagen – Hammond (1996) analyse problems for centralization stemming from the width and duration of redistribution which would take place among the EU countries. The use of automatic mechanisms by an MRI system is indubitably preferable to discretionary criteria. On this, see Goodhart – Smith (1993), p. 432.

[94] The interplay between stabilization and redistribution affects also econometric estimate. In his regressions on the degree of federal stabilization in the US, van Hagen (1992) does not take into account social contributions. The reason is just to avoid the distortion determined in computing shock absorptions by the redistributive aspects of stabilization. However, this problem is not always tackled in the literature, as the following sentence shows: "Unlike redistribution, which requires cooperation across countries, stabilization of cyclical movements in income across EC states can be carried out at the national level." (Bayoumi –Masson (1995) p.267).

In the former case, the insurance is tied to a shock, and it operates through tax levies on regions undergoing expansion with respect to the EMU average and transfers to regions in recession with respect to the EMU average, so that it only gives rise to inter-regional redistribution from the regions in expansion to those in recession. In the latter case, the insurance functions through automatic stabilizers – that is, through the fiscal system as applied to personal and corporate incomes. Thus, is also achieved the redistributive function of the insurance, because inter-regional redistribution comes about between the rich in the region undergoing expansion to the poor in the region undergoing recession. In other words, the stabilization involves both the greater (lesser) likelihood of being unemployed in a poor (rich) region and the greater (lesser) effect of redistribution on rich (poor) individuals. Consequently, the higher the ratio between SNC regional stabilization and SC regional stabilization, the greater the redistributive effect exerted by the MRI system.

A fiscal union which establishes fiscal policy centralization in the EU by an MRI is thus exposed to the instability which could stem from these two redistributive aspects of stabilization, the interregional and the interpersonal one. Among the different countries of a possible European federation distributive conflicts – mainly, regarding the magnitude of interregional transfers in the SC and on the level of fiscal pressure in the SNC – which should add to those already existing (for instance, opposed economic interests inside the EMU countries especially those with a dual structure).

As mentioned above, an aspect, probably the most important, of the possible redistributive impasse by which a fiscal union among the EMU countries could be blocked is that the 'strong' countries have a lesser probability to be hit by a negative shock then the 'weak' ones. From a *bargaining* point of view, countries at low risk of negative shocks may make their compliance with an MRI system conditional on payment by the high-risk countries of 'premiums' to an amount that makes the ratio between probability of negative shock, and the transfer envisaged should it occur, "actuarially fair". On the other hand, it can be argued that imposing this condition would be to adopt a rather myopic view of 'horizontal equity' in that it refers to the short period alone. Indeed, account must necessarily be taken of the fact at an MRI system is particularly ppropriate in the case of 'inter-regional' integration, such as the integration process among the EU countries. On the one hand, the constraints imposed on individual countries by the present institutional arrangements - first of all by the SGP - rise fears of insufficient margins for stabilization. On the other, the growing interdependence in Europe among economic systems at different levels of development (and which is bound to increase with enlargement to the East) will probably exacerbate externality problems.

6. Conclusions

Completion of the single market, adoption of a single currency, self-limitation of the scope of national policies under the Maastricht Treaty and the SGP, mark a transition of political-economic institutions of EMU countries from the traditional international regime to a new one that is still hidden from view in important parts.

As we argued in section 1, the transition process in the EMU may eventually recast the EPAs in a fully accomplished interregional regime, that is a regime characterized by: i) one single currency, ii) full economic integration within geo-economic areas, though not necessarily across them, iii) hierachic articulation of territorial competences of public governance agencies. However, at present the creation of interregional policy institutions is almost complete in the monetary domain, whereas in the fiscal domain policy institutions are still those inherited from national states albeit stritcly constrained by a set of supernational rules. This apparent mismatch between monetary and fiscal institutions originates a hybrid regime that we have proposed to call "constrained international regime".

In this paper we have sought to assess whether such regime is consistent as regards the objective of macroeconomic stabilization. As seen in section 2, the theoretical premisses that have influenced the design of the EMU political-economic institutions (basically, failure-less intertemporal general equilibrium) also underpin the dominant view that a "monetary giant" surrounded by "fiscal dwarves" offers better guarantee of central bank's independence, monetary stability, fiscal discipline and retrenchment of the public sector. These theoretical premisses, however, have led to seriously limited analyses of fiscal policy both normatively and positively. On the one hand, from these premisses it is trivial to deduce that the best intitutional design is one which imposes balanced public budget while minimizing the dimension of the budget. On the other, judgments of "fiscal indiscipline" as regards past fiscal policies in the EU and prescriptions for the conduct of fiscal policy in the EMU have been put forward with no consideration of the actual macroeconomic conditions impinging on fiscal choices as if historical observations were drawn directly from the underlying abstract model.

In the macroeconomic interregional model presented in section 3, macroeconomic fluctuations can be optimized by means of appropriate choice of fiscal and/or monetary measures. Assuming one central MA *vis-à-vis* local national FAs, and that all EPAs in the system are well "disciplined", the problem of the most efficient (in the Tinbergen-Meade sense) policy mix remains to be solved. Can the most efficient solution be obtained in the existing institutional setup? Answering this question requires deeper and better articulated analyses than those available to date. First, our analysis showed that central monetary policy and national fiscal policies cannot be determined one independently from the other. Second, as soon as we recognize that macroeconomic shocks are generally unevenly distributed across member countries, rather than being neatly either symmetric or asymmetric, the assignment problem between fiscal or monetary policy cannot be solved by the simplistic idea the the ECB should take care of symmetric shocks and national FAs of asymmetric ones. Third, the efficient solution depends on i) the degree of correlation of shocks across member countries, ii) the nature of strucutural interdependence among them. If shocks are highly correlated and negative financial interdependence prevails (expansionary fiscal policy in one country "crowds out" economic activity in the others), then the most efficient instrument is central monetary policy (though stabilization cannot be complete in each and all countries, especially "small" ones, unless shocks are perfectly correlated). If shocks are strongly correlated but positive trade interdependence prevail (expansionary fiscal policy in one country "crowds in" economic activity in the others), then the most efficient instrument is local fiscal policy. Other combinations of these factors give rise to more uncertain solutions.

In the light of these results, conventional wisdom on stabilization policy in the EMU presents internal inconsistencies. The SPG has been predicated in force of the idea that, *inter alia*, there exists strong negative financial interdependence among member countries, but if this true, then i) national FAs themselves would find expansionary fiscal policy inefficient locally and globally, and ii) they should not use it altogether, not even to stabilize asymmetric shocks. Hence the question is: why have national FAs been constrained not to use a useless instrument, and why are they allowed or encouraged to use such a useless instrument to correct asymmetric shocks? By contrast, local fiscal stabilization is efficient to correct asymmetric shocks if positive trade interdependence exist, but if this true, i) the efficient degree of intervention may exceed the 3% upward limit imposed by the SGP, and ii) there is no danger of exporting "crowding out" effects if that limit is trespassed: there is indeed collective gain from the coordinated use of the fiscal instrument. Hence the question now is: why have national FAs been constrained in the use of the efficient instrument of stabilization in a way that, to say the least, exacerbates coordination problems by raising the costs of local fiscal intervention?

We have also engaged in empirical anlyses in order to gauge how fiscal policy worked in the pre-EMU Europe and how it may work in the future of EMU. In section 4 we presented estimations of the fiscal stances of EU governments in the last thirty years pointing to the conclusion that the dominant judgement of tendency towards "fiscal indiscipline" should be

better qualified and substantially mitigated. Our analysis confirmed our general contention that the fiscal stance can be correctly assessed only in connection with the general macroeconomic situation, and with the concomitant monetary stance in particular, which co-determine the two factors governing the evolution of the overal deficit/GDP ratio and of the debt/GDP ratio, namely the real interest rate and the growth rate. During the '80s the notorious inability of some governments to bring deficits and debts under control was not the result of deliberate expansionary impulses, but mostly the result of unsuccessful resctrictive impulses chasing dramatically large primary surpluses that wuold have been necessary to compensate for the combination of high real interest rates and low growth rates.

As far as the idea of *country-by-country* stabilization for the future of the EMU is concerned, we estimated in section 5 the result of local shocks on the dispersion of per-capita incomes in the euro area taking existing fiscal legislation as given. Our findings lead us to conclude that, as argued theoretically in section 3, country-by-country stabilization is likely to result in greater dispersion rather than reversion to the mean of per-capita incomes across member countries.

After consideration of all the foregoing issues, we cannot but warn against the optimistic view that favours the present political-economic setup of the EMU as a consistent institutional frame. As briefly outlined in section 5, a step towards fiscal centralization should be moved at least in the form of interregional mutual risk insurance schemes granting each country a chance to receive compensatory transfers whenever per-capita incomes fall below the EMU average.

