Fiscal Adjustments and the Short-Term Trade-Off between economic growth and equality

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Abstract

This article examines the short-term economic impact of alternative fiscal adjustment strategies, with an especial focus on their effect on economic growth and income distribution. Based on a sample of 53 adjustment episodes occurred in the fifteen EU Member States between 1960-2000, this article shows that different strategies of fiscal adjustment bring about different economic consequences. Expenditure-based adjustments that are preceded by bad economic and fiscal initial conditions, that are accompanied by a devaluation, and that succeed in cutting the least productive expenditures of the budget, are likely to have anti-Keynesian effects and to be expansionary. Nevertheless, they do so at the expense of increasing income inequality. The opposite is true for revenue-based consolidations. The nineties epitomize the story of expansionary fiscal consolidations via strong *wealth* and *credibility effects,* but also the rebirth of the trade-off between growth and equality, mediated by fiscal policy.

Keywords: fiscal adjustment, economic growth, equality, budget composition.

JEL Classification: E62, E23, H30, H50.

1. Introduction

A central issue on the political economy of fiscal adjustments is whether these adjustments bring about positive or negative economic consequences. And more concretely, if these adjustments have the same effect (whatever the sign) in terms of economic growth and income distribution. The answers to these two questions motivate this article.

Theoretical predictions regarding the short-term economic consequences of fiscal consolidations are varied and sometimes even contradictory. For example, while standard Keynesian theory predicts that fiscal adjustments reduce the level of output, supply-side theorists sustain the opposite. In their view, if tax cuts and decreasing interest rates accompany the fiscal adjustment, consolidations can have a crowding-in effect of private investment and consumption that might eventually have expansionary effects.

Such ambiguity in the theory's predictions, has made the resolution to these questions a matter of empirical analysis.

Although the empirical literature on the effects of fiscal policy on economic activity in advanced economies expands from macroeconomic models that estimate the sign of fiscal multipliers to simulations that try to test the Ricardian equivalence, the most popular strand of this empirical literature is the one that draws lessons by looking across episodes of fiscal consolidation, with an especial emphasis on identifying expansionary fiscal adjustments. Even if the country samples that are included in the analyses differ between studies, most empirical works published in the nineties identified expansionary fiscal contractions in advanced economies, confirming the original Giavazzi and Pagano (1990) finding [1].

These works have always focused on the effects that fiscal adjustments have on economic output and on its rate of growth, but they have systematically forgotten the possible impact that budget cuts could have on the distribution of that output. Since fiscal consolidations are more likely to be expansionary when there are important reductions in the most rigid items of the budget (public wages and social transfers), it is reasonable to expect that these adjustments could also increase income inequalities. If this was true, there could exist a trade-off between growth and equality that any government willing to undertake a fiscal consolidation had to confront.

Such hypothesis (that there exists a trade off mediated by fiscal adjustments) has never been tested before. The main purpose of this article is thus to test such hypothesis [2], using fresh empirical data from the recent experience of fiscal consolidations in Europe.

In order to do so, this article combines different methodologies used by previous empirical works on the topic, and applies them to a different sample and to a new set of economic variables [3]. Besides the updated time-frame and the focus on EU countries, the article introduces a major important innovation with respect to previous studies: by focusing on the effects that different budgetary compositions have on the distribution of income after fiscal adjustment episodes, the article presents very strong empirical evidence pointing to the existence of a trade-off between growth and equality mediated by fiscal consolidations. While expenditure-based adjustments perform better in terms of subsequent economic growth than do revenue-based adjustments, the latter are less harmful in terms of income distribution.

Section 2 reviews the theoretical and empirical literature related to the effects of fiscal policy and fiscal adjustments on economic growth and income distribution. Section 3 deals with the research design, and sections 4 and 5 present the main empirical results. Section 6 summarizes the main findings and concludes.

2. Fiscal Adjustments and the Macroeconomy: What Does the Literature Say?

The effects of fiscal policy on the macroeconomy have been subject to a long and fruitful debate. The understanding of the different theoretical contributions to this issue is crucial

in order to make hypotheses about the possible economic impact of fiscal adjustments, and the channels through which fiscal variables influence the economy.

2.1.   Fiscal Policy, Fiscal Adjustments and Growth

Fiscal adjustments have significant effects on economic growth both through demand and supply-side mechanisms.

A natural place to start a review of the theoretical predictions regarding the demand-side effects of fiscal policy is with the Keynesian approach. The simplest Keynesian model assumes price rigidity and slack in productive capacity, so that output is determined by aggregate demand. In this model, the Keynesian multiplier exceeds one, it increases with the responsiveness of consumption to current income, and it is larger for a spending increase than for a tax cut. *Ceteris paribus,* this framework predicts that fiscal adjustments decrease the aggregate demand and the level of output.

Non-Keynesian demand-side effects of fiscal policy emerge from new classical models which address the well-known shortcomings of the Keynesian approach, and in particular its lack of microeconomic foundations. An important consequence of non-Keynesian effects is that they can lead to negative fiscal multipliers, which at last could make fiscal adjustments have an expansionary effect of economic activity, instead of their traditional recessionary impact.

While some variants of the Keynesian approach recognize the role of expectations (e.g., on consumption in life cycle and permanent income models), they typically rely on adaptive expectations. By comparison, rational expectations tend to bring forward adjustments in variables that would occur more progressively with adaptive expectations. Thus the longer-term effects of fiscal policy will matter even in the short-term, and in this connection the distinction between temporary and permanent policy changes is important. For example, while a temporary fiscal adjustment that has no long-term effects will not influence expectations, a permanent fiscal adjustment can add to crowding-in because households and firms will expect that an initial decrease in interest rates and a deppreciation of the exchange rate will persist and could become larger (Krugman and Obstfeld, 1987).

Although the analysis of the stabilization role of fiscal policy has traditionally focused on its demand-side effects, supply-side effects have been also recognized as more important over the longer-term. This is so because only policies that promote supply-side responses can address capacity constraints, and their impact is primarily long-term. However, supply-side effects of fiscal policy can have short-term demand-side consequences as well, due to expectations that longer-term growth will be higher. If a fiscal adjustment is imparted through tax increases and spending cuts that are good for the supply side, this will tend to decrease fiscal multipliers, and the adjustment will then be expansionary.

In assessing the long-term impact of fiscal policy on the supply-side, attention should thus be paid to the way in which changes to labor income taxes affect the supply of labor, and changes to capital taxes affect saving and investment. In particular, Alesina and Perotti

(1997) note that increases in labor income taxes can have a significantly negative supply-side impact in unionized, imperfectly competitive labor markets where before-tax wages, and hence labor costs, also increase to reflect the higher taxes. In such circumstances a better adjustment strategy would be to reduce government employment (thereby reducing labor demand, weakening unions, lowering wages, and thus increasing profitability), since it will most likely be a source of non-Keynesian effects (Lane and Perotti, 1996).

In terms of the supply-side effects of fiscal consolidations, attention should also be paid to the fact that spending on public goods and other goods with positive externalities can lead to higher growth, as is demonstrated in models where the government invests in both physical and human capital (Murphy, Shleifer, and Vishny, 1989; Lucas, 1988).

Despite all these new theoretical approaches that explain both the demand and supply-side mechanisms that may be behind the non-keynesian effects of fiscal adjustments, the characteristics of expansionary fiscal consolidations are not completely clear. The description of these characteristics has remained as a matter for empirical work. Some studies, such as Cour, Dubois, Mahfouz, and Pisani-Ferry (1996), Giavazzi and Pagano (1996), and Giavazzi, Japelli, and Pagano (2000) find that large consolidations are most effective in increasing growth. While Alesina and Perotti (1997) and subsequent studies by the same authors emphasize instead the composition of the adjustment, and in particular the gains from cutting transfers and other forms of unproductive spending, McDermott and Wescott (1996) conclude that both the size and the composition of fiscal consolidations are important, which is precisely what this article finds too.

Initial fiscal conditions and the other economic policies that accompany fiscal consolidation may also play a role. While some studies find no evidence that these things are important, other works [4] affirm that the initial level of debt, a currency depreciation preceding the consolidation, wage restraint, and accompanying structural reforms, are all crucial factors that can make fiscal consolidations expansionary or contractionary.

2.2.   Fiscal Policy, Fiscal Adjustments and Income Distribution

While the theoretical and empirical literature that links fiscal policy to growth is abundant, it is almost inexistent with regards to fiscal policy and income distribution [5]. Nonetheless, the idea that there could exist a trade-off between policies that promote economic growth and those that promote a fairer income distribution is an old hypothesis, that still seems to hold pretty well today when fiscal policy is under discussion.

