

Briotti, Maria Gabriella

**Research Report**

## Economic reactions to public finance consolidation - a survey of the literature

ECB Occasional Paper, No. 38

**Provided in Cooperation with:**

European Central Bank (ECB)

*Suggested Citation:* Briotti, Maria Gabriella (2005) : Economic reactions to public finance consolidation - a survey of the literature, ECB Occasional Paper, No. 38, European Central Bank (ECB), Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/154491>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



EUROPEAN CENTRAL BANK

## OCCASIONAL PAPER SERIES

NO. 38 / OCTOBER 2005

# **ECONOMIC REACTIONS TO PUBLIC FINANCE CONSOLIDATION: A SURVEY OF THE LITERATURE**

by Maria Gabriella Briotti



EUROPEAN CENTRAL BANK



## OCCASIONAL PAPER SERIES

NO. 38 / OCTOBER 2005

# ECONOMIC REACTIONS TO PUBLIC FINANCE CONSOLIDATION: A SURVEY OF THE LITERATURE<sup>1</sup>

by Maria Gabriella Briotti



In 2005 all ECB publications will feature a motif taken from the €50 banknote.

This paper can be downloaded without charge from the ECB's website (<http://www.ecb.int>) or from the Social Science Research Network electronic library at [http://ssrn.com/abstract\\_id=807411](http://ssrn.com/abstract_id=807411).



<sup>1</sup> The author works as Principal Economist in the Fiscal Policies Division of the European Central Bank. The author would like to thank Philippe Moutot, José Marin Arcas, Francesco Paolo Mongelli, Ludger Schuknecht, J.-P. Vidal, colleagues from the Fiscal Policies Division and an anonymous referee for their comments, as well as Anna Foden, Elisabeth Keable and Paul Williams for their editing suggestions. Any remaining errors are the sole responsibility of the author. The views expressed do not necessarily reflect those of the European Central Bank.

© European Central Bank, 2005

**Address**

Kaiserstrasse 29  
60311 Frankfurt am Main  
Germany

**Postal address**

Postfach 16 03 19  
60066 Frankfurt am Main  
Germany

**Telephone**

+49 69 1344 0

**Website**

<http://www.ecb.int>

**Fax**

+49 69 1344 6000

**Telex**

411 144 ecb d

*All rights reserved. Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the ECB or the author(s).*

*The views expressed in this paper do not necessarily reflect those of the European Central Bank.*

ISSN 1607-1484 (print)  
ISSN 1725-6534 (online)

# CONTENTS

## CONTENTS

<b>ABSTRACT</b>	<b>4</b>
<b>EXECUTIVE SUMMARY</b>	<b>5</b>
<b>1 INTRODUCTION</b>	<b>8</b>
<b>2 THE THEORY OF THE INFLUENCE OF FISCAL POLICY ON ECONOMIC ACTIVITY</b>	<b>9</b>
2.1 The traditional Keynesian model and the New Classical elements	9
2.2 Rational expectations view	10
2.3 Ricardian Equivalence view	10
2.4 Non-linear effects: interest rate risk premia and credibility	11
2.5 Non-linear effects: the new policy expectation view	12
2.6 Supply-side effects	12
<b>3 EMPIRICAL EVIDENCE FROM FISCAL CONSOLIDATION: A SURVEY</b>	<b>14</b>
3.1 Macroeconomic model simulations	14
3.2 Episodes of fiscal consolidation	15
3.3 Demand side: the consumption channel	15
3.4 Demand side: the investment channel	17
3.5 Supply-side effects: composition of budget adjustment	17
3.6 Spillover effects	19
<b>4 EFFECTS ON SAVINGS: TEST OF RICARDIAN EQUIVALENCE</b>	<b>21</b>
<b>5 CONCLUSION</b>	<b>22</b>
<b>REFERENCES</b>	<b>24</b>
<b>LIST OF OCCASIONAL PAPERS</b>	<b>27</b>

## ABSTRACT

The paper reviews the theoretical and empirical literature that has investigated the conditions under which a contractionary fiscal policy is effective in reducing debt and deficit, but does not have a negative effect on growth. The issue is central to macroeconomics and policy making, given that many countries are currently facing increasing fiscal imbalances, with additional pressure coming in the medium term from population ageing. The paper concludes that the theoretical impact of fiscal policy on aggregate demand and economic activity depends largely on the conceptual framework considered and its assumptions about the world. Empirical studies based on macro-econometric model simulations find evidence that fiscal consolidations lead initially to production losses, while they can result in a higher output in the medium term. Empirical studies focusing on episodes of changes in fiscal policies provide in turn evidence that under certain circumstances austerity measures may have an expansionary impact on the economy.

Key words: fiscal multiplier, fiscal consolidation, non-Keynesian effects, government spending and taxing.

JEL Classification: E62, H30



## EXECUTIVE SUMMARY

The impact of fiscal policy on aggregate demand and economic activity has been the subject of a long-standing debate. The possibility of “non-Keynesian effects” resulting from restrictive fiscal policies was first raised by Barro (1974), who introduced the concept of “Ricardian Equivalence”: a tax cut financed by issuing government debt may fail to stimulate private consumption because consumers discount the future tax burden required to serve and repay the debt, in the belief that this will cancel out the current tax alleviation. This issue attracted much renewed interest in the light of the experiences of fiscal consolidation in Denmark (1983-86) and Ireland (1987-89). In spite of the severe restrictive policies pursued in the two countries during the periods concerned, their rates of growth showed significant increases on previous years. Since then, a number of studies have tried to find evidence of the transmission channels of a potentially expansionary fiscal retrenchment.

Against this background, this Occasional Paper reviews the theoretical and empirical literature that has investigated the conditions and circumstances under which a contractionary fiscal policy is effective in reducing debt and deficit, yet does not have a negative impact on growth. Indeed, there is not much consensus on the interaction between fiscal policy and growth in the short term. Conceptually, the impact of fiscal policy on aggregate demand and economic activity very much depends on the theoretical model and its assumptions about the “world” in which policy measures are implemented. The traditional Keynesian approach emphasises the demand implications of restrictive fiscal policies and points to the short-run contractionary impact of fiscal consolidation. The opposite view highlights the fact that, in the short run, expansionary effects may emerge if fiscal policies improve the expectations of economic agents concerning their future income and wealth (demand-side effects) and/or help to enhance

labour market efficiency and the competitiveness of the economy (supply-side effects). Despite the complexity of the theoretical arguments and the difficulty of obtaining clear-cut empirical results, there seems to be broad agreement about the basic factors influencing the size and sign of fiscal multipliers.

In the most simple static model with fixed prices, an exogenous increase in public expenditure (or an increase in disposable income following a tax cut) will bring about traditional Keynesian effects on demand. In the short-run horizon envisaged by the model, a loosening of fiscal policy has an expansionary effect on private consumption and economic activity. In other words, the fiscal policy multiplier is positive. Even in such a simplified framework, the size of the multiplier is adversely affected by a number of factors. Productive capacity close to full use will severely limit the use of expansionary policies based on aggregate demand. Possible increases in market interest rates may crowd out private demand, particularly when investments show a significant sensitivity to interest rate changes. In an open economy with flexible exchange rates and mobile capital, there can be significant offsetting effects resulting from an exchange rate appreciation. Taking into account such circumstances, the expansionary effects of fiscal loosening on demand can be very limited, i.e. the effect is likely to be “weakly Keynesian” and the multiplier still positive but small.

Moving to a dynamic model that does not assume full market clearing, the range of potential transmission channels for fiscal policy to aggregate demand is broader on the longer horizon. In this context, agents form expectations regarding future developments in public finances and budget policies, and hence their future disposable income and wealth. This intertemporal optimisation implies complex and non-linear relationships in the traditional consumption and investment model, which depend, among other things, on how economic

agents form their expectations. In particular, the inclusion in the model of New Classical elements, such as the formation of agents' expectations and the Ricardian Equivalence property, implies that wealth and expectational effects might well outweigh the traditional Keynesian multiplier effects on demand and activity. In other words, multipliers may become negative and overall effects non-Keynesian.

In most theoretical models, potential non-Keynesian effects are explained by a change in the expectations of economic agents and/or by better labour market performance leading to enhanced competitiveness in the economy. Fiscal retrenchment can have expansionary effects on private consumption when consumers feel that such consolidation will increase their lifetime income. If consolidation is delayed, consumers will expect higher tax increases in future, which, given the non-linear increase in the distortionary effects of taxation, will have a more disruptive effect on future output and income. By contrast, timely consolidation can improve expectations of future income. Furthermore, in countries with high public debt ratios, restrictive fiscal policies can reduce the risk of default and, in turn, boost confidence in future policies. The subsequent interest rate decline would spur aggregate demand both directly, through investment, and indirectly, through the positive wealth effect in the private sector and therefore consumption.

A number of modelling assumptions, however, are crucial to obtaining the expansionary effects of a contractionary policy. First, taxes must be distortionary, with larger tax increases causing larger distortionary effects. Under this assumption, if consolidation is delayed, consumers will expect larger tax increases in future, which will have larger disruptive effects on future output. Second, consumers should be forward-looking and not liquidity-constrained, so that higher expected income can be translated into higher effective demand. Third, fiscal consolidation must be unexpected

in order to trigger expansionary effects. Only under this condition is fiscal consolidation likely to produce a change in people's expectations of future fiscal policies and therefore expected future income.

