CONSUMPTION AND KEYNESIAN FISCAL POLICY

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Abstract

This paper empirically studies the effects of fiscal policy shocks on private consumption. Further, it tries to determine if the level of government bond yield and the unemployment rate affect that relationship. We use yearly data between 1970 and 2000 for thirty-eight countries, of which half are industrialized and half are developing countries. In general, the estimation results seem to indicate that government consumption shocks have Keynesian effects for both industrial and developing countries. In the case of tax shocks, the evidence suggest that they do not have any effects on private consumption. Furthermore, there is no evidence that favors the hypothesis of expansionary fiscal consolidations.

JEL Code: C33, E21, E62.

Keywords: fiscal policy, private consumption, government expenditure, taxation, developing countries.

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1 Introduction

Since the paper by Giavazzi and Pagano (1990), there has been a resurgence in the debate on the effects of fiscal policy. Specifically, there have been a growing number of empirical studies that claim that under special circumstances contractionary fiscal policy may have expansionary effects on consumption, investment and/or output, i.e. fiscal policy has non-Keynesian effects. The most cited papers within this strand of the literature are Giavazzi and Pagano (1990), Giavazzi and Pagano (1996), Perotti (1999) and Giavazzi et al. (2000). However, there is also a growing number of studies that reject the non-Keynesian hypothesis, and claim that one should not generalise the results by Giavazzi and Pagano (1990). Among these papers one could mention, among others, Hjelm (2002b), van Aarle and Garretsen (2003) and Schclarek (2003). Clearly, the empirical results are mixed and the debate is not set yet.

On top of these mixed results, most of the cited papers have mainly focused on the experience of industrial countries. Therefore, there is little evidence that guarantees that the experience of industrial countries can be applied to developing countries. Fortunately, there is an increasing interest to include the experience of developing countries in this debate (Gavin and Perotti, 1997). Giavazzi et al. (2000) and Schclarek (2003) are a contribution in that direction. However, while Schclarek (2003) study the effects of fiscal policy on private consumption, Giavazzi et al. (2000) focus on national saving. Further, Schclarek (2003) finds that fiscal policy has Keynesian effects. Contrarily, Giavazzi et al. (2000) claim that fiscal policy has non-Keynesian results in developing countries. Thus, more research should be done in order to clarify this contradictory results.

The present work is an extension of Schclarek (2003) and empirically investigate the effects of fiscal policy on private consumption for both industrial and developing countries. Specifically, it tries to determine whether fiscal policy has Keynesian or non-Keynesian effects on private consumption and if this relationship is affected by the initial conditions of the economy. We use two variables to determine the initial conditions of the economy, namely the interest rate that the bonds issued by the government pay and the rate of unemployment. The use of these two variables is the main difference with Schclarek (2003), who study the nonlinear relationship taking into account the level of public debt and the size of the public deficit. The econometric methodology of the present study is based on panel data estimation, using a yearly panel of thirty eight countries, of which 19 are industrialized and 19 are developing countries. Further, the data spans between 1970 and 2000. The sources of the data are the World Development Indicators 2002 database of World Bank and the International Financial Statistics 2002 database of the IMF.

The rest of the paper is organized in seven sections. Section 2 presents a short survey of the empirical literature. The theoretical model used as a basis for the empirical research is briefly described in section 3. The empirical methodology and the data used are discussed in sections 4 and 5 respectively. Section 6 presents the estimation results for the whole sample, the sample of industrial countries and the sample of developing countries. In section 7, we discuss and

present the results from some consistency test that were made in order to confirm the results from the benchmark case. Finally, section 8 concludes.

2 Survey of the literature

The literature that has evolved since the paper by Giavazzi and Pagano (1990), have mainly tried to answer whether fiscal policy has Keynesian or non-Keynesian effects on economic activity. Further, it has tried to answer under which special conditions fiscal policy has non-Keynesian effects. According to this branch of the economic literature, the impact of fiscal policy depends on: (i) the sign of the impulse (budget cut or expansion); (ii) its size and duration; (iii) the initial conditions (previous level or rate of growth of public debt, preceding exchange rate and money supply movements); (iv) the composition of the impulse (changes in taxes and transfers relative to changes in government consumption, changes in public investment or in social security entitlements).

Hemming et al. (2002) make an extensive survey of the theoretical and empirical literature on the effectiveness of fiscal policy in stimulating economic activity. They conclude that in general fiscal policy have Keynesian effects on economic activity but that the multiplying effect is small. Further, they acknowledge the possibility of non-Keynesian effects. In what follow we will extend the review of the empirical literature made by Hemming et al. (2002) in order to incorporate the latest results within the field. Specifically, we will concentrate our survey on those papers that examine cross section of countries in order to determine the existence, or not, of expansionary fiscal contractions. In general, the latest studies tend to cast doubts about the expansionary fiscal contraction hypothesis.

Table 1 summarizes the main conclusions from the surveyed papers. In this table we have also included the results of Giavazzi and Pagano (1996), Perotti (1999), and Giavazzi et al. (2000), which are the most cited articles in the empirical literature. The main conclusions of the surveyed studies for industrial countries are as follow:

- The evidence tends not to support the expansionary fiscal contraction hypothesis. The only exception is Jönsson (2004), who finds that when fiscal contractions, in terms of public transfers, are large and persistent, there are non-Keynesian results. All the other studies obtain results that favor the view that fiscal policy has Keynesian effects.
- Regarding the sign of the impulse, the evidence seems to favor the asymmetry between contractions and expansions. Hjelm (2002b) find that private consumption grows less during contractions compared to normal periods and that there is no difference between expansions and normal times. In addition, Jönsson (2004) finds non-Keynesian effects for public transfers during contractions and Keynesian effects during expansions.
- Initial conditions are not important with the exception of the preceding exchange rate movement. Hjelm (2002a) and Hjelm (2002b) find that

contractions preceded by real depreciations improve consumption growth compared to contractions preceded by real appreciations.

- With respect to the composition of the impulse, the evidence is mixed. While van Aarle and Garretsen (2003) find that public transfers have clearer Keynesian effects than government spending and taxes, Jönsson (2004) finds that public transfers have non-Keynesian effects during contractions. In addition, Schclarek (2003) finds that government consumption has Keynesian effects while taxes do not have any effects. Further, Hjelm (2002b) concludes that the composition is not important.

- With the exception of van Aarle and Garretsen (2003), there are no studies that focus on the effects of fiscal policy on investment. They conclude that the findings for private consumption can be extended to private investment, i.e. fiscal policy has Keynesian effects on investment.

Concluding, we can say that the fact that there have been episodes of expansionary fiscal contractions, and that some episodes share certain characteristics is not rejected. However, the surveyed papers cast doubts about the generality of these results. Furthermore, as the paper by Hjelm (2002a) shows, the preceding exchange rate movement is a key element for fiscal contractions to become successful. The most cited examples of successful expansionary fiscal contractions, namely Denmark (1982-1986) and Ireland (1987-1989), where all preceded by real exchange rate depreciations. Thus, it is possible that it was the real exchange rate depreciation that caused the consumption growth rather than the contractionary fiscal policy.

When considering the effects of fiscal policy for developing countries, the evidence is limited to the work of Giavazzi et al. (2000) and Schclarek (2003). Moreover, the evidence of non-Keynesian effects is mixed. On one side, Giavazzi et al. (2000) find evidence of non-linear effects of fiscal policy on private savings during large changes in the surplus. Furthermore, when large changes in the surplus are preceded by rapid debt growth, they even find non-Keynesian effects of taxes on private savings. On the other hand, Schclarek (2003) does not find any evidence for developing countries that support the expansionary fiscal contraction hypothesis. Furthermore, he finds that both government consumption and tax shocks have Keynesian effects on private consumption and that the coefficients are larger for developing countries in comparison to industrial countries.