The reasoning behind this trade-off is that when welfare states implement policies that redistribute income, they impose direct taxes that may distort the sound functioning of efficient markets, which in turn will discourage private investment and will then have a negative impact on productivity and economic growth (Przeworski, 1986; Boix, 1996). Therefore public transfers of income and capital from the richer strata to the poorer strata of the population would only be sustainable in the long run as long as the associated taxes to finance these policies do not damage domestic productivity and the capital's net rate of return. If the pro-

ductivity and the rate of return are positive and higher than in other countries with lower taxes, investors will still remain in the country. Both conditions are necessary to maintain growth in the long-run with considerable public spending. In fact, these are the conditions that have supported the generous welfare states in Europe until today.

The existence of this trade-off between growth and equality was widely accepted under the paradigm of neoclassical economics up to the point that socialist governments in the twenties were willing to abandon redistributive policies if they harmed the medium term rate of economic growth (Boix, 1996). The substitution of this paradigm by the Keynesian one offered a way to escape that zero-sum game. Keynesian economics affirmed that economic growth was less a matter of supply conditions, and more a matter of aggregate demand. By stimulating aggregate demand, output would grow, and full employment could be reached, without very strong costs in terms of inflation. The combination of full employment policies and public spending expansion to stimulate domestic consumption, offered a combination of policies that were positive for both growth and equality.

Once these policies proved no longer applicable in the seventies, basically due to the induced rigidities that they had generated in the aggregate supply, the neoclassical paradigm dominated again the landscape of economic ideas. European Monetary Union (EMU) was conceived under its direct influence, and as the empirical evidence in this article will show, it has coincided with a rebirth of the old trade off. With aggregate demand locked by means of a supranationalized monetary policy and the 3 percent deficit limit to fiscal policy, economic growth has become again a question of supply-side economics. For social democratic governments this means intervening in the provision of human and physical capital. For more conservative governments this means lowering the taxes that disincentivate private investment, and reducing labor costs. In this framework again, direct transfers of income to the worse-off (the very basis of the welfare state) are very much restricted by how much they damage the capital's rate of return, and how much they affect productivity. When too much social spending reduces both, economic growth will be negatively affected and redistribution policies will not be sustainable. Then, expenditure-based fiscal adjustments that arrive in moments when budget deficits are harming productivity and private investment, are likely to increase economic growth (via the positive supply-side mechanisms mentioned in section 2.1). However, this will be achieved at the cost of increasing income inequality.

Only the IMF and the World Bank have systematically studied the effect of stabilization policies (that include serious fiscal adjustments) on both growth and equality in developing countries. Their studies almost always have concluded that successful stabilization experiences have increased economic growth and have reduced inequalities, normally as a «collateral effect» of the general economic stabilization, and sometimes also helped by World Bank's poverty reduction programs (Tanzi, Chu, and Gupta, 1999). Nevertheless, the story for industrial countries seems to be somewhat different. Among the very few studies that have addressed the equity dimension of fiscal adjustments in advanced economies is the work by Ford (1998) and Smeeding (1997, 2000), who find that recent fiscal consolidations in OECD countries have run parallel to a widening in the distribution of incomes and poverty

increases. Whether such findings can be confirmed or refuted through a systematic empirical analysis is the topic of the rest of the article.

3.   Research Design

From the theoretical review of the previous section, there are two set of alternative hypotheses that seem very reasonable and that are at the core of the questions that motivate this article:

Hypotheses regarding the economic consequences of fiscal adjustments: H_0 (null hypothesis): The effect of fiscal adjustments on growth and income distribution are not the same (have opposite sign); H_1 (alternative hypothesis): These effects are the same on both growth and income distribution.

Hypotheses regarding the effect of different fiscal adjustment strategies: H_0 (null hypothesis): expenditure-based and revenue-based fiscal adjustments have different results in terms of economic growth and income distribution; H_1 (alternative hypothesis): Expenditure-based and revenue-based adjustments have the same effects on both variables.

In order to test these hypotheses, this article applies two simple but complementary analyses:

— **Means analysis:** This methodology selects a sample of adjustment episodes and looks at the evolution of economic growth and income distribution (plus another set of economic indicators) in the aftermath of each episode. To put it in context, average figures for all episodes in the sample are compared in the periods immediately preceding and following the adjustment episodes [6].

— **Parametric estimation:** This second methodological approach is based on bilateral correlations and linear regressions of the main variables, using all datapoints in the sample. For the regression analysis, the article takes the GDP growth rate as the dependent variable and includes the annual change of the (primary) budget balance among a wider set of independent variables and controls. In order to test the trade-off hypothesis, this article also estimates a model for the determinants of income distribution, including an indicator of the composition of fiscal adjustments among the set of independent variables. Because this is an article about the immediate economic consequences of fiscal consolidations, both parametric models are conceived to capture short-run interactions and causality between the main variables, and do not focus on long-term dynamics that are difficult to attribute to the effect of isolated fiscal adjustments.

Both methodologies complement each other. While the analysis of means deals with episodes of fiscal adjustment of more than one year, the parametric analysis does not introduce any criteria for the selection of these episodes and simply links annual changes in the budget balance between year t–1 and year t to the observed variations in the rate of growth or the inequality indexes in the same year or in subsequent years (t+1, t+2, ...t+n). In addition, while the means analysis allows for a comprehensive description of the contemporaneous evolu-

tion of a wider set of economic variables, the parametric analysis is restricted to the study of the determinants of growth and income distribution. Most importantly, the parametric analysis test for relationships of causality which can only be guessed tentatively using the analysis of means or bilateral correlations.

A final word should be said about the research design before reporting the results obtained from the application of both analyses. This article is not about the effect of income distribution on growth [7], but about the effects of fiscal adjustments on economic growth and income distribution. The paper does not try to establish any causality between the evolution of economic growth and the previous or simultaneous evolution of income distribution. What this article tests is the hypotheses that fiscal adjustments do not have the same impact on growth and income distribution, especially if these adjustments have relied on spending cuts. If these hypotheses are not rejected, then it is possible to affirm that policy-makers having to decide on the composition of any fiscal consolidation face a trade-off between both economic outcomes. This is the reason why the parametric analysis does not estimate a model for the interaction between growth and income distribution, but it estimates separate models for the determinants of each.

4. Results I: Means Analysis

From the 615 observations of the panel of 15 EU Member States between 1960 and 2000, I select a sub-sample of consolidation episodes [8]. Episodes are selected according to this criteria: episodes of fiscal adjustment are those years in which the cyclically adjusted primary budget balance (CAPB) improved by at least 1.5 percent of GDP one year and was followed by a positive figure in the subsequent or preceding year, or when the CAPB improved at least 1.25 percent of GDP during two consecutive years [9]. Using this standard definition to select episodes of fiscal adjustment, I have a sub-sample of 53 cases that can be divided into 28 revenue-based adjustments and 25 expenditure-based adjustments [10].

The means analysis consists of looking at the average values of a wide range of economic variables two years before the adjustment, during the adjustment episode, and two years after the adjustment. The main reason for looking only at two-year intervals before and after consolidation episodes is that in the longer-term the relationship between fiscal adjustments and other economic variables is more difficult to identify, since the latter can be reflecting the impact of many other factors (Alesina and Ardagna, 1998). Also, in the section that focuses on the nineties (a decade that concentrates 18 of the 53 episodes), the two-year interval is motivated by the need to keep as many data points as possible to perform the analysis.

4.1. Results for the whole sample, 1960-2000

Fiscal adjustments occurred in Europe in the last four decades differ substantially: while some relied on increases in revenues, others relied on spending cuts (Mulas-Granados, 2002,

2003). Table 1 is very illustrative in this respect. As data shows, revenue-based adjustments typically increase revenues from direct taxes to maintain public spending in public transfers, public wages, and public investment. On the contrary, expenditure-based adjustments rely mostly on cuts in transfers, wages and investment, and only increase direct taxes marginally during the adjustment. This slight increase in revenues coming from direct taxation is, however, immediately reversed, once the adjustment comes to an end.

