FISCAL ADJUSTMENT IN EU COUNTRIES: A BALANCE SHEET APPROACH

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Introduction

Several European Union countries have recently implemented or are envisaging fiscal operations which improve budgetary figures but have no structural impact on government finances. Anecdotal evidence suggests that these "non-structural" measures, ranging from securitization of government assets to the transfer of expenditures off budget, have not been used so actively since the run-up to Maastricht of 1997, and according to some commentators have cast doubts on the effectiveness of the fiscal constraints inherent in the Stability and Growth Pact.[1]

This paper provides an evaluation of fiscal operations on public finances using a balance sheet approach, which reconciles budgetary flows with changes in the underlying stocks of government assets and liabilities.[2] This approach is useful for two reasons. First, a number of "non-structural" fiscal operations adopted in EU countries involve asset transactions, whose proper evaluation requires tracking the evolution of government assets in parallel to the evolution of liabilities. Second, this approach allows to investigate the degree to which changes in the size of gross public debt in EU countries over the last decade reflect corresponding changes in holdings of government assets or underlying improvements in net worth. Fiscal operations which entail a simultaneous reduction of both government assets and liabilities, such as, for example, a privatization operation whose proceeds are used to retire government debt, contribute to the objective of reducing the size of the public sector and can be desirable and efficiency-enhancing. However, an improvement in net worth, and not just a symmetric reduction of both sides of the public sector balance sheet, is needed if the objective is to finance a reduction in future taxation or make room for an increase in future spending needs. Distinguishing between these

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[1] Buti, Eijffinger, and Franco (2003) discuss this issue and put forward proposals to increase transparency. Eurostat (1998) contains a detailed country-by-country list of deficit- or debt-reduction measures adopted in 1997 whose classification was doubtful.

[2] The new Government Financial Statistics Manual (GFSM – see IMF, 2001) proposes a balance sheet approach, which uses the terminology of the System of National Accounts 1993 (EC, IMF, OECD, UN and World Bank 1993, henceforth SNA). Despite a few differences (some of them will referred to later), the SNA, GFS and ESA 95 manuals share the same accounting principles.

two types of debt reduction is clearly important in order to assess the sustainability of public finances.

Economists have debated for a long time advantages and shortcomings of various indicators of government accounts, as well as the appropriate definition of the public sector.[3] In particular, the literature has emphasized that "traditional" fiscal indicators, such as the fiscal balance and general government debt, may offer an incomplete picture of government fiscal operations because they do not reflect the evolution of government assets (in addition to government liabilities); fiscal and quasi-fiscal operations taking place outside the domain of the general government; future contractual and non-contractual obligations of the government (such as pension liabilities); and contingent liabilities. A balance sheet approach has been recommended, among others, by Buiter (1983). While it can potentially address issues arising from all of the "critical areas" mentioned above, the approach we adopt in this paper is designed to handle primarily the first issue and some aspects of the second.

The public finance literature has emphasized that the incentive to use "non-structural" fiscal measures – often described as "creative accounting" – may increase in the presence of fiscal rules, but there is surprisingly little theoretical and empirical work on the subject (see Milesi-Ferretti, 2003). Empirical work in this area is clearly hampered by measurement problems and has mostly focused on US states, that have clearly defined budget rules.[4] An exception is Easterly (1999), who argues that fiscal adjustment in a number of developing countries with World Bank and IMF programs relied heavily on running down government assets (primarily by reducing public investment and expenditure on operations and maintenance), implying that the reduction in government liabilities did not necessarily correspond to an improvement in government net worth. This paper provides direct evidence on whether changes in general government debt in EU countries are accompanied by changes in the opposite direction in government assets.

The remainder of the paper is organized as follows. Section 1 presents the framework of analysis. Section 2 classifies "non-structural" fiscal measures in broad categories and discusses several examples taken from European Union countries over the past few years. Section 3 presents a rough attempt at comparing changes in government debt with underlying changes in government net worth and Section 4 concludes.

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[3] See, for example, Buiter (1990), Blejer and Cheasty (1991) and references therein.

[4] Bunch (1991) shows that US states with constitutional debt limits use public authorities to circumvent borrowing restrictions, while von Hagen (1991) and Kiewiet and Szakaly (1996) find that constitutional limitations pertaining only to guaranteed state debt do not affect the total amount of debt issued by state and local public authorities.

1. Framework of analysis

The balance sheet approach we adopt is based on the 2001 Government Financial Statistics Manual (IMF, 2001). It takes the general government as the "unit of analysis" and focuses on changes in government net worth, an approach which is particularly useful for highlighting the budgetary impact of fiscal measures involving asset transactions.

1.1 Government balance sheet

The basic principles of this approach can be briefly summarized as follows:

- The government balance sheet is composed of three elements: on the asset side, the stock of government's non-financial assets K (the public capital stock) and the stock of financial assets FA; on the liability side, the stock of financial liabilities FL. The net worth of government is given by the difference between total assets and liabilities: $W = FA - FL + pK$, where *p* is the value of a unit of public capital. While the valuation of financial assets and liabilities is relatively straightforward, the appropriate valuation of non-financial assets – the public capital stock – is a much more complex issue, which is further discussed below (see also Buiter, 2001).
- Changes in the various items of the balance sheet can arise because of transactions, valuation effects and other changes.[5] Transactions reflect operations resulting in changes to stocks, which are accumulation or decumulation of assets and liabilities caused by mutually agreed interactions between institutional units. In addition to transactions, the stock of assets can change because of valuation effects (for example, fluctuations in prices or exchange rates), or because of other changes in the volume of assets, such as changes in classification.

1.2 Net worth, general government debt and the fiscal balance

General government gross debt, one of the two fiscal measures that the Maastricht criteria and the Stability and Growth Pact refer to, is given by the sum of (a) currency (notes and coins) and deposits, (b) securities other than shares (excluding financial derivatives), and (c) loans. It is closely related to the stock of gross financial liabilities *FL.* Among the differences (which are described in ESA 95) the most important are: the reporting of government debt on a consolidated basis (thus excluding, for example, government debt held by social security funds); and the exclusion of financial derivatives and other accounts payable, which are instead part of gross financial liabilities.

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[5] For example, changes in classification of assets and changes in the quality of existing economic assets.