Several empirical studies have been carried out in an attempt to find evidence of the expansionary effects of fiscal consolidation. One approach is to estimate fiscal multipliers using macroeconomic model simulations. The general conclusion is that fiscal consolidation initially leads to output losses, albeit small, which are then followed by a recovery. In particular, expansionary non-Keynesian effects from expenditure cuts can emerge in the medium run owing to the anticipated effects of higher future disposable income or profitability.

An alternative approach looks at specific episodes of fiscal expansion and contraction in large samples of countries or in the form of individual case studies. A number of such studies provide some evidence that specific characteristics of a fiscal policy are relevant in determining its persistence and potential non-Keynesian effects on economic activity. The size, composition, speed of implementation and initial state of public finances are all seen as relevant factors. However, studies differ as to the relative importance attributed to the various features of a budgetary adjustment in determining possible expansionary effects. Most studies agree on the importance of the composition of a budget adjustment and, in particular, that an expenditure-based adjustment tends to be more growth-friendly and lasting than a tax-based adjustment without expenditure restraints. Views on the role played by the size of the adjustment and the initial state of public finances, on the other hand, are more mixed, as there is no conclusive evidence that larger initial fiscal imbalances and sizeable adjustments are more likely to result in expansionary effects from fiscal tightening. Moreover, the empirical evidence does not reveal whether expansionary effects are driven by expectations concerning future



disposable income (i.e. expectations of lower taxes in future and better financing conditions) or by supply-side effects (through increased incentives to work and invest).

Another way of analysing the impact of fiscal policies on aggregate demand is to look at how private saving responds to changes in the fiscal stance (or public saving). Although many empirical studies strongly reject the idea that a decline in public saving brings about an equivalent increase in private saving, i.e. full Ricardian Equivalence, private consumption may still reflect a partial Ricardian effect. In particular, recent studies indicate that fiscal adjustments and expansions in many OECD countries have been associated with inverse movements in private saving.

From a policy perspective, notwithstanding the complexity of the theoretical arguments and the difficulty of obtaining clear-cut empirical results, there seems to be broad agreement about the basic factors influencing the size and sign of fiscal multipliers. A key condition for fiscal expansion having a “standard” positive multiplier effect on aggregate demand, and therefore output, is that there be slack in productive capacity. The composition of the fiscal expansion is also important, with increases in government spending spurring demand more than tax cuts, particularly in the case of high-quality spending, such as spending that increases the productivity of labour and/or capital. Tax cuts, however, can also be expansionary, if labour supply and/or investment increase correspondingly in response.

The expansionary impact of the public budget could, however, be offset, in full or in part, by consequent increases in market interest rates and by exchange rate appreciation. In such instances, additional public spending would be compensated by lower private spending, mitigating the effects on aggregate demand. Furthermore, fiscal expansions, which generate uncertainty about the future course of budget policies and even jeopardise the

sustainability of public finances, may have an adverse impact on confidence and economic activity. Consumers may form negative expectations about their future income and the consequent precautionary saving behaviour will adversely affect private consumption. Unsound fiscal policies may also result in higher interest rates, reflecting higher risk premia, and therefore have a negative impact on private activity. Such effects will be greater, the more investment decisions are driven by interest rates and the more wealth affects private consumption.

## I INTRODUCTION

The debate on the possible non-Keynesian effects of restrictive fiscal policies started with Barro's seminal paper (1974), which introduced the concept of "Ricardian Equivalence". Accordingly, in theoretical models that embody this feature, a tax cut financed by issuing government debt fails to stimulate private consumption because consumers discount the future tax burden required to serve and repay the debt, in the belief that this will cancel out the current tax alleviation. The issue attracted much renewed interest in the light of the experiences of fiscal consolidation in Denmark (1983-86) and Ireland (1987-89). In spite of the severe restrictive policies pursued in the two countries during the periods concerned, their rates of growth showed significant increases on previous years. Since then, a larger number of studies have been carried out in an attempt to identify the transmission channels of potentially expansionary fiscal retrenchment.

Indeed, there is not much consensus among experts on the interaction between fiscal policy and growth in the short term. The traditional Keynesian approach emphasises the impact of restrictive fiscal policies on demand and points to the short-run contractionary effects of fiscal consolidation. A key condition for fiscal expansion having a "standard" positive multiplier effect on aggregate demand, and thus output, is that there be slack in productive capacity. The composition of the fiscal expansion is also important, with increases in government spending spurring demand more than tax cuts, particularly in the case of high-quality spending, such as spending that increases the productivity of labour and/or capital.

The opposite view emphasises that, in the short run, expansionary effects may arise if fiscal policies improve economic agents' expectations of their future income and wealth (demand-side effects) and/or contribute to enhancing labour market efficiency and the

competitiveness of the economy (supply-side effects). Fiscal retrenchment can have expansionary effects on private consumption when consumers feel that such consolidation will increase their lifetime income (sometimes also referred to as the "wealth channel"). If consolidation is delayed, consumers will expect higher tax increases in future, which, given the non-linear increase in the distortionary effects of taxation, will have a more disruptive effect on future output and income. By contrast, timely consolidation can enhance expectations regarding future income. However, in order for the transmission of these impulses to be effective, consumers should be forward-looking and not liquidity-constrained, so that higher expected income can be translated into higher effective demand.

In order to determine the size and sign of fiscal effects, empirical literature either relies on macroeconomic model simulations to estimate fiscal multipliers or draws lessons from the investigation of specific episodes of fiscal contraction. The first approach shows that short-term multipliers are generally positive, although their estimated values have declined over the last two decades. Such estimates provide only limited evidence of negative fiscal multipliers. In general, fiscal multipliers are smaller in the case of changes in taxation than in the case of changes in spending.

In the alternative approach, empirical studies focus on specific episodes of fiscal consolidation in order to identify transmission channels of potentially expansionary fiscal contractions. A number of these empirical studies provide evidence suggesting that fiscal consolidation policy may have an expansionary effect on economic activity in certain circumstances. However, the studies available do not provide conclusive evidence as to whether expansionary effects are driven by expectational effects or by supply-side effects. The studies also differ in terms of the importance they attribute to the various features of a budgetary adjustment in determining potential expansionary effects. Most studies

agree on the relevance of the persistency and composition of a budget adjustment. In particular, there is broad agreement that an expenditure-based adjustment tends to be more growth-friendly and lasting than a tax-based adjustment without expenditure restraints. By contrast, evidence on the size of the adjustment and, in particular, on the initial state of public finances is more mixed. Furthermore, a number of methodological considerations suggest that empirical results are sensitive to the way in which fiscal consolidation is analysed and conclusions may therefore lack the desired robustness.

The impact of fiscal policy on aggregate demand depends on the response of private saving to changes in fiscal stance. Although empirical evidence is quite mixed and no clear-cut conclusions can be drawn about full Ricardian Equivalence, the behaviour of private consumption may still be consistent with a partial Ricardian offset.

Against this background, this Occasional Paper reviews the theoretical and empirical literature that has analysed the conditions and circumstances under which a contractionary fiscal policy is effective in reducing debt and deficit, but does not have a negative impact on growth. Section 2 examines some of the theoretical literature that investigates potential channels for the non-Keynesian effects, or weak Keynesian effects, of a budget contraction. Table A and Table B summarise the main issues of the theoretical debate. Based on the studies available, Section 3 illustrates the empirical evidence in support of non-Keynesian or weak Keynesian effects of a budget contraction. A synopsis of the main empirical results is set out in Table C. Empirical studies on Ricardian Equivalence are analysed in Section 4, and finally Section 5 presents the main conclusions.

## 2 THE THEORY OF THE INFLUENCE OF FISCAL POLICY ON ECONOMIC ACTIVITY

### 2.1 THE TRADITIONAL KEYNESIAN MODEL AND THE NEW CLASSICAL ELEMENTS

In the most simple static model with fixed prices, an exogenous reduction of public expenditure (or a contraction of disposable income following a tax hike) will bring about traditional Keynesian effects through the demand side by way of the well-known multiplier mechanism. In the short-run horizon envisaged by the model, Keynesian effects prevail and restrictive fiscal policies have contractionary effects on private consumption and economic activity. When assessing the effects of a fiscal loosening, the size of the multiplier, however, is affected by a number of factors which may entail crowding-out effects, such as insufficient slack in productive capacity, increases in market interest rates, the degree of openness of the economy and appreciation of the exchange rate, and the possibility of at least limited price flexibility. Depending on these conditions, the expansionary effects of fiscal loosening on demand can be very limited.

In a dynamic model, which does not assume full market clearing, the longer temporal horizon broadens the range of possible channels of transmission of fiscal policy to aggregate demand. In this context, agents form expectations about future developments in public finances and budget policies, and therefore of their future disposable income and wealth. The intertemporal optimisation implies complex, non-linear relationships in the traditional consumption and investment model, which depend, among other things, on how economic agents form their expectations. In particular, the inclusion of the New Classical elements (e.g. Ricardian Equivalence property) in the model implies that wealth and expectational effects might well outweigh the traditional Keynesian multiplier effects on demand and activity.