Table 1
Initial Fiscal Conditions, Budget Composition and Strategies of Fiscal Adjustments, 1960-2000

	Non-Adjust.	Adjustment					
		Revenue-Based			Expenditure-Based		
		Before	During	After	Before	During	After
Fiscal Policy							
Debt Ratio	47.44	55.05	61.60	60.37	59.62	69.26	65.11
Δ Debt Ratio	0.87	2.32	2.34	1.03	4.36	1.67	0.04
Budget Balance	−1.60	−4.41	−3.41	−2.95	−6.34	−4.11	−3.33
Δ Budget Balance	−0.29	−0.99	0.96	−0.32	−1.03	1.53	0.19
Total Revenues	39.19	40.89	43.22	44.89	46.18	46.48	44.09
Δ Total Revenues	0.36	0.58	1.41	−0.08	0.22	0.78	−0.42
Total Direct Taxes	12.10	12.60	13.59	14.04	13.24	14.07	13.27
Δ T. Direct Taxes	0.20	0.17	0.56	0.01	−0.03	0.31	−0.23
Total Expenditures	41.08	45.34	46.50	47.75	52.30	51.59	48.12
Δ Total Expenditures	0.68	1.41	0.41	0.05	1.46	−0.81	−0.18
Total Transfers	14.60	15.75	16.46	16.23	17.75	17.25	16.46
Δ T. Transfers	0.33	0.43	0.42	0.22	0.40	−0.34	−0.28
Total Public Wages	11.26	11.28	11.28	11.63	12.67	12.37	11.68
Δ T. Public Wages	0.23	0.13	0.06	0.03	0.13	−0.29	0.04
Total Pub. Investment	3.33	3.54	3.28	3.42	3.48	2.82	2.72
Δ T. P. Investment	0.06	0.06	−0.10	0.03	−0.01	−0.24	0.02

Source: Own elaboration from Means Analysis.

It is important to note that expenditure-based adjustments take place when the initial fiscal conditions in terms of public deficit and debt are very deteriorated [11]. The debt to GDP ratio, the level of expenditures and the overall budget deficit are systematically higher in the two years previous to expenditure-based adjustments. This implies that governments facing strong fiscal imbalances are more likely to undertake a fiscal adjustment based on spending cuts.

The amelioration of the debt-to-GDP ratio, the reduction of total expenditures, and the improvement of the budget balance is remarkable after expenditure-based adjustments, while it is more moderate after revenue-based ones. In the latter cases, once the budget deficit is under control and the consolidation episode comes to an end, the increase in revenues

that made the adjustment possible is then used to finance further increases in public transfers, wages and investment. These two different strategies have been generally associated with governments that have opposite economic preferences regarding the role of the public sector in the economy (Mulas-Granados, 2002). However, these different strategies may not be neutral (Garcia and Hénin, 1999), meaning that they may not have the same economic results.

As shown in table 2, GDP growth, unemployment, inflation, and inequality [12] behave very differently depending on the type of adjustment implemented. Starting with initial conditions, it is worth noting that GDP growth is lower before expenditure-based adjustments than before revenue-based ones, and both are smaller than during years of non-adjustment. The same happens with unemployment and inflation rates. This means that governments decide to undertake expenditure-based adjustments when domestic macroeconomic conditions have worsened considerably, probably because it is only then when public opinion is willing to accept the welfare cuts associated to expenditure-based adjustments. As an example, the average unemployment rate before expenditure-based adjustments is 2.5 percentage points higher than before revenue-based ones. For inflation rate and GDP growth, these differences are around 3 percent and 0.5 percent, higher and lower respectively.

Table 2
Macroeconomic Outcomes of Fiscal Adjustments, 1960-2000

| | Non-Adjust. | Adjustment | | | | | |
| | | Revenue-Based | | | Expenditure-Based | | |
		Before	During	After	Before	During	After
Macroeconomic Outcomes							
Real GDP Growth	3.72	2.19	1.61	3.16	1.73	2.46	3.36
Δ Real GDP Growth	–0.11	–0.50	–0.11	0.50	–0.19	0.50	0.56
Unemployment Rate	5.32	6.14	7.02	6.96	8.76	9.08	8.41
Δ Unemployment Rate	0.08	0.25	0.55	–0.02	0.63	0.04	–0.45
Price Index	73.33	91.76	116.56	128.86	117.89	133.50	120.93
Δ Prices	3.71	6.80	7.03	6.70	9.36	7.53	6.75
Gini Coefficient	30.56	29.86	30.90	31.51	30.84	33.31	34.15
Δ Gini Coefficient	0.12	0.04	0.10	0.19	0.03	0.31	0.47
Theil Index (c=1)	32.64	31.23	32.33	33.87	31.98	33.76	35.45
Δ Theil Index	0.15	0.05	0.14	0.21	0.09	0.42	0.58
Ratio D9/D1	2.63	2.67	2.88	2.93	2.72	2.94	3.02
Δ Ratio D9/D1	0.03	0.02	0.04	0.06	0.03	0.07	0.11

Source: Own elaboration from Means Analysis

Increased growth follows after both revenue-based and expenditure-based consolidations. However, during revenue-based consolidations there is a typical Keynesian temporary recession that increases unemployment, and reduces the growth rate, while the opposite happens during expenditure-based adjustments. During and after the latter, growth increases and unemployment is reduced. In the same way, inflation remains constant during and after revenue-based consolidations, but decreases considerably in cases of expenditure-based adjustments.

If expenditure-based adjustments perform better than revenue-based ones in terms of growth, unemployment and inflation, they also have higher costs in terms of income inequality than do revenue-based ones. As table 2 shows, all indexes show that inequality increases during and after both types of fiscal adjustments, but it is during and after expenditure-based adjustments when these inequality indexes grow more, indicating a worsening in the income distribution. These results confirm the latest contributions in this area, which point toward important increases in income inequality by the end of the nineties, regardless of the type of index employed to measure the distribution of income [13].

So far, the empirical evidence presented until now in tables 1 and 2 supports the argument that expansionary fiscal adjustments occur primarily when initial fiscal and economic conditions have worsened considerably, and when the adjustment takes place on the spending side [14]. These expenditure-based adjustments, although they can be expansionary and increase economic growth, they have important costs in terms of increasing income inequality.

It remains unclear, however, whether the budget's composition and initial economic conditions are the only factors behind expansionary fiscal adjustments; it can be the case that the size of the adjustment [15] and the accompanying monetary conditions can also play a role in generating the economic expansion. Furthermore, it remains to be clarified whether these expansionary fiscal adjustments work primarily through supply-side or demand-side mechanisms.

With regards to the size of the adjustment, it may actually be a factor generating expansionary fiscal consolidations, since the difference between the figures for the budget balance «after» and «before» the adjustment is bigger in the case of expenditure-based expansionary fiscal adjustments than in the case of revenue-based ones. Nevertheless, this effect does not seem to be very important because the differences are small in comparison: expenditure-based adjustments reduce the budget deficit by 2 average percentage points, while revenue-based adjustments reduce the budget deficit by 1.5 percentage points.

The question of accompanying monetary conditions does seem to play a role too, but again a very limited one. As shown in table 3, a nominal devaluation (increase in the exchange rate) accompanies both types of fiscal adjustments. This devaluation is however maintained after expenditure-based consolidations but reversed after revenue-based ones. With respect to short-term real interest rates, there seems to be no differences in their behavior across types of adjustment, since they remain more or less constant before and during the adjustment, and they only fall after expenditure-based ones, reflecting the lower risk-premia.

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Table 3
Monetary Policy and Fiscal Adjustments, 1960-2000

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	Non-Adjust.	Adjustment					
		Revenue-Based			Expenditure-Based		
		Before	**During**	**After**	**Before**	**During**	**After**
Monetary Policy							
Real Interest Rate (ShTerm)	1.85	3.02	3.11	3.11	3.04	2.95	2.62
Δ Real Interest Rate	0.07	−0.44	−0.11	0.41	0.30	−0.17	−0.02
Real Exchange Rate	99.06	101.18	102.75	101.11	97.19	97.89	96.62
Δ Real Exchange Rate	−0.07	−0.27	0.50	−0.69	−0.12	0.64	0.87

Source: Own elaboration from Means Analysis.

Therefore, the story of expansionary fiscal adjustments seems to be based more on the composition of the budget, than on the size of the budget cut or the simultaneous expansion of monetary conditions. It is true that monetary policy was slightly more relaxed during and after expenditure-based expansionary adjustments, but this can also be reflecting the fact that almost all expenditure-based fiscal consolidations that took place in the nineties started right after the devaluations of 1992-93.

Once the macroeconomic results that different types if fiscal adjustments bring about have been described, and once the type of initial and accompanying fiscal and monetary conditions that influence those final outcomes have become clear, the last step in this analysis is then to investigate the channels through which expansionary fiscal adjustments work. As can be observed in table 4, economic expansion after expenditure-based fiscal consolidations is mediated by a remarkable crowding-in of the private sector in the form of increasing consumption and a boom of private investment.

