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An avenue for expansionary fiscal contractions

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Abstract

Expansionary fiscal contractions were first illustrated by several fiscal episodes that occurred in Europe during the 1980s. This paper suggests a simple analytical textbook model that encompasses both Keynesian and non-Keynesian effects of fiscal policy. In such a context, the possibility of expansionary fiscal contractions is linked to the responsiveness of the risk premium of domestic interest rates to the budgetary position of the government and to the existence of credit-rationed consumers.

Keywords: fiscal policy; expansionary fiscal contractions; non-Keynesian effects

JEL classification: E21, E62

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1. Introduction

While studying the fiscal consolidations that occurred in Denmark and in Ireland in the 1980s, Giavazzi and Pagano (1990) documented the possibility of expansionary fiscal contractions. In a nutshell, an increase of public expenditures might cast doubts on the sustainability of fiscal policy and on the level of the debt-to-GDP ratio, and one may observe an increase of private saving and a reduction of private consumption. By the opposite reasoning, a reduction of public spending may induce an increase in private consumption. The aforementioned fiscal episodes exemplified also the relevance of the Ricardian equivalence idea.

Among the available empirical evidence on expansionary fiscal consolidations there is significant disagreement. Nevertheless, there seems to be some evidence that the existence of non-Keynesian effects may well depend upon the size and the persistence of the fiscal adjustment. The composition of the adjustment is also relevant, that is, to what degree the fiscal contraction is based on tax increases and public investment or consumption cuts.[1]

This paper suggests an avenue for expansionary fiscal contractions in a simple analytical textbook model that encompasses both Keynesian and non-Keynesian effects of fiscal policy. The possibility of expansionary fiscal contractions is linked to the responsiveness of interest rates to fiscal policy and to the existence of rationed consumers. Section two briefly offers some rational background regarding expansionary fiscal contractions. The analytical model and the results are presented in section three and section four is a conclusion.

2. Some background on expansionary fiscal contractions

The discussion on expansionary fiscal consolidations could be traced back to Barro and the Ricardian Equivalence question, an expression apparently coined by Buchanan (1976). Even though the first formal exposition is credited to Barro (1974), the theoretical rational behind the Ricardian Equivalence hypothesis was originally stated by Ricardo (1817).[2]

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[1] For empirical evidence on cross-country analysis see Alesina and Perotti (1995), McDermott and Wescott (1996), Alesina and Ardagna (1998), Perotti (1999), Giavazzi, Jappelli and Pagano (2000), Heylen and Everaert (2000), EC (2003), Giudice et al. (2004), and Afonso (2006).

[2] Interestingly Barro (1998) says: "My excuse for being blissfully ignorant in 1973 of Ricardo' s contribution is that I was a young, non-tenured faculty member with inadequate graduate training from Harvard University."

The key idea behind Ricardian Equivalence is that consumers are linked by intergenerational altruism, and also that they have a fairly good perception about the future taxes needed to repay eventual present increases in government debt. Therefore, consumer's net wealth would be invariant between more debt today and more taxes tomorrow. Budget deficits would have no real effects and fiscal policy would be unable to change private consumption, a different notion from the one sustained by Keynes. In a limit situation, when the government cuts taxes, consumers just save more, for instance placing money in time deposit accounts, in order to help pay the higher future taxes, and the level of consumption would remain unchanged.

Another point worthwhile making is that, intuitively, if an increase in public spending casts some doubts on the sustainability of fiscal policy and on the level of the debt-to-GDP ratio, one may observe an increase of private saving and a reduction of private consumption.[3] Conversely, an increase in taxes, while shifting some of the tax burden from future generations to the present generations, and contributing to reduce current private consumption, may also diminish uncertainty about the future conduction of fiscal policy. Therefore, consumers can reduce accumulated saving, some of which was probably set up as a precaution to meet future tax increases. This second effect may be the prevailing one, when for instance there is already a high debt-to-GDP ratio. Therefore, the possibility of the so-called non-Keynesian effects of fiscal policy can arise.