3 Theoretical Model

In this section we will briefly outline the theoretical model that we will use as point of reference for our empirical investigation. For a detailed treatment of the theoretical model we make reference to Perotti (1999). The model has four basic assumptions: first, taxes have distortionary effects; second, the government has a higher discount rate than private agents, and thus the economy is initially away

Table 1: Cross-section studies of fiscal policy

Study	Sample	Special circumstances	No. episodes	Type of Analysis
Giavazzi and Pagano (1996)	19 OECD countries, 1970-1992	Size and persistence (ex ante): Any period when the cyclically adjusted primary deficit as a percentage of potential GDP had a cumulative change of 3 to 5%, depending on the number of years.	223	Panel regressions of consumption functions (error correction specification)
Perotti (1999)	19 OECD countries, 1965-1994	Initial conditions: the "cyclically adjusted" government debt and the PDV of future government expenditure, as a share of trend GDP in previous year, exceeds the 90th percentiles of the distribution and cyclically adjusted deficit, as a share of trend GDP, exceeds 4% for two consecutive years.	Not given	Panel regressions of consumption functions (Euler equation specification)
Giavazzi et al. (2000)	18 OECD countries, 1960-1996	Size and persistence (ex ante): a large and persistent fiscal impulse when full employment surplus (as a percent of potential output) changes by at least 1.5 percentage points per year over a two-year period. Initial conditions: gross public debt exceeds 70% of potential output in previous year and growth rate of the ratio of (cyclically adjusted) gross public debt to trend GDP exceeds 4% for two consecutive years.	38 expansions, 65 contractions	Panel regressions of national savings rates
Hjelm (2002a)	19 OECD countries, 1970-1997	Size and persistence (ex ante): fiscal contraction period when the cyclically adjusted primary deficit as a percentage of potential GDP had a cumulative decrease of 3 to 5%, depending on the number of years. Initial conditions: Splits fiscal contractions with respect to REER and M2 during the preceding two years and during the contraction.	23 contractions	Panel regressions of consumption functions (structural solved out specification)
Hjelm (2002b)	19 OECD countries, 1970-1997	Size and persistence (ex ante): Any period when the cyclically adjusted primary deficit as a percentage of potential GDP had a cumulative change of 3 to 5%, depending on the number of years. Initial conditions: Splits fiscal contractions with respect to debt to GDP ratio of the preceding year, total growth in the debt ratio during the preceding two years and the preceding exchange rate movement (depreciation or appreciation).	55	Panel regressions of consumption functions (structural solved out specification)
van Aarle and Garretsen (2003)	14 EU countries, 1990-1998	Size and persistence (ex ante): Any period when the cyclically adjusted primary deficit as a percentage of potential GDP had a cumulative change of 3 to 5%, depending on the number of years. Initial conditions: Splits fiscal contractions with respect to debt to GDP ratio of the preceding year, total growth in the debt ratio during the preceding two years and the preceding exchange rate movement (depreciation or appreciation).	29	Panel regressions of consumption functions (error correction specification)
Schclarek (2003)	19 OECD countries, 1970-2000	Initial conditions: the "cyclically adjusted" government debt, as a share of GDP, in previous year exceeds 80% and cyclically adjusted deficit, as a share of GDP, exceeds 10% for two consecutive years.	Not given	Panel regressions of consumption functions (Euler equation specification)
Jönsson (2004)	19 OECD countries, 1960-2000	Size and persistence (ex ante): Any period when the cyclically adjusted primary deficit as a percentage of potential GDP had a cumulative change of 3 to 5%, depending on the number of years.	23 expansions, 25 contractions	Panel regressions of consumption functions (error correction specification)
Giavazzi et al. (2000)	101 developing countries, 1970-1994	Size and persistence (ex ante): a large and persistent fiscal impulse when current surplus (as a percent of potential output) changes by at least 1.5 percentage points per year over a two-year period. Initial conditions: gross public debt exceeds 70% of potential output in previous year and growth rate of the ratio of (cyclically adjusted) gross public debt to trend GDP exceeds 4% for two consecutive years.	259 expansions, 270 contractions	Panel regressions of national savings rates
Schclarek (2003)	21 developing countries, 1970-2000	Initial conditions: the "cyclically adjusted" government debt, as a share of GDP, in previous year exceeds 80% and cyclically adjusted deficit, as a share of GDP, exceeds 10% for two consecutive years.	Not given	Panel regressions of consumption functions (Euler equation specification)

Table 1 *(continuation)*: Cross-section studies of fiscal policy

Study	Main Evidence of Expansionary Contractions	Channels	Characteristics
Giavazzi and Pagano (1996)	For large/persistent consolidations, $1 increase in taxes (cut in transfers) raises private consumption by 15-20c in long run.	Private sector consumption	Size and persistence most important, clearer effects for government spending but also for taxes and transfers.
Perotti (1999)	Expenditure shocks have Keynesian effects with low debt or deficit, but non-Keynesian effects with high debt or deficits; evidence on a similar switch with tax shocks is less strong.	Private sector consumption	Initial fiscal conditions are crucial; composition also important.
Giavazzi et al. (2000)	Non-linear responses by private sector more likely when fiscal impulses are large and persistent. No evidence of non-Keynesian effects.	Private sector consumption/saving	Size and persistence most important, initial fiscal conditions not important. Non-Keynesian effects larger for changes in taxes than spending, and for contractions rather than expansions.
Hjelm (2002a)	No evidence of non-Keynesian effects.	Private sector consumption	Initial conditions: contractions preceded by real depreciations improve consumption growth compared to contractions preceded by real appreciations.
Hjelm (2002b)	No evidence of non-Keynesian effects.	Private sector consumption	Size and persistence is important: private consumption growth is lower during contractions compared to normal periods, no difference between expansions and normal periods. Composition not important. Initial conditions: consumption growth higher during contractions preceded by depreciations rather than appreciations; initial level of debt and deficits not important.
van Aarle and Garretsen (2003)	No evidence of non-Keynesian effects.	Private sector consumption/investment	Size and persistence not important. Initial conditions: initial level of debt not important. Clearer Keynesian effects for public transfers than government spending and taxes.
Schclarek (2003)	No evidence of non-Keynesian effects.	Private sector consumption	Initial fiscal conditions not important. Government consumption have Keynesian effects while taxes have no effects.
Jönsson (2004)	Non-Keynesian responses only for transfers and when fiscal impulses are large and persistent.	Private sector consumption	Size and persistence important, non-Keynesian effects only for public transfers during contractions; larger effects during contractions than expansions.
Giavazzi et al. (2000)	Non-Keynesian responses only for tax changes when fiscal impulses are large and persistent and preceded by rapid debt growth.	Private sector consumption/saving	Size and persistence most important, initial fiscal conditions only important for debt growth. Non-Keynesian effects larger for changes in taxes than spending, symmetry between expansions and contractions.
Schclarek (2003)	No evidence of non-Keynesian effects.	Private sector consumption	Initial fiscal conditions not important. Government consumption and taxes have Keynesian effects.

from a perfect tax-smoothing situation; third, there are two kinds of private agents in terms of the access to the credit market, unconstrained individuals and constrained individuals; fourth, government consumption has positive effects on economic output.