From a balance sheet perspective, the fiscal balance *B* ("net lending or borrowing") equals the difference between transactions in financial assets and transactions in financial liabilities. Therefore, it can be viewed as an indicator of the financial impact of government activity on the rest of the economy. The relation between net lending or borrowing and the change in the net worth is summarized by the following identity:

$$\Delta W_t \equiv \Delta FA_t - \Delta FL_t + p\Delta K_t + \Delta V_t = B_t + p\Delta K_t + \Delta V_t \quad (1)$$

where ΔV_t represents any change in non-financial and financial assets or liabilities other than government operations: for example, fluctuations in prices or exchange rates and "holding gains or losses" on assets or liabilities. The identity shows that net lending or borrowing is generally different from a change in the government net worth because it includes net capital formation by the government and excludes valuation changes. The latter can be quite important, for example for countries that have a significant share of public debt denominated in foreign currency.[6]

From a flow perspective, the fiscal balance is the difference between government saving S_t^g and investment I_t^g. In turn, government saving equals the difference between revenues and current government expenditures (plus net capital transfers),

$$S_t^g = \tau_t + R_t + r_t^{FA} FA_{t-1} + r_t^K K_{t-1} - G_t^C - r_t^{FL} FL_{t-1} \quad (2)$$

where G_t^C is government current expenditure (inclusive of "net capital transfers"), τ is total tax revenue, R is non-tax, non-interest revenue, r^K the rate of return on government non-financial assets, and $r^{FA}(r^{FL})$ is the rate of return on financial assets (liabilities). In turn, gross government investment is given by:

$$I_t^G = p_t[K_t - K_{t-1}(1-\delta)] \quad (3)$$

Government investment I_t^g equals net fixed capital formation ΔK_t plus capital depreciation δK_{t-1}. If we add capital depreciation (consumption of fixed capital) to current expenditures in equation (2), we can express the fiscal balance as the difference between net saving and net investment.

From the definition of government net worth it is clear that government debt can decrease even when net worth does not change. A decline in debt can be accompanied by a reduction in financial assets (for example, a privatization operation), or by a decline in the stock of non-financial public capital (for example,

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[6] In Greece, for example, currency fluctuations implied increases in gross debt much larger than the underlying flow of new government borrowing, because of the trend nominal depreciation of the drachma *vis-à-vis* partner country currencies.

if depreciation of existing capital exceeds gross capital formation).[7] Also, a switch in the investment pattern of public social security funds from private sector instruments to government sector instruments would imply a decline in general government gross debt, but not in the general government's net financial liabilities or an improvement in the government's net worth.[8] Hence, reductions in gross government debt are not necessarily associated with an improvement in the government's intertemporal budgetary position.

A similar argument can be made for improvements in net lending, particularly if obtained through a reduction in net public investment. Indeed, a number of authors (such as, for example, Blanchard and Giavazzi, 2003) have suggested to amend the fiscal balance the SGP refers to by excluding net investment expenditures. Other authors, such as Buiter (2001) and Buti, Eijffinger and Franco (2003) are more critical of fiscal restraints based on the so-called "golden rule".[9]

1.3 The valuation of public capital

One of the most difficult issues in constructing a government's balance sheet is the valuation of public capital. The value of private capital is equal to the present discounted value (PDV) of the flow of returns that it will generate. However, "government investment is undertaken in anticipation of future social returns, that may or may not take the form of a stream of cash payments" (Buiter, 2001). It is therefore possible for the cost of investment to be higher than the present value of the future stream of financial returns the project generates. In the case in which the future stream of net financial returns is equal to zero government investment is equivalent to government consumption from a budgetary point of view. In this case, an evaluation of the public sector balance sheet at market prices would attribute to public capital a price equal to zero, so that government net worth would coincide with the government's net financial assets.

Even when the public capital is "marketable" (say, a building rented to private individuals, or a state-owned enterprise undertaking market activity) the stream of returns that the government earns on the assets may be below the market rate of return, because of the presence of an implicit subsidy (below-market rents, or wages above market levels in the public enterprise). In this case, evaluating the impact of a sale operation on net worth and on the PDV of future tax revenues may yield opposite results. For example, suppose that the government sells a building or a public enterprise to the private sector for a price which is below the market price

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[7] Easterly (1999) provides several examples of "illusory" fiscal adjustment undertaken by foregoing expenditures on operations and maintenance.

[8] Debt in the Maastricht-based definition is on a consolidated basis, *i.e.*, general government bond holdings by other branches of the general government are netted out. These include, for example, social security funds which are invested in government securities.

[9] The idea of a separate "capital" budget has a long and distinguished history (see, for example, Musgrave, 1939).

(itself given by the capitalized value of market rents). In this case, net worth formally declines, because according to the ESA 95 manual all assets and liabilities must be evaluated at their market price in the government balance sheet.[10] However, the present value of future taxes may still decline, if the 'valuation loss' is smaller than the present discounted value of implicit future subsidies that the sale eliminates. We will discuss the implications of valuation problems for government assets in several of the examples below.

In practice, non-financial public capital is typically evaluated at replacement cost.

1.4 The intertemporal budget constraint and non-structural fiscal measures

Government solvency requires that the sum of government assets and the present discounted value of future taxes equal the sum of outstanding government liabilities and the present discounted value of future spending. In other words, future taxes have to equal the difference between future spending and the government's net worth:

$$\sum_{i+1}^{\infty} T_i (1+r)^{t-i} \geq \sum_{i+1}^{\infty} G_i (1+r)^{t-i} - W_t \qquad (4)$$

where T measures non-interest revenues, G the primary expenditure, and r is the rate of interest, assumed for simplicity to be constant over time and equal across asset categories. Fiscal measures can have an impact on the government's intertemporal position in various ways: for example, they can increase net worth by reducing present spending and/or increasing present taxes; or they can affect future tax receipts or spending (for example, a decline in future tax allowances, or a pension reform that reduces benefits).

A fiscal measure permanently improves public accounts if it reduces the present value of future taxes needed to finance future spending and repay existing debt. In this context, an improvement in the fiscal balance or a reduction in public debt can be defined as non-structural if they do not reduce the need for future taxation.[11] Clearly, a proper classification of *all* fiscal measures along these lines would be hopelessly complex, as it would have to include the impact of any policy decision that may affect public accounts in the future. The paper instead provides a brief sample of non-structural fiscal operations recently adopted by EU countries, and their accounting implications. Some of the operations being described may also reduce the need for future taxation, but only on a one-off basis – for example, they

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[10] "The stock of the assets and liabilities recorded in the balance sheet is valued at the market prices prevailing on the date which the balance sheet relates" (page 197).

[11] In an analogous fashion, one may define permanent fiscal measures (which permanently reduce the level of future spending or the need for future taxation) and one-off measures, which reduce future taxation needs, but only temporarily.

may entail a temporary deficit reduction, and/or can be a combination of a non-structural and a one-off measure.

2. A classification of non-structural fiscal measures

This section presents a classification of frequently adopted non-structural fiscal measures in broad categories; for each category, it discusses the appropriate recording in fiscal accounts, highlighting the effects on the fiscal balance, government debt, as well as on net worth and future taxes. In several cases, a ruling by Eurostat has changed the initial accounting of these measures, with the consequence of 'undoing' the debt or deficit reduction that the fiscal measure initially achieved.

2.1 Capital injections and recapitalization

The ESA 95 manual (page 61) specifies that a capital injection ΔC can be of two types: (a) a capital transfer, when the government, acting for public policy purposes, provides funds to a corporation without receiving financial assets and without expecting property income, (b) a financial transaction, when the government, acting as a shareholder, provides funds and receives in return financial assets of equal value of the payments, on which it expects dividends.