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Figure 1. European Union

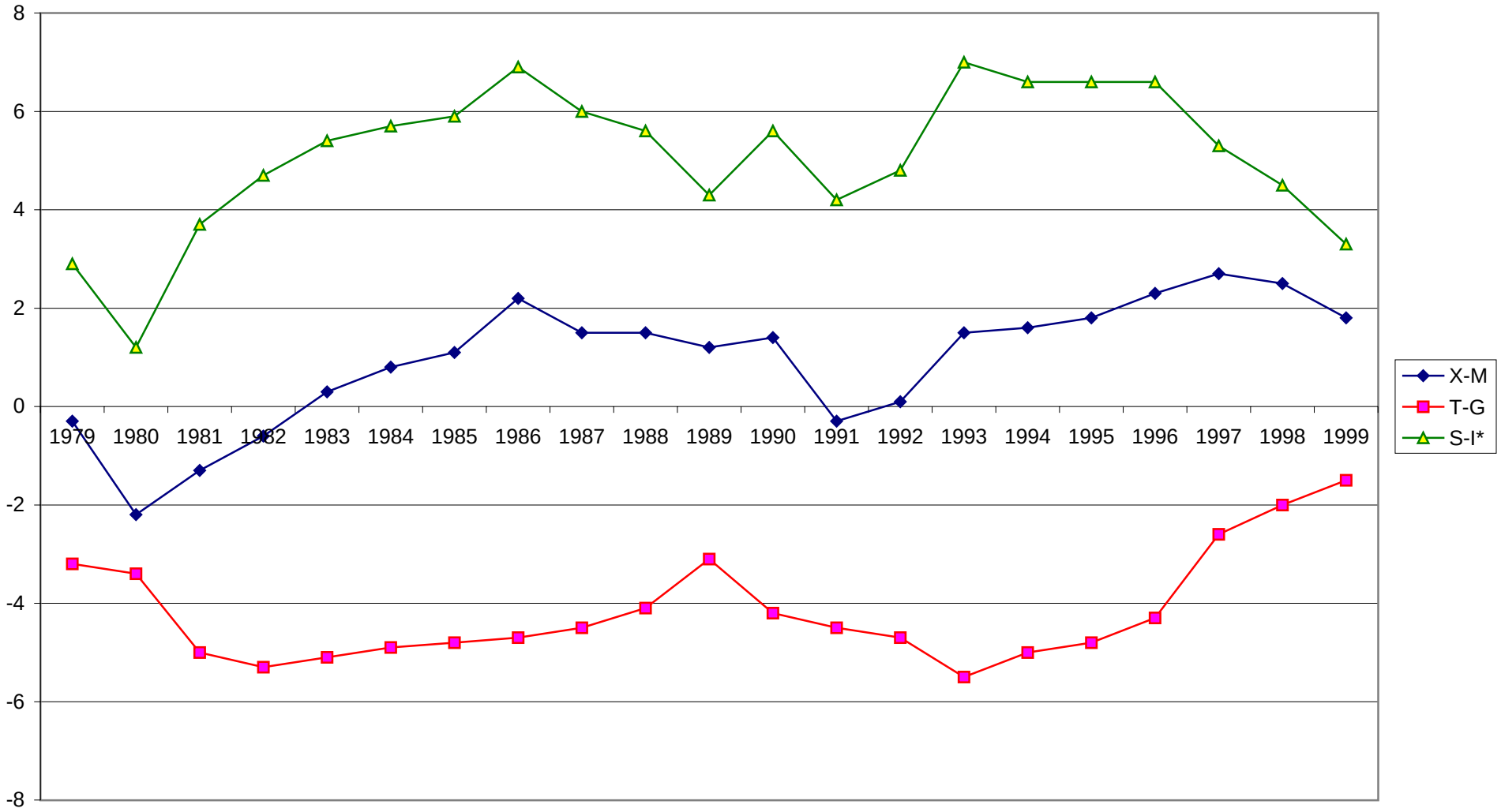


Figure 2. Austria

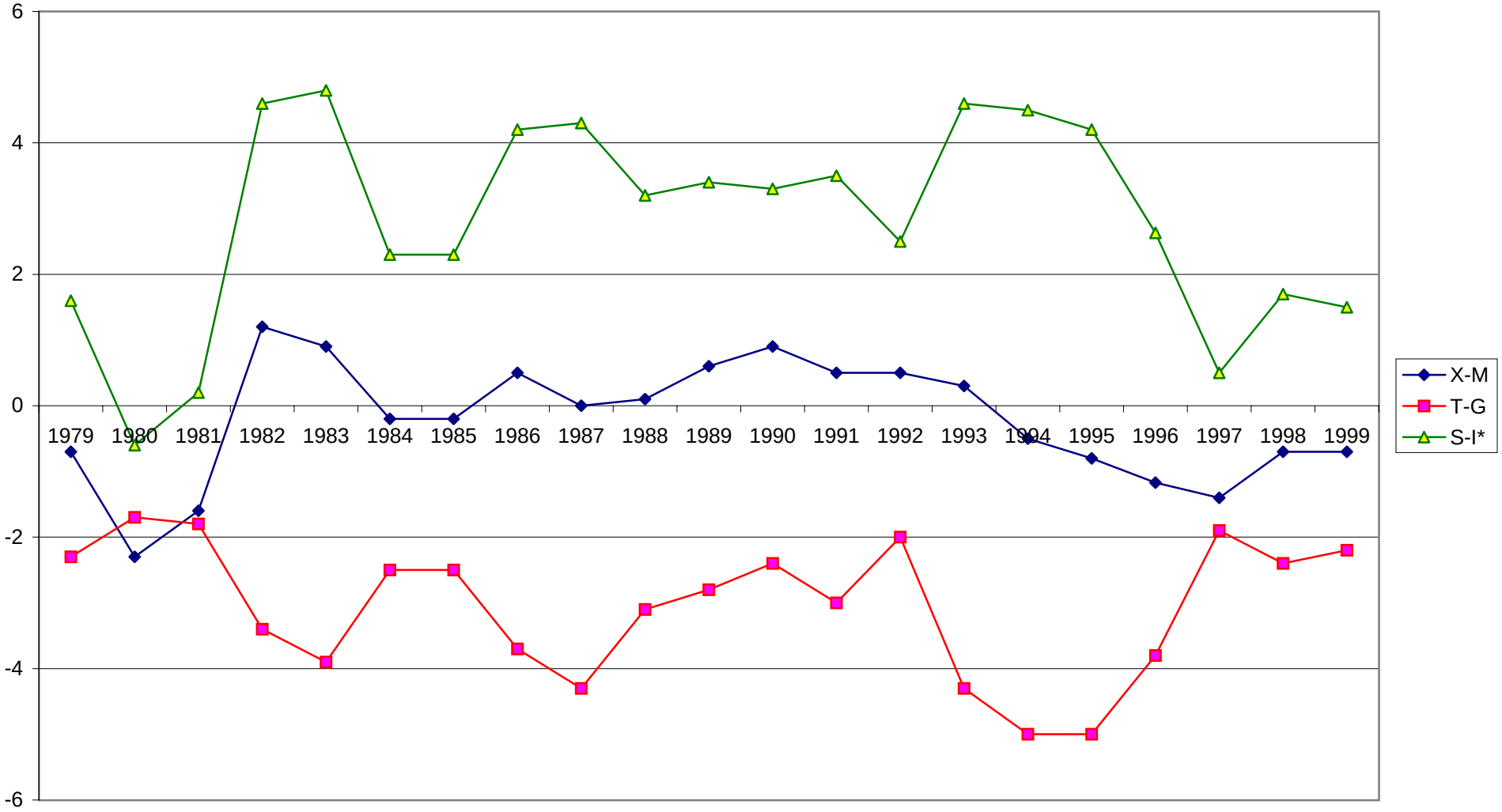


Figure 3. Belgium

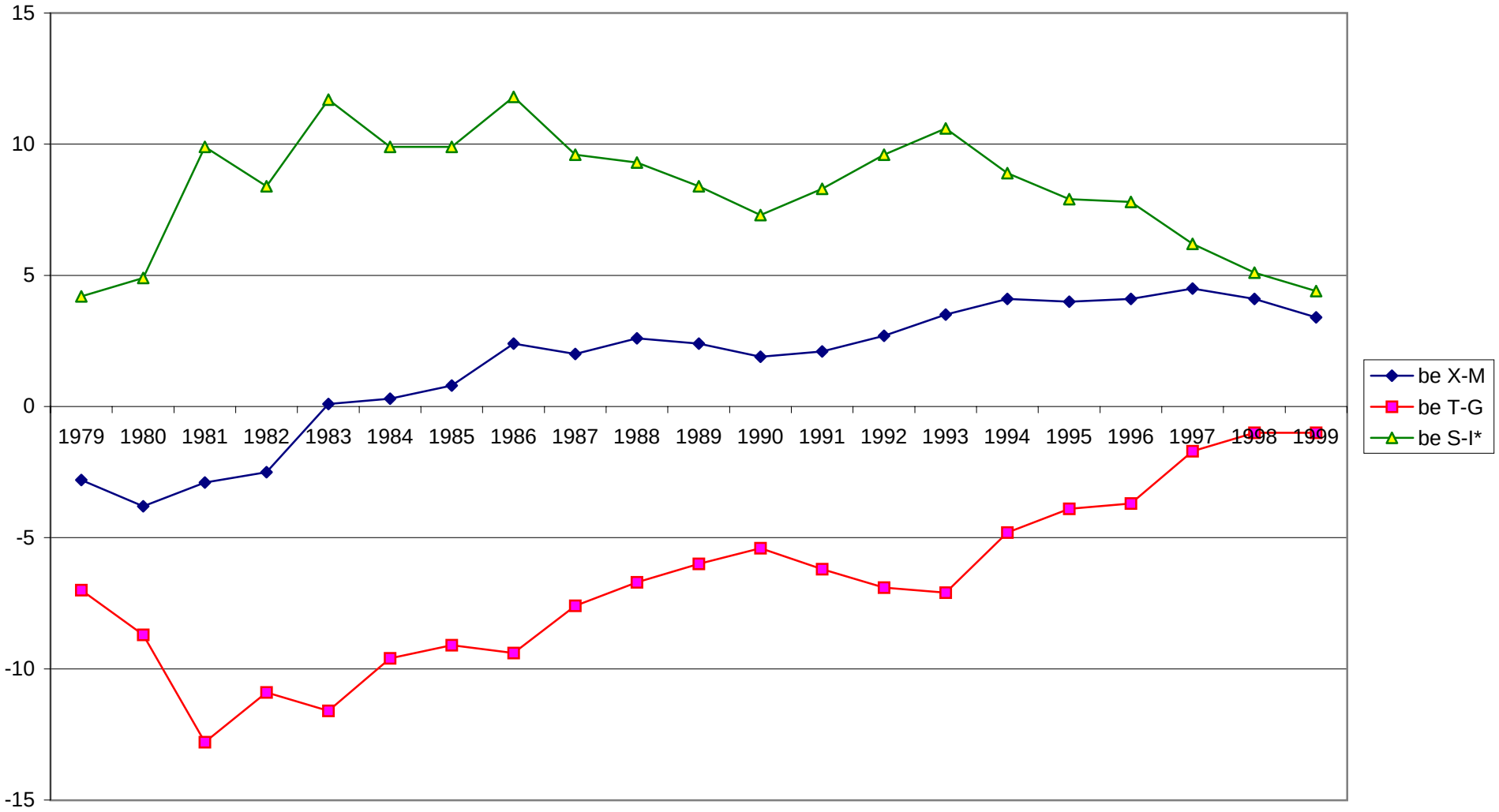


Figure 4. Denmark