There is a fraction $1-u$ of unconstrained individuals, which have perfect access to the credit market. The fraction u of constrained individuals have no access to the credit market. Both kinds of agents live for three periods. The model study the change in their consumption between periods 0 and 1 due to a fiscal shock in period 1. Further, the response of the fiscal policy in period 2 will depend on the fiscal shock in period 1. Therefore, fiscal policy shocks will have wealth effects from anticipated future responses of fiscal policy for unconstrained individuals. Conversely, constrained individuals will have no wealth effects and their change in consumption between periods 0 and 1 will be completely determined by their current income, which in turn is affected by the fiscal shock.

Further, L_t is the PDV of the financing needs of the government, which is determined by the intertemporal government budget constraint. Moreover, p is the probability that the policy-maker currently in charge of the government stay in office in the next period. The case when L_t is low or p is high is denominated good times, and the opposite situation is called bad times. According to this model, government consumption shocks have positive effects on private consumption at low levels of L_0, the PDV of the financing needs from the perspective of time 0, and negative effects at high levels of it. Similarly, government consumption shocks have positive effects at high levels of p and negative effects at low levels of it. In the case of tax revenue shocks, the model predicts that the tax shocks have the opposite effects on private consumption than the government consumption shocks. Therefore, tax shocks have negative effects at low levels of L_0, or high levels of p, and positive effects at high levels of L_0, or low levels of p. These predictions of the model will be the null hypothesis that we will empirically test. Further, the empirical model for testing the null hypothesis will be presented in the next section.

4 Specification and Estimation Methodology

The empirical model that we will estimate is a two-step econometric model. In the first step, we will estimate the fiscal policy innovations and the expected change in disposable income for each country at the time. After that, we will use the generated regressors to estimate the structural equation, which is the model we are interested in, through panel data estimation. We will estimate two different structural equations: the first one reflects the fiscal policy effects on consumption for both constrained and unconstrained individuals, and the second reflects only the effects on unconstrained individuals. The first structural equation model is

$$\Delta C_{it} = \gamma_1 \hat{\epsilon}^G_{it} + \tilde{\gamma}_1 D_{it} \hat{\epsilon}^G_{it} + \gamma_2 \hat{\epsilon}^T_{it} + \tilde{\gamma}_2 D_{it} \hat{\epsilon}^T_{it} + \mu \Delta \hat{Y}_{it/t-1} + \omega_{it} \qquad (1)$$

where ΔC_{it} is the change in private consumption for country i at time t, $\hat{\epsilon}^G_{ti}$ is the estimated shock, or innovation, in government consumption, $\hat{\epsilon}^T_{it}$ is the estimated shock in tax revenues, D_{it} is a dummy variable, which will take the value 0 in good times and the value 1 in bad times, $\Delta\hat{Y}_{it/t-1}$ is the estimated change in disposable income using information at time $t-1$, and ω_{it} is the error term.

The coefficient γ_1 measures the effects of government consumption shocks on the consumption of both constrained and unconstrained individuals. The case when $\gamma_1 > 0$ is referred as the Keynesian effects of government consumption because a positive government consumption shock has a positive effect on private consumption. Conversely, when $\gamma_1 < 0$ we say that government consumption has non-Keynesian effects on private consumption. Similarly, when γ_2 has a negative sign it means that a tax shock has a negative effect on private consumption. In this case, $\gamma_2 < 0$ is referred as the Keynesian effect and $\gamma_2 > 0$ as the non-Keynesian effect. The expansionary effects of fiscal consolidations occur when $\gamma_1 < 0$ and/or $\gamma_2 > 0$. The coefficients $\tilde{\gamma}_1$ and $\tilde{\gamma}_2$ measure the difference in the effects of government consumption shocks and tax shocks between good and bad times respectively.

Under the null hypothesis $\gamma_1 > 0$, $\tilde{\gamma}_1 < 0$, $\gamma_2 < 0$, and $\tilde{\gamma}_2 > 0$. Therefore, the null hypothesis states that fiscal policy innovations have normally Keynesian effects on private consumption but that the Keynesian effects are reduced in bad times. Moreover, in the case that $\tilde{\gamma}_1 > \gamma_1$ and/or $\tilde{\gamma}_2 > \gamma_2$ the Keynesian effects are reverted in bad times and therefore fiscal policy shocks have non-Keynesian effects, i.e. the expansionary effects of fiscal consolidations.

The second structural equation, which reflects the fiscal policy effects on consumption but only for unconstrained individuals, is

$$\Delta C_{it} = \gamma^u_1 \hat{\epsilon}^G_{it} + \tilde{\gamma}^u_1 D_t \hat{\epsilon}^G_{it} + \gamma^u_2 \hat{\epsilon}^T_{it} + \tilde{\gamma}^u_2 D_t \hat{\epsilon}^T_{it} + \mu \Delta\hat{Y}_{it/t} + \tilde{\omega}_{it} \tag{2}$$

where $\Delta\hat{Y}_{it/t}$ is the forecasted change in disposable income for country i using information at time t. Also the u reflects the fact that we are only analyzing the effects of fiscal policy shocks on unconstrained individuals. Therefore, this alternative approach permits us study the wealth effects of unconstrained individuals which is the source of the non-Keynesian effects of fiscal policy. Note that the difference between equations (1) and (2) is that the first use $\Delta\hat{Y}_{it/t-1}$ while the second use $\Delta\hat{Y}_{it/t}$. The difference between $\Delta\hat{Y}_{it/t-1}$ and $\Delta\hat{Y}_{it/t}$ is that the later use both lagged information on disposable income *and* the contemporaneous estimated fiscal policy innovations (Schclarek, 2003). Therefore, $\Delta\hat{Y}_{it/t}$ incorporates the effects of fiscal shocks on the disposable income of constrained individuals, and thus the coefficients of the fiscal innovations in equation (2) reflects only the wealth effects on consumption for unconstrained individuals (Perotti, 1999).

Under the null hypothesis $\gamma^u_1 < \gamma_1$, $\tilde{\gamma}^u_1 = \tilde{\gamma}_1 < 0$, $\gamma^u_2 > 0 > \gamma_2$, and $\tilde{\gamma}^u_2 > \tilde{\gamma}_2 > 0$. The null hypothesis states that during normal times a government consumption shock will have a milder effect on the consumption of unconstrained individuals than when taking into account both kinds of individuals.

The reason is that unconstrained individuals decide their present consumption taking into account the PDV of income and not only their present income as constrained individuals do. Therefore, when government consumption increase, unconstrained individuals also take into account that in the future the tax revenues of the government will have to increase to finance the current increase in government consumption, thus having a negative wealth effect. $\tilde{\gamma}_1^u$ is equal to $\tilde{\gamma}_1$ because it is only unconstrained individuals that react differently between bad times and good times. The reason for γ_2^u being positive is that tax distortions fall, and therefore the wealth of unconstrained individuals increase, when current taxation is increased and future taxation is reduced, at the same time that the expected PDV of taxation is constant. Further, $\tilde{\gamma}_2^u > \tilde{\gamma}_2 > 0$ because $\tilde{\gamma}_2 = \tilde{\gamma}_2^u + \tilde{\gamma}_2^c$ and $\tilde{\gamma}_2^c < 0$ (Perotti, 1999).