**Table A Potential impact of budgetary adjustments on economic activity**

Taxonomy	Main underlying assumptions	Definition	Value of the Multiplier
Traditional Keynesian Multiplier	Slack in productive capacity; fixed price; static model.	Increase in income following exogenous increase in public expenditure or tax cut.	Positive and greater than 1.
Weak Keynesian	Productive capacity close to full use; market interest increase; exchange rate appreciation.	Partial or full crowding-out side-effects of budget changes limit the size of the multiplier.	Between 1 and 0.
Ricardian equivalence	Intertemporal optimisation; forward looking agents; no liquidity constraints.	Precautionary behaviour of economic agents fully offset fiscal policy changes.	Multiplier equal to 0.
Non-Keynesian	Intertemporal optimisation; large fiscal imbalances; risk premium on interest rates; credible fiscal consolidation.	Prompted by a credible fiscal consolidation, agents' expectations about future fiscal policy and future income improve.	Negative or close to zero.

Intertemporal issues have been explored in a Keynesian context by Barry and Devereux (1995), who developed a theoretical model that explicitly takes into account agents' expectations and assumes perfect foresight, perfect capital markets and the Ricardian Equivalence property. The model is, however, Keynesian, in the sense that wages and prices are not perfectly flexible. It examines the impact of temporary and permanent fiscal contractions on consumption, investment, employment and the current account, in a two-period and two-sector framework (tradeables and non-tradeables). According to Barry and Devereux's analysis, permanent fiscal contractions can have expansionary effects, although this largely depends on the specific conditions met by the parameters of the model. In particular, when wages are rigid and prices (in the non-tradeables sector) are flexible, under a strong consumption smoothing hypothesis, fiscal contraction typically raises private sector consumption, following the New Classical elements of the model. The effects on investments and the trade balance are instead less clear cut, while the general impact of a fiscal contraction is to reduce employment, following the Keynesian features of the model.

## 2.2 RATIONAL EXPECTATIONS VIEW

When agents form rational expectations, permanent changes in fiscal policy modify their expected permanent income, while transitory fiscal changes do not affect it at all. Since agents bring forward the long-term effects of fiscal policy to the present, short-term effects become relevant. In particular, if agents expect that an initial increase in interest rates and/or an appreciation of the exchange rate, following fiscal expansion, will continue or even become larger, crowding-out effects will be augmented and the fiscal multiplier may become negative (Krugman and Obstfeld, 1997). Under such circumstances, a weak Keynesian effect is dependent on the effects of policy measures being permanent, with the transmission to aggregate demand being through the permanent income hypothesis.

## 2.3 RICARDIAN EQUIVALENCE VIEW

The Ricardian Equivalence implies the irrelevance of the government's financing decisions vis-à-vis taxes and debt (Barro, 1974). The key issue is that the economy is influenced only by the quantity of government expenditure (purchases in the basic model) and not by whether such expenditure is financed by

higher taxes or debt. The Ricardian Equivalence view states that a fiscal expansion prompts expectations of future fiscal contractions, in order to repay for the initial loosening. The reduction in government saving brought about by an initial tax cut will therefore be fully offset by higher private saving and bequests, adopted by households and firms as precautionary behaviour. Consequently, changes in aggregate private demand will reduce or even bring to zero the multiplier effects of the fiscal expansion on the economy.

The link between fiscal policy and consumption is based on the permanent income hypothesis. Since, under the assumptions that give rise to Ricardian Equivalence, permanent income and aggregate demand are not affected by intertemporal changes of fiscal policy, the fiscal multiplier is zero. However, it should be emphasised that for the Ricardian Equivalence property to be met, a number of crucial assumptions must be satisfied, e.g. perfect capital markets and the absence of liquidity constraints, perfect foresight, altruistic and forward-looking agents, and lump-sum taxes.

The robustness of Ricardian Equivalence can therefore be questioned on the basis of the reality of the underlying assumptions. The introduction, in turn, of alternative assumptions, such as myopic agents, a finite life, liquidity-constrained consumers, imperfect capital markets and distortionary taxation, makes a positive multiplier once again likely. Departures from the crucial underlying assumptions are worth mentioning in greater detail. If agents cannot offset increases in public savings because of liquidity constraints and/or imperfect capital markets, fiscal expansion can still have Keynesian effects, particularly when debt is low (Blanchard, 1985). Taking into account liquidity-constrained consumers is justified particularly when there is no evidence of consumption smoothing in the face of income fluctuations, or when there is evidence that a significant share of consumers have near-zero

net worth. By the same token, considering the case of myopic agents, whose time horizon is shorter than that of the government, a decrease in taxes today will boost the consumption of the current generation. This is because another generation will pay the higher taxes required in the future to finance the deficit. The main implication of the cases considered is that the time pattern of consumption depends on the time profile of taxes and public debt, and therefore on intertemporal changes of fiscal policies (Modigliani and Brumberg, 1954; Ando and Modigliani, 1963).

Furthermore, dropping the hypothesis of lump-sum taxes, the case for distortionary taxes (proportional or progressive) makes intertemporal changes of fiscal policy matter to the economic impact. More specifically, a tax cut increases the present value of future tax payments expected by agents, as they would expect future fiscal adjustments that, in the presence of distortionary taxes, produce larger output losses. Hence, a permanent increase in public spending financed by higher future taxes will lead to a reduction in permanent income, and therefore consumption, owing to the distortionary effects of taxes. This will reduce the size of the multiplier and even imply a negative fiscal multiplier.

#### 2.4 NON-LINEAR EFFECTS: INTEREST RATE RISK PREMIA AND CREDIBILITY

Risk premia, which reflect the risk of default or inflation, particularly in the case of a large public debt stock, will reinforce potential crowding-out effects and even turn fiscal multipliers into negative value. Restrictive fiscal policies, which can reduce the risk of default in countries with high public debt ratios, will possibly reduce or even eliminate such risk premia. The subsequent interest rate decline would spur aggregate demand both directly, through investments (McDermott and Wescott, 1996), and indirectly, through the positive wealth effect in the private sector and therefore consumption (Giavazzi and Pagano, 1990). Against this background, a large budget

consolidation and correction of fiscal imbalances will prompt confidence effects, boosting consumption and/or investment in a non-linear way. Changes in household wealth and interest rates are the main channels of transmission to aggregate demand, mitigating the traditional Keynesian effects of fiscal contraction or even prompting the non-Keynesian case of expansionary fiscal consolidation.

## 2.5 NON-LINEAR EFFECTS: THE NEW POLICY EXPECTATION VIEW

A restrictive fiscal policy, through higher taxes and/or lower expenditure, could have expansionary effects on aggregate demand if fiscal policies prompt a change in agents' expectations of their future disposable income. More specifically, in a simplified framework, fiscal consolidation undertaken through higher taxes – in order to stabilise debt at a constant level – influences consumer behaviour in two ways (Blanchard, 1990). The intertemporal redistribution of taxes from the future to the present day has the conventional effect of reducing taxpayers' current income and consumption. If the agents' time horizon is shorter than that of the government, bringing forward taxation will be perceived as a net reduction of disposable income. However, by resorting to timely fiscal consolidation, governments will avoid the need for much greater fiscal consolidation in the future, which would have more disruptive effects on income and output. In this context, fiscal consolidation would improve expectations of future income and wealth. Similarly, in the case of a sizeable reduction in public expenditure, perceived as permanent, consumers would anticipate a reduction in the future tax burden and a permanent increase in their expected income and wealth. Consequently, households will revise upwards their expected future disposable income, and therefore wealth, thus increasing their current consumption.

The pre-condition for a non-linear functional relation of private consumption to fiscal

consolidation is given by a very high and unsustainable level of public expenditure (Bertola and Drazen, 1993) or public debt (Sutherland, 1997). In such a scenario, non-Keynesian effects are triggered by large and credible budgetary adjustments which, in the presence of pre-existing large fiscal imbalances, induce economic agents to change their expectations of future policies. In the expectation view of fiscal policy, the channel of transmission between fiscal policy and private consumption is household wealth, driven by intertemporal effects of expected changes in fiscal policy. The expectation view is also consistent with the argument set forth by Giavazzi and Pagano (1995), who argue that large consolidation can be expansionary when fiscal imbalances reach a critical level, precisely because they signal a permanent and decisive change in the stance of fiscal policy. By contrast, small adjustments may have the opposite effect because they might be interpreted as an example of failed stabilisation.

A number of assumptions are crucial in the specification of the consumption function when deriving the expansionary effects of a contractionary policy. First, taxes must be distortionary, with larger distortionary effects attached to larger tax increases. Under this assumption, if consolidation is delayed, consumers expect larger tax increases in future, with larger disruptive effects on future output. By contrast, timely consolidation can improve agents' expectations of future income. Second, consumers should be forward-looking and not liquidity-constrained, so that higher expected income can be translated into higher effective demand. Third, in order to be good news, fiscal consolidation must be unexpected.