It follows that if a capital injection is made to cover expected future losses, or to cover repetitive losses (perhaps so that the corporation can reduce its borrowing costs), it should be recorded as a capital transfer.[12] In this case, net worth, public debt and the budget balance worsen by the same amount as the transfer.

On the other hand, when a capital injection is a financial transaction, it simply implies a change in asset structure: an increase in financial assets (formally, an acquisition of "share and other equity" of public corporations, recorded in the financial account), and a decline in other assets such as "currency and deposits (financial assets)" if there is a financial transfer or "fixed capital (non-financial assets)" if the transfer involves a non-financial asset. When the counterpart to the capital injection is a financial asset (*i.e.*, acquisition of new shares in the public corporation), neither the government's net worth nor the fiscal balance change. When the counterpart is a non-financial asset (*i.e.*, change in asset structure), the government net worth does not change, but the budget balance improves, because the transfer of the non-financial asset is recorded as negative public investment ("gross fixed capital formation").

In practice, some EU countries have attempted to record capital transfers as financial transactions, so as to avoid an impact on the fiscal balance, leading to discussions with Eurostat. For example, in March 2002 Eurostat did not certify the

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[12] This is the case even if shares (or equivalent) are issued (ESA 95 manual, page 65).

2001 budget deficit initially reported by Portuguese authorities, in part because of questions related to the proper booking of capital transfers to public sector enterprises.[13]

2.2 Special dividends

During the run-up to Maastricht, several governments (including Belgium, Germany and Italy) considered booking revenues arising from the taxation of capital gains on their Central Banks' gold holdings as reducing the budget deficit. In general, special dividends are large and exceptional one-off payments based on accumulated reserves or holding gains , originating, for example, from the Central Bank or public enterprises outside of the general government sector.[14] According to a January 1998 decision by Eurostat, such proceeds "result in a reduction of the State equity which is a financial transaction" and therefore should have no impact on the budget balance. More specifically, such payments should be classified as "withdrawals of equity" – the positive amount of receipts is offset by a decline in the equity held by the general government in these enterprises (or in the Central Bank), leaving net financial liabilities and the budget balance unchanged. However, receipts can be used to reduce government debt even though this reduction is accompanied by an equal reduction in the financial assets of the government.

2.3 Asset sales (privatization and corporatization)

Sales of non-financial assets of the general government are classified as negative "gross fixed capital formation" in the capital account, and their proceeds typically imply an increase in "currency and deposits" in the financial account. In other words, sales of non-financial assets are recorded as negative investment expenditure and therefore improve the budget balance. The impact on the government's net worth depends on the difference between the market price p^m and the actual sale price p of the asset. The impact on the need for future taxation must be evaluated taking into account the present discounted value (PDV) of the stream of (direct and indirect) earnings that the government forgoes with the sale. For example, suppose that the government earns a rate of return r^K on the asset, and that the market rate of return is r^m. If $r^K < r^m$, the government is earning below-market returns on the asset; this is equivalent to earning an implicit market rate of return and paying an implicit subsidy. In this case, the asset sale will lead to a decline in future taxes as long as the PDV of future foregone earnings is below the sale price – that is,

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[13] The deficit (4.3 per cent of GDP) turned out to be much higher than initially reported.

[14] Regular payments of dividends are recorded as such and thus counted in net saving of the general government.

$\frac{r^K}{r^m} p^m < p$. This can occur even when $p < p^m$. *De facto*, the asset sale combines two features: the sale of a non-financial asset and the elimination of a subsidy.

Sales of financial assets (such as privatization operations) do not affect the budget balance, but only the level of gross government debt, in case the privatization proceeds are used to reduce it. The line of reasoning for evaluating their impact on government net worth and on the need for future taxation is analogous to the one for non-financial assets.

2.4 Securitization

The issue here is considerably more complicated and depends on the adopted securitization schemes. In a typical securitization operation, the government sells assets to a Special Purpose Vehicle (SPV), a company set up by a group of investors. The SPV finances itself on the market by issuing bonds (asset-backed securities, or ABS), which are backed by the flow of receipts that the government assets purchased from the government generate. In a recent ruling, Eurostat (2002) has established criteria for the appropriate recording of securitization operations in government accounts. In particular, the requirements for the SPV-issued bonds not to be counted as government debt are: (a) ABSs have no future flows which directly depend on the activity undertaken by government after the securitization operations, (b) the risk is completely transferred to the SPVs, and (c) the difference between the sale price and the market price is below 15 percent. In addition, Eurostat ruled that (d) the value of the initial transaction must be recorded according to the upfront payment made by the SPV to the government, with additional payments having an impact on the fiscal balance only at the time they occur.

As a result of the Eurostat decision, the Italian fiscal deficit for 2001 was increased by an amount of €6.8 billion (0.6 percent of GDP), as €3 billion in revenues from the securitization of lotto receipts and the securitization of real estate assets worth €3.8 billion were excluded from the calculation of the 2001 fiscal balance. The first transaction involved future flows (lotto receipts) that depend on government activity, while for the second the initial price at which the assets were transferred to the SPV was only 60 percent of their value.[15] The Eurostat decision also affected the deficit and debt measures of Austria and Greece.

If the underlying assets being securitized are government financial assets, securitization has no impact on the government's net worth and the budget balance, but may lead to a decline in gross government debt if the proceeds from the securitization are used for that purpose. Specifically, the operation will result in an increase in "currency and deposits" accompanied by a decline in "loans" in the

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[15] In Italy, a second operation involving the securitization of real estate assets was conducted in 2002, and it was designed to meet the new Eurostat criteria. It yielded €6.6 billion (0.5 percent of GDP), and receipts were recorded as negative capital formation.

financial account. This was the case, for example, for part of the securitization of claims on unpaid social security contributions undertaken by the Italian government (the so-called *cartolarizzazione crediti INPS*).

If the underlying government assets are non-financial (such as, for example, real estate holdings), securitization still improves the budget balance because the sale of assets is recorded as negative "gross fixed capital formation" in the capital account. Also in this case, gross government debt declines if the proceeds from the operation are used for that purpose. The impact on government net worth and future taxation depends on two factors: the difference between the market price and the sale price of the asset; and the present value of future subsidies (the difference between "market" returns and the stream of earnings that the government forgoes by selling the asset) that the sale eliminates (see sub-section 2.3 above).

Finally, in the case of collateralizing future receipts (CFR), as was the case for Italy's securitization backed by future lottery receipts, the impact on government net worth is in general negligible – it would depend on the difference in borrowing costs between the government and the SPV. The Eurostat ruling of July 2002 established that proceeds from collateralizing future receipts should always be treated as government borrowing and therefore have no impact on the budget balance and government debt.

2.5 Quasi-fiscal activities[16]

In several European Union countries, public financial institutions (majority-)owned by the general government and possibly benefiting from a guarantee from the general government, play a role in the financing of projects. These operations have no impact on the government's net worth because a guarantee is not counted as a government liability (contingent liabilities are in general recorded off-balance sheet). However, the payoffs of public financial institutions can be reflected in general government accounts through (a) "dividends", (b) withdrawals of equity, (c) "holding gain in shares and other equity" in the revaluation account, and (d) the calling of guarantee. The latter, which would be recorded as "capital transfer, payable", would worsen the budget balance, gross government debt (acquisition of "loans" in the liability side of the financial account) as well as net worth.