This crowding-in is also present in revenue-based adjustments but is much less important [16]. This important crowding-in of the private sector in expansionary expenditure-based consolidations is accompanied by higher profits and lower labor costs, which are at last translated into an improvement of the trade balance. The argument behind the reduction in labor costs that improves the budget balance, that increases profits and investment, thus contributing to an increase in the level of output is the following: during expenditure-based adjustments, the government wage bill is reduced and there are no increases in direct taxes (that principally rely on the labor factor). Both measures have the effect of reducing labor costs directly and indirectly by undermining the bargaining power of labor unions.

The truth is that this mechanism of diminishing labor costs that trigger expansionary fiscal adjustments should not be uniquely associated with expenditure-based fiscal adjustments. In fact, this mechanism would also work for revenue-based fiscal adjustments as well, if trade unions internalized the government's budget constraint, or if they did not ask for an increase in real salaries when taxes grew. This only happens in countries such as the United

Table 4
Microeconomic Outcomes, Trade Policy Outcomes, and Fiscal Adjustments, 1960-2000

	Non-Adjust.	Adjustment					
		Revenue-Based			Expenditure-Based		
		Before	During	After	Before	During	After
Microeconomic Outcomes							
Private Consumption	57.80	57.93	58.32	58.09	57.95	58.39	58.97
Δ Private Consumption	−0.09	−0.07	0.19	0.03	−0.02	0.23	0.37
Private Investment	18.66	17.63	18.22	18.01	17.35	18.16	19.26
Δ Private Investment	0.02	−0.03	0.49	−0.40	0.05	0.55	0.76
Labor Costs Index	107.08	108.88	108.02	105.43	108.20	104.86	101.83
Δ Labor Costs	−0.13	0.48	−0.49	−1.39	−0.98	−1.85	−1.54
Profits Share	31.84	31.77	31.06	31.88	31.10	32.31	32.92
Δ Profits Share	0.04	0.05	0.02	0.09	0.03	0.72	0.31
Trade Policy Outcomes							
Imports	29.60	35.99	35.50	36.60	36.34	35.86	37.44
Δ Imports	0.80	0.47	0.33	1.54	0.74	0.94	1.10
Exports	21.46	24.06	24.13	26.01	25.80	28.51	29.08
Δ Exports	0.65	0.34	0.61	0.77	0.87	1.08	1.15
Trade Balance	−0.36	−1.41	−0.25	−0.30	−1.77	0.67	0.68
Δ Trade Balance	−0.08	−0.20	−0.02	−0.11	0.31	0.95	0.20

Source: Own elaboration from Means Analysis.

States or Canada, where trade unions are very weak, or in countries such as the Scandinavian ones, where the high degree of corporatism and a centralized wage bargaining process have traditionally made trade unions encompassing and collaborative with the government's budget constraint. Such labor market institutions allow these governments to balance their budgets via revenues without damaging labor costs, domestic productivity and economic growth (Alesina and Ardagna, 1998; Alesina, Perotti and Tavares, 1998; Garrett 1998, and Esping-Andersen, 1999). In other countries, trade unions are strong enough to protest and demand higher salaries, but not enough to be able to control all wage demands across different sectors of the economy [17].

Summing up, what the empirical evidence of this section has shown can be re-grouped in three different sets of conclusions:

1. In the short-run, the composition of fiscal adjustments is a crucial factor determining the economic consequences of consolidation episodes. Expenditure-based adjustments normally take place in situations of fiscal stress, with low GDP growth, high debt levels, strong budget deficits and poor initial economic performance. When these consolidations succeed in reducing the most rigid items of the budget, namely public transfers and public

wages, they are expansionary. Their economic effects are to increase GDP growth, and reduce inflation and unemployment rates, but they do so at the cost of increasing income inequality more than what revenue-based adjustments do. Note that these results are important for two strands of the economic literature: the one on the growth-equality trade-off, and the one related to growth theory.

2. When fiscal adjustments are expansionary, non-Keynesian effects work through both demand-side and supply-side mechanisms.

a) With respect to demand-side mechanisms, this section has provided evidence of the existence of *wealth effects,* given that a cut in public consumption that is perceived as permanent increases private consumption, because households discount future higher levels of disposable income as a result of the expected reduction in taxes.

b) There are also *credibility effects* that benefit both private consumption and private investment. When debt is high, interest rates are high and any deficit reduction, mostly if it is based on spending cuts, reduces the risk premia, and consequently interest rates, facilitating the crowding-in of private consumption and investment [18].

c) And with respect to the supply-side, the reduction in the government wage-bill in unionized imperfectly labor markets proves crucial to reduce labor costs, to increase business's profits, and to improve the trade balance, thus contributing to the economic expansion.

3. Finally, the choice that governments planning to undertake a fiscal adjustment face seems to lie between two extremes: one option is to undertake a revenue-based adjustment that may not be so expansionary but that will prevent income inequality from raising dramatically; and an alternative option is to pursue an expenditure-based strategy that may be expansionary but at the cost of increasing inequalities substantially. As shown by Mulas-Granados (2002, 2003) this decision is heavily influenced by the rate of unemployment, by the structural budget balance in previous years, by the electoral calendar, by the fragmentation of the cabinet, and most importantly, by the ideology of the party in government.

4.2.   Results for the nineties

During the nineties, the story for expansionary fiscal adjustments depicted in the previous section applies almost exactly. Revenue-based adjustments and expenditure-based ones have had similar characteristics than those from previous decades. Similarly, they have also had opposite economic consequences, in the short-run. While expenditure-based adjustments in the nineties have shown better chances of increasing economic growth, revenue-based ones have proved less likely to increase income inequality.

The driving forces leading to expansionary fiscal adjustments during the nineties have also been a mix of supply-side and demand-side mechanisms of wealth effects, investment boom and credibility effects. The process of strong deficit reduction in Europe, and the

Table 5
Macroeconomic Outcomes of Fiscal Adjustments, 1990-2000

	Non-Adjust.	Revenue-Based			Expenditure-Based		
		Before	During	After	Before	During	After
Macroeconomic Outcomes							
Real GDP Growth	2.74	1.96	2.26	2.66	1.74	2.56	3.61
Δ Real GDP Growth	0.01	0.03	–0.04	0.25	0.42	0.13	0.30
Unemployment Rate	8.54	8.24	8.42	9.10	9.35	8.84	8.82
Δ Unemployment Rate	–0.03	0.21	0.21	–0.09	0.55	–0.08	–0.67
Price Index	163.69	155.88	193.75	212.96	172.81	170.31	162.85
Δ Prices Index	6.11	8.14	8.48	8.80	10.67	6.94	6.29
Gini Coefficient	32.43	30.60	31.08	31.41	29.30	30.28	34.64
Δ Gini Coefficient	0.09	0.03	0.07	0.10	0.05	0.24	0.65
Theil Index (c=1)	32.55	31.24	32.13	33.76	31.89	32.99	35.66
Δ Theil Index	0.11	0.03	0.12	0.19	0.18	0.33	0.57
Ratio D9/D1	2.59	2.63	2.79	2.86	2.59	2.91	2.99
Δ Ratio D9/D1	0.05	0.07	0.06	0.10	0.06	0.09	0.15

Source: Own elaboration from Means Analysis.

downward convergence of interest rates, maintained inflation at historically low levels, and this curbed unit labor costs down following expenditure-based adjustments. The trade balance improved, and private investment and consumption boomed, increasing the GDP growth rate in the EU [19].

5. Results II: Parametric Analysis

Although the means analysis performed in sections 4.1 and 4.2 already seem to confirm the two hypotheses formulated in section 3, the statistical robustness of an analysis based on averages needs to be enhanced with complementary techniques that establish correlations among variables and directions of causality.

Simple Spearman-correlations between the two major measures of fiscal policy (the annual change in the primary budget balanced, corrected and non corrected by the economic cycle), and the four measures of economic policy outcomes (the GDP growth rate, the unemployment rate, the inflation rate and the Gini coefficient) are reported in table 6.