## 2.6 SUPPLY-SIDE EFFECTS

If it can be shown that tax increases or spending cuts have different macroeconomic effects, then the composition of a budgetary adjustment is instrumental in its success. In a standard neoclassical model, higher taxes would have



opposite income and substitution effects on labour supply, with income effects increasing the labour supply and substitution effects decreasing it (if leisure is a normal good). At the individual level, tax effects on labour supply depend on the consumption-leisure elasticity of substitution, which most disaggregated studies on labour supply behaviour find rather small. By contrast, tax effects on aggregate supply might be large in unionised labour markets, because an increase in labour taxation will induce unions to demand higher pre-tax real wages. This would result in firms having higher unit labour costs and a loss of competitiveness. To what extent the economy will suffer from a loss of competitiveness depends on the labour market institutions. Effects on labour costs tend to be smaller when labour unions are weak or internalise the effects of their policy.

The relevance of trade union moderation is also apparent on the expenditure side. Declining public expenditure and, particularly, public employment would have a depressive effect on

the dynamics of public wages, which, through spillovers in the labour market, would be transmitted to private sector wages. In turn, this would increase profits and investments, with some supply-side effects also present (Alesina and Perotti, 1995a, 1995b and 1996; Alesina and Ardagna, 1998; Alesina et al., 1999).

Furthermore, additional considerations suggest that composition matters in terms of its macroeconomic consequences and how permanent the fiscal adjustment is (Alesina and Perotti, 1997). Cuts in social welfare can be seen as more lasting than cuts in investment or infrastructure maintenance, which cannot be postponed forever. Furthermore, cutting the politically more delicate components of the budget, such as public employment and social transfers, would signal that governments have the necessary instruments and consensus to tackle those issues. In both cases, expectation effects and political credibility effects would influence expectations concerning the future stance of fiscal policy.

**Table B Non-Keynesian or weak Keynesian effects of fiscal consolidation in a dynamic model**

Assumptions	Conditions	Channels	Demand/Supply	Effects
Rational expectations.	Permanent change in fiscal policy.	Interest rates/permanent income.	Demand/consumption/investment.	Weak Keynesian or non-Keynesian.
Ricardian consumers (no liquidity constraints, perfect capital market, altruistic agents).	a) Lump-sum taxes. b) Distortionary taxes.	Permanent income.	Demand/labour supply.	a) Ricardian equivalence. b) Weak Keynesian or non-Keynesian.
Liquidity constraints/myopic agents/finite life.	a) Low debt. b) High debt.	Income/wealth effect.	Demand.	a) Keynesian. b) Weak Keynesian.
Risk premia and credibility.	High debt or discrete change in fiscal policy.	Interest rates/wealth effect/permanent income.	Demand/investment/consumption.	Weak Keynesian or non-Keynesian.
Expectation view of fiscal policy.	a) Low initial expenditure/debt. b) High initial expenditure/debt.	Permanent income/wealth effect.	Demand/Consumption.	a) Keynesian. b) Non-Keynesian.
Unionised labour market.	Fiscal tightening through expenditure cuts or tax hikes.	Unit labour cost.	Supply.	Non-Keynesian.

### 3 EMPIRICAL EVIDENCE FROM FISCAL CONSOLIDATION: A SURVEY

#### 3.1 MACROECONOMIC MODEL SIMULATIONS

Empirical studies that rely on macroeconomic model simulations to estimate fiscal multipliers show that short-term multipliers are generally positive, although they decline over time (IMF, 2000). Multipliers are broadly similar across large countries and there is only limited evidence of negative fiscal multipliers in the short term. Furthermore, fiscal multipliers are smaller in the case of tax changes than in that of spending changes. In the medium run, expansionary effects of fiscal tightening may materialise, driven by higher profitability and/or higher future income.

Bartolini, Razin and Symansky (1995) evaluate the macroeconomic effects of the fiscal restructuring undertaken in the 1990s in the G7 countries, using the IMF's multi-country model (MULTIMOD). The model reflects the neoclassical theory underlying private consumption and investments, while also taking into account various sources of market imperfections and short-run rigidities. Hence, full Ricardian Equivalence does not occur because households are liquidity-constrained in the short run and face a constant probability of death. The model examines the effects of permanent unanticipated increases in labour, capital and indirect taxes, as well as of a cut in government expenditure of the same size. Shocks other than fiscal policy (e.g. German unification, ERM crisis, etc.) are not analysed. In addition, simulations assume monetary policy neutrality, defined as an unchanged money growth rate compared with the baseline scenario.

Their general conclusion is that fiscal consolidation initially leads to output losses, which are then followed by a recovery. The fiscal adjustments of the 1990s have only resulted in a temporary loss of output and employment. Such demand effects resulting from fiscal consolidation are not offset by

higher private demand because of short-run liquidity constraints and the decline in household net wealth. In the medium run, the projected recovery mainly reflects the shift of demand from (public) consumption to (private) investment, with some of the additional tax revenue rebated to firms. In the long run, the choice of policy instruments makes a significant difference. Countries that rely primarily upon increases in indirect taxes and expenditure cuts are expected to enjoy output gains from their adjustment over the long run, while countries that mainly rely on labour and capital taxes are expected to suffer output losses.

A more recent simulation conducted with the European Commission's QUEST model supports evidence for non-Keynesian effects of fiscal adjustments in the medium run (European Commission, 2003). The model can be described as a neoclassical-Keynesian synthesis. Behavioural equations are based on intertemporal optimisation of households and firms, with forward-looking expectations. The model has Keynesian features in the short run, although intertemporal budget constraints limit the effectiveness of fiscal policy. Since planning horizons are finite, there is no complete tax discounting and Ricardian Equivalence does not hold. The model allows for non-Keynesian effects through the functioning of the consumption and investment channels. The policy experiments allow an assessment of the potential economic impact of budgetary adjustments, either tax-based or expenditure-based, under the assumption of unchanged monetary policy. The results show that fiscal adjustments, in general, have a negative, albeit small, impact on economic activity. However, expansionary non-Keynesian effects from expenditure cuts can emerge in the medium run as a result of anticipated effects of higher future disposable income or profitability. The consumption channel is a major force offsetting standard Keynesian effects (demand side), with the investment channel also playing a role when consolidation occurs through cuts in the

government wage bill (supply side). To evaluate the impact of monetary policy, an accommodative monetary stance in conjunction with fiscal consolidation is also considered. Alternatively, the fall in interest rates can be interpreted as related to a reduction in risk premia, following credible consolidation, particularly in the case of highly indebted countries. Falling real interest rates reduce the negative impact of fiscal consolidation and contribute to supporting growth rates. Under such circumstances, positive effects on output stemming from fiscal consolidation may emerge in the short run.

### 3.2 EPISODES OF FISCAL CONSOLIDATION

As an alternative approach, lessons can be drawn from the investigation of specific episodes of fiscal contractions or even case studies. However, some methodological pitfalls suggest that the results might lack the desirable robustness, so that great caution should be used when drawing general conclusions about the design of fiscal policy. More specifically, the definition and measurement of the fiscal stance are not fully uncontroversial as there is not a universally accepted methodology to quantify the effect of the cycle on the budget. Consequently, a number of alternative measures have been adopted by the various studies, such as a full-employment budget balance (Blanchard, 1993), a cyclically adjusted budget balance based on detrending techniques (European Commission, 1995), and a structural budget balance based on the production function approach (OECD, 1993 and Giorno et al., 1995). As expected, different measures affect the results of the analysis. A relevant element of the analysis is the definition and identification of the episodes of fiscal adjustments to be considered significant, based on their size, duration, graduality and lasting effects on public finances. Studies differ as to the identification of what is to be considered a sizeable and successful budgetary adjustment. Unavoidably, a margin of arbitrariness is implied in the definition adopted, which also

affects the results (Zaghini, 1999). Furthermore, a number of additional factors, such as changes in interest rates, asset prices, exchange rates and world demand, can indeed affect the statistical correlation observed between fiscal consolidation and growth. Hence, robustness of results also depends on how these factors have been controlled during estimation.

### 3.3 DEMAND SIDE: THE CONSUMPTION CHANNEL

In a study on the experiences of fiscal consolidation in Denmark and Ireland, Giavazzi and Pagano (1990) provided some evidence that large fiscal contractions can change people's expectations of future fiscal policies. They hypothesised that large fiscal contractions could signal lower future tax burdens, which, in turn, would lead to an increase in expected lifetime disposable income. In a Blanchard-type model, where consumers have finite life and hence Ricardian Equivalence does not hold, changes in people's expectations can boost consumption. Wealth effects on consumption might therefore outweigh a Keynesian recessionary impulse triggered by a reduction in public spending.

In a more recent work (Giavazzi and Pagano, 1995), the same authors looked into whether the size and persistency of fiscal consolidations are relevant to the specification of the consumption function. They analysed cross-country data for 19 OECD countries, including most European countries, over the period 1970-92, using the OECD indicator for the estimated cyclically adjusted primary budget balance, based on the production function approach. Compared to their previous study, the analysis indicates additional cases of "expansionary budget cuts" (Greece in 1990-94 and Sweden in 1986-87) and of "contractionary budget expansions" (Finland in 1977-90 and 1990-92 and Sweden in 1977-79 and 1990-93). The authors identified 223 fiscal episodes, where an episode is defined by a period in which the variable has recorded

changes of the same sign. Hence, the shortest episode lasts one year and has only one observation. The regression analyses confirm a non-monotonic relationship between private consumption and fiscal variables. This means that non-Keynesian responses of private consumption are more likely when changes in fiscal policy are large and persistent. In contrast to their previous study, they also detected that not only cuts in government consumption but also cuts in transfer payments and increases in taxes can have non-Keynesian effects.