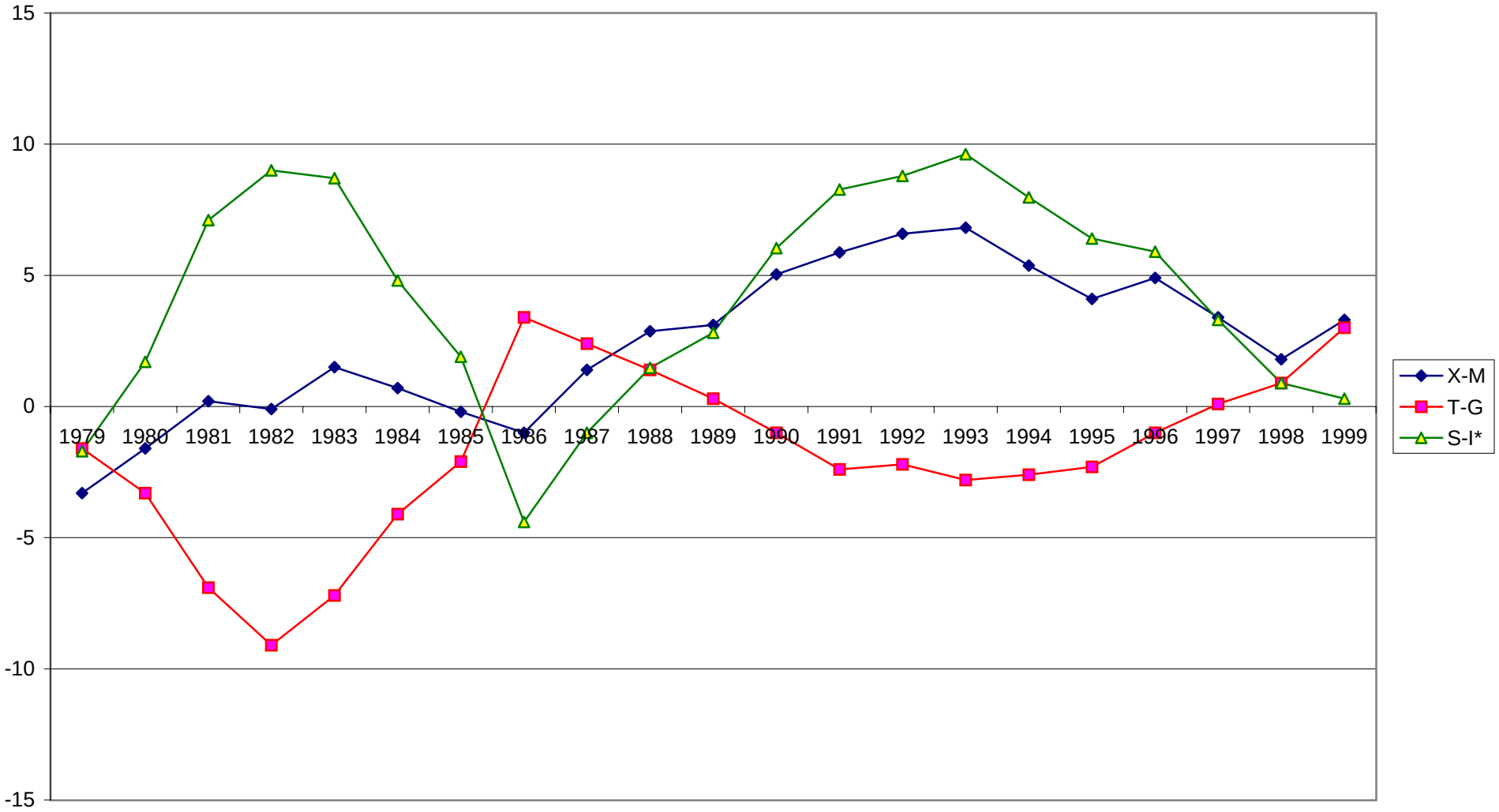


Figure 5. Spain

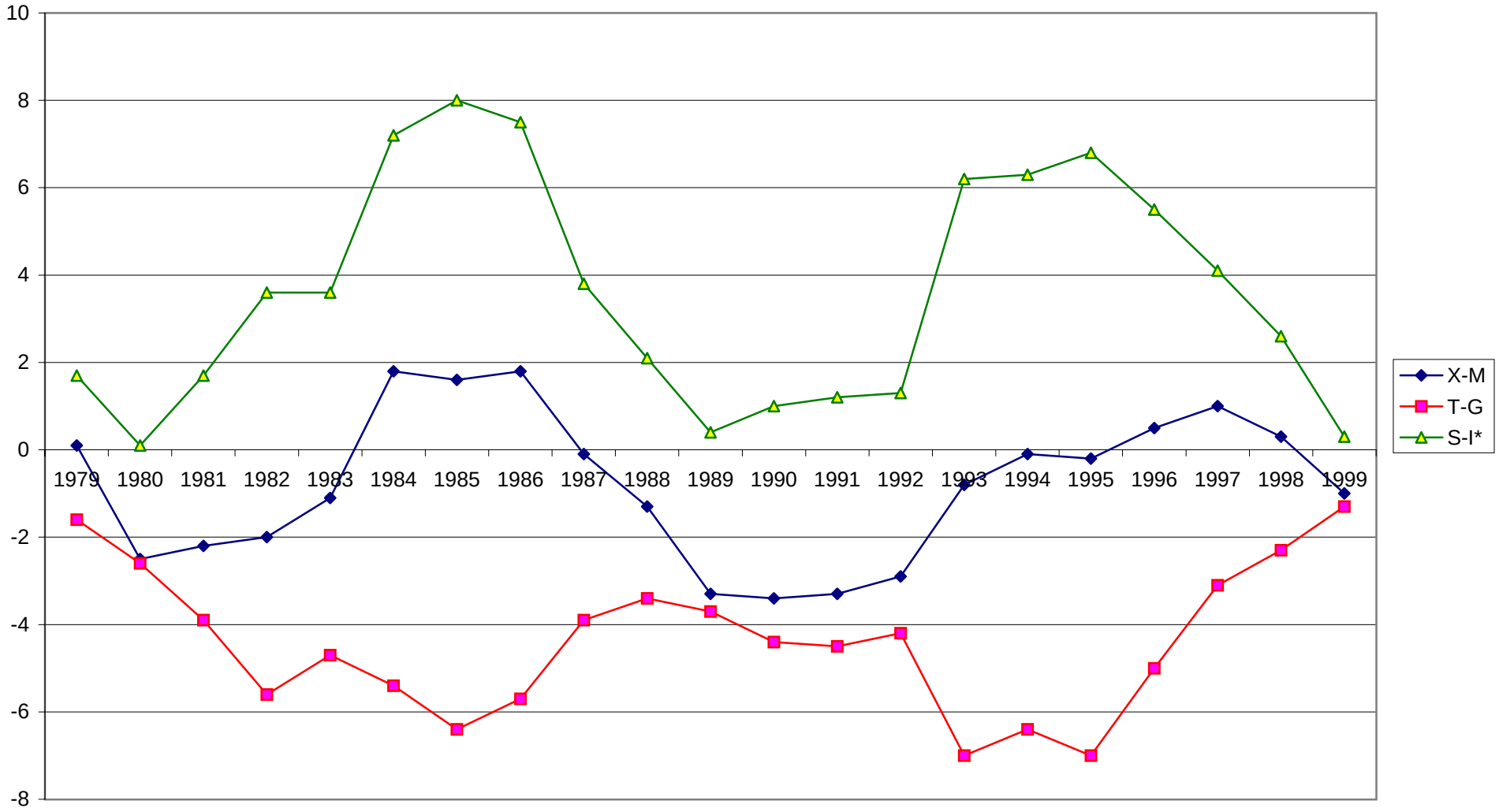
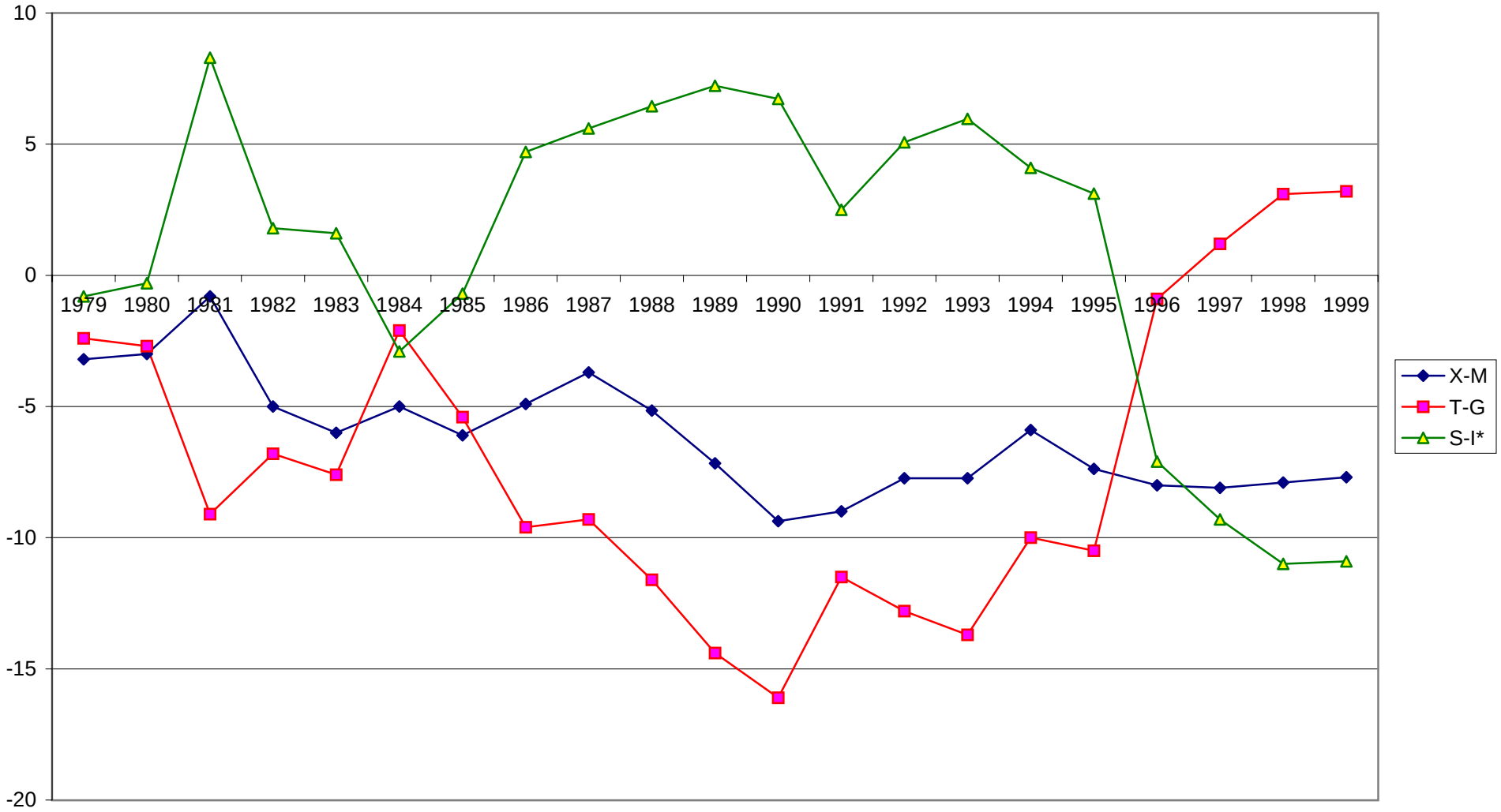


Figure 6. Finland

Figure 7. Greece



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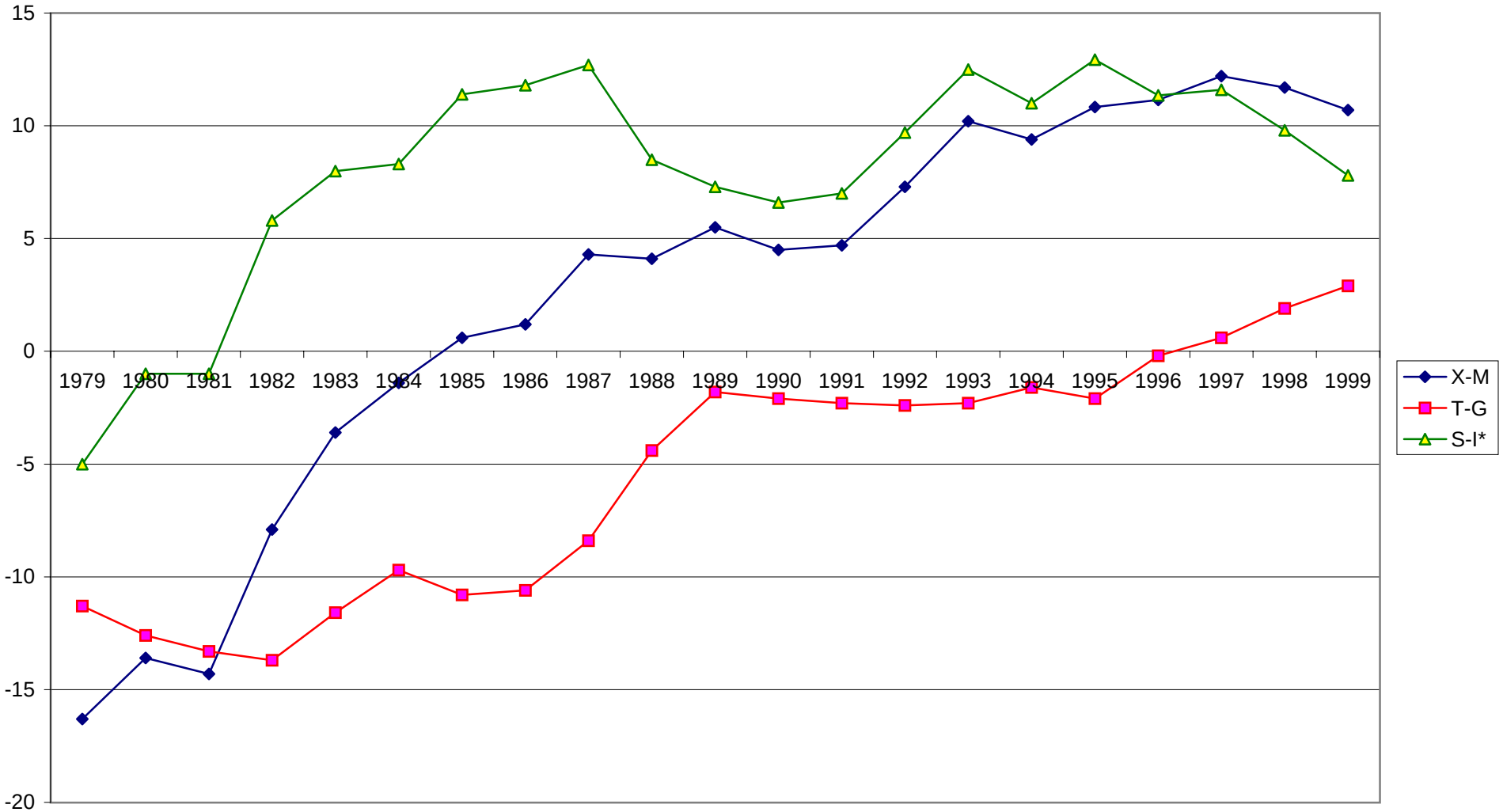