As expected, the main correlations among important variables are statistically significant: economic growth is negatively associated with fiscal adjustments and specially if those are strong. Nevertheless, economic growth is positively correlated with better quality of the budget [20], what seems to confirm a relationship between adjustments based on spending cuts and economic growth. Unemployment is negatively associated with improvements in the

Table 6
Bilateral Correlations. Fiscal Policy and Macroeconomic Outcomes, 1960-2000

	Δ Primary Budget Balance	Δ Cyclically Adjusted Primary Budget Balance (CAPB)	Quality of Budget	Strength of Fiscal Adjustment
Δ Primary Budget Balance	1			
Δ CAPB	0.77***	1		
Quality of Budget	0.16***	0.15***	1	
Strength of Adjustment	0.74***	0.93***	0.22***	1
Δ Real GDP Growth	0.14***	–0.17***	0.10***	–0.13***
Δ Unemployment Rate	–0.24***	0.04	–0.06	–0.06
Δ Price Index	0.03	0.12***	–0.12***	0.04
Δ Gini Coefficient	0.18***	0.24***	0.16***	0.21***

Source: Own elaboration.

budget balance, since higher unemployment means less public revenues and more expenditures. By contrast, prices are positively associated with improvements in the budget balance, meaning that monetary easing and fiscal adjustment work together. Finally, income inequality measured by the Gini coefficient is positively associated with improvements in the budget balance.

With these correlations in hand, we obtain confirmation that most variables that apparently moved simultaneously in the means analysis, are in fact significantly correlated. Nevertheless, correlations can hide possible endogeneity problems because they do not establish the direction of the relationships, nor they establish mechanisms of causality. For this purpose, the regression analysis to be performed in the next two sub-sections is needed.

5.1.   Results for Growth

To build a comprehensive statistical model for the determinants of economic growth is beyond the purpose of this section. There is a long tradition of econometric studies that analyze the long-term impact of fiscal policy on growth [21], but what this section aims at doing is simply to test if there exists a statistically significant positive relationship between fiscal adjustments and short-term increases in output, as previous sections have initially indicated.

Given that the objective for this section is very concrete, the statistical model is simple. This model takes into account the interaction between fiscal policy and monetary policy as the short-term determinants of output, as well as the relationships between output and monetary and fiscal policies. The purpose of this design is to control for the existing endogeneity between output, fiscal policy and monetary policy. The analysis of the monetary stance is not of particular interest for this article, but it has to be included because it is part of the policy mix and it performs a crucial role in determining output in the short-run.

Thus, this section estimates the following model for the interaction between fiscal policy, real output and monetary conditions, in a system of three endogenous variables [22].

$$\Delta Y_t = y(\Delta Y_{t-1}, \Delta F_{t-1}, \Delta Q_{t-1}, \Delta M_{t-1}, \Delta GAP_t)$$ [1]

$$M_t = m(M_{t-1}, \Delta F_t, i_{t-1}, \Delta Y_t, \Delta F_{t-1})$$ [2]

$$\Delta F_t = f(\Delta F_{t-1}, M_{t-1}, \Delta Y_t, \Delta Y_{t-1}, DEBT_t, dummies)$$ [3]

The GDP growth equation (1) is characterized by output being dependent only on its lag, lagged change in the cyclically adjusted primary budget balance, lagged monetary policies, lagged change in the quality of the budget, lagged output growth, and the change in the EU-15 output gap [23]. The monetary policy equation (2) has the real monetary conditions index [24] depending on its own lag, the change in the cyclically adjusted primary budget balance, and its lag, output growth, and the lag of long term interest rate. Finally, the fiscal policy equation (3) describes the change in the cyclically adjusted primary budget balance as a function of its own lag, lagged monetary conditions, current and lagged domestic output growth, and the debt-GDP ratio.

This model is estimated using a three-stage least squares estimator in order to take into account any cross correlation between the various residuals which may reflect some of the behavior of the variables which had to be omitted from the panel estimation. Robust standard errors were estimated to account for heteroskedasticity and any remaining serial correlation.

Table 7
The Effects of Fiscal Adjustments on Economic Growth

Growth Equation D. Variable: Real GDP Growth	Real GDP Growth (1970-1989)	Real GDP Growth (1990-2000)
Real GDP Growth t-1	0.253***	0.562***
	(3.76)	(6.79)
Monetary Conditions Index t-1	–0.242**	–0.489***
	(1.91)	(2.88)
Δ Output Gap (UE-15)	0.677***	0.793***
	(8.01)	(3.55)
Δ Cyclic. Adj. Primary Budget Balance t-1	–0.101	–0.078
	(1.40)	(0.57)
Quality of the Budget t-1	0.088*	0.112**
	(1.89)	(2.23)
Constant	1.885***	1.655***
	(6.73)	(3.70)
Observations	297	163
Adj. R-squared	0.31	0.46
LR Chi 2(7)	72.66	110.71
Prob>Chi 2	0.000	0.000

Table 7
The Effects of Fiscal Adjustments on Economic Growth

Monetary Policy Equation D. Variable: Monetary Conditions Index	Monetary Conditions Index (1970-1989)	Monetary Conditions Index (1990-2000)
Monetary Conditions Index t-1	0.653***	0.612***
	(8.67)	(7.27)
Δ Cyclic. Adj. Primary Budget Balance	0.267***	0.201***
	(3.11)	(2.96)
Δ Cyclic. Adj. Primary Budget Balance t-1	0.187***	0.098***
	(3.77)	(3.02)
Real GDP Growth	−0.101	−0.112*
	(1.57)	(1.77)
Long-term Interest Rate t-1	0.045	0.063*
	(1.66)	(1.86)
Constant	−0.766	−0.702
	(1.65)	(1.77)
Observations	296	162
Adj. R-squared	0.26	0.29
LR Chi 2(7)	132.12	131.14
Prob>Chi 2	0.000	0.000

Fiscal Policy Equation D. Variable: Δ Cyclically Adjusted Primary Budget Balance (CAPB)	Δ CAPB (1970-1989)	Δ CAPB (1990-2000)
Δ CAPB t-1	−0.312***	0.009
	(4.76)	(0.04)
Monetary Conditions Index t-1	−0.311***	−0.134
	(3.24)	(1.22)
Real GDP Growth	0.165***	0.321
	(1.98)	(1.23)
Real GDP Growth t-1	0.087*	0.146
	(1.64)	(1.38)
Debt-to-GDP ratio	0.078***	0.098***
	(5.76)	(3.01)
Constant	−2.786***	5.122***
	(2.01)	(4.76)
Observations	297	163
Adj. R-squared	0.37	0.29
LR Chi 2(7)	82.46	82.91
Prob>Chi 2	0.000	0.000

Absolute value of t-statistics in parentheses.

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

As results in table 7 show, during the seventies and the eighties, GDP growth was strongly positively affected by its own lag, and by the surrounding cyclical conditions in the EU. It was negatively affected by monetary and fiscal contractions, although the coefficient for the change in the fiscal stance is not statistically significant. These effects were all reinforced in the nineties. GDP growth became even more dependent on its lag and on the average EU output gap, what reflects the growing interdependence of European economies. It was also more negatively affected by monetary contractions, meaning that devaluations

and/or falling interest rates had a bigger positive impact in increasing growth during the nineties than they had before. What is most striking is that the impact of fiscal consolidations on growth became much less negative during the nineties. Also, the positive impact that the quality of the budget had on growth before 1990, was reinforced in the following decade. These two results confirm that non-Keynesian effects of expenditure-based fiscal consolidations applied even better during the nineties than in previous decades, as shown already in section 4.2 using means analysis.

5.2.   Results for Income Distribution

The purpose of this final section is to perform a parametric estimation of the determinants of income distribution in Europe. Results should help us confirm or reject the initial evidence from previous sections according to which fiscal adjustments worsen the distribution of income, mostly if they are expenditure-based.

There exists a variety of potential determinants of income distribution, but since the purpose of this exercise is limited to the effect of fiscal policies on inequality, the equation below includes only the basic factors [25]:

$$\Delta I_t = i(\Delta I_{t-1}, \Delta F_{t-1}, \Delta Q_{t-1}, DT_{t-1}, SS_{t-1}, Educ_{t-1}, dummies) \qquad [4]$$

In the expression above, the change in the income distribution (measured by the Gini and the Theil indexes) depends on its lag, on the lagged change of the cyclically adjusted budget balance, the lagged change of the quality of the budget, the lagged share of direct taxes to GDP, the lagged share of social spending to GDP, and the lagged share of people enrolled in secondary education.

The lagged change in the budget balance and the quality of the budget should capture the effects of fiscal adjustments on income distribution. In addition, the inclusion of the share of direct taxes and the share of social spending in the equation attempts to control for the different degrees of welfare state development in different member states: more developed welfare states use higher social spending and higher direct taxation to redistribute income, what should be reflected in the evolution of the Gini and Theil indexes. The share of social spending also serves to capture the effect that globalization may have had on the distribution of income. According to some authors [26], recent economic globalization may be responsible for increased income inequalities in the nineties, because this process has imposed cuts in welfare spending as a means of gaining external competitiveness. A quick look to the evolution of social spending and income distribution in Europe during the Maastricht years seems to support such hypothesis.