A further investigation (Giavazzi, Jappelli and Pagano, 1999) aimed at testing the relevance of the initial debt level and its dynamics, as well as the composition of a budgetary adjustment, to possible macroeconomic effects of fiscal consolidation. Contrary to their previous studies, they focused only on large and persistent episodes of fiscal consolidation. Based on a sample of 18 OECD countries of similar size, but covering a longer period of time (1970-1996), they detected 38 expansionary episodes and 65 contractions. They expanded upon their previous results with the finding that changes of taxes and transfers have higher non-Keynesian effects than public consumption. Furthermore, the composition of the fiscal impulse is important and non-Keynesian effects are amplified when this is carried out primarily by raising taxes. Macroeconomic effects, however, are asymmetric, meaning that they are stronger for fiscal contraction than for fiscal expansion. Yet, while the sign, size and persistence of fiscal adjustments are relevant, the initial conditions and dynamics of the debt ratios are not relevant. The effect of fiscal policy therefore becomes non-Keynesian when large and persistent budgetary adjustments are implemented.

Focusing on cases of fiscal crisis, the paper by Hogan (2004) found evidence that private consumption increases following a cut in government consumption, based on a sample of 18 OECD countries covering the period

1970-99. However, it appears that private consumption does not increase sufficiently to offset the direct effect on output of a reduction in public consumption. Therefore, fiscal contractions are not literally expansionary.

The paper by Perotti (1999) searches for conditions under which non-Keynesian effects might prevail, by applying the structural vector autoregression (VAR) approach to the analysis of fiscal policy. His study also verifies whether different fiscal regimes (identified as normal and difficult times) influence the effects of fiscal policies on consumption. He uses a model based on relatively standard macroeconomic assumptions, such as distortionary taxes and the coexistence of liquidity-constrained and unconstrained consumers, among others. In normal times, i.e. a relatively low debt ratio, Keynesian effects related to changes in public consumption might prevail. However, in the case of very high debt and therefore very large distortions from taxes, wealth effects can be very sizeable (difficult times). Hence, in a scenario of reduced government spending, the increase in consumption by unconstrained individuals might well outweigh the fall in consumption by constrained individuals, thus pushing up aggregate private consumption and showing non-Keynesian effects. Perotti tested this prediction on a sample of 19 OECD countries from 1965 to 1994. He found that an increase of one percentage point in government purchases of goods and services generates, in the same year, an increase in private consumption of 0.7 percentage point of GDP in low debt (normal) times, but a fall of about 0.4 percentage point of GDP in high debt (difficult) times.

In a more recent paper (2002), Perotti studies the effects of fiscal policy on GDP, prices and interest rates in five OECD countries (Australia, Canada, Germany, the United Kingdom, and the United States), again using a structural VAR approach. The study concludes that the effects of fiscal policy on GDP and its components tend to be small and have become substantially weaker over time. Before 1980,

positive government spending multipliers of larger than 1 were an exception, and could only be estimated in the United States. In the post-1980 period, these effects have been mostly negative, particularly in the case of private investment, with tax multipliers being even smaller than spending multipliers. The study also emphasises that the United States is an outlier in many dimensions and that US responses to fiscal policy are often not representative of the average OECD country included in the sample.

Focusing on the US economy in the post-war period, Blanchard and Perotti (1999) examine the effects on economic activity of shocks to government spending and taxes, using a mixed VAR/event approach. The results show that multipliers for both spending and tax shocks are typically small, with larger spending having positive effects on output and larger taxation having negative effects. Furthermore, increases in both taxes and government spending have strong negative effects on private investment. Consistent results have been obtained by Fatás and Mihov (2001), and by Galí, López-Salido and Vallés (2004), when applying a VAR approach to the United States.

### 3.4 DEMAND SIDE: THE INVESTMENT CHANNEL

The study by McDermott and Wescott (1996) looks into whether the composition of fiscal consolidation is relevant to its success, as measured by the stabilisation of debt dynamics, and into whether a successful fiscal consolidation might enhance growth. Data from 20 OECD countries (including most EU countries) are analysed over the period 1970-95, using the OECD estimated indicators for the cyclically adjusted primary budget balance, expenditures and revenues. The study focuses on significant and successful episodes of fiscal consolidation, which are defined as an improvement in the corrected budget balance of at least 1.5 percentage points of GDP over two years, provided it does not decline in either of the two years. An episode is considered to be

a success when a discretionary policy puts the debt-to-GDP ratio on a stable downward trend.

The empirical results suggest a positive response to their questions. Out of 62 episodes of fiscal adjustment between 1970 and 1995, the 14 successful ones are associated with higher GDP growth and lower unemployment. Most of this economic growth stemmed from investment buoyancy rather than from consumption. More specifically, the credibility effects of fiscal adjustment, strengthened by initial high debt conditions, caused a decline in the nominal interest rate. Furthermore, the dimension and composition of budget adjustment are of relevance. In particular, consolidation on the expenditure side, specifically on government wages and transfers, is more likely to reduce the debt-to-GDP ratio than a tax-based consolidation.

### 3.5 SUPPLY-SIDE EFFECTS: COMPOSITION OF BUDGET ADJUSTMENT

In a series of studies, Alesina and Perotti (1995 a and b and 1996) investigate whether the composition of a fiscal adjustment is relevant to its success, which is defined as a lasting and sizeable reduction of the debt ratio. Thereafter, they examine the impact of fiscal consolidation on economic activity, while also taking into account its composition. To measure the fiscal stance, they use the Blanchard fiscal impulse, i.e. the estimated change in government budget with respect to the previous year that would have materialised had the unemployment rate stayed the same as in the previous year. They analyse a sample of 20 OECD countries (including most EU countries) over the period 1960-94. A significant episode of fiscal consolidation is defined as a tightening of the fiscal stance by 1.5% of GDP in one year (or by a slightly lower percentage over two consecutive years). The authors identify 62 episodes of tight fiscal policy and report that there is no strong link between the size of an episode of fiscal consolidation and its success. However, the composition is relevant, with cuts in spending transfers and government

wages being the main engine of the deficit reduction. By contrast, increases in taxes and investment cuts are not effective in guaranteeing the success of the adjustments as they heighten the effects of fiscal policy on unit labour costs and competitiveness. Furthermore, they provide some evidence that investment is, at least partly, crowded in during fiscal consolidation and that international competitiveness measured against unit labour costs could improve. For a suitable composition of budget adjustment, devaluation appears to enhance expansionary effects through the trade balance. Results show that nominal interest rates and relative unit labour costs fall significantly during successful episodes, while they remain roughly constant during unsuccessful ones. Furthermore, the rate of GDP growth is significantly higher during, and immediately after, successful fiscal consolidation than during unsuccessful episodes. One interpretation is that successful types of adjustments induce moderation effects on wages. Hence, it is suggested that the unit labour cost channel might even be empirically more relevant to consumption than the wealth effects and credibility channels.

A study by Alesina and Ardagna (1998) brings further support to the evidence presented above. Their sample includes almost all OECD countries over the period 1960-94. Successful adjustments are defined as those characterised by an investment boom during and immediately after the adjustment, with private consumption growth also on the increase. Both successful and unsuccessful episodes are accompanied by a nominal devaluation of a similar magnitude. Unit labour costs fall immediately before and after successful adjustments, with all indicators pointing to an increase in profits during successful adjustments. In terms of size, expansionary adjustments appear to be larger than the contractionary ones, but the difference is not statistically significant. The composition of budgetary adjustments is important, with transfers and public wage cuts positively heightening the likelihood of successful adjustments. By contrast, the authors did not

observe any cases of fiscal adjustments that were based on a large tax increase and had expansionary effects. Initial conditions, such as debt and its dynamics, do not appear to influence the probability of a successful adjustment. The study therefore provides some evidence to support the wealth and expectation effects (demand side), as well as the labour market argument (supply side). The policy prescription is that a successful and long-lasting fiscal adjustment, with expansionary effects, must combine spending cuts (particularly transfers, welfare programmes and government wage bills), some form of wage agreement with the union to ensure wage moderation, and a devaluation before fiscal tightening. Although devaluations are important elements of a policy package, they alone are not sufficient to have expansionary effects on economic activity.

Alesina et al. (1999) carry out an empirical investigation in order to assess the effects of taxation and expenditure on investments. They focus on the role of profits as a determinant of investment in a model where workers belong to a union that is a monopolist. Based on an annual panel of 20 OECD countries over the period 1960-95, they use a structural-VAR procedure to identify fiscal policy shocks and estimate the effects of these shocks on profits, wages and investment. They find that government spending shocks have a negative effect on profits and also show that the composition of fiscal policy is relevant to profit determination. In particular, higher government spending will prompt higher labour demand, and the union will increase the price (real wage) of labour. In a standard Q model of investment, the subsequent decline in profits will also lower investment. Lower profits and investment will also result from increased labour taxes, although the effects are weaker than in the case of spending changes. Combining all those effects, when government purchases of goods and services increase by 1 percentage point of GDP, investment falls by 0.4 percentage point of GDP on impact and by 0.5 percentage point in the long run.