Both equation (1) and (2) were estimated using two alternative definitions for the dummy variable. In addition, they were estimated for the whole country sample but also for the sub-sample of industrialized countries and the sub-sample of developing countries. The estimation method that was used was the fixed effect panel data version of the Prais-Winsten estimator.[1] In all the regressions we included year dummies to account for any time-specific effects, i.e. we had a two-way error component regression model. In addition, for all regressions we allowed the disturbances to be heteroskedastic and contemporaneously correlated across panels (each pair of panels has their own covariance). Further, we specified that within panels, there was first-order autocorrelation and that the coefficient of the AR(1) process was specific to each panel.[2][3]

As noted earlier, $\hat{\epsilon}_{it}^G$, $\hat{\epsilon}_{it}^T$, $\Delta\hat{Y}_{it/t-1}$, and $\Delta\hat{Y}_{it/t}$ are generated regressors, which are obtained from the first-step model for each country at the time. According to McAleer and McKenzie (1991) the presence of generated regressors results in the covariance matrix of the disturbance term being non-spherical, with both non-zero off-diagonal and non-constant diagonal elements. Obviously, these poses a problem for our panel data estimation methodology, which unfortunately has no easy solution.[4] However, the estimation procedure that we used provides an efficient estimator (McAleer and McKenzie, 1991).[5] Moreover, as will be clearer

[1] According to Beck and Katz (1995) the Prais-Winston estimator used in our regressions produces more accurate standard errors than the commonly used feasible generalized least square (FGLS) estimator.

[2] We tested our data for heteroskedasticity and autocorrelation for both equation (1) and (2) using the two dummy variable definitions. The tests performed were a modified Wald test for groupwise heteroskedasticity and a LM test for first-order serial correlation. For the sample of all countries and the sub-sample of industrial countries, we found evidence of both heteroskedasticity and autocorrelation when we used the dummy variable $D2_t$. Yet, when we used the dummy variable $D1_t$, we found heteroskedasticity but not autocorrelation. For de sub-sample of developing countries, we found both heteroskedasticity and autocorrelation when using both dummy variables. However, in order to take care of the "generated regressor" problem, we estimated all equations allowing for autocorrelation.

[3] We used the estimation command "xtpcse" with the "correlation(psar1)" option from the statistical software Stata 7.0.

[4] See, for example, Pagan (1984), Murphy and Topel (1985), McAleer and McKenzie (1991), and Smith and McAleer (1994).

[5] There are two broad procedures to correct the standard errors for the "generated regressor" problem. The first procedure implies applying a joint estimation method, such as full

when the empirical results are presented, even if we use incorrect standard errors our main results cannot be invalidated.[6]

5 Data

The sample used for the estimation of the model consisted of a yearly panel of thirty eight countries, half of them were industrialized countries and the other half developing countries.[7] The sources of the data are the World Development Indicators 2002 database from the World Bank and the International Financial Statistics 2002 of the IMF. A detailed description of the definitions and sources for the different variables used in the present study are presented in table 2. The data span from 1970 to 2000, i.e. there are 31 observations for each country. However, the transformations of the data and estimation procedures reduced the span of the sample with four observations. Besides, we used unbalanced panels because for certain countries there was not complete data for the dummy variables.

All the variables are scaled by the lagged value of disposable income. The procedure is described in detail in Schclarek (2003). The reason for not using the standard scaling procedure, which uses the log value of the variable, is that there are large differences in government consumption-to-GDP and tax-to-GDP ratios across countries and over time. Obviously a change in government consumption will not have the same effects on private consumption if the government consumption-to-GDP ratio is 10% as when it is 30%. Therefore just scaling by the log difference is not appropriate in this case

As mentioned in section 4, the fiscal policy innovations $\hat{\epsilon}_{it}^{G}$ and $\hat{\epsilon}_{it}^{T}$ are not readily available and had to be estimated, i.e. they are generated regressors. In addition, the fiscal policy shocks have been cyclically adjusted, because we are only interested in the discretionary variations and not the variations due to the business cycle. The estimation method and the cyclical adjustments are described in detail in Schclarek (2003).

In the case of the empirical construction of the regime dummy variable, D_{it} takes the value 0 in good times and the value 1 in bad times. Further, as in the theoretical model in section 3 we used two different definitions of bad times. $D1_t$

information maximum likelihood (FIML). The other alternative, which is the one employed in this study, is to use a two-step estimator. In this case, the standard errors from the second step need to be corrected. In this study, we have corrected the standard errors by allowing them to be heteroskedastic and autocorrelated of order 1.

[6] As Murphy and Topel (1985) show, the correct covariance matrix for the second-step estimators exceeds the unadjusted covariance matrix by a positive-definite matrix. Therefore, unadjusted standard errors are understated. In our case, and because in most cases we cannot reject the null of insignificant coefficients, this would imply that most of our coefficient would become even more insignificant.

[7] The industrialized economies are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, and United States. The developing countries are Chile, Colombia, Costa Rica, Dominican Republic, Malaysia, Malta, Mexico, Morocco, Pakistan, Panama, Paraguay, Philippines, South Africa, Sri Lanka, Thailand, Turkey, Uruguay and Venezuela.

Table 2: Definitions and sources of the variables

Variables	Series	Sources
Private consumption	Final Household Consumption Expenditure	WDI
Government consumption	General Final Govt. Consumption Expend.	WDI
Total tax revenue	Taxes on Income, Profits and Capital Gains	WDI
	+ Social Security Taxes	WDI
	+ Net Taxes on Products	WDI
Households disposable income	GNI	WDI
Gross domestic product	GDP	WDI
Disposable income deflator	GDP Deflator	WDI
Population	Population, total	WDI
Government bond yield	Government Bond Yield	IFS
Unemployment rate	Unemployment, total (% of total labor force)	WDI

The sources of the data are the World Development Indicators 2002 database of the World Bank (WDI) and the International Financial Statistics 2002 database of the International Monetary Fund (IFS). All the series are expressed in units of the local currency. For some countries, we used the serie Taxes on Goods and Services (WDI) instead of Net Taxes on Products (WDI).

was used as proxy for L_0 and $D2_t$ for p. In the first definition, $D1_t$, we used the long term government bond yield to define bad times. Specifically, bad times are those years t in which the bond yield in the previous period $t-1$ is higher than a certain threshold value x. The aforementioned value x is determined individually for each country of the sample and corresponds, in the benchmark case, to the eightieth percentile of the distribution for each country. As will be seen in section 7, we will also take alternative values for $D1_t$, equivalent to the seventieth and ninetieth percentiles, in order corroborate our results obtained in the benchmark case.

In second definition of bad times, $D2_t$, we used the unemployment rate for every country to define bad times. In this case, a given year t belongs to the bad times regim if a country's unemployment rate exceeds a certain value x in the previous year $t-1$. we use the same methodology for $D2_t$ as for $D1_t$, that is the seventieth, eightieth and ninetieth percentiles, where the eightieth percentile also serves as the benchmark case. In table 3 of the appendix, we see a list of the country-years that belong to the bad time regime according to the definitions of $D1_t(.80)$, $D1_t(.90)$, $D2_t(.80)$, and $D2_t(.90)$.