Some cases in table 8 are specially relevant in this respect, such as those of Finland, Austria, Italy, the United Kingdom and Spain. In all of them, strong reductions in social spending were accompanied by remarkable increases in income inequality. There are some cases, however, that did not follow the same pattern. France and Germany, for example, are two cases where income inequality increased in spite of moderate increases in transfers.

Table 8

Changes in Social Spending and Income Distribution, 1993-1997 (% GDP)

	Δ Gini Coefficient	All Transfers (Total Change)	Major Transfers (Disaggregated Change)		
			Δ Transfers (16-65)*	Δ Disability	Δ Unemployment
Austria	1.1	−0.6	0.3	0.4	−0.1
Belgium	0.4	−1.2	−0.7	−0.3	−0.4
Denmark	−1.6	−1.1	−2.1	0.1	−2.0
France	0.1	0.2	−0.3	−0.1	−0.3
Finland	1.4	−4.3	−2.5	−0.9	−1.6
Germany	0.2	0.6	−0.1	0.1	−0.3
Greece	−0.2	0.7	−0.1	−0.1	0.0
Italy	1.5	−0.9	−0.4	−0.2	−0.2
Ireland	0.4	−2.3	−0.6	0.0	−0.7
Luxembourg	−0.2				
The Netherlands	0.5	−2.9	−1.2	−0.7	0.2
Portugal	−0.2	0.7	−0.1	−0.2	0.0
Spain	0.6	−2.3	−2.3	−0.1	−2.2
Sweden	0.4	−3.5	−1.2	−0.4	−0.6
UK	0.9	−1.3	−0.8	0.0	−0.8
EU-15	0.3	−0.4**	−0.6	−0.1	−0.5

Source: Own elaboration. Data on social spending from EC (2001: 25). Data on Income Inequality from Smeeding (2000) and WIID (2000). Note: Figures show changes between 1993 and 1997, all measured in terms of GDP, except the change in income inequality measured by the Gini coefficient.

* Transfers to working age people. Includes unemployment, plus disability benefits, plus social assistance.

** Weighted by Real GDP share in 1997, excluding Luxembourg.

While the German case is obviously explained by the process of German unification, the French case remains unclear. Something similar, but with an opposite sign, happened with Denmark, the only country were inequalities were importantly reduced during the nineties in spite of a serious retrenchment in public transfers.

Equation (4) is estimated by Ordinary Least Squares with panel-corrected standard errors to deal with panel heteroskedasticity, spatial and serial correlation [27].

Results are reported in table 9 and show that ameliorations in the budget balance and the quality of the budget increase both the Gini and the Theil indexes. The strongly significant impact of the latter is very important because the «quality» variable is a proxy for expenditure-based adjustments. Better quality budgets are those in which cuts in primary spending contribute most to the fiscal consolidation, and are significantly associated with a widening in the distribution of income. These results are coherent with the negative impact that lower shares of social spending have on inequality, and confirm that fiscal adjustments have opposite effects in terms of growth and income distribution, specially if they are based on spending cuts. That opposite effect becomes graphically very clear in Figure 1, where economic growth and income distribution (measured by the Gini coefficient) are plotted against the

Table 9
The Effects of Fiscal Adjustments on Income Distribution

Income Distribution Equation D. Variable: Change in Gini Coefficient	Gini Coefficient (1970-1989)	Gini Coefficient (1990-2000)
Δ Gini Coefficient t-1	0.134***	0.142***
	(3.31)	(3.56)
Δ Cyclic. Adj. Primary Budget Balance t-1	0.253***	0.133**
	(1.98)	(1.88)
Δ Quality of the Budget t-1	0.432***	0.431***
	(4.59)	(4.37)
Direct Taxes (% GDP) t-1	–0.078	–0.099
	(1.43)	(1.36)
Social Spending (% GDP) t-1	–0.101*	–0.099*
	(1.81)	(1.88)
Enrollment in Secondary Education t-1	–0.276	–0.241
	(1.68)	(1.40)
Constant	1.122***	1.426**
	(2.21)	(1.89)
Observations	297	163
Adj. R-squared	0.35	0.32
LR Chi 2(7)	85.32	98.72
Prob>Chi 2	0.000	0.000

| Income Distribution Equation D. Variable: Change in Theil Coefficient	Theil Index (1970-1989)	Theil Index (1990-2000)
Δ Theil Index t-1	0.112***	0.134***
	(3.11)	(3.28)
Δ Cyclic. Adj. Primary Budget Balance t-1	0.204***	0.132**
	(2.01)	(1.86)
Δ Quality of the Budget t-1	0.366***	0.402***
	(4.14)	(4.02)
Direct Taxes (% GDP) t-1	–0.086	–0.108
	(1.34)	(1.23)
Social Spending (% GDP) t-1	–0.096*	–0.098*
	(1.92)	(1.92)
Enrollment in Secondary Education t-1	–0.212	–0.202
	(1.58)	(1.38)
Observations	1.022***	1.126**
	(2.11)	(1.39)
Adj. R-squared	297	163
LR Chi 2(7)	0.36	0.31
Prob>Chi 2	88.12	96.15
	0.000	0.000

Absolute value of t-statistics in parentheses.
* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

change in the primary budget balance. As can be observed, the more consolidations rely on spending cuts, the more unequal is the distribution of income.

Finally, the other variables included in equation (4) show the expected signs but are not statistically significant. In this respect, the share of direct taxes and the education level are all

Figure 1. Fiscal Adjustments, and the Trade off between Growth and Equality, 1960-2000

Coef = .291; T = 2.9; Adj. R-Squared = 0.12; N = 60

Coef = -.0971; T = -1.74; Adj. R-Squared = 0.10; N = 34
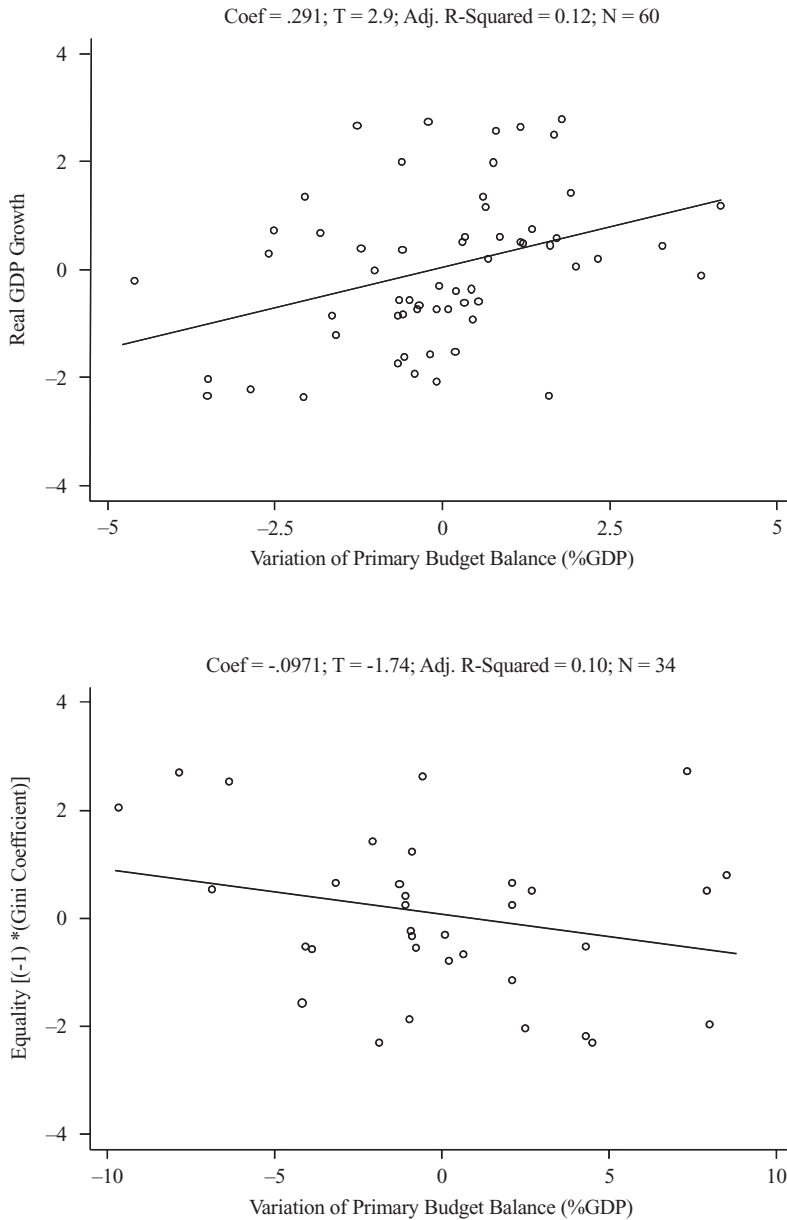
positively associated with ameliorations in the distribution of income, but do not have a significant impact.