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[16] Quasi-fiscal activities are defined as "Activities (under the direction of government) of central banks, public financial institutions, and non-financial public enterprises that are fiscal in character – that is, in principle, they can be duplicated by specific fiscal measures, such as taxes, subsidies or other direct expenditures, even though precise quantification can in some case very difficult. Examples include subsidized bank credit and non-commercial public services provided by an enterprise" (page 76 in "Manual on Fiscal Transparency", IMF). See also MacKenzie and Stella (1996).

2.6 "Off-budget" items and infrastructure spending

The ESA 95 manual regulates the recoding of transactions between the general government and public enterprises (Part II) as well as leases, licenses and concessions (part IV). For example, when the government makes no regular payment to the corporation in cash or in kind, either directly or indirectly, the infrastructure should be recorded in the corporation's balance sheet during the period of exploitation. If the government has shares (or provides guarantees to liabilities) of the public corporations which have infrastructure or off-budgetary items on their balance sheets, profitability of the off-budgetary items and infrastructure should be reflected on 'dividends' or 'holding gains (or losses) in shares and other equity' in the government's accounts. Therefore, the effects of the off-budget operations on the government net worth accrue only indirectly, through this channel.

More generally, a shift from direct public investment to infrastructure projects (co-)financed by the private sector or by a public enterprise outside the general government budget may have no implications for government net worth, but substantial implications for the government budget balance and gross government debt. Suppose, for example, that the project is not entirely self-financing. If it is undertaken by a private firm, which borrows with government guarantees, government outlays would be the flow equivalent of the difference between the 'required' rate of return and the actual rate of return on the project. If the government undertakes the project directly, there would be a large upfront cost (that would show in the budget balance and gross government debt), followed by a stream of future revenues, whose present value would be smaller than the initial outlays by an amount equivalent to the subsidies paid to the private firm in the previous case.

3. Assessing the impact of fiscal adjustment on net worth

The operations discussed in the previous section highlight that the fiscal targets associated with the Maastricht criteria may not always provide reliable information on the underlying degree of fiscal adjustment that a country is undertaking. However, we only provided examples and an aggregate quantification of "non-structural" fiscal adjustment based on a comprehensive list of individual fiscal operations is too demanding and goes beyond the scope of this paper.

In this section we approach the characterization of fiscal adjustment from a different perspective. First, we provide a brief description of fiscal trends since 1992 for the 12 EU countries, tracking not only public debt and the fiscal balance, but also the stocks of financial and non-financial assets, so as to provide a rough estimates of the evolution of government balance sheets. Anecdotal evidence (Eurostat, 1998) suggests that countries with a higher debt level have made more extensive use of non-structural fiscal measures such as asset sales, privatization, securitization and special dividends. We investigate this issue more systematically by studying whether high debt countries rely more heavily on asset sales, and the degree to

which reductions in government debt are reflected in an increase in government net worth, rather than a decumulation of assets. While selling public assets may itself be a desirable objective, consistent with a reduction in the government role in the economy, future expenditure needs due to population ageing, together with commitments to reduce high tax burdens, highlight the importance to achieve a reduction in *net* government liabilities.

Second, we construct a simple indicator of "optimism about the future" and examine whether this degree of optimism is systematically correlated with the underlying fiscal position. Large fiscal imbalances may be associated with a degree of "short-termism" in the conduct of fiscal policy (itself related to political and institutional factors), and more myopic governments are more willing to "gamble" on fiscal adjustment by relying on rosy macroeconomic forecasts.[17]

Both perspectives are grounded in political economy arguments. In political economy models, governments that discount the future more heavily than other economic agents tend to run larger budget deficits and accumulate government debt. In the presence of fiscal rules that limit the size of permissible budget deficits, more myopic governments may rationally choose to implement fiscal measures that shift revenues from the future to the present. As the discussion of section 2 highlights, one of the typical features of non-structural fiscal measures is that the government gets upfront proceeds at the expense of lower revenues in the future – the government moves its future cash flow to the current period. The incentive to engage in this type of operation is stronger the higher the government discount rate.

Also, the incentive to use non-structural measures depends on how severe is the punishment for violating a fiscal rule. We would therefore expect the incentive to be stronger in the run-up to Maastricht, when an excessive deficit could jeopardize participation in the European Monetary Union, than currently.

3.1 Fiscal trends and changes in government balance sheets

Table 1 shows the cyclically adjusted fiscal balance in 1992, 1997 and 2002. During the period 1992-97, the fiscal balance improved in all EU member countries and the average fiscal deficit during the period 1998-2002 was considerably lower than during 1992-97. However, in several countries the process of fiscal deficit reduction during 1992-97 did not achieve a reduction in the ratio of public debt to GDP (Table 2).

As we argued earlier, the fiscal balance and gross government debt capture only part of changes in, and the level of, government net worth. To investigate further how the government balance sheet evolved during the past decade, it is

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[17] Hallerberg, Strauch, and von Hagen (2002) discuss political economy determinants of growth and budgetary forecasts in Stability Programs. A more charitable interpretation is that governments that believe markets are unduly pessimistic about the country's growth prospects run larger fiscal deficits because they expect fast future revenue growth.

Table 1

Fiscal Balances, 1992-2002

	Average Fiscal Balance		Cyclically Adjusted Balance		
	1992-97	1998-2002	1992	1997	2002
Austria	–3.7	–1.4	–2.6	–1.9	–0.3
Belgium	–5.1	–0.1	–8.5	–1.5	0.5
Denmark	–1.7	2.3	–0.6	–0.4	1.6
Finland	–4.4	4.1	1.4	0.7	4.8
France	–4.7	–2.1	–4.2	–1.4	–3.0
Germany	–2.9	–1.7	–3.2	–1.7	–2.6
Greece	–9.4	–1.8	–11.9	–2.8	–1.5
Ireland	–1.4	1.9	–2.2	1.1	–2.4
Italy	–7.9	–2.1	–10.3	–2.2	–2.1
Luxembourg	2.0	4.3	n.a.	n.a.	n.a.
Netherlands	–2.9	0.1	–5.0	–1.9	–1.8
Portugal	–5.7	–3.2	–5.7	–3.7	–2.3
Spain	–5.3	–1.0	–3.8	–1.8	0.2
Sweden	–7.0	2.5	–5.0	0.2	0.8
United Kingdom	–5.5	0.8	–4.4	–1.9	–1.3

Source: OECD, Economic Outlook.

necessary to focus on the evolution of public assets as well. Unfortunately, providing a precise assessment of changes in the government balance sheet is hindered by severe data limitations, in particular the dearth of comparable data on government net worth, and on government financial and non-financial assets (see the Supplement to the 2001 Government Finance Statistics for a discussion). Data on gross financial assets for some EU countries is available from the OECD, although coverage is not homogeneous.[18] In addition, some countries publish sectoral balance sheets which include financial assets and liabilities of the government, and the data are reported by Eurostat. Although coverage from this second source of data should

[18] For example, some countries do not include shares in public enterprises among the general government's financial assets.