6 Estimation Results

6.1 All the Countries in the Panel

Table 4 shows the estimates of equation (1) in columns (1) and (2), and of equation (2) in columns (3) and (4) for all the countries in the sample. Thus, the estimated coefficients are the γ_i's and $\tilde{\gamma}_i$'s in columns (1) and (2) and γ_i^u's and $\tilde{\gamma}_i^u$'s in columns (3) and (4). The difference between columns (1) and (2) is

Table 3: Bad times

	(1) $D1_t(.80)$	(2) $D1_t(.90)$	(3) $D2_t(.80)$	(4) $D2_t(.90)$
Australia	1981-1986	1981-1982, 1985	1983, 1991-1993	1992-1993
Austria	1974-1976, 1980-1982	1974, 1981-1982	1986, 1996-1998	1996.1998
Belgium	1980-1985	1980-1982	1982-1984	1982, 1984
Canada	1980-1985	1981-1982, 1984	1983-1984, 1992-1993	1983, 1993
Chile			1982-1985	1982-1983
Colombia			1985, 1998-2000	1999-2000
Costa Rica			1981-1983, 1985	1982-1983
Denmark	1974, 1978-1982	1980-1982	1981-1983, 1993	1982, 1993
Dominican Republic			1992-1993	1992
Finland			1993-1996	1993-1994
France	1980-1985	1981-1983	1994, 1996-1997	1994, 1997
Germany	1974, 1981-1982, 1990-1991	1974, 1981	1997-1998	1997
Greece			1996, 1998-2000	1999-2000
Ireland	1974, 1976, 1979-1982	1974, 1981-1982	1985-1988	1986-1987
Italy	1977, 1980-1984	1981-1983	1987-1989, 1998	1988-1989
Japan	1974-1976, 1980-1982	1974-1975, 1980	1998-2000	1999-2000
Malaysia			1985-1988	1986-1987
Malta			1983-1986	1983-1984
Mexico			1994-1996	1995-1996
Morocco			1994-1995, 1999	1995, 1999
Netherlands	1974, 1976, 1980-1982, 1990	1980-1982	1983-1986	1983-1984
Norway	1982-1983, 1985-1988	1982, 1986-1987	1991-1994	1993
Pakistan	1978-1983	1978-1980	1991, 1997	1991, 1997
Panama			1988-1991	1988-1989
Paraguay			1983-1984 1990, 1996	1983, 1996
Philippines			1987, 1998-2000	2000

Table 3 *(continuation)*: Bad times

	(1) $D1_t(.80)$	(2) $D1_t(.90)$	(3) $D2_t(.80)$	(4) $D2_t(.90)$
Portugal	1982-1985, 1990-1991	1983-1985	1983-1986	1985-1986
South Africa	1985-1986, 1988-1991	1985, 1988-1989		
Spain	1980-1984	1982-1984	1993-1996	1994-1995
Sri Lanka			1990, 1993	1993
Sweden	1981-1983, 1985, 1990	1981, 1985, 1990	1993-1994, 1996-1997	1996-1997
Thailand	1979-1982, 1984	1979, 1981-1982	1985-1987, 1998	1985, 1987
Turkey			1982-1985	1983, 1984
United Kingdom	1974-1976, 1979-1981	1974, 1976, 1981	1983-1986	1984
United States	1980-1985	1981-1982, 1984	1981-1983	1982-1983
Uruguay			1986, 1999	1986, 1999
Venezuela	1994-1996, 1998	1994-1995	1984-1985, 1996, 1999	1985, 1999
Observations	120	61	128	66

In the first definition of bad times, $D1_t$, we use government bond yield to define bad times. In second definition of bad times, $D2_t$, we use the unemployment rate to define bad times. Bad times are those years t in which the interest rate or the unemployment rate in the previous period $t-1$ is higher than a certain threshold value x. x is determined individually for each country of the sample and corresponds to the eightieth and ninetieth percentile of the distribution for each country. In columns (1) and (3) we use the eightieth percentile and in columns (2) and (4) we use the ninetieth percentile. In section 5 we discuss the construction of the the bad times's dummy variable.

that the dummy variable used is $D1_t(.80)$ and $D2_t(.80)$ respectively. The same apply to columns (3) and (4).

In columns (1) and (2) under the null hypothesis $\gamma_1 > 0$, $\tilde{\gamma}_1 < 0$, $\gamma_2 < 0$, and $\tilde{\gamma}_2 > 0$. Examining column (1), when the first definition of bad times $D1_t(.80)$ is used, we see than the only coefficients that are consistent with the null hypothesis are γ_1 and γ_2. The coefficient for government consumption is 0.887 and is significantly different from zero at the 1%. Consequently, government consumption shocks have Keynesian effects on private consumption in good times. Besides, $\tilde{\gamma}_1$ is insignificantly different from zero and inconsistent with the null hypothesis. As a consequence, there is no difference in the Keynesian effects between good and bad times. In the case of the tax shocks during good times, the coefficient γ_2 is significant at the 5% and take the value -0.235. Besides, $\tilde{\gamma}_2$ is insignificant and not consistent with the null hypothesis. Therefore, tax shocks have Keynesian effects on private consumption during good times as well as during bad times.

When using the second definition for bad times $D2_t(.80)$ in column (2), the only significant coefficient is γ_1 with a value equal to 0.676. Because $\tilde{\gamma}_1$ is insignificantly, government consumption shocks have Keynesian effects in good and bad times. On the other hand, both coefficients of the tax variable are insignificantly different from zero. Consequently, tax shocks have no effects on private consumption during good and bad times.

In the case of columns (3) and (4) the null hypothesis states that $\gamma_1^u < \gamma_1$, $\tilde{\gamma}_1^u = \tilde{\gamma}_1 < 0$, $\gamma_2^u > 0 > \gamma_2$, and $\tilde{\gamma}_2^u > \tilde{\gamma}_2 > 0$. Note that now the coefficients of the fiscal shocks depict only the effects on unconstrained individuals. In column (3) we see that the only coefficients that are consistent with the null hypothesis are γ_1^u and γ_2^u. The coefficient for government consumption is significant and has a value of 0.452, which is inferior to the value of γ_1 (0.887). In addition, the coefficient γ_2^u, which reflects tax shocks in good times, is equal to -0.246 and significant at the 1%. The results of column (4) are also mostly inconsistent with the null hypothesis. In this case, only the coefficient for government consumption shocks is significant and equal to 0.597. The rest of the coefficients are insignificantly different to zero.

In short, the results using the entire panel of countries seem not to be consistent with the null hypothesis. Specifically, government consumption shocks have Keynesian effects in good times as well as in bad times. Also, the estimates of the tax variable yield ambiguous results. When we define bad times using the government bond yield, we find that tax shocks have Keynesian effects during good and bad times. However, when we use the rate of unemployment, the estimates show that tax shocks have no effects on private consumption. In addition, there is no evidence that supports the expansionary fiscal consolidations hypothesis. Also, when comparing the results from equation (1) and (2), we do not find any significant differences in the results. Thus, we conclude that unconstrained and constrained individuals react in the same way on fiscal policy shocks.

Table 4: Estimates All Countries

Var.	Coef.	(1)	(2)	Coef.	(3)	(4)
$\hat{\epsilon}_t^G$	γ_1	0.887	0.676	γ_1^u	0.452	0.597
		(0.221)***	(0.177)***		(0.206)**	(0.172)***
$D_t * \hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	0.147	0.339	$\tilde{\gamma}_1^u$	0.135	0.103
		(0.496)	(0.422)		(0.470)	(0.402)
$\hat{\epsilon}_t^T$	γ_2	-0.235	-0.056	γ_2^u	-0.246	-0.060
		(0.093)**	(0.095)		(0.089)***	(0.090)
$D_t * \hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	0.072	-0.081	$\tilde{\gamma}_2^u$	0.055	-0.150
		(0.212)	(0.199)		(0.205)	(0.179)
$\Delta \hat{Y}_{t/t-1}$	μ	0.492	0.364			
		(0.064)***	(0.075)***			
$\Delta \hat{Y}_{t/t}$				μ	0.540	0.472
					(0.047)***	(0.052)***
Sample		All	All		All	All
No. observations		540	666		540	666
No. countries		21	37		21	37
R^2		0.294	0.171		0.401	0.274
Defn. of bad times		$D1_t(.80)$	$D2_t(.80)$		$D1_t(.80)$	$D2_t(.80)$
No. of bad times		120	128		120	128

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) and (2) display estimates of equation (1). Columns (3) and (4) display estimates of equation (2). Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

6.2 Industrialized Countries

Table 5 shows the estimates of equations (1) and (2) for industrialized countries. From column (1), we see that the only coefficient that is significant, is the one for government consumption shocks, with a positive value of 0.561. All the other coefficients are insignificantly different from zero and, consequently, are not according to the null hypothesis. In the case of column (2), when we use the dummy variable $D2_t(.80)$, the results are similar to the results of column (1). The coefficient of government consumption shock is the only one that it is significantly different to zero and consistent with the null hypothesis, with a positive value of 0.308.

