Threshold effect of fiscal policy on private consumption : Evidence from Tunisia

Wissem Khanfir [1]

Using a threshold regression model, we analyse the impact of fiscal policy on private consumption in Tunisia, over the 1975-2010 period. Our empirical results revealed that public expenditure and tax revenues have Keynesian effects on consumption, when private debt/GDP ratio is below 48 %. This effect becomes non-Keynesian once this threshold is exceeded. We provide empirical evidence that private consumption reacts in non-linear fashion to changes in fiscal policy.

Introduction

The effect of fiscal policy on private demand has been an intensely debated issue in macroeconomics. The Keynesian theory suggests that a decrease of government expenditure has a negative effect on the private demand and therefore on the output. On the contrary, the neoclassical theory explains that reduced public expenditure makes room for an expansion of the private sector and has a stimulating effect on the economy. According to Giavazzi and Pagano (1990),

[1]**Wissem Khanfir,** Doctor of Economics Sciences, Faculty of Economics and Management of Sfax, University of Sfax, Tunisia, e-mail address : khanfirwissemfseg@yahoo.fr

there has been a growing number of empirical studies claiming that under special circumstances, contractionary fiscal policy may have expansionary effects on consumption, investment and/or on the output. Giavazzi and Pagano (1990) and Blanchard (1990) proposed the hypothesis of expansionary fiscal consolidation as an explanation for nonlinearities in the effects of fiscal policy. Theoretically, these non-linear effects are modelized in the behavior of private consumption.

This study presents the theoretical background as well as the empirical evidence of the non-linear effects of fiscal policy. It also examines the impact of fiscal policy on private consumption in Tunisia, using a threshold regression model. We estimated consumption function between 1975 and 2010 and we verified if the values and signs of fiscal multipliers are influenced by private debt levels.

1. Survey of the literature

According to the traditional Keynesian view, fiscal consolidations achieved by raising taxes or by cutting public expenditure reduces GDP growth. In contrast, other studies based on non-Keynesian theory analyze the influence of the expansionary fiscal contractions on the output. These studies showed that the impact of fiscal policy on the output depends on a number of factors, such as the initial conditions of public finances, the size, the composition and persistence of the fiscal impulse. The output responds in a non-linear fashion to fiscal policy shocks.

Following the theory of non-Keynesian effects, fiscal policy affects the output either through the demand-side channel or the supply-side channel. The demand side effects depend on the agents' expectations of future policy changes, whereas the supply side effects depend on the composition and structure of the fiscal policy changes. Theoretical litterature analyzing the causes of non-linear effects of fiscal policy concentrate mainly on the demand side.

In this context, the expectation view studies the impact of the current fiscal policy on the economy, through its influence on the changes of the agents' expectations of the future policy. Two channels are analyzed : the wealth effect on private consumption and the effect of credibility on interest rates.

The wealth effect on consumption occurs more directly in the case of a permanent decline in public spending, rather than in the case of a tax increase. A permanent reduction of public spending implies a decrease in future tax burden of consumers, which leads to a positive wealth effect. Bertola and Drazen (1993), Sutherland (1997) and Perotti (1999) found that large fiscal adjustments imply a reduction of the tax burden, which increases the expectations of the present value of the future revenues of economic agents, stimulating private consumption, aggregate demand and production. Moreover, Blanchard (1990) found that higher taxes lead to expansionary effects on the private consumption and production.

Bertola and Drazen (1993) described a neoclassical model in which a reduction of government spending must have an expansionary effect on private consumption. If the government spending decreases, the wealth and private consumption increase. Bertola and Drazen (1993) introduced a non-linear relationship between the level of consumption chosen by optimizing agents and the level of government consumption. This relationship depends on the level reached in the ratio of government spending to GDP. In normal times, a rise in government spending reduces private consumption. However, the private consumption behavior changes around the trigger values of government spending.

Blanchard (1990), Sutherland (1997) and Perotti (1999) emphasized that anti-Keynesian effects of tax increases depend on the level of the public debt. When this level is low, fiscal policy leads to a traditional Keynesian effects on private consumption, and beyond a certain level

of the public debt, it causes an anti-Keynesian effects on private consumption.