6.   Conclusion

The clearest and most comprehensive way to conclude this article and summarize all the empirical evidence presented until now, is to affirm that different strategies of fiscal adjustment bring about different economic consequences in the short-term.

Expenditure-based adjustments that are preceded by bad economic and fiscal initial conditions, that are accompanied by a currency devaluation, and that succeed in cutting the least productive expenditures of the budget, are likely to have anti-Keynesian effects and to be expansionary. Nevertheless, they do so at the expense of increasing income inequality. The opposite is true for revenue-based consolidations.

For expansionary fiscal adjustments to take place, demand-side effects in the form of crowding-in of the private sector, as well as supply-side effects in the form of lower labor costs and increased investment, usually take place simultaneously. The signal that expenditure-based adjustments send to private agents inform about the commitment of the government to a sustained fiscal effort, and this produces a credibility effect that is crucial for expansionary fiscal adjustments to take place.

The nineties epitomize the story of expansionary fiscal consolidations, but also the rebirth of the trade-off between growth and equality, mediated by fiscal policy. Since fiscal adjustments imposed by the Maastricht criteria arrived in a moment of fiscal stress for the public finances across Europe, credible spending cuts succeeded in attracting private investment and consumption, and therefore accelerated growth in the short-term. However, the negative side of the strongest episode of fiscal adjustment in Europe in the last three decades has been the progressive widening of income distribution and the increase in inequalities that have reached in the nineties its higher levels as well.

In this respect, future choices by policy-makers between revenue-based and expenditure-based adjustments should be informed by their likely opposite consequences. Being aware of the trade-off between growth and equality presented in this article, future strategies of fiscal consolidation will depend on the relative preferences that governments may have over both economic policy objectives.

Notas

1.   Since the original work by Giavazzi and Pagano (1990), other scholars such as Alesina and Perotti (1997), Alesina and Ardagna (1998) and Von Hagen, Hallett and Strauch (2001) have expanded the literature on expansionary fiscal consolidations. See Appendix 1 for a detailed revision of all these studies.

2.   See section 3 for a detailed formulation of the null and alternative hypotheses tested in this article.

3. In this respect, the article that I take as the main reference for the first sections of this paper is Alesina and Ardagna (1998).

4. For example, OECD (1996), Alesina and Ardagna (1998) and Perotti (1999).

5. Lately there has been an effort to evaluate the effect that tax and expenditure policies have in the distribution of income. For example, Ayala, Martínez and Ruiz-Huerta (1999), and Chu, Davoodi and Gupta (2000) find that social spending has a strong and significant impact in reducing inequalities (especially public health spending, pensions, and primary-secondary education spending). Taxes have however an indirect and limited impact in reducing inequalities. These findings have been confirmed by Oliver, Ramos and Raymond (2001) for the Spanish case.

6. This is the most popular approach in the literature. See for example: Alesina and Perotti (1997), Alesina and Ardagna (1998), and Alesina, Perotti and Tavares (1998). These authors compare the average values of the main variables two or three years before the adjustment takes place with those from two or years after the adjustment. None of them has however looked at the evolution of income distribution.

7. This literature is enormous, ranging from the original theoretical works of Kuznets (1955) and Williamson (1965), to the most recent empirical works of Alesina and Rodrik (1994), Persson and Tabellini (1994) or Perotti (1996). Some works include very informative revisions of the literature in this field: see for example, Aghion, Caroli and García-Penalosa (1999).

8. All data used in this article is from AMECO (2003), the macroeconomic database of the European Commission.

9. This is the same criteria used for the selection of adjustment episodes in the most important articles in this field. See for example, Alesina-Ardagna (1998), Perotti and Kontopoulus (2002), Mulas-Granados (2002, 2003). Also see Alesina and Perotti (1997) and Maroto and Mulas-Granados (2002) for a discussion on the sensitivity of results to different fiscal adjustment definitions.

10. An episode of fiscal adjustment is considered to be revenue-based when more than half of the contribution to average deficit reduction during the episode of adjustment comes from an increase in the average total revenues during the episode. The opposite applies to expenditure-based adjustments.

11. This confirms the findings of Von Hagen, Hallett and Strauch (2001) who showed that the probability of starting a fiscal adjustment raised when the public debt increased.

12. Data on inequality comes from the World Income Inequality Database of the United Nations (2000), and has been completed for some years and some countries with the database from the Luxembourg Income Study Group (2001). Overlapping three-year moving averages have been used to fill out the gaps in the series. The Gini and Theil coefficients as expressed in these databases run from 0 to 100. They equal 0 when the distribution of income is completely egalitarian, and they equal 100 when it is completely inegalitarian and one person holds all the income in a society. Besides the Gini and Theil coefficients, calculations also include the ratio between the highest and the lowest deciles. Both databases (WIID and LIS) contain comparable data in terms of *equivalent disposable household income,* which includes all income obtained by families from any source (work, property, capital, private transfers, social security benefits, etc), applying an equivalent scale of parameter of 0.5 to family income figures in order to take into account differences in the sizes of households. «Although other, and possibly better, indicators may exist on the economic situation of households than disposable monetary income, it is though this variable the one that provides an adequate basis for comparison among the countries selected (advanced economies)» (Ruíz-Huerta, Martínez and Ayala, 1999: 3)

Definition of the Gini Coefficient: $G(x) = \left[\dfrac{\sum_{i=1}^{n}\sum_{j=1}^{n}\left|x_i - x_j\right|}{2\mu_x} \right]$

Definition of the Theil Index (c = 1): $T(x) = \left[\dfrac{1}{n}\right]\sum_{i=1}^{n}\left[\dfrac{x_i}{\mu}\right]\ln\left[\dfrac{x_i}{\mu}\right], c = 1$

13. See for example, Gottchalk, Gustaffson, and Palmer (1997); Danzinger and Reid (1999); Ford (1998); Atkinson (2000); Smeeding (2000); Freeman (2000), Álvarez, Prieto and Salas (2002).

14. Note that these results are very similar to those reported by Alesina and Ardagna (1998), and all other similar studies collected in Appendix 1. Note also that the importance of bad initial fiscal conditions in generating expansionary fiscal adjustments, while very much stressed in studies dealing with advanced economies (Perotti, 1999; Giavazzi, Jappelli and Pagano, 2000), it has been also corroborated in studies dealing with low-income countries (Gupta, Clements, Baldacci and Mulas-Granados, 2002).

15. Giavazzi and Pagano (1996) argue that a large adjustment, by inducing a permanent change of fiscal regime, can be expansionary because expectations are less susceptible to be affected by smaller adjustments.

16. See Argimón, González-Páramo, and Roldán (1997) for similar evidence on crowding-in after fiscal adjustments.

17. According to Alesina and Perotti (1997b), in such cases where trade unions are not weak nor strong enough, a 1 percent increase in the income tax, increases labor costs in 2 percent.

18. Note that the size of the increase in private consumption depends on the absence of liquidity-constrained consumers (Alesina and Ardagna, 1998), and therefore, as noted by Perotti (1999), the result hinges on the efficiency of financial markets, and should be stronger when fiscal consolidation occurs in bad times when the debt-to-GDP ratio is growing rapidly. For similar previous arguments in this respect, see also Blanchard (1990) and Bertola and Drazen (1993).

19. These conclusions are based on the calculations that replicate tables 1, 3 and 4, now estimated only for the sub-sample of adjustment episodes occurred during the nineties. These tables are not included in the text following the editor's indications, due to space constraints. Nonetheless, they are available from the author.

20. Quality of the budget is a variable that measures the contribution of primary expenditures to the total amelioration of the budget balance.

21. See for example Barro (1990, 1991), Easterly, Rodriguez and Schmidt-Hebbel (1994), Tanzi and Zee (1996), Barro and Sala-I-Martin (1995), and Mendoza, Milesi-Ferretti and Asea (1997).

22. The model replicates the baseline specification of the one proposed by Von Hagen, Hallett and Strauch (2001). Note, however, that they used a sample of 19 OECD countries for the period 1965-1995, while this article uses a sample of 15 EU Member States for the period 1960-2000, with data from the AMECO database.