When considering the effects of fiscal policy shocks on unconstrained individuals and using the dummy variable $D1_t(.80)$ (column 3), the results are also mostly inconsistent with the null hypothesis. In this case, and like in columns (1) and (2), only the government consumption shocks have significant effects on private consumption. The estimate of γ_1^u is significant at the 5% and equal to 0.372, which is less than the estimate of γ_1 (0.561). In addition, $\tilde{\gamma}_1^u$ is insignificantly different from zero, and thus there are no difference in the effects of the shocks during good times and bad times. In the case of the tax variables, both coefficients are insignificantly different of zero. When using the second definition of bad times (column (4)), all the coefficients are insignificantly different from zero.

Concluding, the results for the industrial countries seem not to favor the null hypothesis. The shocks in the consumption of the government have Keynesian effects, which is consistent with the null hypothesis. However, these Keynesian effects are not reverted in bad times, which is not in agreement with the null hypothesis. Besides, in the case of the tax variable, the shocks seem not to have any effects on private consumption during good and bad times. On the other hand, when comparing the estimates of equations (1) and (2), we did not find significant differences in the results. Thus, there is no evidence that fiscal policy shocks affect differently unconstrained and constrained individuals. As a consequence, we conclude that fiscal policy have not non-Keynesian effects on private consumption.

If we compare the results of tables 4 and 5 for the dummy variable $D1_t(.80)$ (columns (1) and (3)), we see that the coefficient γ_2 is significant for the sample of all countries and insignificant when only considering industrial countries.[8] Therefore, we can conclude that the estimation results of γ_2, when using the sample of all countries, is significantly influenced by the effects of the developing countries. In other words, the effects of tax shocks change from not having any effect, when using the sample of industrial countries, to having Keynesian effects, when adding four developing countries to the sample of industrial countries.

[8] Note that the difference between this two samples are four countries. The sample of all countries consists of the sample of industrial countries plus Pakistan, South Africa, Thailand and Venezuela.

Table 5: Estimates Industrial Countries

Var.	Coef.	(1)	(2)	Coef.	(3)	(4)
$\hat{\epsilon}_t^G$	γ_1	0.561	0.308	γ_1^u	0.372	0.301
		(0.179)***	(0.154)**		(0.180)**	(0.157)*
$D_t * \hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	-0.146	-0.080	$\tilde{\gamma}_1^u$	-0.127	-0.152
		(0.318)	(0.307)		(0.316)	(0.313)
$\hat{\epsilon}_t^T$	γ_2	0.019	0.054	γ_2^u	0.024	0.062
		(0.058)	(0.056)		(0.050)	(0.057)
$D_t * \hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	-0.106	-0.049	$\tilde{\gamma}_2^u$	-0.103	-0.082
		(0.161)	(0.092)		(0.144)	(0.097)
$\Delta \hat{Y}_{t/t-1}$	μ	0.433	0.332			
		(0.065)***	(0.059)***			
$\Delta \hat{Y}_{t/t}$				μ	0.335	0.230
					(0.052)***	(0.048)***
Sample		Indust	Indust		Indust	Indust
No. observations		446	368		446	368
No. countries		17	19		17	19
R^2		0.325	0.333		0.321	0.304
Defn. of bad times		$D1_t(.80)$	$D2_t(.80)$		$D1_t(.80)$	$D2_t(.80)$
No. of bad times		99	70		99	70

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) and (2) display estimates of equation (1). Columns (3) and (4) display estimates of equation (2). Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

6.3 Developing Countries

The results of estimating equations (1) and (2) for developing countries are presented in table 6. Unlike tables 4 and 5, we use only the dummy variable $D2_t(.80)$ since there is no available data for constructing dummy variable $D1_t$ for developing countries.[9] Column (1) shows that the shocks on government consumption have a positive effect on private consumption, with a significant coefficient equal to 0.790. However, the estimates of $\tilde{\gamma}_1$ and the tax variables are insignificantly different from zero. When we analyze the wealth effects on the unconstrained individuals (column (2)), we obtain similar results to those in column (1), i.e. only γ_1^u is significantly different from zero. In this case, the coefficient equals 0.697 and is consistent with the null hypothesis since it is inferior to γ_1.

Concluding, the estimation results for the developing countries do not favor the null hypothesis. Government consumption shocks have Keynesian effects on private consumption during good times as well as bad times. In the case of tax shocks, they do not have any effects on private consumption during either good times or bad times. Besides, the estimation results of equations (1) and (2) are similar, which indicate that the fiscal policy shocks do not affect differently unconstrained and constrained individuals. Therefore, we obtain evidence that reject the expansionary fiscal contraction hypothesis.

Additionally, the results obtained for the developing countries using dummy variable $D2_t(.80)$, are practically equivalent to the ones obtained for the industrial countries. Note, however, that the coefficients γ_1 and γ_1^u are larger when using the sample of developing countries. Therefore, we can conclude that government consumption shocks have a larger Keynesian effect on private consumption in developing countries than in industrial countries. This result is intuitive, and is in accordance with the theoretical model, if we consider that there is a larger proportion of constrained individuals in developing countries.

7 Consistency Tests

In order to confirm that the benchmark case results in section 6 are robust, we estimated equations (1) and (2) using alternative definitions of bad times. For both dummy variables, $D1_t$ and $D2_t$, we used two different values to define bad times. Specifically, we used the value of the seventieth and ninetieth percentile of the distribution for each country to define bad times.

The results for the sample of all the countries can be seen in table 7, where we see that the results of the estimations are very similar. The only difference is for the coefficient γ_1^u when using the first definition of bad times $D1_t$. In this case, the coefficient goes from being significant in column (7) to being insignificant in column (8), when using $D1_t(.70)$. However, the coefficient is still significant if we enlarge the confidence level to the 10%. Moreover, when using $D1_t(.90)$ in

[9] Specifically, there is only data for Pakistan, South Africa, Thailand and Venezuela.