A more recent analysis conducted by Ardagna (2004) on a panel of 17 OECD countries, including most euro area countries, covering the period 1975-2002, brings new evidence on the determinants and channels through which fiscal consolidation influences the dynamics of the debt-to-GDP ratio and economic activity. The paper shows that, in order to successfully reduce the debt-to-GDP ratio, the size of a fiscal adjustment is more relevant than its budget composition. Conversely, the composition of budget measures is crucial to observe expansionary effects of fiscal adjustment, with spending cuts supporting higher GDP growth rates than tax increases. Concerning the channels of transmission of expansionary effects on growth, there is evidence that the labour market is more important than agents' expectations of future fiscal policy. According to the study, the results are not affected by the monetary policy stance and the exchange rate regime.

### 3.6 SPILLOVER EFFECTS

The study by Caselli and Rinaldi (1998) aims to investigate whether the composition of the fiscal consolidation is relevant because of its impact on consumer expectations or on the competitiveness of the economy. To answer this question, the study empirically tests the main prescriptions of the Obstfeld and Rogoff model (1996), i.e. whether the growth differential of private consumption between two countries depends, in both the short and long run, negatively on the increase of the public consumption ratio-to-GDP in one country and positively on the increase of the same ratio in the other one. As a measurement of the fiscal stance, the study uses the indicator calculated by the European Commission and an HP filter to determine the trend from the revenues and primary expenditures, the latter being limited to transfers to households. Hence, the identification of the relevant episodes differs significantly from other studies, emphasising the relevance of the selection of the fiscal stance indicator.

The model is applied to the EU15 using annual data from the period 1980-97. The study finds that budget composition affects private demand through expectational effects rather than supply-side effects. In terms of the composition of fiscal adjustments, larger expansionary effects on private consumption are higher for public consumption cuts than for other components of primary expenditure. Furthermore, improvement of the primary balance brought about by higher revenues offsets these expansionary effects. However, simultaneity of fiscal consolidation in the second half of the 1990s might have contributed to the weakness of the economic cycle in Europe.

The study by von Hagen, Hughes-Hallet and Strauch (2001) illustrates that, when taking into account fiscal spillovers across EU countries, results are consistent with the non-Keynesian view but are not strong enough to imply expansionary fiscal contraction. Their model analyses the interaction between fiscal policy, output and monetary policy and, when estimated for the period 1973-98, it produces Keynesian results. However, when estimated for the period 1990-98, the output cost of fiscal contraction is irrelevant.

Using panel regression, Hemming, Mahfouz and Schimmelpfennig (2002) evaluate the effects of fiscal policy during economic downturns. Their results illustrate that fiscal expansion is likely to have a standard Keynesian impact in a relatively closed economy. Such an impact, however, is weaker for open economy, with flexible exchange rates and no excess capacity.

A study conducted by Giudice, Turrini and in't Veld (2003) on a panel data analysis, covering 14 EU countries during the period 1970-2002, shows that about half of the episodes of fiscal consolidation that have been undertaken by EU countries in the past three decades have been followed by an immediate acceleration in growth. Moreover, roughly half of these episodes of expansionary

**Table C Empirical evidence of weak Keynesian or non-Keynesian effects from episodes of fiscal changes**

Study	Sample	Indicator of fiscal stance	Number of fiscal episodes	Empirical evidence	Channels	Underlying theory	Characteristic of expansionary contraction
Giavazzi and Pagano (1995).	19 OECD countries, 1970-92.	OECD primary structural budget balance.	223 episodes.	Consolidation has non-Keynesian effects.	Private consumption based on wealth effects through a decline in interest rates.	Credibility effects and non-linearity of consumption.	Size/persistency are relevant.
McDermott and Wescott (1996).	20 OECD countries, 1970-95.	OECD primary structural budget balance (only large and successful episodes).	62 fiscal contractions, of which 14 successful.	Consolidation has weak Keynesian or non-Keynesian effects.	Investment through a decline in interest rates.	Credibility effects reinforced by initial debt conditions.	Size, composition, persistency and initial conditions are relevant.
Alesina and Perotti (1995a, 1995b and 1996).	20 OECD countries, 1960-94.	Blanchard fiscal impulse.	62 episodes of tight fiscal policy.	Consolidation has non-Keynesian effects.	Supply side effects through enhanced competitiveness.	Unionised labour markets/budget composition.	Size not relevant, composition relevant (expenditure cuts).
Alesina and Ardagna (1998).	Most OECD countries, 1960-94.	Blanchard fiscal impulse.	28 fiscal contractions and 23 expansions.	Consolidation has non-Keynesian effects.	Supply side and demand effects (consumption and investment).	Unionised labour markets/budget composition/wealth effects.	Size not relevant, composition relevant (expenditure cuts); devaluation effects.
Alesina et al. (1999).	20 OECD countries, 1960-95.	–	–	Consolidation has non-Keynesian effects.	Supply side/investment.	Unionised labour markets/budget composition/wealth effects.	Composition is relevant (expenditure cuts).
Caselli and Rinaldi (1999).		EU cyclically adjusted primary budget balance/large and successful consolidation.		Under specific circumstances, consolidation has non-Keynesian effects.	Demand side/consumption.	Wealth effects.	Composition and spillover effects are relevant.
Perotti (1999).	19 OECD countries, 1965-94.	–	–	Consolidation has non-Keynesian effects.	Consumption through wealth effects.	Distortionary taxes and expectation view.	Composition and initial conditions are relevant.
Giavazzi, Jappelli and Pagano (1999)	18 OECD countries, 1970-96.	OECD primary structural budget balance (only large and persistent episodes).	65 fiscal contractions and 38 expansions.	Consolidation has non-Keynesian effects. Consolidation has stronger effects than expansion	Private consumption based on wealth effects.	Credibility effects and non-linearity of consumption.	Size, composition (tax hikes) and persistency are relevant. Initial public finance conditions not relevant.
von Hagen, Hughes-Hallet, Strauch (2001)	20 OECD countries, 1960-90.	Cyclical adjustment based on a linear-quadratic trend in each country.		Until 1998: Keynesian results; 1990-1998 neutral			Size not relevant; composition is relevant.
Hemming et al. (2002)	29 advanced economies, 1970-99.	IMF data.	Fiscal response to economic downturns.	Keynesian impact, small or very small multiplier (open economy)			
Giudice, Turrini, in 't Veld (2003)	14 EU countries (1970-2002)	Ameco databases (European Commission)	49/74 fiscal contractions (based on size/persistence);	About half of the consolidation episodes are expansionary	Consumption/investment	Labour market channel/	Composition is relevant
Ardagna (2004)	17 OECD countries, 1975-2002.	As in Alesina and Perotti, 1995 (a and b).	Years when fiscal austerity is needed.	Expansionary effects of fiscal adjustment	Supply side.	Labour market channels; less from agents' expectations.	Composition is relevant; devaluation plays no role.

consolidation were not matched by a reduction in interest rates (meaning that expansionary effects on output are barely attributable to concomitant expansionary monetary policies or exchange rate devaluation). This suggests that monetary easing and devaluations are factors that may favour the emergence of expansionary fiscal consolidations, but are not necessary conditions for consolidation to exhibit non-Keynesian effects. Furthermore, expansionary fiscal adjustments are more likely to be based on expenditure cuts than on tax increases and they also appear to be associated with an initially high level of debt.

#### 4 EFFECTS ON SAVINGS: TEST OF RICARDIAN EQUIVALENCE

The impact of fiscal policies on aggregate demand depends on the responses of private saving to changes in fiscal stance. Although many empirical studies strongly reject the full Ricardian Equivalence, the behaviour of private consumption may still be consistent with a partial Ricardian effect. However, empirical evidence is somewhat mixed and no clear conclusions can be reached about the existence and size of the Ricardian offset. A major difficulty stems from measurement problems and methodological issues that greatly affect the estimation of the parameters.

A study on the behaviour of private sector consumption explores the hypothesis that the propensity to consume out of income is not constant but varies, in a non-linear fashion, with fiscal variables (Bhattacharya, 1999). In particular, it examines whether or not there is any empirical evidence to support the view that households move from non-Ricardian to Ricardian behaviour as government debt reaches high levels and uncertainty about future taxes increases. The sample included 12 OECD countries (nine of which were EU countries) that were analysed over the period from the mid-1960s to the mid-1990s. The individual country time series evidence presented in this paper provides some

empirical support for the hypothesis examined. In countries where government net debt is relatively low, the propensity to consume is barely linked to government net debt. However, in countries with a high debt ratio, there is evidence of a clear negative relationship once the debt ratio reaches the critical threshold of 30-35%, after which the propensity to consume falls steadily.

A further investigation (Giavazzi, Jappelli and Pagano, 2000) was aimed at testing which factors (e.g. initial public finances conditions, size, persistence and composition of budgetary adjustments) are more likely to be associated with non-monotonic effects of fiscal policy. In order to discriminate between competing hypotheses concerning the effects of fiscal policy on private sector behaviour, the authors focus on national savings, so as to compare their results with the Ricardian Equivalence proposition. They concentrate on large and persistent episodes of fiscal consolidation and base their analysis on a sample of 18 OECD countries over the period 1970-96 and on a World Bank sample of 150 developing countries over the last thirty years. In the case of the OECD countries, the results, on the whole, strongly support models in which increases in net taxes boost national saving, while increases in government saving reduce it (a non-Ricardian result). However, the effects of changes in taxes and spending are significantly dampened during large fiscal contractions. The dampening is particularly pronounced when the fiscal impulse is tax-based. However, there is no conclusive evidence that the non-linear effects of fiscal policy depend on the level of debt and its dynamics, nor on the composition of the adjustment. In the case of the developing countries, and notwithstanding serious limitations in terms of the data, non-linear responses of national saving appear to be more frequent, not only in the case of fiscal contractions but also fiscal expansions.