Table 2

Debt-to-GDP Ratio, EU Countries

	1992	1997	2002
Austria	57.2	64.7	67.6
Belgium	132.5	124.8	105.3
Denmark	66.3	61.2	45.2
Finland	40.6	54.0	42.7
France	39.6	59.3	59.5
Germany	42.9	61.0	60.8
Greece	87.8	108.2	104.9
Ireland	100.2	65.0	33.3
Italy	107.7	120.2	106.7
Luxembourg	4.7	6.1	5.7
Netherlands	77.8	69.9	52.6
Portugal	54.4	59.1	58.1
Spain	46.8	66.6	54.0
Sweden	63.3	70.5	52.4
United Kingdom	39.2	50.8	38.4

Source: OECD, Economic Outlook.

be more homogeneous and complete, availability is limited to a few countries and years. Comparable data on general government non-financial assets are also difficult to obtain and more generally there are severe conceptual problems in determining market values for a host of government assets. Finally, there are some differences in the recording of gross financial liabilities across countries, although the problems in data comparability across countries are less severe than for government assets.

Given data limitations, we proceed as follows. For countries for which Eurostat or the OECD report data on government financial assets, we combine these data with corresponding data on gross financial liabilities and with estimates of the stock of public capital (constructed using the perpetual inventory method – see Appendix) to estimate the change in the ratio of net worth to GDP.

The change in the ratio of net worth to GDP is given by the change in total assets (financial and non-financial) minus the change in total liabilities:

$$w_t - w_{t-1} = fa_t - fa_{t-1} + pk_t - pk_{t-1} - (fl_t - fl_{t-1}) \quad (5)$$

where lower-case letters indicate ratios to GDP. We examine to what degree changes in the ratio of public debt to GDP $(fl_t - fl_{t-1})$ reflect corresponding changes in the stock of government assets $fa_t - fa_{t-1} + pk_t - pk_{t-1}$ or changes in government net worth. We perform this exercise for both the period 1992-97 and the period 1997-2002.[19]

We also use a second, indirect method to assess changes in the government's balance sheet. The change in net worth ΔW_t is approximately equal to the sum of net saving, capital transfers and valuation effects. We use direct measures of government net saving and capital transfers, and approximate valuation effects with the change in government debt induced by exchange rate fluctuations. These effects are quite substantial for countries that have a significant share of debt denominated in foreign currency (especially prior to EMU). We then use the estimated change in net worth to construct the variable

$$z_t = \frac{\Delta W_t}{Y_t} + (fl_t - fl_{t-1}) - \frac{\gamma}{1+\gamma}(pk_{t-1} - fl_{t-1}) \tag{6}$$

where Y_t is nominal GDP and γ its the rate of growth. Manipulating equations (5) and (6) it can easily be shown that z_t is an upper bound on the gross change in the ratio of government financial assets to GDP:

$$z_t = fa_t - fa_{t-1} + \frac{\gamma}{1+\gamma} fa_{t-1} + pk_t - pk_{t-1} > w_t - w_{t-1} + fl_t - fl_{t-1} \tag{7}$$

We use equation (6) to estimate z_t for the countries for which we don't have data on government financial assets (namely Greece, Ireland, Luxembourg and Portugal). For the other countries, we can calculate z_t directly using equation (7). We then relate z_t to the initial level of government debt, both for the period 1992-97 and for the period 1997-2002. This comparison provides some information on the extent to which fiscal adjustment (as measured by a reduction in gross government debt) has lowered the need for future taxation.[20]

3.2 Changes in the government balance sheet: the evidence

The empirical analysis shows substantial differences between events in the pre- and post-Maastricht period. As shown in Figure 1, the change in public debt

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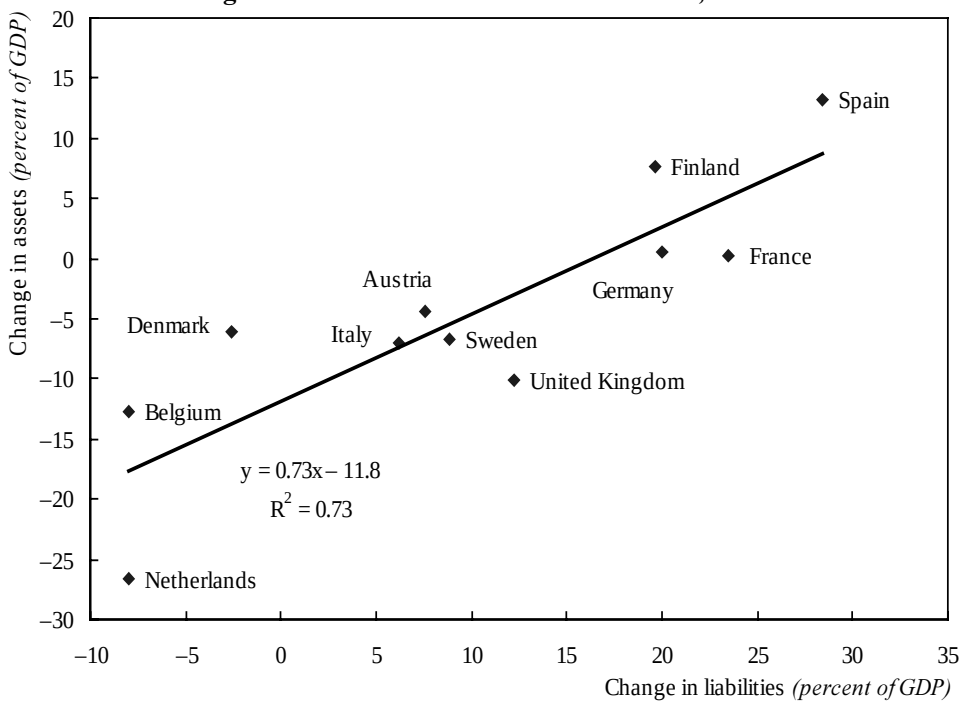
[19] Using the estimates for the public capital stock constructed by Kamps (2004) yields similar results.

[20] This is, of course, not a complete measure of the impact of fiscal policy on future tax outlays. For example, a pension reform has no impact on net worth and government debt but can reduce or increase future spending, and hence future taxes.

Figure 1

Change in Government Assets and Liabilities, 1992-97



Source: authors' calculations based on OECD, Economic Outlook.