Figure 9. Netherlands

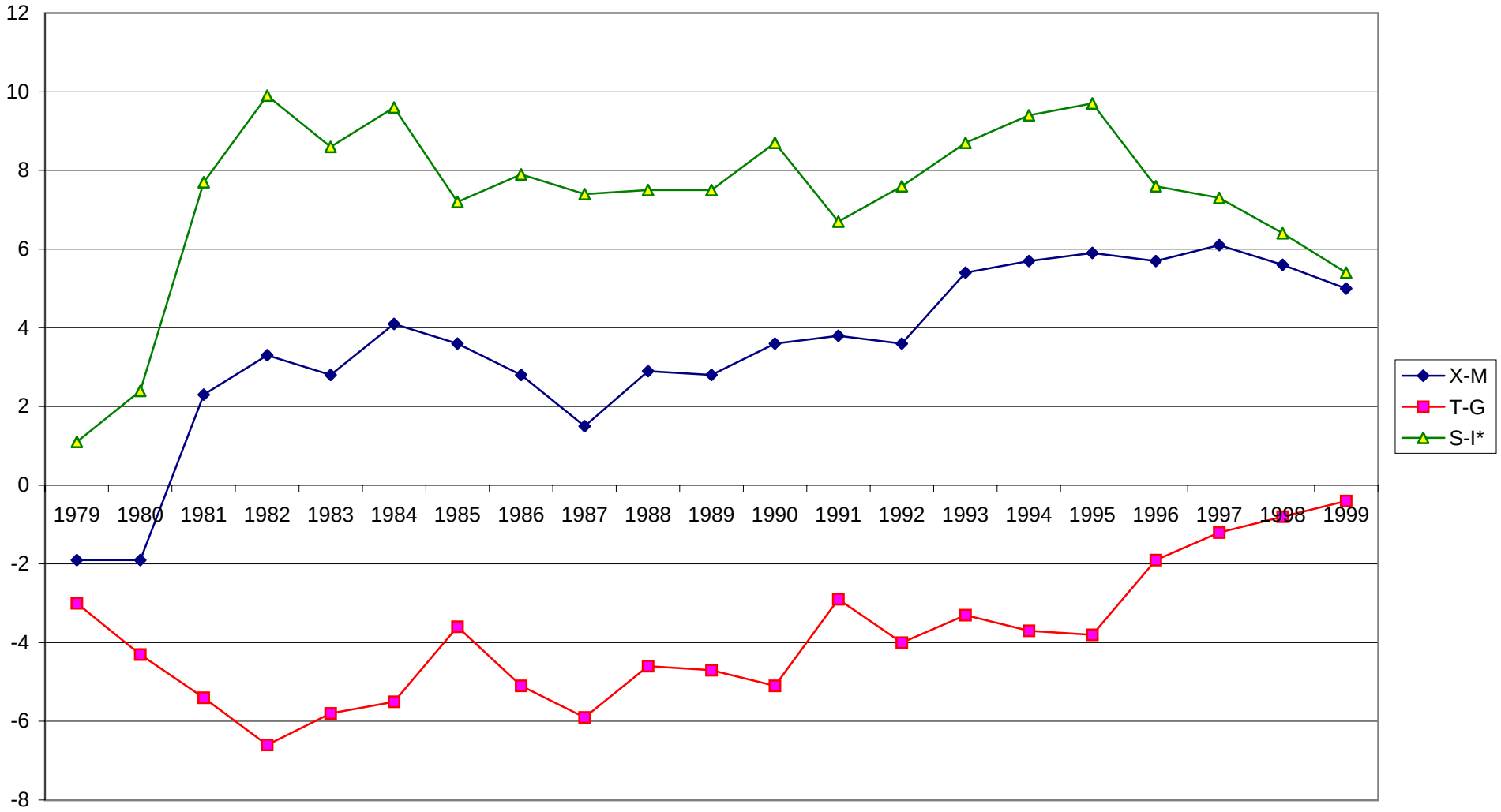


Figure 10. Portugal

Figure 11. Sweden

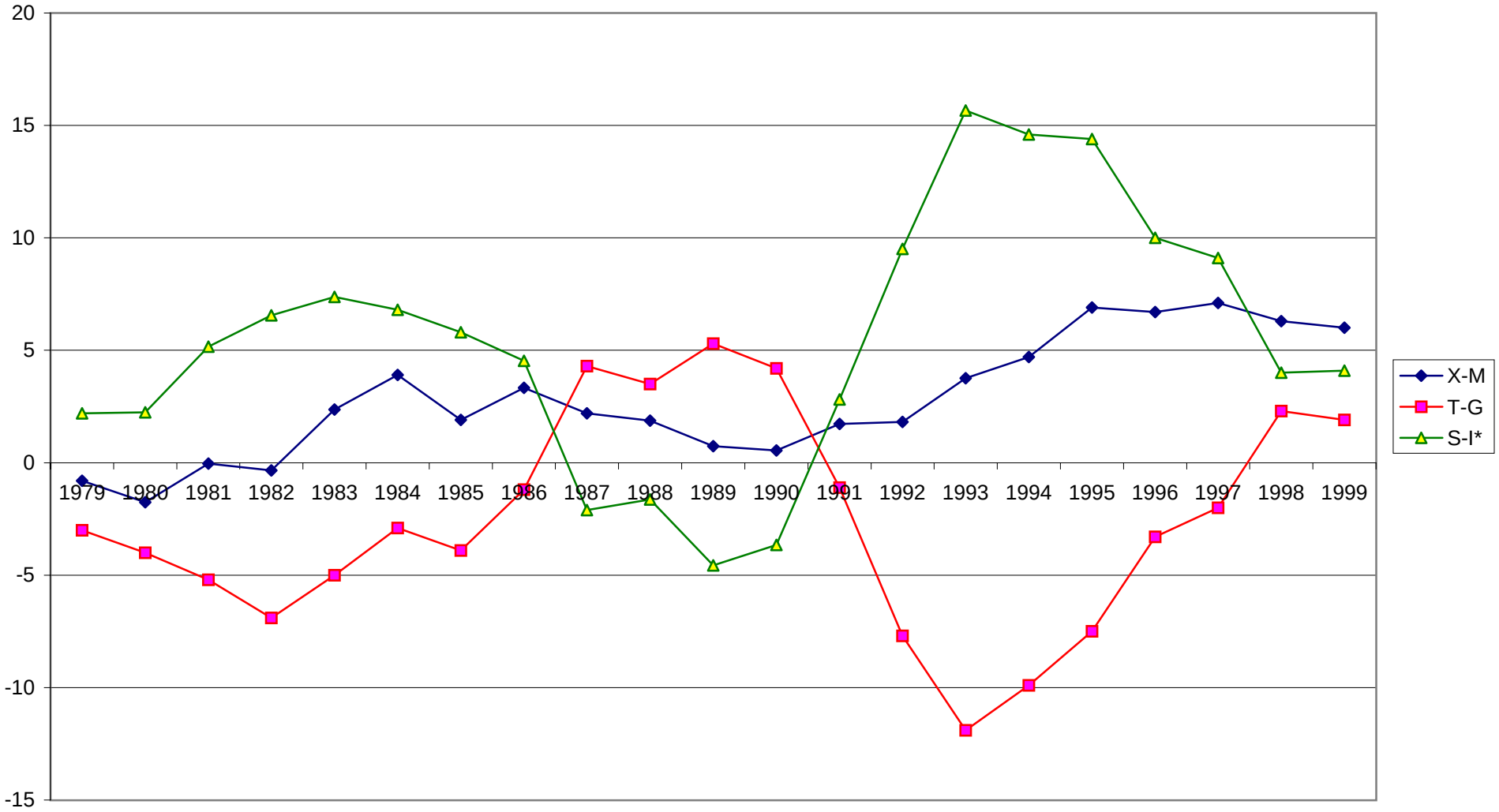


Figure 12. United Kingdom

Figure 13. Germany

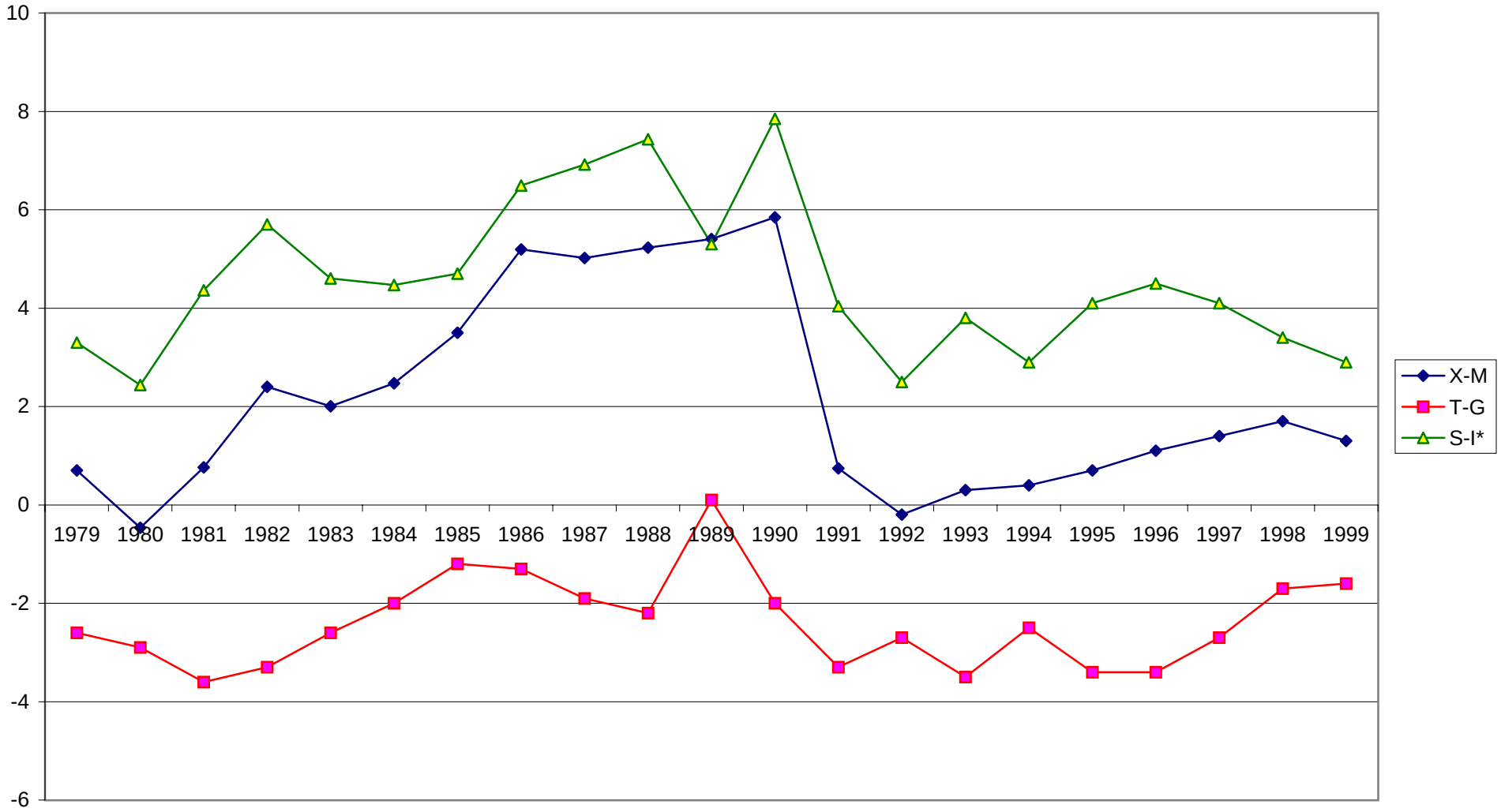


Figure 14. France