A recent study by the OECD (de Mello et al., 2004) confirms that private saving responses

offset budget shifts, which, in turn, affect fiscal policy outcomes. In particular, fiscal adjustments in many OECD countries are often associated with inverse movements in private saving. The empirical analysis conducted on pooled cross-country and time-series data covering 16 OECD countries over the period 1970-2002 reveals that co-movements in private and public saving are confirmed by an average correlation coefficient across countries of roughly -0.5. However, the magnitude of co-movements differs greatly across countries. Furthermore, such co-movements are not necessarily causally related, as developments have coincided with a number of secular influences. A test for the existence of private saving offsets provides strong evidence of partial, yet substantial, direct offsetting movements in private saving, amounting to about 50% in the short run and some 70% in the long run. In the short run, the saving offset is greater for revenue than for expenditure changes, but it is broadly similar in the long run. In general, measurement problems necessitate caution in the interpretation of results.

## 5 CONCLUSION

The impact of fiscal policy on aggregate demand and economic activity has been the subject of a long-standing debate about the theoretical validity of alternative models and the practical relevance of the implied policy prescriptions. This survey has reviewed the theoretical and empirical literature dealing with the hypothesis that contractionary fiscal policy could have expansionary effects.

From the theoretical works, it emerges that intertemporal optimisation in a dynamic model implies complex and non-linear relationships in the traditional consumption and investment model. Intertemporal effects depend, among other things, on how economic agents form their expectations. In particular, the inclusion in the model of New Classical elements, such as the Ricardian Equivalence property, implies that wealth and expectational effects might

well outweigh the traditional Keynesian multiplier effects on demand and activity.

In most of the models examined, potential non-Keynesian effects are explained by a change in the expectations of economic agents and/or by labour market reactions that improve the competitiveness of the economy. Weak or negative multipliers stem from the expansionary effects of fiscal consolidation on private consumption, through the permanent income hypothesis or the wealth channel, and on investment, through a reduction in interest rate risk premia and supply-side effects.

A number of assumptions, however, are crucial to the specification of the consumption function in order to derive the expansionary effects of a contractionary policy. First, taxes must be distortionary, with larger distortionary effects attached to larger tax increases. Under this assumption, if consolidation is delayed, consumers will expect larger tax increases in future, with larger disruptive effects on future output. By contrast, timely consolidation can improve agents' expectations of future income. Second, consumers should be forward-looking and not liquidity-constrained, so that higher expected income can be translated into higher effective demand. Third, in order to trigger expansionary effects, fiscal consolidation must be unexpected. Only under this condition is fiscal consolidation likely to produce a change in peoples' expectations of future fiscal policies and therefore future expected income.

A large body of empirical studies has attempted to find evidence for expansionary effects of fiscal consolidation. One approach involves estimating fiscal multipliers using macroeconomic model simulations. The general conclusion is that fiscal consolidation initially leads to output losses, albeit small, which are then followed by a recovery. In particular, expansionary non-Keynesian effects from expenditure cuts can emerge in the medium run as a result of the anticipated effects of higher future disposable income or profitability. Furthermore, fiscal multipliers

are smaller in the case of tax changes than in that of spending changes.

Adopting an alternative approach, based on the study of specific episodes of fiscal expansion and contraction, empirical studies provide some evidence that specific characteristics of a fiscal policy are linked to its effectiveness and possible expansionary effects on economic activity. To this end, crucial aspects of a budget adjustment include its size, composition, graduality of implementation and initial conditions of public finances. However, studies differ as to the relevance given to the various features of a budgetary adjustment in determining possible expansionary effects. Although most studies agree on the importance of composition of a budget adjustment, the evidence relating to its size and the initial conditions of public finances, in particular, is more mixed. In addition, the empirical evidence does not satisfactorily substantiate whether expansionary effects are driven by expectational effects about future disposable income or by supply-side effects.

From a policy perspective, notwithstanding the complexity of the theoretical arguments and the difficulty of obtaining clear-cut empirical results, there seems to be broad agreement about the basic factors influencing the size and sign of fiscal multipliers. These factors can be summarised in the following way: a crucial condition for a fiscal expansion having multiplier effects on aggregate demand, and thus output, is that there be slack in productive capacity. The composition of the fiscal expansion is also important, with higher government spending giving a stronger impulse to demand than tax cuts, particularly in the case of high-quality spending, such as spending that increases the productivity of labour and/or capital. Tax cuts, however, can also be expansionary, should labour supply and/or investment increase in response to them. In general, the larger the responsiveness of consumption and investment to current income, the larger the multiplier.

The initial expansionary impact of the public budget could, however, be crowded out, in full or in part, by induced changes in market interest rates and exchange rates. In such instances, additional public spending would be compensated by lower private spending, mitigating the effects on, or not affecting, aggregate demand. A number of conditions make crowding-out more likely. In particular, fiscal expansions that generate uncertainty about the future course of budget policies, and even jeopardise the sustainability of public finances, may generate negative expectations among consumers about their future income, therefore adversely affecting private consumption. Unsound fiscal policies may also have a negative impact on private activity through higher interest rates, which, in turn, reflect higher risk premia. Those effects will be larger, the more investment decisions are driven by interest rates and the more wealth affects private consumption. In combining these elements, it can be concluded that there seems to be evidence of positive, but small, or even negative, fiscal multipliers in Europe.

## REFERENCES

1. Ando, A. and F. Modigliani (1963), The 'life cycle' hypothesis of saving: aggregate implications and tests, *American Economic Review*, vol. 53, No 1.
2. Alesina, A. and S. Ardagna (1998), Tales of fiscal adjustment, *Economic Policy*, No 27.
3. Alesina, A., S. Ardagna, R. Perotti and F. Schiantarelli (1999), Fiscal policy, profits and investment, NBER, WP No 7207. Also in: *American Economic Review*, vol. 92, No 3, 2002.
4. Alesina A. and R. Perotti (1995a), Fiscal expansions and adjustments in OECD countries, *Economic Policy*, No 21.
5. Alesina A. and R. Perotti (1995b), Fiscal expansions and fiscal adjustments in OECD countries, NBER, WP No 5214.
6. Alesina A. and R. Perotti (1996), Fiscal adjustments in OECD countries: composition and macroeconomics effects, NBER, WP No 5730, (also in: *IMF Staff Papers*, vol. 44, No 2, 1997).
7. Alesina A. and R. Perotti (1997), The Welfare State and Competitiveness, in *American Economic Review*, vol. 87, No 5.
8. Ardagna S. (2004), Fiscal stabilizations: when do they work and why?, *European Economic Review* 48.
9. Barry F. and M. B. Devereux (1995), The expansionary fiscal contraction hypothesis: a neo-Keynesian analysis, *Oxford Economic Papers*, vol. 2, No 47.
10. Barro R. (1974), Are governments bonds net wealth?, *Journal of Political Economy*, vol. 82, No 6.
11. Bartolini L., A. Razin and S. Symansky (1995), G7 fiscal restructuring in the 1990s: macroeconomic effects, *Economic Policy*, No 21.
12. Bhattacharya R. (1999), Private sector consumption behavior and non-Keynesian effects of fiscal policy, IMF, WP/99/112/.
13. Bertola G. and A. Drazen (1993), Trigger points and budget cuts: explaining the effects of fiscal austerity, *American Economic Review*, vol. 83, No 1.
14. Blanchard O. J. (1993), Suggestions for a new set of fiscal indicators, in H. A. Verbon and F. A. van Winden (eds.), *The new political economy of government debt*, Elsevier Science Publishers.
15. Blanchard O. J. (1990), Comments on Giavazzi and Pagano, *NBER Macroeconomics Annual*, vol. 5, MIT Press.