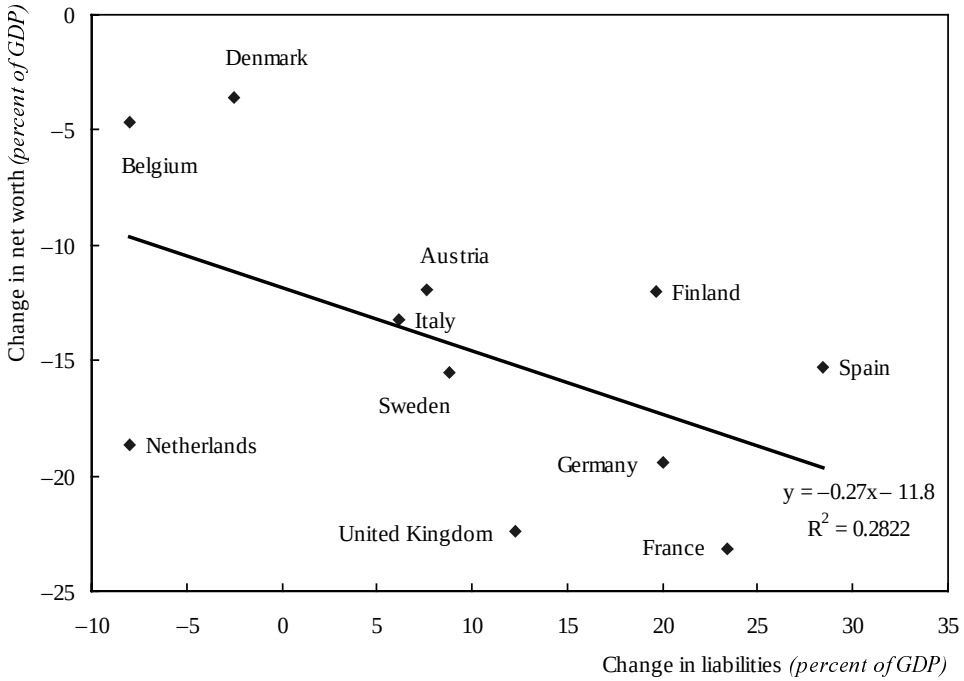
between 1992 and 1997 is strongly positively correlated with changes in government assets during the same period, while it is weakly correlated with changes in net worth (Figure 2). Hence, during this period, the evolution of gross public debt provides only limited information on changes in the government's intertemporal position. Despite a decline in the stock of public assets in the majority of countries, between 1992 and 1997 net worth deteriorated in all EU countries, except for Sweden.

However, for the period 1998-2002 the link between the change in government assets and liabilities virtually disappears (Figure 3), with changes in gross financial liabilities strongly correlated with changes in net worth (Figure 4). In terms of general trends, this period is characterized by an improvement in net worth in most countries, notwithstanding generally declining government assets.

In Figure 5 we relate a proxy for the change in the ratio of public assets to GDP during the period 1992-97, constructed according to equation (6), to public debt at the beginning of that decade. The figure shows that countries with larger government debt in the early Nineties reduced their financial assets more

Figure 2

Changes in Government Liabilities and in Net Worth, 1992-97



Source: authors' calculations based on OECD, Economic Outlook.

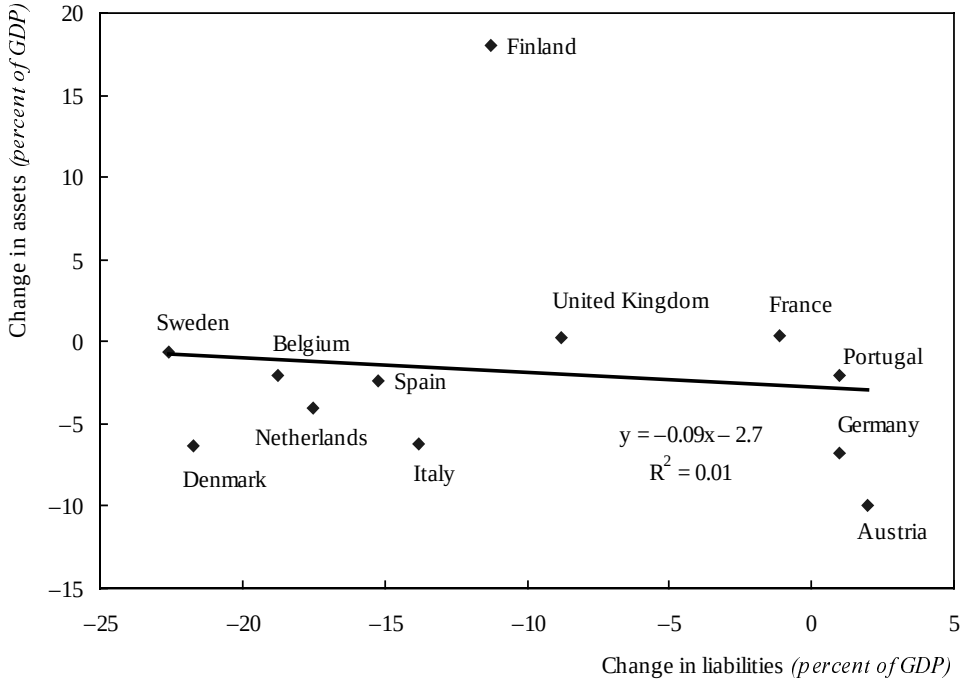
substantially in the period 1992-97 than countries with lower initial public debt.[21] Once again, the link is much weaker in the period 1998-2002 (Figure 6).

Overall, these results are consistent with the notion that during the period leading up to 1997 governments contained the rise in the public debt ratio (or reduced it) by decumulating government assets, and that this decumulation was stronger in countries with large public debts. During the period 1997-2002 instead government debt declined and net worth improved in virtually every country. A possible interpretation of the weaker incentive to use non-structural measures is that fiscal rules are less "punishing" in the post-1997 era (once countries are inside the euro area). A comparison with the evolution of balance sheets in other OECD countries can provide some perspective on whether we are capturing phenomena associated with the establishment of budget rules in the euro area and the EU, or common fiscal trends in advanced economies. Preliminary evidence shows that the correlation between changes in financial assets and financial liabilities for the 1992-97 period is much stronger in the euro area than in non-euro area OECD

[21] The correlation is stronger for the countries that joined the euro area.

Figure 3

Changes in Government Assets and Liabilities, 1997-2002



Source: Authors' calculations based on OECD Economic Outlook.

countries (0.8 versus 0.3).[22] In the subsequent period, the correlation for euro-area countries drops to zero, while the one for other OECD countries remains broadly unchanged.

3.3 Fiscal imbalances and output projections

The last piece of evidence we focus on relates to the link between the growth forecasts of countries' medium-term fiscal plans and their initial fiscal conditions. Intuitively speaking, given other conditions, a government that expects more favorable economic conditions in the future and faces constraints on its budget balance and/or debt level has a stronger incentive to use "non-structural" fiscal measures, "betting" on the possibility of favorable future conditions to avoid the cost of improving the underlying fiscal accounts.