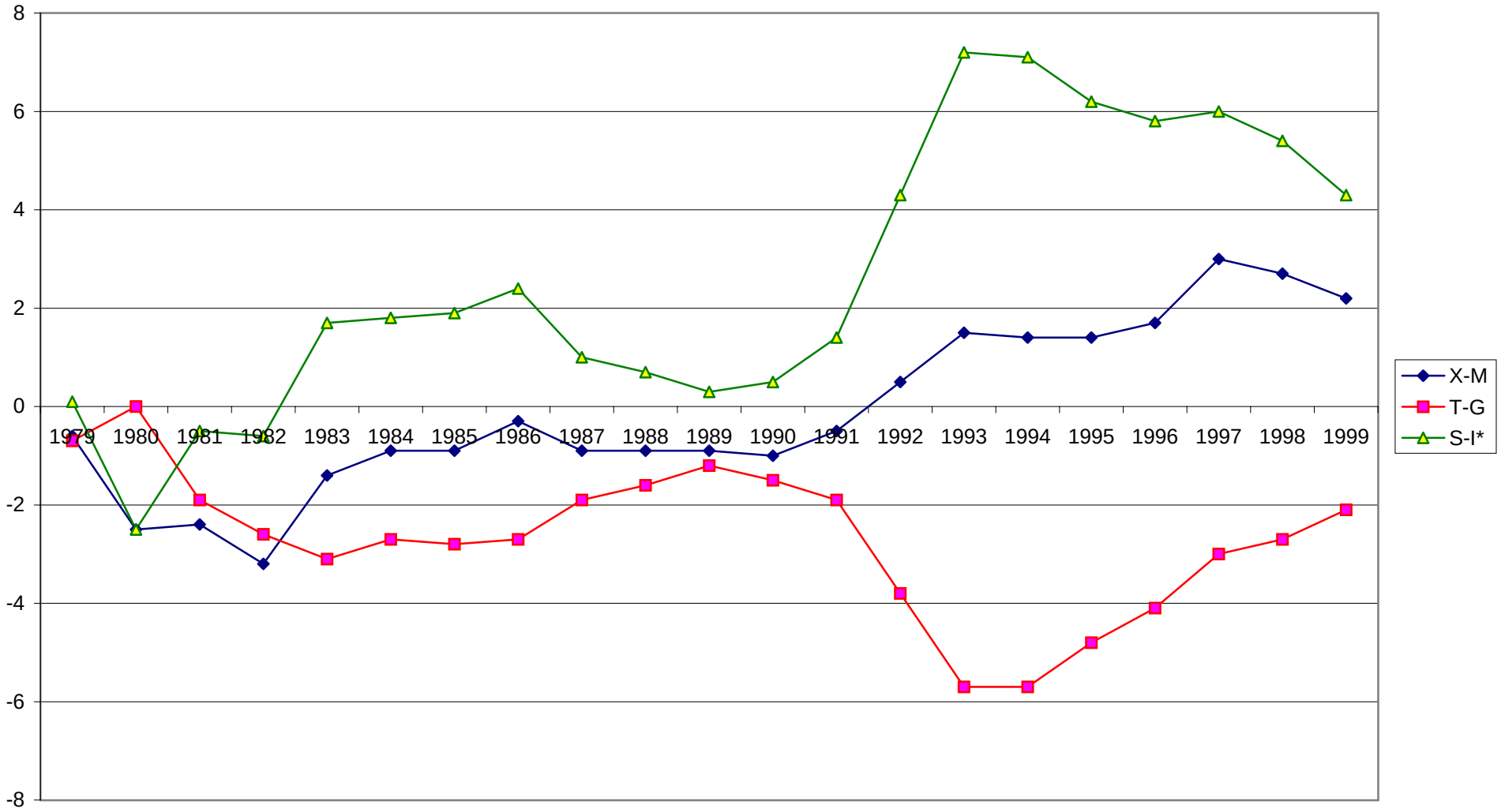


Figure 15. Italy

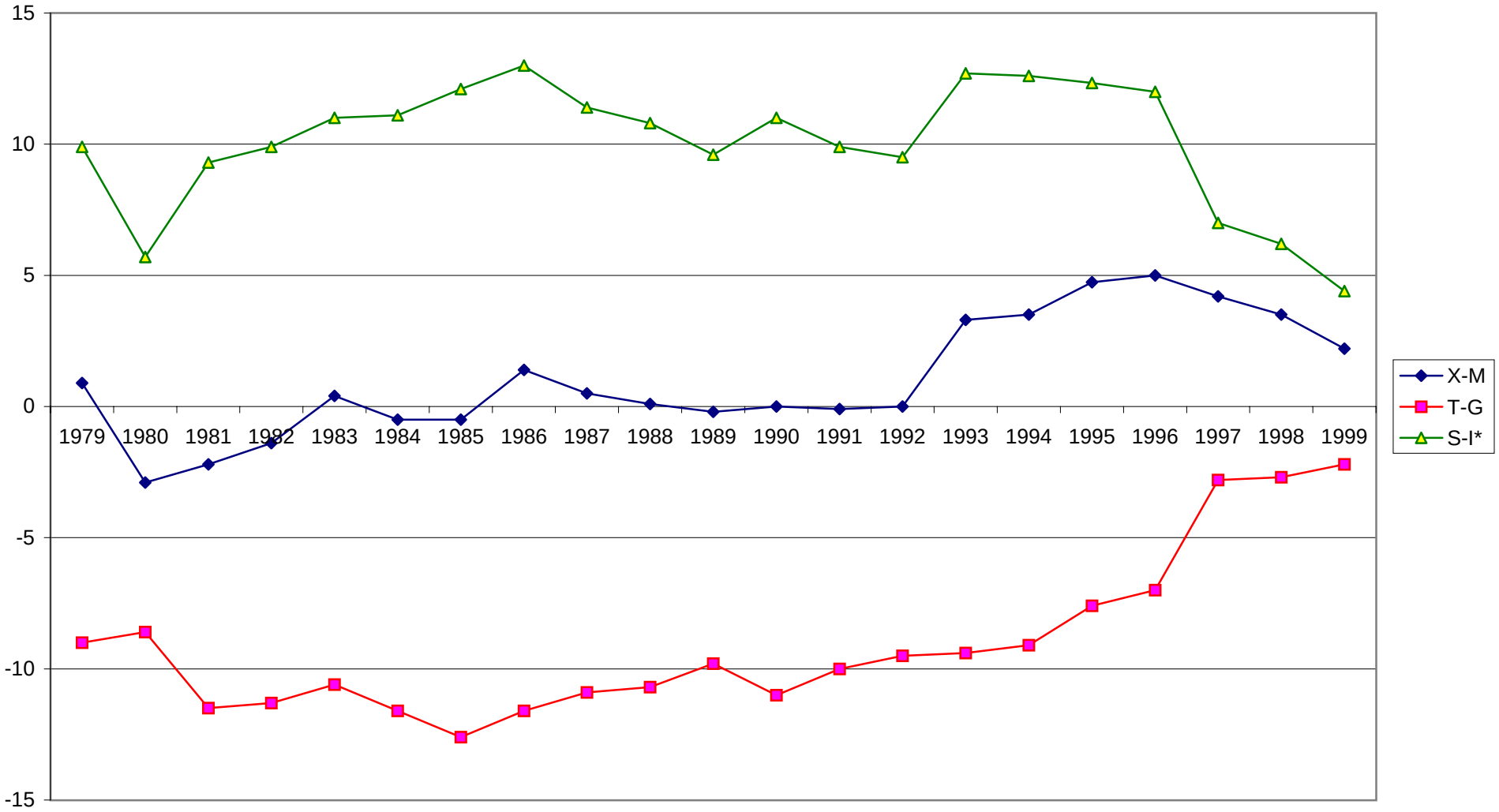
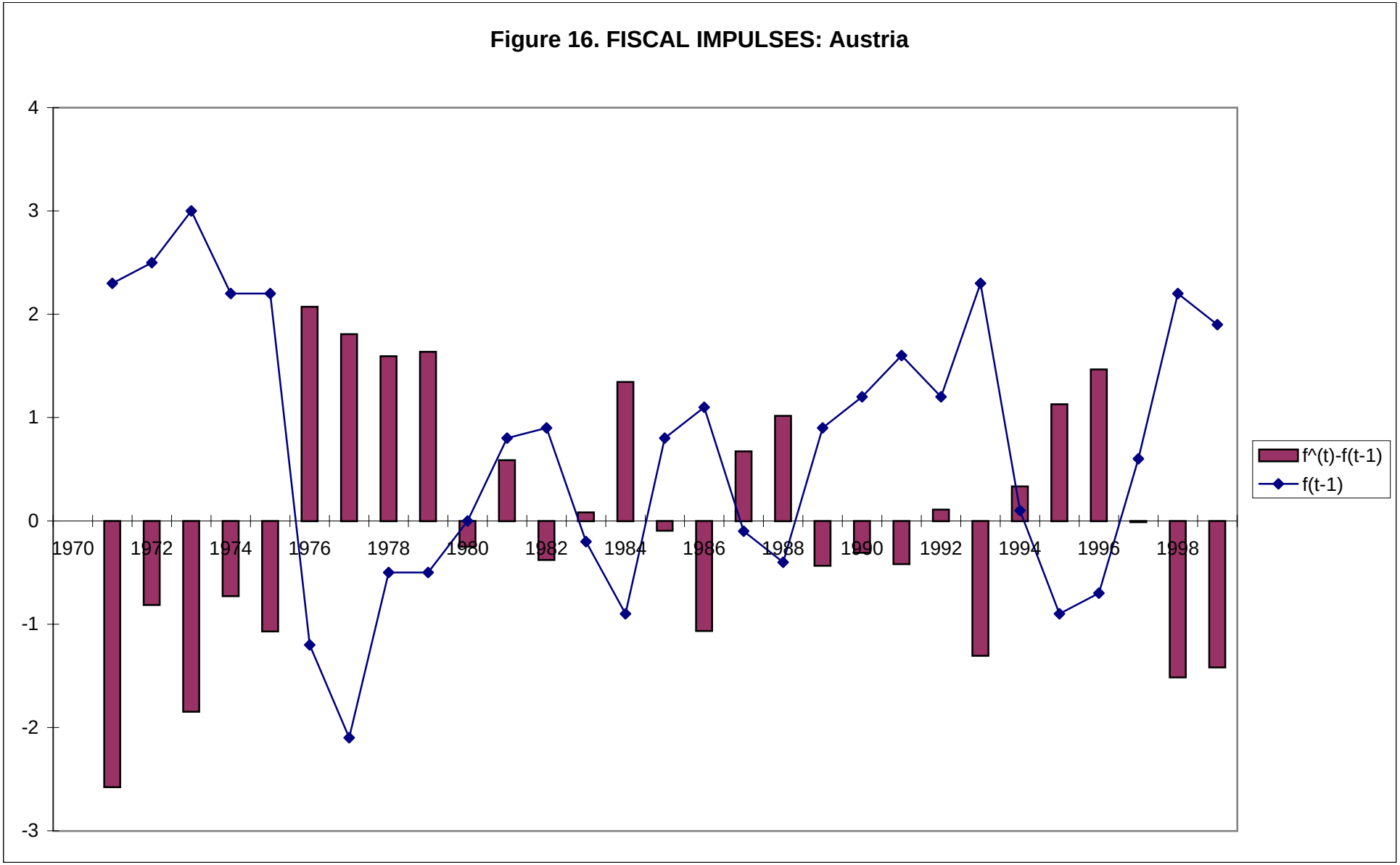


Figure 16. FISCAL IMPULSES: Austria



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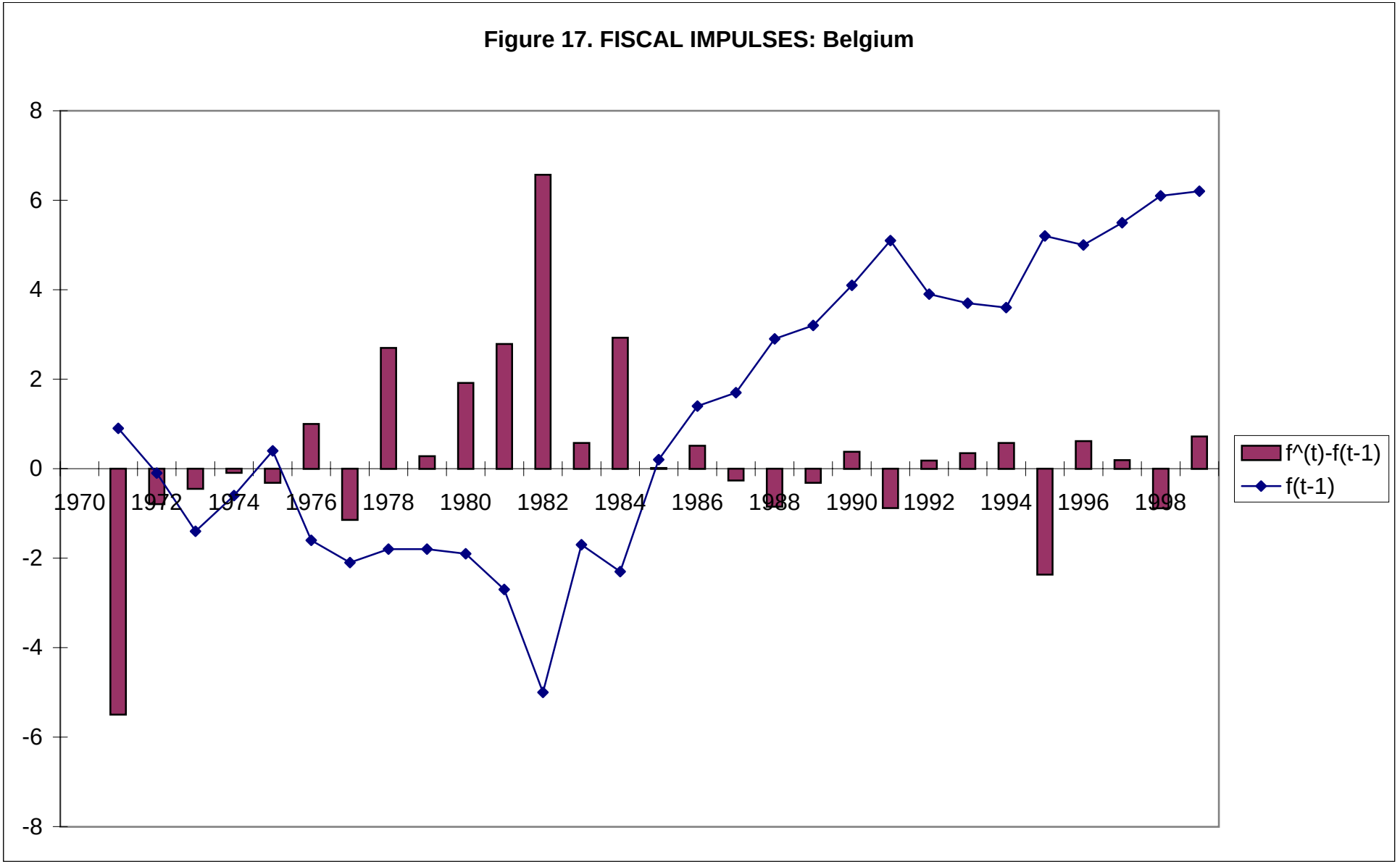