Blanchard (1990) focused on whether and when permanent increase in taxes may increase private consumption, given government spending. His model derived the effects of fiscal consolidation on private consumption. It is based on the notion that the larger the tax rate, the larger the distortions in the economy are. Blanchard assumed a critical level of taxation, such that distortions caused by taxes, which exceed this level, imply a reduction in the output. Therefore, there is an associated critical level of debt that indicates, through the government budget constraint, a future tax rate above the critical level and a lower output. If consumers anticipate that this critical level of debt will be reached, a fiscal consolidation that stabilizers or lowers the debt value, protects the economy from high distortionary tax. Consequently, expected permanent income and consumption rise.

As a result, Blanchard (1990) found that, if consumers have a constant probability of death[2](in normal times), the economy is far from the critical debt level and consumers behave in a keynesian way. In bad times, consumers' behavior is reversed and there is presence of non-keynesian effects. Thus, fiscal policy has non-linear effects on private consumption.

In this sense, Sutherland (1997) showed that, at low levels of public debt, there is a high probability that current consumers die before the next fiscal stabilization being imposed. Consumers heavily discount future taxes and higher taxes will be borne mainly by the future generations. Fiscal policy has the usual keynesian effects. On the other hand, at high levels of public debt, there is a high chance that current generations of consumers would be alive when stabilization takes place. Consumers are not able to move the burden of public debt to future generations. Moreover, they know that if these stabilization

---

[2] Consumers are not ricardian

programs are put in place, higher taxes will be imposed. These taxes will be higher than fiscal transfers. Therefore, fiscal policy conforms with the anti-keynesian view. His model presupposes that the government has implemented a restrictive fiscal policy, in the form of higher taxes, when government debt reaches a certain critical level. The solution to the model indicates a smooth transition from the keynesian case to the anti-keynesian case as public debt increases.

Similar to Blanchard (1990) and Sutherland (1997), Perotti (1999) developed another model where non-keynesian effects of the shocks of taxes and public expenditure can be analyzed. Specifically, Perotti provides considerable support for the idea that the initial conditions of public finances are an important determinant of the effects of fiscal policy shocks. In other words, the correlation between private consumption and fiscal policy depends on the public debt and government spending levels.

Perotti (1999) showed the non-linear effects of fiscal policy on private consumption, for 19 OECD countries between 1965 and 1994. He concluded that the level of the public debt is a triggering factor of these effects. At low levels of public debt, higher government spending and lower tax revenues have keynesian effect on private consumption. At high levels of public debt, they have non-keynesian effect on private consumption.

Siwińska and Bujak (2006) found that private consumption reacts in a non-linear fashion to discretionary fiscal policy changes, for OECD countries, between 1970 and 2001. Estimation results showed that when the fiscal situation of a country is sound, households tend to behave in keynesian manner. When the fiscal situation is bad[3], their behavior tends to change to a non-keynesian : an expansionary fiscal policy lowers consumption. Similarly to OECD countries, the results suggest that consumption function does not react in linear fashion to

---

[3] When public debt or fiscal deficit is large.

changes in fiscal policy also in transition countries. These results are consistent with the nonlinearity predicted theoretically by Blanchard (1990), Bertola and Drazen (1993) and Sutherland (1997).

Ary Tanimoune et al. (2008) and Minea and Villieu (2008) found that the impact of fiscal policy on economic growth differs from high debt countries to low debt countries. Over the 1986-2002 period, Ary Tanimoune et al. (2008) showed that a fiscal expansion stimulates economic growth for the UEMOA countries, if the public debt / GDP ratio is less than 83%. Once this threshold is exceeded, the non-keynesian effect dominates and the fiscal contraction has a positive effect on the economic activity. Using data from 19 OECD countries between 1978 and 2005, Minea and Villieu (2008) deduced the existence of a non-linear effect of fiscal deficits on economic growth. Their approach illustrates a possible non-keynesian effects of fiscal policy when public debt is high, in the spirit of Perotti (1999).

Landry (2010) appreciated the nature of the relation between the budget policy and the activity in the CEMAC between 1970 and 2006 taking account of the existence of possible non-linear effects of the budget policy. Landry concluded that if the public debt ratio is below 79% of GDP, the expansionist fiscal policies have a favorable impact on the economic activity. However, beyond this threshold, *contractionnist policies* become effective.