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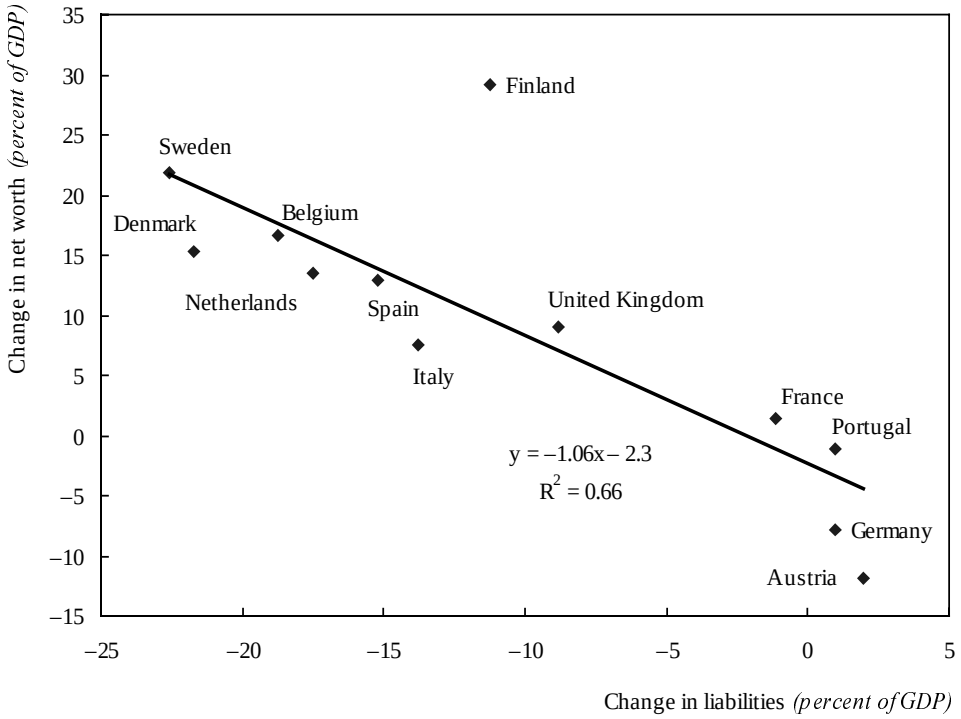
[22] In addition to the Denmark, Sweden, and the United Kingdom, the non-euro area sample includes Australia, Canada, Iceland, Japan, New Zealand, and the United States.

Figure 4

Change in Government Liabilities and Net Worth, 1997-2002



Source: Authors' calculations based on OECD Economic Outlook.

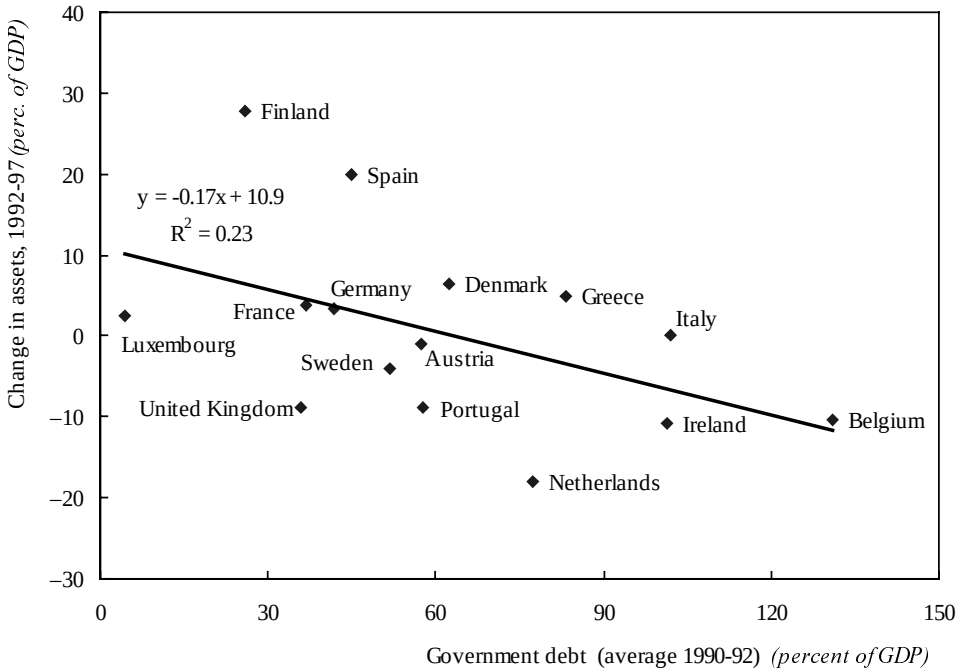
Our indicator of government optimism with regard to output is constructed from the period 1998-onwards using the Stability Programs, which are annually submitted to the European Commission by 12 EU member countries. These programs report the forecast of output growth on which budgetary projections are based. We define the "degree of optimism about future" (DOF) as follows:

$$DOF_t = \sum_{s=1}^{2} (G_{y_t}^{t+s} - CF_{y_t}^{t+s})$$

where G_{yt}^{t+s} is the expected GDP growth rate (annual base) of year $t+s$ in the Stability Program submitted at year t and CF_{yt}^{t+s} is the expected GDP growth rate

Figure 5

Adjusted Change in Public Assets and Initial Debt, 1992-97



Source: Authors' calculations based on OECD, Economic Outlook, and Eurostat, New Cronos database.

in year $t+s$ in the Consensus Forecast in the same month as the Program was submitted.[23]

The larger *DOF* is, the more optimistic the government is about economic conditions in the future compared to the Consensus Forecast, which is the simple average of expected growth rates provided by private research institutes. For the purpose of cross-country comparisons, we normalize *DOF* using the average GDP growth rate from 1993 to 1997 because countries with high growth rate tend to have larger absolute values of *DOF*.[24]

Figure 7 plots the relation between the average of the "degree of optimism about the future" from 1998 to 2001 and the average budget deficit per GDP from 1995 to 1997 (results are identical if we use the average budget deficit from 1993 to 1995). The negative correlation between the initial budget deficit per GDP and the

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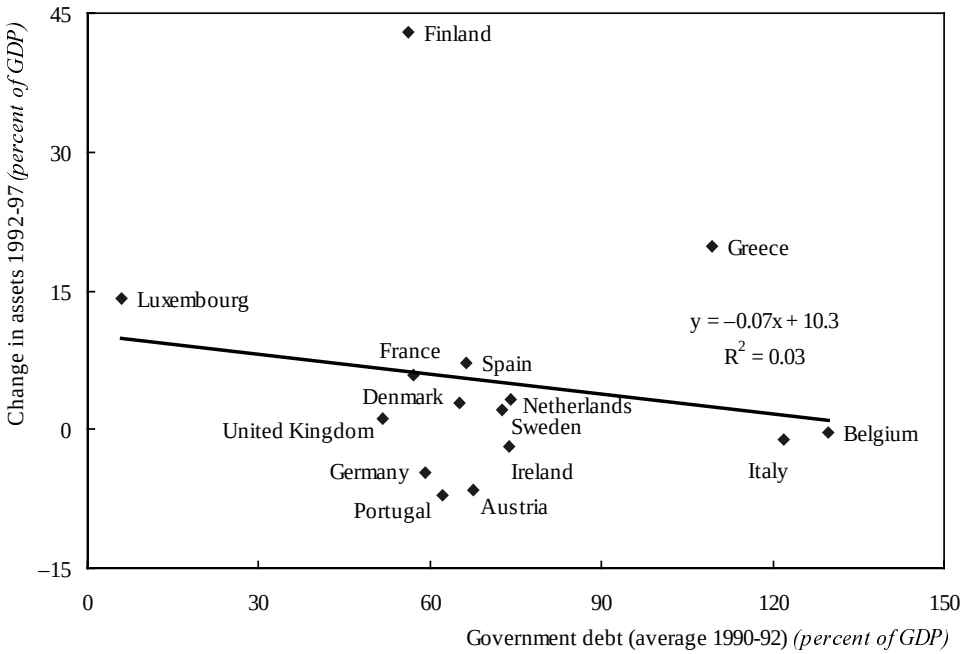
[23] The Consensus Forecast monthly reports the average of the expected GDP growth rates (annual base) computed by private research institutions in each country (there is no report for Luxembourg).