In addition, Blanchard (1990) and Sutherland (1997) maintain that if the fiscal consolidation appears to the public as a serious attempt to reduce the public sector borrowing requirements, there may be an induced wealth effect, leading to an increase in private consumption. Furthermore, the reduction of the government borrowing requirements diminishes the risk premium associated with public debt issuance, contributes to reduce real interest rates and allows the crowding-in of private investment. However, if consumers do not think that the fiscal consolidation is credible, then the customary negative Keynesian effect on consumption will prevail.[4]

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[3] Regarding the sustainability of fiscal policies in the European Union see, for instance, Afonso (2005).
[4] Bertola and Drazen (1993), Barry and Devereux (1995) and Perotti (1999) present several theoretical explanations concerning the possible existence of non-Keynesian effects.

On the other hand, McDermott and Wescott (1996) discuss the possibility of a wealth effect as an explanation to the existence of a non-Keynesian transmission channel of fiscal policy. Again, if there are doubts concerning the sustainability of fiscal policy, a fiscal consolidation may be a factor in favour of the reduction of interest rates. This may in turn, help increase the market value of the assets portfolios held by the consumers, and the implicit wealth effect would allow the increase of aggregate demand.

Moreover, a fiscal consolidation may contribute to improve the long-term financing conditions of a given government by reducing its demand for financing in the capital markets. This can decrease potentially existing crowding out effects created by the government's demand for capital, and reduce the risk premium attached to government debt. Such effects could play a role in increasing private investment

In addition, the fact that an increase in public expenditure will have typical Keynesian effects when the level of public debt or of the budget deficit is small. If a country has an important budget deficit or a very high debt-to-GDP ratio, a fiscal consolidation may well produce the non-Keynesian effects discussed above.

3. Model and results

One should be aware that, in general, a public spending cut back may have non-Keynesian results when the impact is large enough in order to change future expectations about future budget deficits and public debt evolution. Indeed, such result is easily shown in straightforward formulations.[5]

The proposed formal analysis in this paper uses a simple two period model for a small economy, with income in each year given by

$$Y_i = C_i + \bar{G}_i + I_i + (\bar{X}_i - M_i) \tag{1}$$

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[5] In a simple Keynesian framework, with the standard notation and relations, $Y = C + G + I$, $G = \bar{G}$, $Y^d = Y - T$, $T = tY$ and $C = cY^d$, a fiscal policy contraction may lead to an output expansion. In fact, an increase of the budget surplus produces an output increase if the following two conditions are fulfilled: $c < \Delta G / \Delta T < 1/(1-t)$.

where Y_i is income; C_i is private consumption; $\bar{G}_i$ are exogenous public expenditures, $\bar{X}_i$ are exports, also exogenous, M_i are imports, and I_i is investment, with $i = 1, 2$.

The domestic interest rate r depends on the foreign interest rate, and it should also reflect the country specific risk conditions, which may be related to the public revenues that the government has available to finance the deficit. McDermott and Westcott (1996) argue that fiscal contractions (for instance, an increase of public revenues) contribute to lower the interest rate risk premium and to increase investment. In other words, the less significant those public revenues are, the more pressured the government is to find credit in the capital markets, paying therefore higher interest rates. The domestic interest rate could then be seen as a positive function of the budget deficit or, alternatively, as a decreasing function of the tax revenues.

For instance, Artus (1997) observed that the European countries with the higher interest rate differentials with reference to Germany were the countries with the more significant budget deficits. Cebula (1997) and Engen and Hubbard (2004) find empirical evidence for the US that budget deficits and government debt have a significant and positive effect on long-run interest rates. Ibrahim and Kumah (1997) find evidence that an increase in the budget deficit leads to an increase of the short run interest rate differential, vis-à-vis the US, in the UK, Japan and Sweden. See also Rose and Hakes (1995) concerning the relationship between deficits and interest rates. Additionally, Laubach (2003) finds that a one-percentage point increase in the projected US deficit-to-GDP ratio is estimated to raise long-term interest rates by some 25 basis points.

On the other hand, Faini (2004) finds some evidence that, after the set up of the European Monetary Union, interest rate spillovers are larger for high-debt countries with unsustainable fiscal policies. Therefore, an interest rate reduction would raise the market value of the assets owned by the households. If this wealth effect is higher than the negative effect that the fiscal consolidation has on aggregate demand, then the fiscal contraction may result in a net increase of private consumption.