Table 6: Estimates Developing Countries

Var.	Coef.	(1)	Coef.	(2)
$\hat{\epsilon}_t^G$	γ_1	0.790	γ_1^u	0.697
		(0.170)***		(0.172)***
$D_t * \hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	0.526	$\tilde{\gamma}_1^u$	0.320
		(0.469)		(0.440)
$\hat{\epsilon}_t^T$	γ_2	-0.178	γ_2^u	-0.174
		(0.140)		(0.137)
$D_t * \hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	-0.198	$\tilde{\gamma}_2^u$	-0.277
		(0.276)		(0.253)
$\Delta \hat{Y}_{t/t-1}$	μ	0.351		
		(0.077)***		
$\Delta \hat{Y}_{t/t}$			μ	0.493
				(0.054)***
Sample		Dev		Dev
No. observations		298		298
No. countries		18		18
R^2		0.290		0.320
Defn. of bad times		$D2_t(.80)$		$D2_t(.80)$
No. of bad times		58		58

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Column (1) displays estimates of equation (1). Column (2) displays estimates of equation (2). Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

Table 7: Other definitions of bad times for all countries

Var.	Coef.	(1)	(2)	(3)	(4)	(5)	(6)
		$D1_t(.80)$	$D1_t(.70)$	$D1_t(.90)$	$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$
$\hat{\epsilon}_t^G$	γ_1	0.887	0.817	0.893	0.676	0.687	0.794
		(0.221)***	(0.233)***	(0.209)***	(0.177)***	(0.181)***	(0.171)***
$D_t*\hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	0.147	0.358	0.229	0.339	0.231	-0.509
		(0.496)	(0.452)	(0.665)	(0.422)	(0.361)	(0.589)
$\hat{\epsilon}_t^T$	γ_2	-0.235	-0.244	-0.238	-0.056	-0.052	-0.024
		(0.093)**	(0.104)**	(0.085)***	(0.095)	(0.102)	(0.087)
$D_t*\hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	0.072	0.089	0.138	-0.081	-0.077	-0.321
		(0.212)	(0.173)	(0.282)	(0.199)	(0.179)	(0.248)
$\Delta\hat{Y}_{t/t-1}$	μ	0.492	0.491	0.491	0.364	0.362	0.361
		(0.064)***	(0.064)***	(0.063)***	(0.075)***	(0.075)***	(0.075)***
Sample		All	All	All	All	All	All
No. observations		540	540	540	666	666	666
No. countries		21	21	21	37	37	37
R^2		0.294	0.297	0.295	0.171	0.170	0.176
No. of bad times		120	178	61	128	197	66

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) to (6) display estimates of equation (1). Columns (7) to (12) display estimates of equation (2). See section 7 for alternative definitions of bad times. Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

column (9), the coefficient is significant at the 5%. Therefore, we conclude that the consistency test lead us to accept the conclusions from the benchmark case.

When only using the sample of industrial countries (table 8) and using the alternative definitions of bad times, we see that the majority of the results do not change. Concretely, the significance of coefficients γ_1 and γ_1^u are the only changes. In the case of γ_1, we see than when we use definition $D2_t(.70)$, it becomes insignificant (column (5)). However, it continues being significant when we use definition $D2_t(.90)$ (column (6)). Besides, from column (8), γ_1^u reduces its significance level from 5% to 10% when using the dummy variable $D1_t(.70)$. In addition, when using the second definition of bad times $D2_t(.90)$ in column (12), the coefficient becomes significant at the 5%. Concluding, there is some evidence that the significance of γ_1 and γ_1^u is not completely robust for industrial countries.

For the sample of developing countries (table 9), the results from the benchmark case are practically corroborated in the consistency test. The only difference with the benchmark case can be seen in column (6) for γ_2^u. In this case, the coefficient becomes significant at the 5% with a value of -0.747.

Table 7 *(continuation)*: Other definitions of bad times for all countries

Var.	Coef.	(7)	(8)	(9)	(10)	(11)	(12)
		$D1_t(.80)$	$D1_t(.70)$	$D1_t(.90)$	$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$
$\hat{\epsilon}_t^G$	γ_1^u	0.452	0.385	0.456	0.597	0.606	0.662
		(0.206)**	(0.218)*	(0.196)**	(0.172)***	(0.176)***	(0.166)***
$D_t*\hat{\epsilon}_t^G$	$\tilde{\gamma}_1^u$	0.135	0.329	0.252	0.103	0.050	-0.569
		(0.470)	(0.427)	(0.608)	(0.402)	(0.346)	(0.548)
$\hat{\epsilon}_t^T$	γ_2^u	-0.246	-0.259	-0.239	-0.060	-0.060	-0.033
		(0.089)***	(0.099)***	(0.083)***	(0.090)	(0.096)	(0.082)
$D_t*\hat{\epsilon}_t^T$	$\tilde{\gamma}_2^u$	0.055	0.091	0.029	-0.150	-0.118	-0.395
		(0.205)	(0.172)	(0.280)	(0.179)	(0.162)	(0.216)*
$\Delta\hat{Y}_{t/t}$	μ	0.540	0.540	0.540	0.472	0.471	0.474
		(0.047)***	(0.047)***	(0.047)***	(0.052)***	(0.052)***	(0.051)***
Sample		All	All	All	All	All	All
No. observations		540	540	540	666	666	666
No. countries		21	21	21	37	37	37
R^2		0.401	0.403	0.401	0.274	0.273	0.285
No. of bad times		120	178	61	128	197	66

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) to (6) display estimates of equation (1). Columns (7) to (12) display estimates of equation (2). See section 7 for alternative definitions of bad times. Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

Table 8: Other definitions of bad times for industrial countries

Var.	Coef.	(1)	(2)	(3)	(4)	(5)	(6)
		$D1_t(.80)$	$D1_t(.70)$	$D1_t(.90)$	$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$
$\hat{\epsilon}_t^G$	γ_1	0.561	0.505	0.553	0.308	0.241	0.329
		(0.179)***	(0.192)***	(0.168)***	(0.154)**	(0.167)	(0.149)**
$D_t*\hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	-0.146	0.003	-0.223	-0.080	0.136	-0.362
		(0.318)	(0.308)	(0.380)	(0.307)	(0.256)	(0.500)
$\hat{\epsilon}_t^T$	γ_2	0.019	0.024	0.018	0.054	0.057	0.021
		(0.058)	(0.061)	(0.054)	(0.056)	(0.058)	(0.052)
$D_t*\hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	-0.106	-0.091	-0.159	-0.049	-0.045	0.082
		(0.161)	(0.125)	(0.199)	(0.092)	(0.080)	(0.111)
$\Delta\hat{Y}_{t/t-1}$	μ	0.433	0.433	0.431	0.332	0.333	0.334
		(0.065)***	(0.065)***	(0.065)***	(0.059)***	(0.059)***	(0.059)***
Sample		Indust	Indust	Indust	Indust	Indust	Indust
No. observations		446	446	446	368	368	368
No. countries		17	17	17	19	19	19
R^2		0.325	0.327	0.325	0.333	0.332	0.339
No. of bad times		99	148	50	70	110	35

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) to (6) display estimates of equation (1). Columns (7) to (12) display estimates of equation (2). See section 7 for alternative definitions of bad times. Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

Table 8 *(continuation)*: Other definitions of bad times for industrial countries

Var.	Coef.	(7)	(8)	(9)	(10)	(11)	(12)
		$D1_t(.80)$	$D1_t(.70)$	$D1_t(.90)$	$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$
$\hat{\epsilon}_t^G$	γ_1^u	0.372	0.323	0.359	0.301	0.252	0.305
		(0.180)**	(0.192)*	(0.163)**	(0.157)*	(0.168)	(0.151)**
$D_t * \hat{\epsilon}_t^G$	$\tilde{\gamma}_1^u$	-0.127	-0.000	-0.124	-0.152	0.040	-0.345
		(0.316)	(0.310)	(0.380)	(0.313)	(0.256)	(0.501)
$\hat{\epsilon}_t^T$	γ_2^u	0.024	0.026	0.030	0.062	0.067	0.022
		(0.050)	(0.055)	(0.048)	(0.057)	(0.059)	(0.054)
$D_t * \hat{\epsilon}_t^T$	$\tilde{\gamma}_2^u$	-0.103	-0.076	-0.216	-0.082	-0.076	0.069
		(0.144)	(0.114)	(0.188)	(0.097)	(0.084)	(0.113)
$\Delta \hat{Y}_{t/t}$	μ	0.335	0.335	0.336	0.230	0.229	0.228
		(0.052)***	(0.052)***	(0.052)***	(0.048)***	(0.048)***	(0.048)***
Sample		Indust	Indust	Indust	Indust	Indust	Indust
No. observations		446	446	446	368	368	368
No. countries		17	17	17	19	19	19
R^2		0.321	0.320	0.324	0.304	0.304	0.306
No. of bad times		99	148	50	70	110	35