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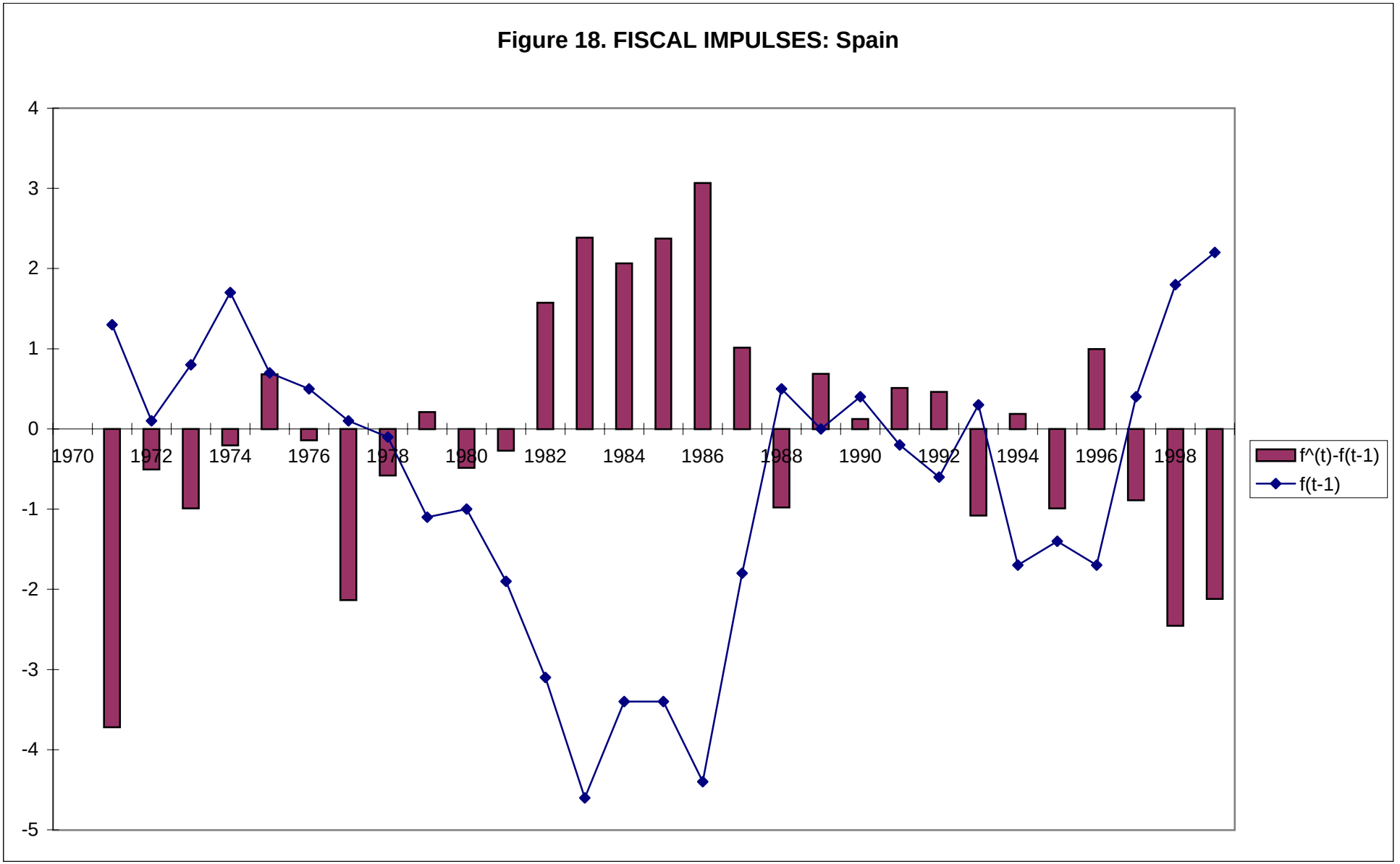