Bhattachaya and Mukherjee (2013) proved that the propensity to consume out income varies in a non-linear fashion with the public debt, for 18 OECD countries between 1960 and 2009. These results support the hypothesis that households move from a non-ricardian to a ricardian behavior when government debt reaches high levels and when uncertainty about future taxes increases.

Kameda (2014) clarified that the ratio of the structural primary budget surplus to the potential GDP and the ratio between the public debt and the GDP represent a signal of non-keynesian effects of fiscal policy on private consumption, as in Perotti (1999), Giavazzi et al.

(2000) and Hjelm (2002). Estimation results, for the case of Japan between 1980 and 2008, showed that the value of the ratio between the structural primary budget surplus and the potential GDP close to 0.00176 changes the household co*nsumption behavior*, between good and bad times.

Ouside the debate over the expectation view, an additional channel by which the current fiscal policy can influence the economy is the credibility effect on interest rates. High levels of debt will impose a premium on the interest rates to account for inflation and default risk. If agents believe that stabilization avoids a default on government debt, they demand a lower premium on government bonds. Private demand sensitive to the real interest rate can increase if the diminution in the interest rate paid on government bonds decrease the real interest rate charged to consumers and firms. This reduction of the interest rate can also valorize stocks and bonds, raising agents' financial wealth, and boosting consumption and / or investment.

Miller et al. (1990) and McDermott and Wescott (1996) found that risk premium[4], particularly in the case of a large public debt stock and during periods of « fiscal stress », will reinforce potential crowding-out effects and even turn fiscal multipliers into negative value. Restrictive fiscal policies, which can reduce default risk in high-debt countries, will possibly reduce or even eliminate such risk premium. The interest rate decline would stimulate demand both directly, through investments (McDermott and Wescott, 1996), and indirectly, through the positive wealth effect in the private sector and therefore consumption (Giavazzi and Pagano, 1990).

According to Alesina et al. (1998) and Alesina and Ardagna (1998), the credibility effect operates through lower real interest rates. This is caused by a decrease of default risk premium, which in turn is driven by the decreased need for public financing, coupled with fiscal

---

[4] Which reflect the inflation or the default risk.

consolidation. The reduction of the interest rates encourages aggregate demand through private investment.

However, changes in the household wealth and the interest rates are the main channels of transmission to aggregate demand, justifying the traditional keynesian effects of fiscal contraction or even suggesting the non-keynesian case of expansionary fiscal consolidation.

2. Specification and estimation methodology
2.1. Modeling consumption function

In this section, we will briefly outline Perotti (1999)'s model that we will use as point of reference to our empirical investigation. The model has four key ingredients : first, taxes have distortionary effects ; second, the government has a higher discount rate than private agents ; third, the coexistence of credit-constrained individuals and individuals with free access to credit markets ; fourth, the government expenditure has a positive effect on the economic output.

Theoretically, and according to Perotti (1999), the change of private consumption simultaneously depends on unexpected fiscal policy innovations and an expected change in disposable income. These macroeconomic variables are not readily available and must be estimated in a first step. The specification is therefore based on equation 1:

(1)
$$\Delta C_t = \alpha^G \, \varepsilon_t^G + \alpha^T \, \varepsilon_t^T + \mu \, \Delta Y_{t/t-1}^d + \epsilon_t$$

$\Delta C_t,\ \varepsilon_t^G,\ \varepsilon_t^T$ and $\Delta Y_{t/t-1}^d$ represent the change in private consumption, government expenditure innovation, tax revenue innovation and the expected change in disposable income.

The empirical analysis requires two preliminary steps. First, the fiscal policy innovations ε_t^G and ε_t^T and the expected change in disposable

income $\Delta Y^d_{t/t-1}$ must be estimated using a Structiural Vector Autoregression model (VAR), presented by equation 2[5] :

(2) $$\Delta X_t = I + A\,\Delta X_{t-1} + \varepsilon_t$$

ΔX_{t-1} is the vector of endogenous variables consisting of the net public expenditure (G_t), tax revenues (T_t) and real GDP (Y_t). ε_t is the residual vector. Unexpected fiscal policy innovations ε^G_t and ε^T_t correspond to the first two residuals of vector ε_t.