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) to (6) display estimates of equation (1). Columns (7) to (12) display estimates of equation (2). See section 7 for alternative definitions of bad times. Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

Table 9: Other definitions of bad times for developing countries

Var.	Coef.	(1)	(2)	(3)	Coef.	(4)	(5)	(6)
		$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$		$D2_t(.80)$	$D2_t(.70)$	$D2_t(.90)$
$\hat{\epsilon}_t^G$	γ_1	0.790	0.804	0.932	γ_1^u	0.697	0.700	0.776
		(0.170)***	(0.177)***	(0.165)***		(0.172)***	(0.180)***	(0.167)***
$D_t * \hat{\epsilon}_t^G$	$\tilde{\gamma}_1$	0.526	0.380	-0.478	$\tilde{\gamma}_1^u$	0.320	0.255	-0.439
		(0.469)	(0.420)	(0.586)		(0.440)	(0.403)	(0.544)
$\hat{\epsilon}_t^T$	γ_2	-0.178	-0.186	-0.119	γ_2^u	-0.174	-0.185	-0.114
		(0.140)	(0.152)	(0.130)		(0.137)	(0.148)	(0.127)
$D_t * \hat{\epsilon}_t^T$	$\tilde{\gamma}_2$	-0.198	-0.147	-0.652	$\tilde{\gamma}_2^u$	-0.277	-0.200	-0.747
		(0.276)	(0.265)	(0.337)*		(0.253)	(0.236)	(0.309)**
$\Delta \hat{Y}_{t/t-1}$	μ	0.351	0.348	0.352				
		(0.077)***	(0.077)***	(0.073)***				
$\Delta \hat{Y}_{t/t}$					μ	0.493	0.494	0.498
						(0.054)***	(0.055)***	(0.051)***
Sample		Dev	Dev	Dev		Dev	Dev	Dev
No. observations		298	298	298		298	298	298
No. countries		18	18	18		18	18	18
R^2		0.290	0.206	0.221		0.320	0.318	0.336
No. of bad times		58	87	31		58	87	31

Estimated using Prais-Winston regression assuming disturbances are heteroskedastic and contemporaneously correlated across panels, and allowing for panel-specific first-order autocorrelation. All regressions include year dummies to account for any time-specific effect, i.e. we have a two-way error component regression model. Columns (1) to (3) display estimates of equation (1). Columns (4) to (6) display estimates of equation (2). See section 7 for alternative definitions of bad times. Standard errors in parentheses. * significant at 10%;** significant at 5%; *** significant at 1%.

8 Conclusions

The results from the estimations indicate that government consumption shocks have Keynesian effects on private consumption in industrial and developing countries. In addition, these Keynesian effects are not reverted in bad times. In the case of the tax shocks, the evidence suggest that they do not have any effects on private consumption either in good times or bad times. This result is confirmed for both industrial and developing countries. Accordingly, we show that the composition of fiscal policy shocks is crucial for stimulating private consumption. Contrary to the common belief that expenditure cuts, instead of tax increases, is crucial for a favorable macroeconomic outcome, we claim that the opposite is true. Further, we do not find that initial conditions are important in determining the outcome of fiscal policy. Thus, there is no evidence that favor the expansionary fiscal consolidation hypothesis (non-Keynesian effects). Finally, we find that government consumption shocks have a larger Keynesian effect on private consumption in developing countries than in industrial countries. This result is intuitive, and is in accordance with the theoretical model introduced in section 3, if we consider that there is a larger proportion of constrained individuals in developing countries.

When comparing our results with the results of Schclarek (2003), we get identical results for the case of government consumption shocks, both for industrial and developing countries. In the case of tax shocks, we obtain only coincidences for industrial countries. Schclarek (2003) finds that tax shocks do not have any effects for industrial countries, but, and unlike us, finds Keynesian effects for developing countries. When comparing our results for industrial countries with Perotti (1999), we find markedly differences. He finds that the shocks in government consumption and taxes have Keynesian effects during good times, but non-Keynesian effects during bad times. However, he also finds that the composition of fiscal policy is important. With regards to the other surveyed papers, our results are in line with Giavazzi et al. (2000), Hjelm (2002b) and van Aarle and Garretsen (2003) in the sense that initial conditions, with the exception of preceding depreciations, are not important. Moreover, our results regarding the rejection of the expansionary fiscal consolidation hypothesis are in line with Hjelm (2002a), Hjelm (2002b), van Aarle and Garretsen (2003) and Schclarek (2003).

References

Beck, N. and Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *The American Political Science Review*, 89:634–647.

Gavin, M. and Perotti, R. (1997). Fiscal policy in latin america. *NBER Macroeconomics Annual*, 12:11–62.

Giavazzi, F., Jappelli, T., and Pagano, M. (2000). Searching for non-linear effects of fiscal policy: Evidence from industrial and developing countries. *European Economic Review*, 44:1259–1289.

Giavazzi, F. and Pagano, M. (1990). Can severe fiscal contractions be expansionary? tales of two small european countries. *NBER Macroeconomic Annual*, 5:75–110.

Giavazzi, F. and Pagano, M. (1996). Non-keynesian effects of fiscal policy changes: International evidence and the swedish experience. *Swedish Economic Policy Review*, 3:67–103.

Hemming, R., Kell, M., and Mahfouz, S. (2002). The effectiveness of fiscal policy in stimulating economic activity - a review of the literature. IMF Working Paper No. 02/208, December 2002.

Hjelm, G. (2002a). Effects of fiscal contractions: The importance of preceding exchange rate movements. *Scandinavian Journal of Economics*, 104(3):423–441.

Hjelm, G. (2002b). Is private consumption growth higher (lower) during periods of fiscal contractions (expansions)? *Journal of Macroeconomics*, 24:17–39.

Jönsson, K. (2004). Fiscal policy regimes and household consumption. Working Papers No. 2004:12, Department of Economics, Lund University, 2004.

McAleer, M. and McKenzie, C. R. (1991). When are two step estimators efficient? *Econometric Reviews*, 10:235–252.

Murphy, K. M. and Topel, R. H. (1985). Estimation and inference in two-step econometric models. *Journal of Business and Economic Statistics*, 3:370–379.

Pagan, A. (1984). Econometric issues in the analysis of regressions with generated regressors. *International Economic Review*, 25:221–247.

Perotti, R. (1999). Fiscal policy in good times and bad. *The Quarterly Journal of Economics*, 114:1399–1436.

Schclarek, A. (2003). Fiscal policy and private consumption in industrial and developing countries. Working Papers No. 2003:20, Department of Economics, Lund University, 2003.

Smith, J. and McAleer, M. (1994). Newey-west covariance matrix estimates for models with generated regressors. *Applied Economics*, 26:635–640.

van Aarle, B. and Garretsen, H. (2003). Keynesian, non-keynesian or no effects of fiscal policy changes? the emu case. *Journal of Macroeconomics*, 25:213–240.

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