[24] Our results are robust to different normalization methods.

Figure 6

Adjusted Change in Public Assets and Initial Public Debt, 1997-2002



Source: Authors' calculations based on OECD, Economic Outlook, and Eurostat, New Cronos database.

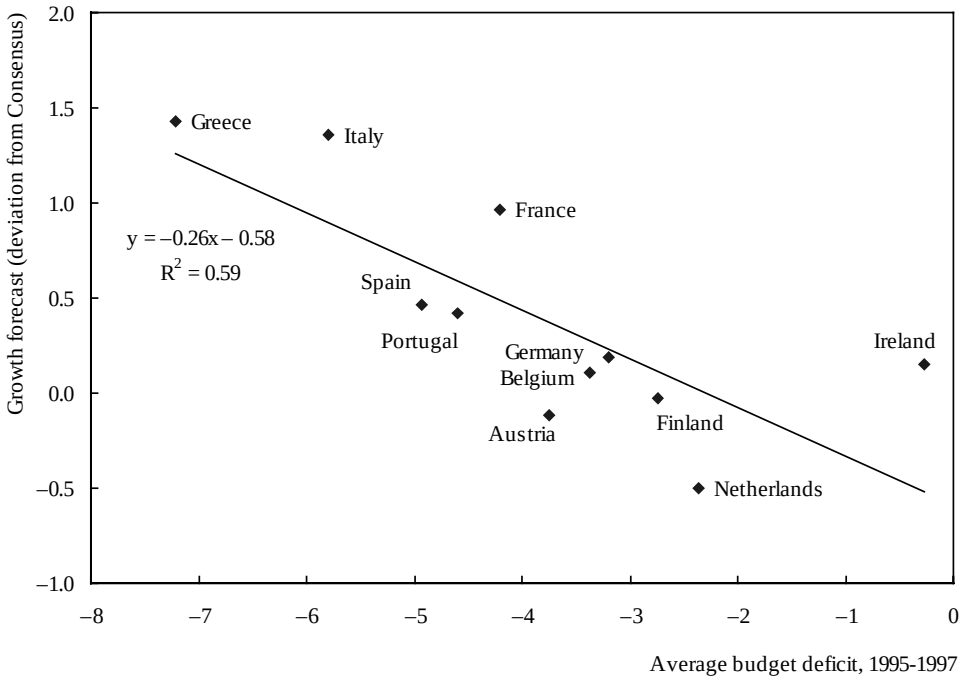
degree of optimism about the future is striking – among EU countries, governments with larger budget deficits have systematically more optimistic output forecasts.

4. Concluding remarks

In the presence of fiscal rules constraining the size of the fiscal balance of the path of government debt, governments may adopt measures which affect these targets but have no impact on the government's net worth. Anecdotal evidence suggests that these measures have been widely used in EU countries, in the run-up to the adoption of the common currency and also during the current slowdown. The paper has re-examined fiscal adjustment in EU countries over the past decade by focusing on the evolution of the general government balance sheet. It has described a number of fiscal measures that improve the fiscal accounts subject to the Maastricht criteria but have no durable impact on public finances as a whole. Empirical evidence for EU countries suggests a positive correlation between changes in government liabilities and changes in government assets for the period 1992-97, but a much weaker correlation for the period 1997-2002. Also, countries

Figure 7

Degree of Optimism and Budget Balance



Note: the deviation of the growth forecast from consensus is constructed as follows. First, for each year t=1998-2001, we calculate deviations of the growth forecast incorporated in the country's Stability Program from the Consensus growth forecast at the time the Stability Program was issued, and sum these deviations for the years t+1 and t+2. The resulting deviations are then averaged over the period 1998-2001, and normalized by the country's average growth rate during the period 1993-97.

Source: Individual countries' Stability Programs and Consensus Forecasts.

with a more difficult fiscal situation have used systematically more optimistic output projections in their Stability Programs.

APPENDIX
THE ESTIMATION OF PUBLIC CAPITAL

The paper makes use of the perpetual inventory method (PIM) to compute the nominal value of public capital. This Appendix derives the formula used in the PIM.

The law of motion of "real" public capital stock is given by:

$$K_t = (1-\delta)K_{t-1} + I_t \tag{8}$$

where δ represents the real depreciation rate, which is set to 4 per cent. Let the deflator of the government gross fixed capital formation be p. Multiplying p_t to both sides of the above equation and rearranging gives the following law of motion of nominal public capital:

$$p_t K_t = (1-\delta)\hat{p}_t p_{t-1} K_{t-1} + p_t I_t \text{, and } \hat{p}_t = \frac{p_t}{p_{t-1}}$$

Let the nominal value of capital be $\tilde{K}_t$. The new law of motion is finally reduced to:

$$\tilde{K}_t = (1-\delta)\hat{p}_t \tilde{K}_{t-1} + \tilde{I}_t$$

This is the law of motion of nominal public capital used to estimate the data of public capital in our paper.

One problem in the PIM is the computation of the initial capital stock, which is usually estimated based on strong assumptions. In this paper, we implicitly assume that each economy's stock of public capital was in steady state in the Eighties. Under this assumption, the initial level of public capital can be obtained as follows. First, both sides of the nominal law of motion have to be divided by the nominal GDP $\tilde{Y}_t$:

$$\frac{\tilde{K}_t}{\tilde{Y}_t} = \frac{(1-\delta)(1+\pi_t^K)}{1+g_t}\frac{\tilde{K}_{t-1}}{\tilde{Y}_{t-1}} + \frac{\tilde{I}_t}{\tilde{Y}_t},$$

where $1+\pi_t^K = \hat{p}_t = \frac{p_t}{p_{t-1}}$ and $1+g_t^K = \frac{\tilde{Y}_t}{\tilde{Y}_{t-1}}$.

Hence, in the steady state:

$$\tilde{K} = \frac{(1+g)\tilde{I}}{g-\pi^K+\delta(1+\pi^K)}$$

where all variables are the average of the Eighties.

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