According to Schclarek (2007), the expected change in disposable income between t and $(t-1)$ is given by the following expression:

(3) $$\Delta Y^d_{t/t-1} = \beta_0 + \beta_1\,\Delta Y^d_{t-1} + \omega_t$$

$\Delta Y^d_{t/t-1}$ depends only on the lagged information (ΔY^d_{t-1}), and not on contemporaneous information about fiscal policy innovations.

Second, a key aspect of the model is that the effects of fiscal policy innovations depend on the initial conditions. Using Hansen (2000)'s threshold regression model, we estimate the non- linear consumption function. By assumption, we assume that the consumption decision in period t is made with a lag to fiscal policy changes ε^G_{t-1} and ε^T_{t-1}. The econometric model is :

(4) $$\begin{aligned} \Delta C_t = &\left(\alpha^G_1 \varepsilon^G_{t-1} + \alpha^T_1 \varepsilon^T_{t-1} + \mu_1 \Delta Y^d_{t/t-1} \right) I(Z_{t-d} \le Z) \\ &+ \left(\alpha^G_2 \varepsilon^G_{t-1} + \alpha^T_2 \varepsilon^T_{t-1} + \mu_2 \Delta Y^d_{t/t-1} \right) I(Z_{t-d} > Z) \\ &+ \varepsilon_t \end{aligned}$$

I (.) is an indicator function which equals 1 when $I(Z_{t-d} \le Z)$ and 0 otherwise. Similarly, it is equal to 1 if $I(Z_{t-d} > Z)$ and 0 otherwise. Z_{t-d} is the threshold variable.

---

[5] To simplify the general specification of the VAR model, we use one delay in the model.

2.2. Threshold regression model

Recent contributions to econometrics with threshold effects are usually based on a two-step approach. The first step requires a linearity test of the model. The test to be used is the following :

H_0: The model is linear

H_1: The model contains a threshold effect,

If the linearity is rejected, the second step consists in estimating all the parameters in the model.

For a special case of threshold regression models, we can cite the threshold model with two regimes developed by Hansen (2000), which take the form of :

$$(5) \qquad y_i = \theta_1' \, X_i + e_i, \qquad q_i \leq \gamma$$
$$(6) \qquad y_i = \theta_2' \, X_i + e_i, \qquad q_i > \gamma$$

where q_i may be called the threshold variable, and used to split the sample into two groups or « regimes ». The random variable q_i is a regression error.

The threshold regression model takes the form (5)-(6). This model allows the regression parameters to differ depending on the value of q_i.

To write the model in a single equation, we define the dummy variable $d_i(\gamma) = \{q_i \leq \gamma\}$, where $\{.\}$ is the indicator function and set $X_i(\gamma) = X_i \, d_i \, (\gamma)$, so that (1)-(2) equal

$$(7) \qquad y_i = \theta' \, X_i + \delta_n' \, X_i(\gamma) + e_i$$

where $\theta = \theta_2$. Equation (7) allows for all the regression parameters to switch between the regimes.

To express the model in matrix notation, we define the $n \times 1$ vectors y and e by stacking the variables y_i and e_i, and the $n \times m$ matrices X and X_γ by stacking the vectors X_i' and $X_i(\gamma)'$. Then (7) can be written as :

(8) $Y = X \theta + X_\gamma \delta_n + e$

The regression parameters are $(\theta, \delta_n, \gamma)$ and the natural estimator is the least squares (LS). We set

(9) $S_n(\theta, \delta, \gamma)$
$$= (Y - X\theta - X_\gamma \delta)'(Y - X\theta - X_\gamma \delta)$$

$S_n(\theta, \delta, \gamma)$ is the sum of squared error function. Then by definition, the LS estimators $\hat{\theta}, \hat{\delta}, \hat{\gamma}$ jointly minimize (9). For this minimization, γ is assumed to be restricted to a bounded set $\left[\underline{\gamma}, \overline{\gamma}\right] = \Gamma$.