Figure 19. FISCAL IMPULSES: Ireland

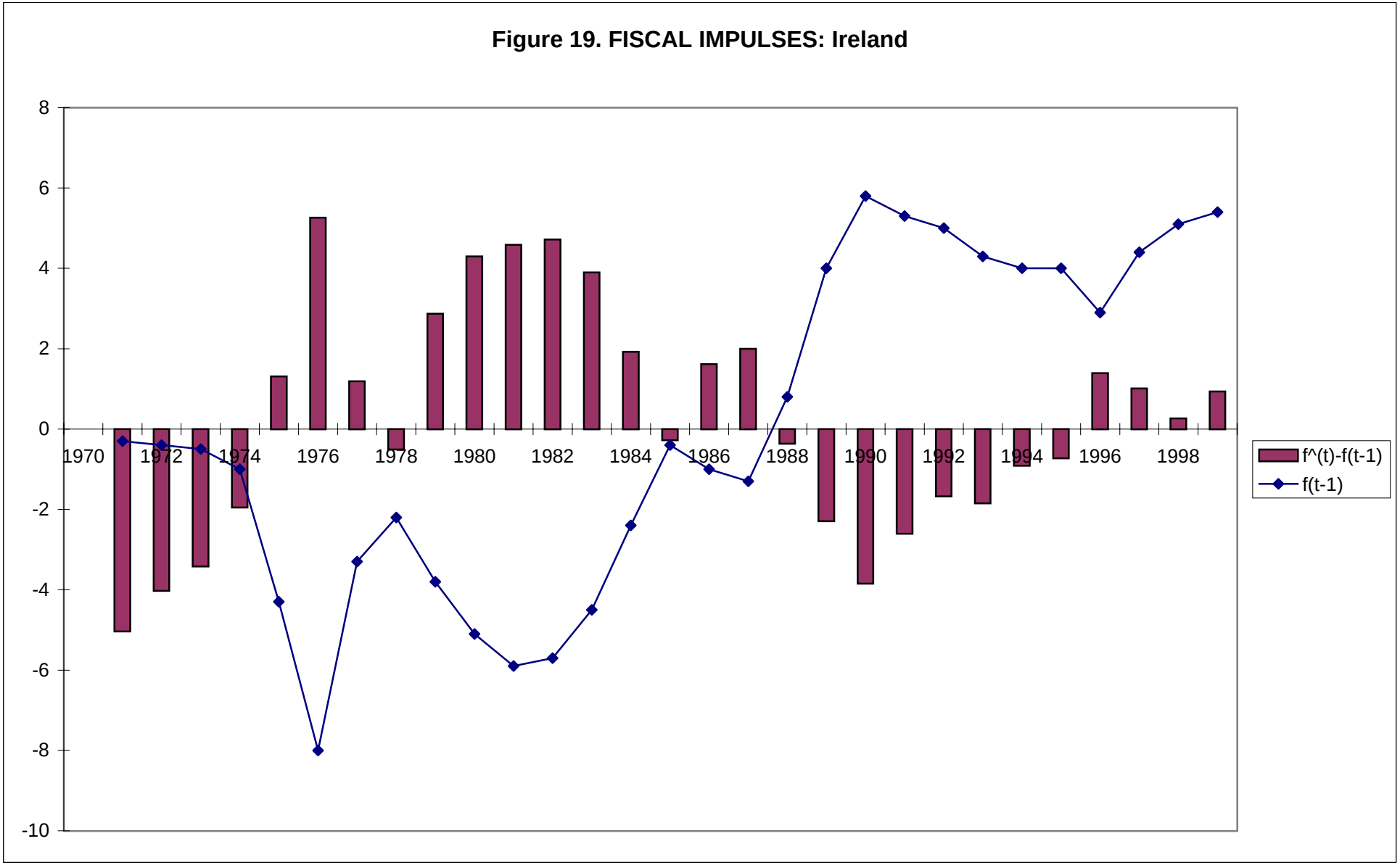


Figure 20. FISCAL IMPULSES: Netherlands

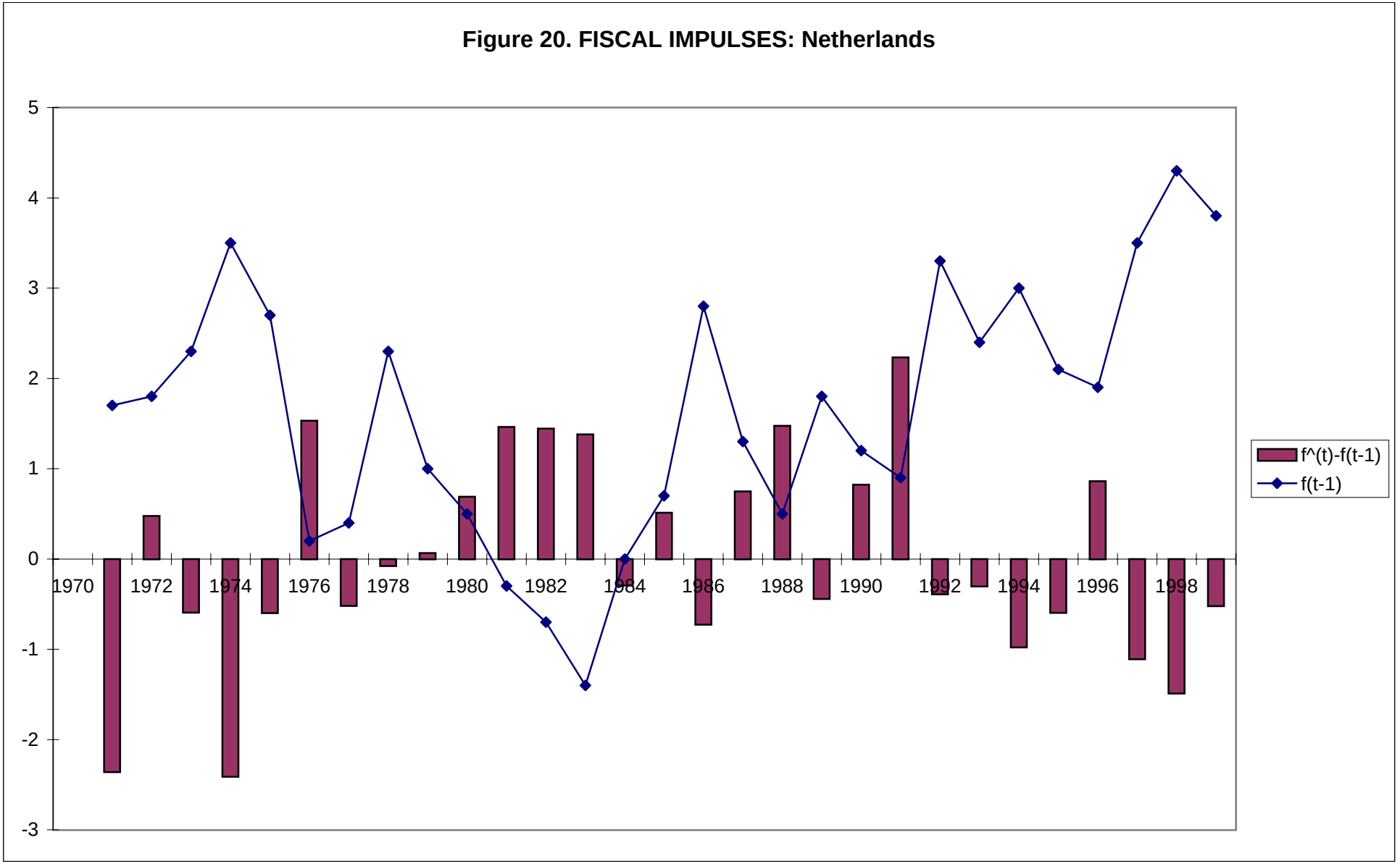


Figure 21. FISCAL IMPULSES: Portugal

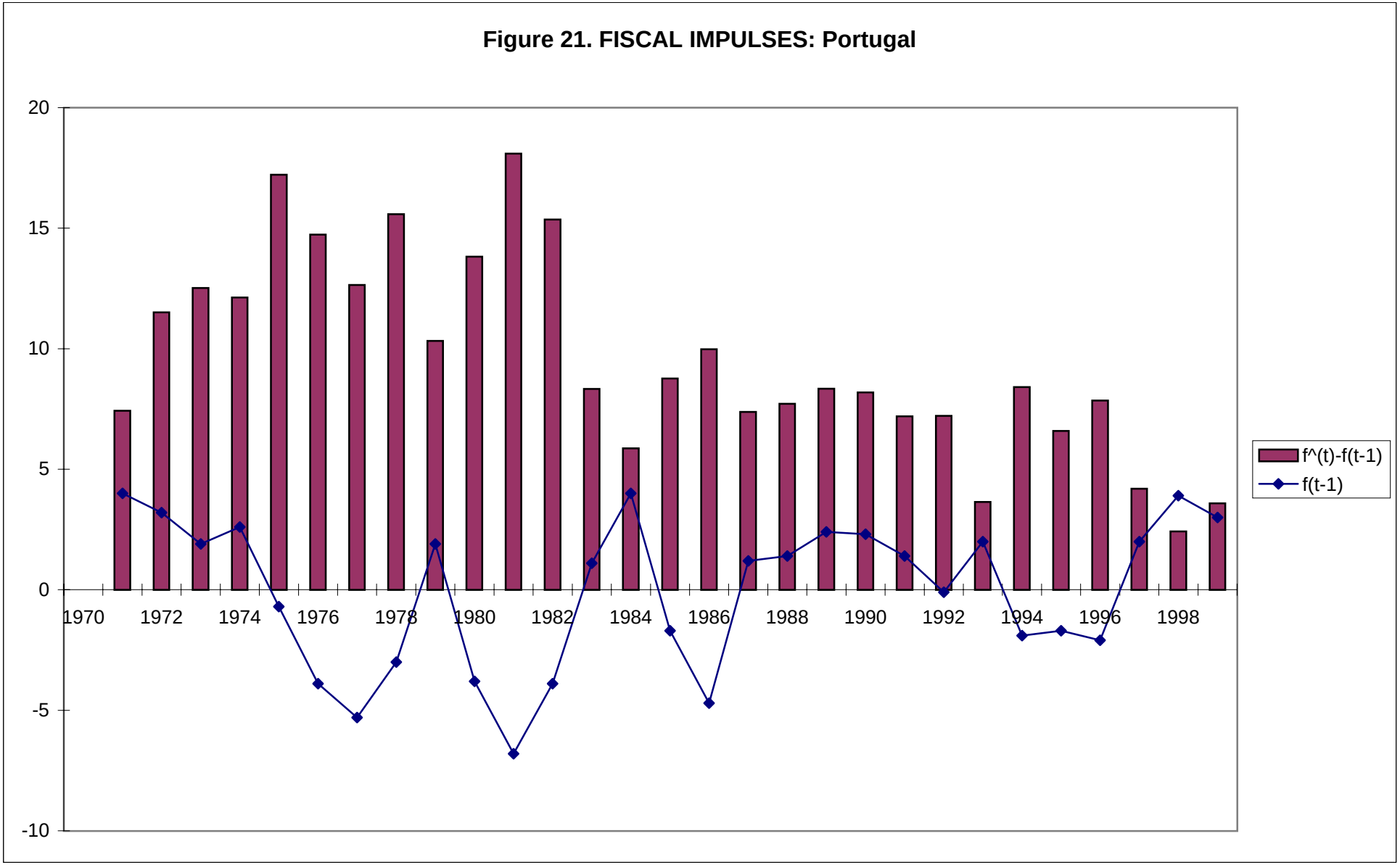


Figure 22. FISCAL IMPULSES: United Kingdom

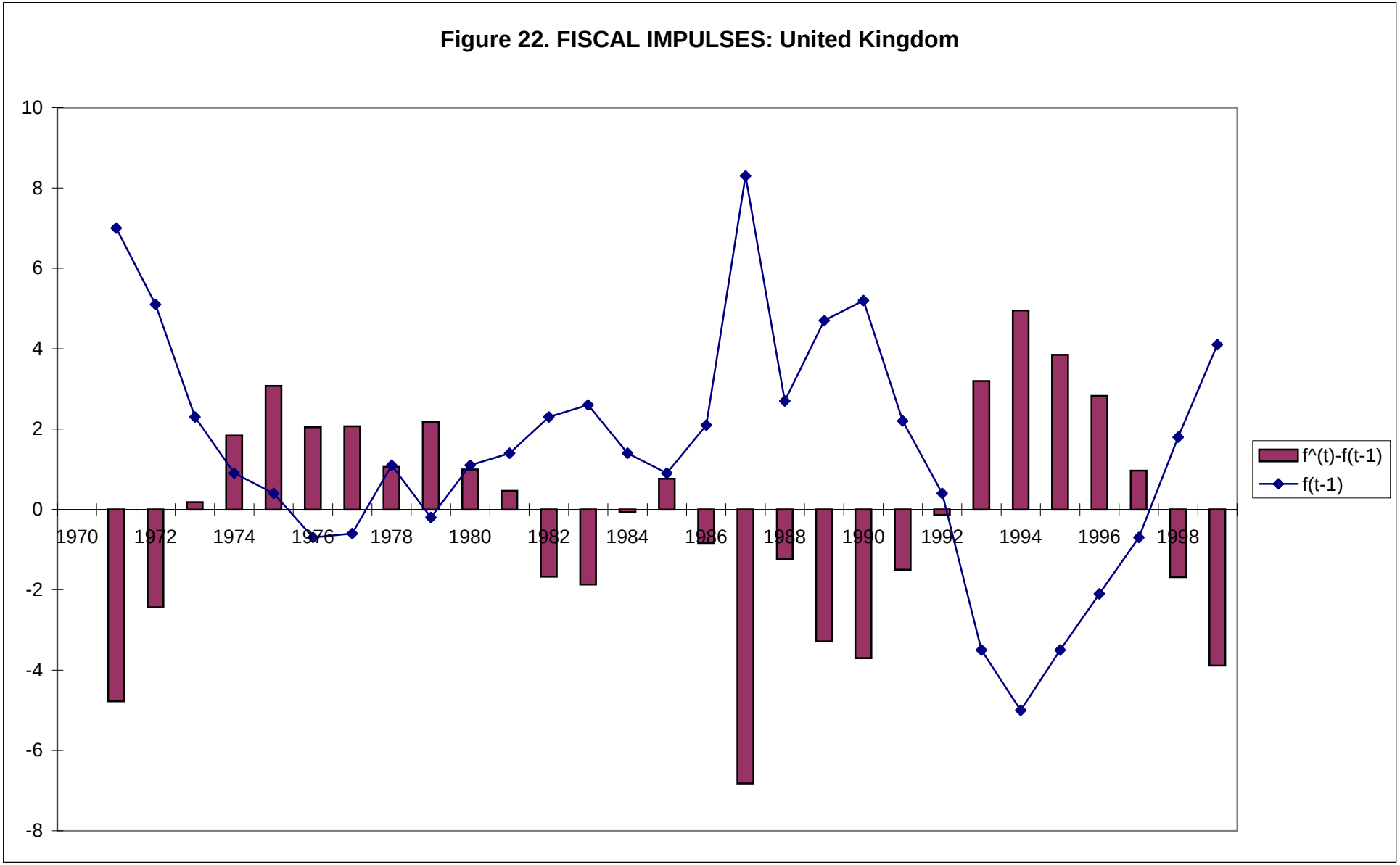
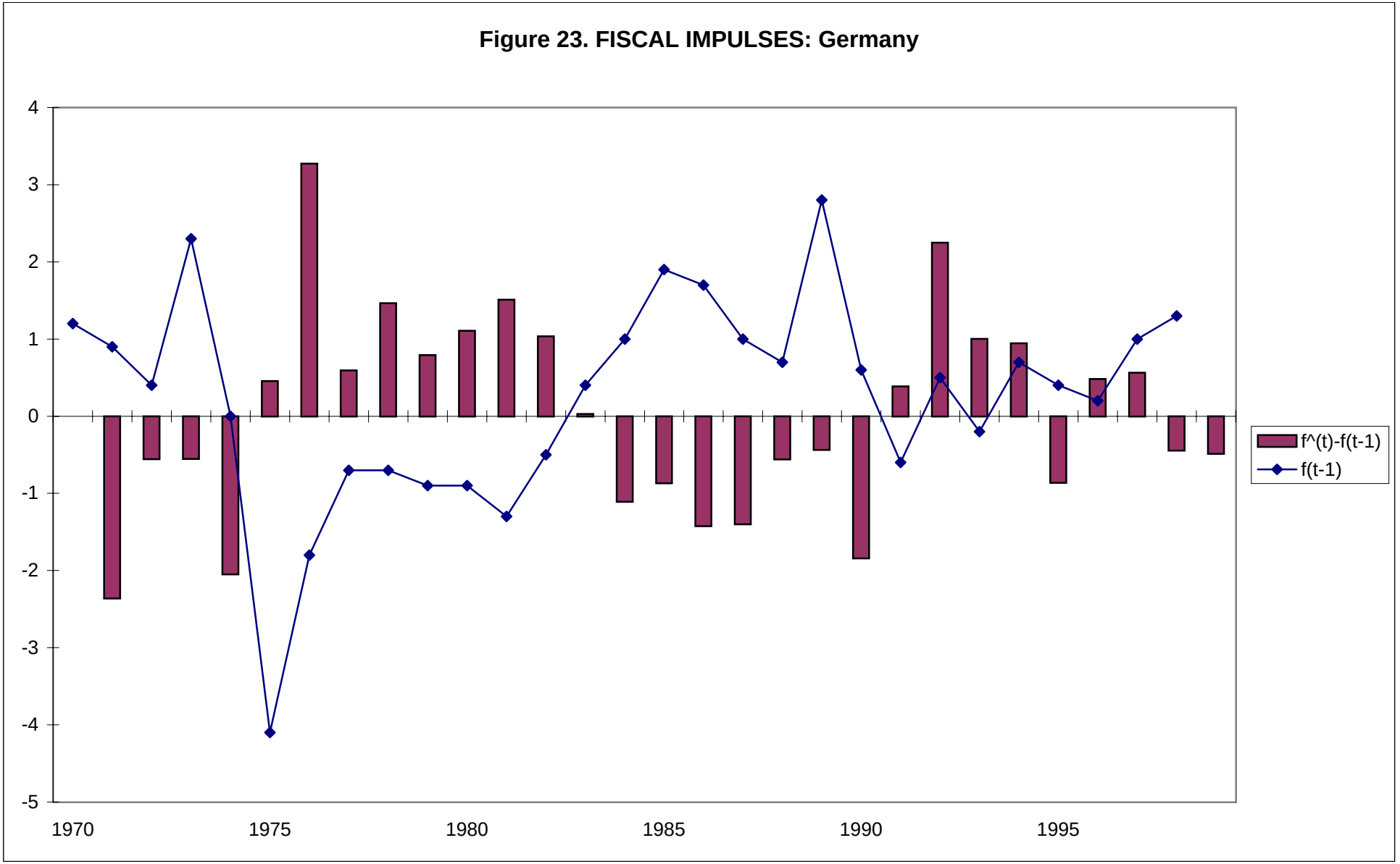


Figure 23. FISCAL IMPULSES: Germany



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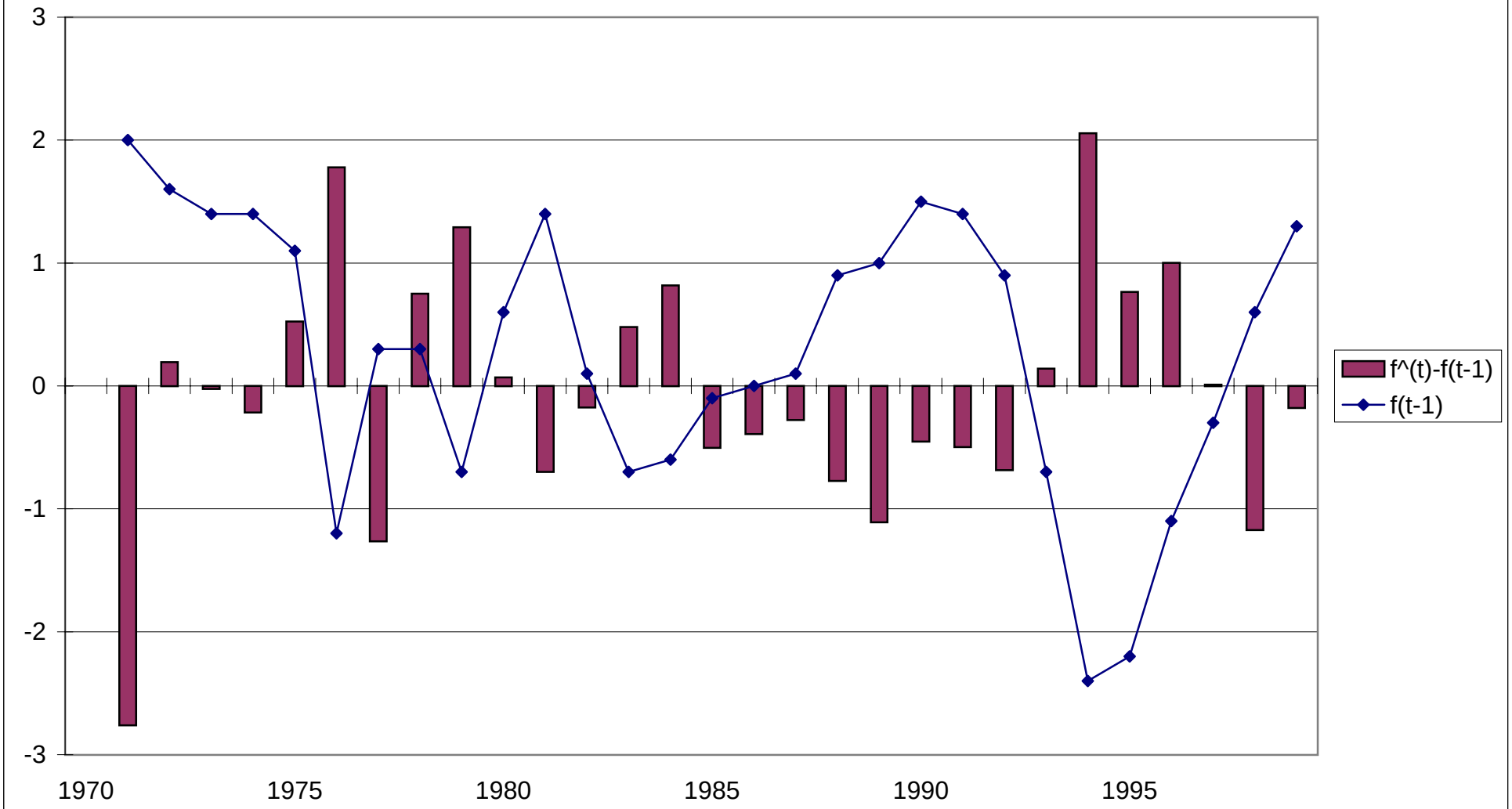