23. Measured as the difference between aggregate demand and potential output, as defined by the European Commission in the AMECO database.

24. The stance of monetary policy is measured by the Monetary Conditions Index built specifically for this purpose. The index is the sum of the short-term real interest rate and the real exchange rate, each weighted by its sample standard deviation.

25. For a more detailed review of the potential factors that affect income distribution see Chu, Davoodi and Gupta (2000).

26. See for example (Garrett, 1998; Kaufman and Segura-Ubiergo, 2001).

27. For details on this technique, see Beck and Katz (1995, 1996). According to Kaufman and Segura-Ubiergo (2001: 18), «the use of panel-corrected standard errors usually produces rather conservative results, since it tends to increase the standard errors of the estimates. Moreover, the inclusion of dummy variables tends to deflate the statistical significance of the other regressors (...) this carries some risk that causal hypotheses will be rejected prematurely. On the other hand, it also increases our confidence that results which do emerge as significant are not the consequence of unsound statistical assumptions or inappropriate econometric methods».

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Resumen

Este artículo examina el efecto económico a corto plazo que tienen distintas estrategias de ajuste fiscal, prestando especial atención a sus efectos sobre el crecimiento económico y la distribución de la renta. Utilizando una muestra de 53 episodios de ajuste fiscal ocurridos entre 1960 y 2000 en los 15 Estados Miembros de la UE, este artículo demuestra que diferentes estrategias de ajuste fiscal tienen diferentes consecuencias económicas. Las estrategias de ajuste basadas en el recorte de los gastos que están precedidas de malas condiciones económicas y fiscales, que se aplican junto con una devaluación, y que reducen sustancialmente las partidas menos productivas del presupuesto, tienden a generar efectos positivos no keynesianos sobre el crecimiento. Sin embargo, estos efectos se logran a costa de producir incrementos en las desigualdades. Justo lo contrario ocurre con los ajustes basados en incrementos de ingresos. Los años noventa son el ejemplo paradigmático de los ajustes fiscales con efectos anti-keynesianos expansivos, a través de fuertes efectos riqueza y efectos de credibilidad. Al mismo tiempo los años noventa son testigos del renacimiento del viejo dilema entre crecimiento e igualdad, ahora mediado por la política fiscal y las diferentes estrategias de ajuste.

Palabras clave: Ajuste fiscal, crecimiento económico, igualdad, composición presupuestaria.

Clasificación JEL: E62, E23, H30, H50.

Appendix 1: The Empirical Literature on the Economic Impact of Fiscal Adjustments

Table A.1
Cross-Section Studies of Expansionary Fiscal Contractions

Authors	Sample	Definition of Contraction	N. of Episodes	Type of Analysis
McDermott and Wescott (1996)	20 OECD countries, 1970-95	Primary structural balance improves by at least 1.5 percent of GDP in two years.	74	Correlations of averages across groups of episodes
Giavazzi and Pagano (1996)	19 OECD countries, 1970-92	Any period when the primary structural balance moved in a consistent direction; a cumulative 5 percentage point of GDP change marks a «large» consolidation.	223	Panel regressions of consumption functions (error correction specification)
OECD (1996)	All OECD countries, 1975-95	Primary structural balance improves by 3 percent of GDP in consecutive years.	15	Correlations of averages across groups of episodes
Cour, Dubois, Mahfouz, and Pisani-Ferry (1996)	17 OECD countries, 1970-94	Continuous improvement in primary structural balance, including an «intense» subperiod.	19	Correlations of averages across groups of episodes, consumption functions estimated across countries.
Alesina and Perotti (1997)	20 OECD countries, 1960-94	Primary structural balance improves by at least 1.5 percent of GDP in one year or 1.25 percent of GDP in two consecutive years.	62 years of tight fiscal policy	Correlations of averages across groups of episodes.
Alesina and Ardagna (1998)	All OECD countries, 1960-95	Primary structural balance improves by 1.5 percent of GDP in two consecutive years.	51, of which 23 expansionary	Correlations of averages across groups of episodes.
Alesina, Perotti, and Tavares (1998)	19 OECD countries, 1960-95	Primary structural balance improves by 1.5 percent GDP in one year.	69, of which 19 successful	Correlations of averages across groups of episodes.

Table A.1 (continuation)
Cross-Section Studies of Expansionary Fiscal Contractions

Authors	Sample	Definition of Contraction	N. of Episodes	Type of Analysis
Alesina, Ardagna, Perotti, and Schiantarelli (1999)	18 OECD countries, 1960-96	Primary structural balance improves by at least 2 percent of GDP in one year or 1.25 percent of GDP in two consecutive years.	Not given	Correlations of averages across groups of episodes, investment equations from pooled regressions.
Perotti (1999)	19 OECD countries, 1965-94	Not given	Not given	Panel regressions of consumption functions (Euler equation specification).
Giavazzi, Jappelli, and Pagano (2000)	18 OECD countries, 1970-96	Not given	38 expansions 65 contraction	Panel regressions of national saving rates.

Source: Own elaboration based on IMF (2000: 20-21).

Table A.1 (continuation)
Cross-Section Studies of Expansionary Fiscal Contractions

Authors	Main Evidence of Expansionary Contractions	Channels	Characteristics of Expansionary Contraction
McDermott and Wescott (1996)	For successful consolidations, GDP growth rate relative to OECD average: −0.2 percent (before), 0.1 percent (during) and 0.7 percent (after)	For expansionary contractions, mostly through investment; for debt-increasing expansions, crowding-out of investment; for stable-debt expansions, growth via consumption	Size is important, as composition; expenditure cuts (specifically transfers and government wages) more likely to be successful; timing with respect to world business cycle also important.
Giavazzi and Pagano (1996)	For large/persistent consolidations, $1 increase in taxes (cuts in transfers) raises private consumption by 15-20c in long run	Private sector consumption (other channels not tested)	Size and persistence most important; clearer effects for government spending but also for taxes and transfers.
OECD (1996)	Four of 15 consolidations had growth above potential and six were within 1 percent point of potential	Not addressed	Supportive monetary policy helps avoid adverse activity consequences.
Cour, Dubois, Mahfouz, and Pisani-Ferry (1996)	Large retrenchments on average led to 0.1 percent reduction in G-7 corrected growth, but small retrenchments led to 0.4 percent reduction. Non-Keynesian retrenchments had higher growth rate of private consumption than predicted by a standard consumption function.	Consumption most important.	Size most important; other factors not clear.
Alesina and Perotti (1997)	For successful consolidations, GDP growth rate relative to OECD average: −0.2 percent (before), 1.1 percent(during), and 0.3 percent (after)	Emphasizes impact of unit labor costs and competitiveness, and hence on investment and exports.	Composition is crucial.
Alesina and Ardagna (1998)	For expansionary contractions, GDP growth rate relative to G-7 average: 0.2 percent (before), 1.3 percent (during), and 0.9 percent (after).	Emphasizes impact on unit labor costs and competitiveness, and hence on investment and exports.	Composition more important than size; income policy and exchange rate depreciation are important preconditions.

Table A.1 (continuación)
Cross-Section Studies of Expansionary Fiscal Contractions

Authors	Main Evidence of Expansionary Contractions	Channels	Characteristics of Expansionary Contraction
Alesina, Perotti, and Tavares (1998)	For successful consolidations, GDP growth rate relative to OECD average: −0.3 percent (before), 0.1 percent (during), and 0.2 percent (after)	Investment more important than consumption; labor market also important.	Composition more important than size; labor market structure also important.
Alesina, Ardagna, Perotti, and Schiantarelli (1999)	1 percent cut in primary spending leads to 0.2 percent increase in investment after impact, and 0.8 percent increase after 5 years, similar effects for 1 percent increase in labor taxes; larger effects for cuts in government wages.	Tax and spending affect labor costs, and hence profits and investment.	Composition is crucial.
Perotti (1999)	Expenditure shocks have Keynesian effects with low debt or deficits, but non-Keynesian effects with high debt or deficits; evidence on similar switch with tax shocks is less strong.	Private sector consumption (other channels not tested).	Initial fiscal conditions are crucial; composition is also important..
Giavazzi, Jappelli, and Pagano (2000)	Non-Keynesian responses by private sector more likely when fiscal impulses are large and persistent.	Private sector consumption/saving (other channels not tested)	Size and persistence most important; but not initial fiscal conditions. Non-Keynesian effects larger for changes in taxes than spending, an for contractions rather than expansions.

Source: Own elaboration based on IMF (2000: 20-21).