Conditionnal on γ, (8) is linear in θ and δ_n, yielding the conditional OLS estimators $\hat{\theta}(\gamma)$ and $\hat{\delta}(\gamma)$ by regression of Y on $X_\gamma^* = [X\, X_\gamma]$. The concentrated sum of squared errrors function is :

(10) $$S_n(\gamma) = S_n\big(\hat{\theta}(\gamma), \hat{\delta}(\gamma), \gamma\big) = Y'Y - Y'X_\gamma^* \left(X_\gamma^{*\prime} X_\gamma^*\right)^{-1} X_\gamma^{*\prime} Y$$

and $\hat{\gamma}$ is the value that minimizes $S_n(\gamma)$. $\hat{\gamma}$ can be defined as :

$$\hat{\gamma} = \begin{matrix} \text{argmin } S_n(\gamma) \\ \gamma \in \Gamma_n \end{matrix}$$

where $\Gamma_n = \Gamma \cap \{q_1, \dots, q_n\}$, which requires less than n function evaluations. The slope parameter estimates can be computed through $\hat{\theta} = \hat{\theta}(\hat{\gamma})$, and $\hat{\delta} = \hat{\delta}(\hat{\gamma})$.

To test the hypothesis $H_0 : \gamma = \gamma_0$, a standard approach is to use the likelihood ratio statistic under the auxiliary assumption that e_i is iid $N(0, \sigma^2)$.

Following Hansen (2000), we consider this statistics

$$LR_n(\gamma) = n \frac{S_n(\gamma) - S_n(\hat{\gamma})}{S_n(\hat{\gamma})}$$

The likelikood ratio test of H_0 is rejected for large values of $LR_n(\gamma_0)$.

3. Empirical analysis and results

In this paper, we use annual data from 1975 to 2010, to the case of an emerging country, Tunisia. C_t is private consumption. G_t is net public expenditure. T_t is tax revenue. Y_t is real GDP. Y^d is household income. All these variables are in real per capita terms. Z_{t-d} represents the private debt / GDP ratio $(DEBTPR_{t-d})$[6].

The fiscal policy innovations ε^G_{t-1} and ε^T_{t-1} and the expected change in household income $\Delta Y^d_{t/t-1}$ are estimated by means of the VAR model (equations 2 and 3).

Before estimating the threshold model (equation 4), it is necessary to test the presence of threshold effect and specify the threshold variable for which linearity is most strongly rejected. Using the methodology developed by Hansen (2000), the linearity test results do not reject the existence of a private debt threshold, here the estimated parameter for the threshold parameter is 48% (Table 1).

Table 1

Linearity test $(DEBTPR_{t-1})$

Threshold Estimate	48%
Value of LM test	8.72
Bootstrap P-Value	0.109***

***significant at 10% level.

Using Hansen (2000)'s methodology, table 2 reports the estimation results of equation 4 and provides an overview of the non-linear consumption function. The table indicates that the threshold for the

---

[6] In this case, the delay lag of the threshold variable d used may be 0, 1 or 2.

private debt of 48% of GDP, splits the sample into two regimes based on private debt/ GDP ratio.

Table 2

Threshold private consumption; threshold variable $DEBTPR_{t-1}$

Parameters	$DEBTPR_{t-1} \leq 48\%$	$DEBTPR_{t-1} > 48\%$
Constant	0,296 (5,69)*	0,032 (1)
ε_{t-1}^{G}	0,293 (4,30)*	-0,037 (1,76)***
ε_{t-1}^{T}	-0,247 (16,46)*	0,066 (1,78)***
$\Delta Y_{t/t-1}^{d}$	-9,916 (5,161)*	-0,792 (0,71)

*significant at 1% level, ***significant at 10% level. t-statistics are presented in ( ).

When the private debt /GDP ratio is at or below 48%, public expenditure innovation has a positive and significant effect on private consumption (the estimated coefficient is 0,293). However, the estimated parameter of tax innovation is negative and has a significant effect on private consumption (-0,247). These results indicate that public expenditure and tax revenues have traditional keynesian effects on private consumption.

On the other hand, when the private debt /GDP ratio is above 48%, it is clear that the coefficients of public expenditure and tax revenues change signs. A positive innovation of public expenditure on private consumption becomes negative and significant, showing a coefficient of -0.037. This implies that a decrease in the public expenditure leads to an expansion in private consumption. It is the standard neoclassical effect. This explains the expansionary effect of public expenditure on private consumption.

A positive innovation of tax revenue has a positive and significant effect on private consumption (the estimated coefficient is 0,066). An

increase of tax revenues causes a stimulation of private consumption : it is the anti-keynesian impact of tax revenue on private consumption. A fiscal contraction based on increased tax revenue has a favorable effect on the economic activity. This is consistent with the hypothesis of expansionary fiscal contraction.