Figure 25. FISCAL IMPULSES: Italy

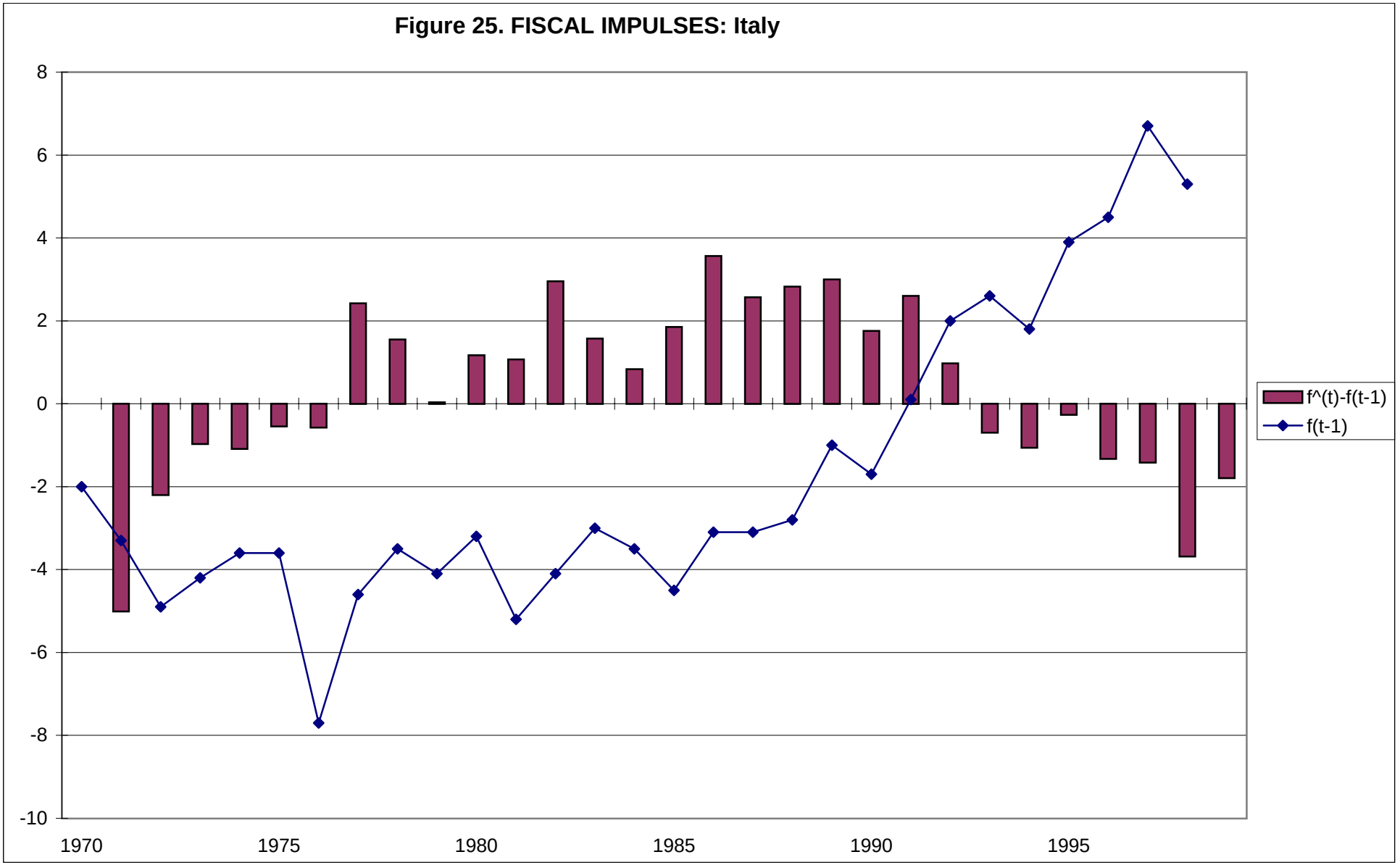

Figure 26. Germany. "Stabilizing public debt" primary structural balance Levels

b(t)=b(t-1), f^*(t)=(r(t)-g(t))b(t-1)-fc(t)

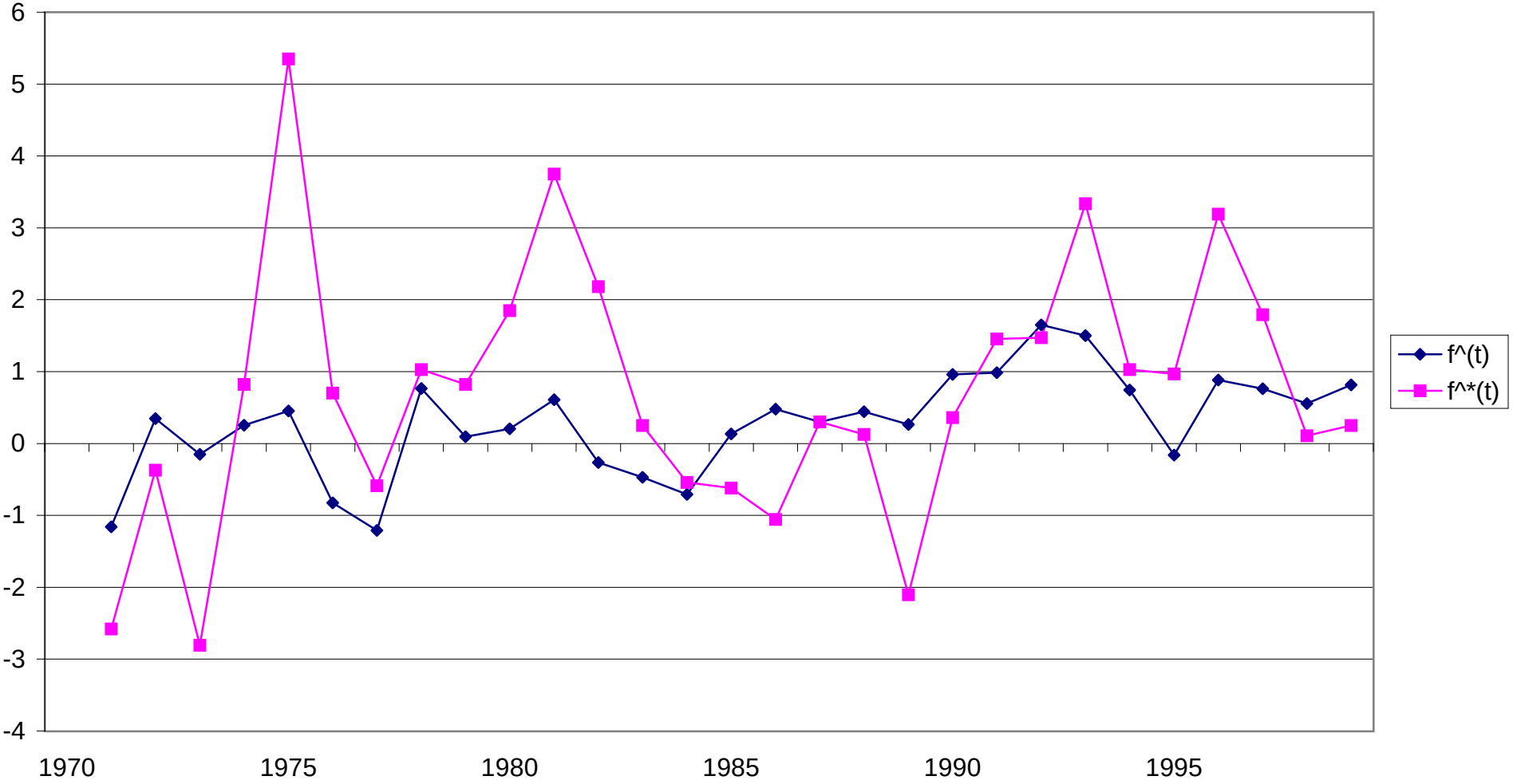

Figure 27. France. "Stabilizing public debt" primary strucutral balance
Levels

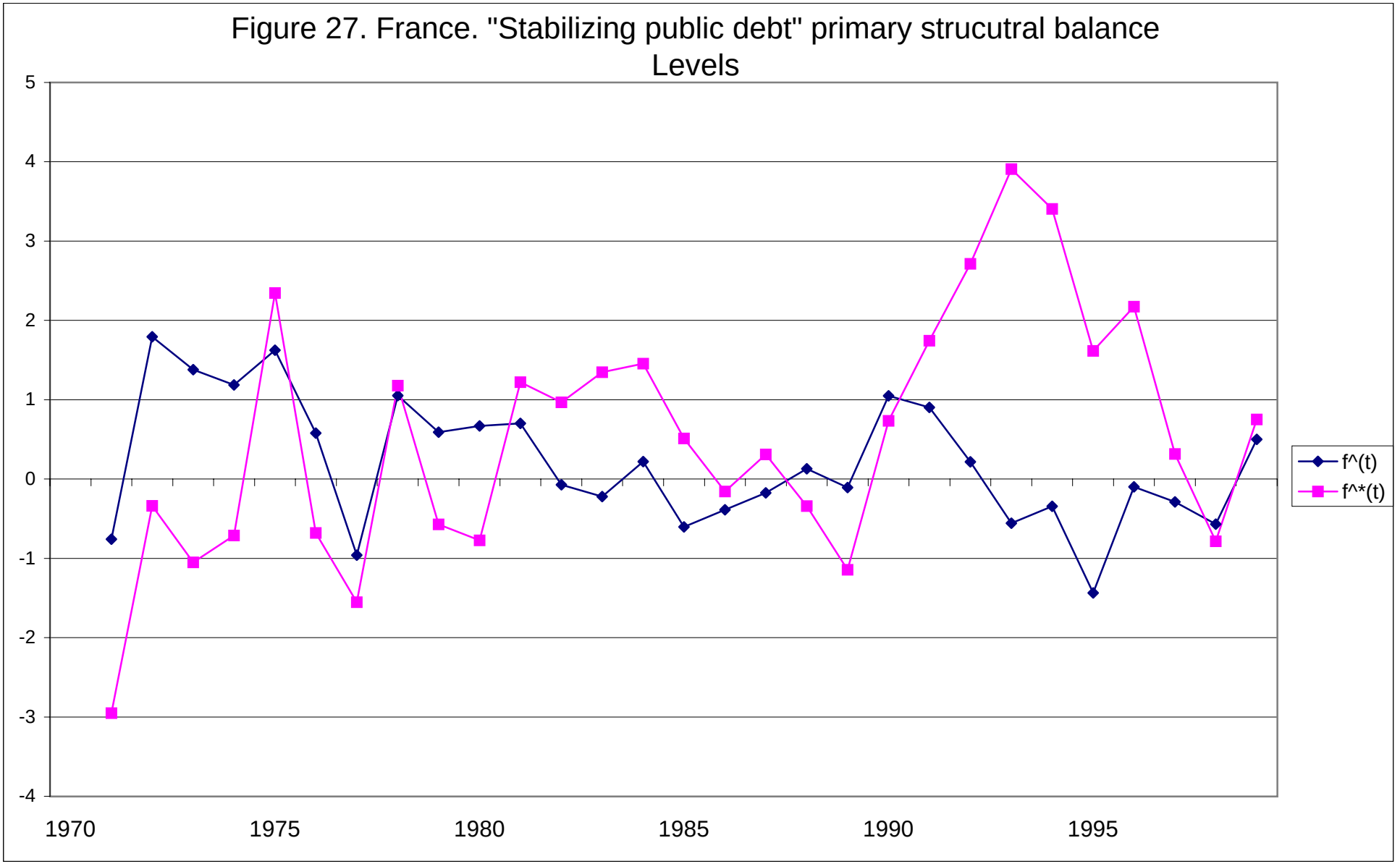

Figure 28. Italy. "Stabilizing public debt" primary structural balance
Levels