16. Blanchard O. J. (1985), Debt and deficits and finite horizon, *Journal of Political Economy*, vol. 93, No 2.
17. Blanchard O. J. and R. Perotti (1999), An empirical characterization of the dynamic effects of changes in government spending and taxes on output, NBER, WP No 7269, (also in: *The Quarterly Journal of Economics*, vol. 117, No 4, 2002).
18. Caselli P. and R. Rinaldi (1999), La politica fiscale nei paesi dell'Unione Europea negli anni novanta, Banca d'Italia, Temi di discussione, No 334.
19. European Commission (1995), Technical Note: the Commission services method for the cyclical adjustment of government budget balance, *European Economy*, No 60.
20. European Commission (2003), Public Finances in EMU, *European Economy*, No 3.
21. Fatás A. and I. Mihov (2001), The effects of fiscal policy on consumption and employment: theory and evidence, CEPR, *International Economics, Discussion Paper Series*, No 2760.
22. Galí J., J. D. López-Salido and J. Vallés (2004), Understanding the effects of government spending on consumption, *European Central Bank Working Paper Series*, No 339, April.
23. Giavazzi, F., T. Jappelli and M. Pagano (1999), Searching for non-Keynesian effects of fiscal policy, CSEF, *Centro Studi in Economia e Finanza*, WP No 16, Università di Salerno, Italia, 1999).
24. Giavazzi, F., T. Jappelli and M. Pagano (2000), Searching for non-linear effects of fiscal policy: evidence from industrial and developing countries, CEPR, *International Macroeconomics*, WP No 2374. Also in: *European Economic Review*, vol. 44, No 7, 2000.
25. Giavazzi, F. and M. Pagano (1990), Can severe fiscal adjustments be expansionary? Tales of two small European countries, *NBER Macroeconomic Annual*, vol. 5, MIT Press.
26. Giavazzi, F. and M. Pagano (1995), Non-Keynesian effects of fiscal policy changes: international evidence and Swedish evidence, NBER, WP No 5332 (also in *Swedish Economic Policy Review*, 1996).
27. Giorno C., P. Richardson, D. Roseveare and P. van den Noord (1995), Potential output, output gaps and structural budget balances, *OECD Economic Studies*, No 24.
28. Giudice G., A. Turrini and J. in't Veld (2003), Can Fiscal consolidation be expansionary in the EU? Ex-post evidence and ex-ante analysis, *European Economy, Economic Papers*, No 195.
29. von Hagen J., A. Hughes Hallet and R. Strauch (2001), Budgetary consolidation in EMU, *European Economy, Economic Papers*, No 148.
30. Hemming, R., S. Mahfouz, and A. Schimmelpfennig (2002), Fiscal policy and economic activity during recessions in advanced economies, IMF, WP/02/87.

31. Hogan, V. (2004), Expansionary fiscal contractions? Evidence from panel data, *Scandinavian Journal of Economics*, vol. 106, No 4, December.
32. IMF (2000), The effectiveness of fiscal policy in stimulating economic activity – A review of the literature, Fiscal Affairs Department.
33. Krugman, P. and M. Obstfeld (1997), *International economics: theory and policy*, Addison Wesley.
34. Mc Dermott, J. and R. Wescott (1996), An empirical analysis of fiscal adjustments, *IMF Staff Papers*, vol. 43, No 4, December.
35. de Mello L., P. M. Kongsrud and R. Price (2004), Saving behaviour and the effectiveness of fiscal policy, *OECD, ECO/WKP No 397*.
36. Modigliani, F. and R. Brumberg (1954), Utility analysis and the consumption function: an interpretation of cross-section data, in K. K. Kurihara (ed.), *Post-Keynesian economics*, Rutgers University Press.
37. Obstfeld M., and K. Rogoff (1996), *Foundations of international economics*, Cambridge MA, MIT Press.
38. OECD (1993), *Economic outlook, Automatic stabilisers: their extent and role*, June.
39. Perotti, R. (1999), Fiscal policy in good times and bad, *Quarterly Journal of Economics*, vol. 114, No 4.
40. Perotti R. (2002), Estimating the effects of fiscal policy in OECD countries, *European Central Bank, Working Paper Series*, No 168 (also in: *Proceedings, Federal Reserve Bank of San Francisco*, 2005).
41. Sutherland, A. (1997), Fiscal crises and aggregate demand: can high public debt reverse the effects of fiscal policy?, *Journal of Public Economics*, vol. LXV.
42. Zaghini A. (1999), The economic policy of fiscal consolidations: the European experience, *Banca d'Italia, Temi di discussione*, No 355.

EUROPEAN CENTRAL BANK  
OCCASIONAL PAPER SERIES

- 1 “The impact of the euro on money and bond markets” by J. Santillán, M. Bayle and C. Thygesen, July 2000.
- 2 “The effective exchange rates of the euro” by L. Buldorini, S. Makrydakis and C. Thimann, February 2002.
- 3 “Estimating the trend of M3 income velocity underlying the reference value for monetary growth” by C. Brand, D. Gerdesmeier and B. Roffia, May 2002.
- 4 “Labour force developments in the euro area since the 1980s” by V. Genre and R. Gómez-Salvador, July 2002.
- 5 “The evolution of clearing and central counterparty services for exchange-traded derivatives in the United States and Europe: a comparison” by D. Russo, T. L. Hart and A. Schönenberger, September 2002.
- 6 “Banking integration in the euro area” by I. Cabral, F. Dierick and J. Vesala, December 2002.
- 7 “Economic relations with regions neighbouring the euro area in the ‘Euro Time Zone’” by F. Mazzaferro, A. Mehl, M. Sturm, C. Thimann and A. Winkler, December 2002.
- 8 “An introduction to the ECB’s survey of professional forecasters” by J. A. Garcia, September 2003.
- 9 “Fiscal adjustment in 1991-2002: stylised facts and policy implications” by M. G. Briotti, February 2004.
- 10 “The acceding countries’ strategies towards ERM II and the adoption of the euro: an analytical review” by a staff team led by P. Backé and C. Thimann and including O. Arratibel, O. Calvo-Gonzalez, A. Mehl and C. Nerlich, February 2004.
- 11 “Official dollarisation/euroisation: motives, features and policy implications of current cases” by A. Winkler, F. Mazzaferro, C. Nerlich and C. Thimann, February 2004.
- 12 “Understanding the impact of the external dimension on the euro area: trade, capital flows and other international macroeconomic linkages” by R. Anderton, F. di Mauro and F. Moneta, March 2004.
- 13 “Fair value accounting and financial stability” by a staff team led by A. Enria and including L. Cappiello, F. Dierick, S. Grittini, A. Maddaloni, P. Molitor, F. Pires and P. Poloni, April 2004.
- 14 “Measuring Financial Integration in the Euro Area” by L. Baele, A. Ferrando, P. Hördahl, E. Krylova, C. Monnet, April 2004.

- 15 “Quality adjustment of European price statistics and the role for hedonics” by H. Ahnert and G. Kenny, May 2004.
- 16 “Market dynamics associated with credit ratings: a literature review” by F. Gonzalez, F. Haas, R. Johannes, M. Persson, L. Toledo, R. Violi, M. Wieland and C. Zins, June 2004.
- 17 “Corporate ‘Excesses’ and financial market dynamics” by A. Maddaloni and D. Pain, July 2004.
- 18 “The international role of the euro: evidence from bonds issued by non-euro area residents” by A. Geis, A. Mehl and S. Wredenburg, July 2004.
- 19 “Sectoral specialisation in the EU a macroeconomic perspective” by MPC task force of the ESCB, July 2004.
- 20 “The supervision of mixed financial services groups in Europe” by F. Dierick, August 2004.
- 21 “Governance of securities clearing and settlement systems” by D. Russo, T. Hart, M. C. Malaguti and C. Papathanassiou, October 2004.
- 22 “Assessing potential output growth in the euro area: a growth accounting perspective” by A. Musso and T. Westermann, January 2005.
- 23 “The bank lending survey for the euro area” by J. Berg, A. van Rixtel, A. Ferrando, G. de Bondt and S. Scopel, February 2005.
- 24 “Wage diversity in the euro area: an overview of labour cost differentials across industries” by V. Genre, D. Momferatou and G. Mourre, February 2005.
- 25 “Government debt management in the euro area: recent theoretical developments and changes in practices” by G. Wolswijk and J. de Haan, March 2005.
- 26 “The analysis of banking sector health using macro-prudential indicators” by L. Mörttinen, P. Poloni, P. Sandars and J. Vesala, March 2005.
- 27 “The EU budget – how much scope for institutional reform?” by H. Enderlein, J. Lindner, O. Calvo-Gonzalez, R. Ritter, April 2005.
- 28 “Reforms in selected EU network industries” by R. Martin, M. Roma, I. Vansteenkiste, April 2005.
- 29 “Wealth and asset price effects on economic activity”, by F. Altissimo, E. Georgiou, T. Sastre, M. T. Valderrama, G. Sterne, M. Stocker, M. Weth, K. Whelan, A. Willman, June 2005.
- 30 “Competitiveness and the export performance of the euro area”, by a Task Force of the Monetary Policy Committee of the European System of Central Banks, June 2005.
- 31 “Regional monetary integration in the member states of the Gulf Cooperation Council (GCC)” by M. Sturm and N. Siegfried, June 2005.

- 32 “Managing Financial Crises in Emerging Market Economies: Experience with the Involvement of Private Sector Creditors” by an International Relations Committee task force, July 2005.
- 33 “Integration of securities market infrastructures in the euro area” by H. Schmiedel, A. Schönenberger, July 2005.
- 34 “Hedge funds and their implications for financial stability” by T. Garbaravicius and F. Dierick, August 2005.
- 35 “The institutional framework for financial market policy in the USA seen from an EU perspective” by R. Petschnigg, September 2005.
- 36 “Economic and monetary integration of the new Member States: helping to chart the route” by J. Angeloni, M. Flad and F. P. Mongelli, September 2005.
- 37 “Financing conditions in the euro area” by L. Bê Duc, G. de Bondt, A. Calza, D. Marqués Ibáñez, A. van Rixtel and S. Scopel, September 2005.
- 38 “Economic reactions to public finance consolidation: A survey of the literature” by M. G. Briotti, October 2005.