In conclusion, there is a large difference between the effects of fiscal policy innovations on private consumption, depending on private debt regime.

Conclusion

The objective of this paper is to analyze the effect of a fiscal shock on private consumption. In particular, we try to check for the existence of a threshold effect on the consumption function, in Tunisia, between 1975 and 2010.

The application of Hansen (2000)'s threshold regression model shows that private debt ratio determine the impact of fiscal policy innovations on private consumption. Generally, public expenditure and tax revenues do not have the same effect in both regimes identified by the threshold variable.

Our empirical analyses imply that when the level of private debt is inferior or equal to 48%, fiscal shocks affect private consumption on a keynesian way. Once this threshold is exceeded, public expenditure has a neoclassical effect. Indeed, tax revenues have anti-keynesian effect on private consumption. Our results indicate that the expansionary fiscal policy may not always have standard keynesian effects. We can not always stimulate the economy through fiscal expansion. Nevertheless, we can stimulate the tunisian economy through a fiscal contraction, by increasing tax revenues or reducing public expenditure, at high private debt levels.

References

Alesina, A. and Ardagna, S., 1998. "Tales of fiscal adjustments". Economic Policy, 13(27), pp.487-545.

Alesina, A., Perotti, R. and Tavares, J., 1998. "The political economy of fiscal adjustments". Brookings Papers on Economic Activity, 29(1), pp.197-266.

Ary Tanimoune, N., Combes, J. L. and Plane, P., 2008. "La politique budgétaire et ses effets de seuil sur l'activité en Union Economique et Monétaire Ouest Africaine (UEMOA)". Revue Economie et Prévision, 186(5), pp.145-162.

Bertola, G. and Drazen, A., 1993. "Trigger points and budget cuts: explaining the effects of fiscal austerity". American Economic Review, 83(1), pp.11-26.

Bhattacharya, R. and Mukherjee, S., 2013. "Non-keynesian effects of fiscal policy in OECD economies: an empirical study". Applied Economics, 45(29), pp. 4122-4136.

Blanchard, O., 1990. "Can severe fiscal contractions be expansionary? tales of two small european countries: comment". NBER Macroeconomics Annual, 5, pp.111-116.

Giavazzi, F. and Pagano, M., 1990. "Can severe fiscal contractions be expansionary? tales of two small european countries". NBER Macroeconomics Annual, 5, pp.75-111.

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(7), pp. 1259-1289.

Hansen, B. E., 2000. "Sample splitting and threshold estimation". Econometrica, 68(3), pp.575-603.

Hjelm, G., 2002. "Is private consumption growth higher (lower) during periods of fiscal contractions (expansions)?". Journal of Macroeconomics, 24(1), pp.17-39.

Kameda, K., 2014. "What causes changes in the effects of fiscal policy? A case study of japan ". Japan and the World Economy, 31(C), pp.14-31.

Landry, B., 2010. "Threshold effects of budgetary policy on economic growth in Cemac ". MPRA paper, n°24524.

McDermott, J. and Wescott, R. F., 1996. "An empirical analysis of fiscal adjustments". IMF, Staff Papers, 43(4), pp.725-753.

Miller, M., Skidelsky, R. and Weller, P., 1990. "Fear of deficit financing: is it rational?". in public debt management: theory and history, ed. by Rudiger Dornbusch and Mario Draghi (Cambridge and New York: Cambridge University Press), pp.293-310.

Minea, A. and Villieu, P., 2008. "Un réexamen de la relation non-linéaire entre déficits budgétaires et croissance économique". Revue Economique, 59(3), pp.561-570.

Perotti, R., 1999. "Fiscal policy in good times and bad". The Quarterly Journal of Economics, 114(4), pp.1399-1436.

Schclarek, A., 2007. "Fiscal policy and private consumption in industrial and developing countries". Journal of Macroeconomics, 29(4), pp. 912-939.

Siwinska, J. and Bujak, P., 2006. "The short-run macroeconomic effects of discretionary fiscal policy changes". in the Eastern Enlargement of the Eurozone, ed. by Dabrowski, M., J. Rostowski, Netherlands, pp.131-145.

Sutherland, A., 1997. "Fiscal crises and aggregate demand: can high public debt reverse the effects of fiscal policy? ". Journal of Public Economics, 65(2), pp.147-162.