One may then assume the possibility of a negative relation between the domestic interest rate and public revenues and put differently, a negative link between domestic interest rate and

taxes. With the existence of such risk-premium factor that is increasing in the budget deficit, the interest rate is given by

$$r = r^* + f(T_1) \tag{2}$$

where r^* is the foreign interest rate and T_1 the tax revenues, with $\partial r / \partial T_1 < 0$. Additionally, one also assumes that investment depends negatively on the interest rate.

In each period the government fulfils its budget constraint, which can be written respectively for periods 1 and 2 as

$$T_1 + B_1 = \bar{G}_1 , \tag{3}$$

$$T_2 - B_1 = \bar{G}_2 . \tag{4}$$

Assume also that outside public debt there is no other source of deficit financing. The government's intertemporal budget constraint may then be written as

$$T_1 + \frac{T_2}{1+r} = \bar{G}_1 + \frac{\bar{G}_2}{1+r} . \tag{5}$$

Presuming also there is a certain fraction of consumers, λ, that face liquidity constraints, that is, they consume in each period their entire disposable income. On the other hand, a fraction *(1–λ)* of consumers does not face such restrictions, which may imply that they have access to the credit market. For this group of consumers consumption reflects their permanent disposable income, and as a result is inversely related to the interest rate due to wealth effects.

Hence, private consumption in period one, assuming for simplification sake that there are no current transfers, is a function of present and future disposable income,

$$C_1 = \lambda(Y_1 - T_1) + (1-\lambda)(1-s)\left[Y_1 - T_1 + (Y_2 - T_2)\frac{1}{1+r}\right], \qquad (6)$$

with $0 < \lambda < 1$, and with the savings rate, s, also obeying $0 < s < 1$. The first term of the previous equation right-hand side represents the consumers that face liquidity constraints, while the second term of the right-hand side regards the consumers without liquidity constraints. In the presence of liquidity constraints, private consumption is the sum of consumption from liquidity-constrained consumers and consumption from non-constrained consumers.

The effect on private consumption of a tax increase (see Appendix), noticing that $\partial T_2 / \partial T_1 = -(1+r)$, may be derived as

$$\frac{\partial C_1}{\partial T_1} = -\lambda + \underbrace{(1-\lambda)}_{(+)}\underbrace{(1-s)}_{(+)}\underbrace{\left(\frac{\partial r}{\partial T_1}\right)}_{(-)}\underbrace{\left[-\frac{Y_2 - T_2}{(1+r)^2}\right]}_{(-)}. \qquad (7)$$

Observe that the second term of the right-hand side of the previous equation has a positive sign, so that the sign of the derivative $\partial C_1 / \partial T_1$ is undetermined, giving rise to the possibility for the existence of expansionary fiscal contractions.

Defining z as the second term of the right-hand side of equation (7), then according to the magnitude of the z term, a tax increase may produce either a private consumption increase, the case where $|z| > |\lambda|$, or the usual Keynesian effect of decreasing private consumption, the case where $|z| < |\lambda|$.

The model also allows the following results:

i) There are no expansionary fiscal contractions when $\partial r / \partial T_1 = 0$, in other words, in the absence of the risk-premium factor increasing in the budget deficit;

ii) If all consumers are rationed, $\lambda = 1$, fiscal policy will also have the usual Keynesian effects;

iii) The higher the proportion of non-rationed consumers (the lower the value of λ) the higher the possibility of non-Keynesian effects;

iv) When the interest rate is more responsive to changes in public revenues, implying a higher value for $|\partial r / \partial T_1|$, and if not all consumers are rationed ($\lambda \neq 1$), then more likely is the existence of fiscal policy non-Keynesian effects.

Additionally, the effect on income of a change in tax revenues is obtained through the computation of $\dfrac{\partial Y_1}{\partial T_1} = \dfrac{\partial C_1}{\partial T_1} + \dfrac{\partial I_1}{\partial T_1}$. Considering also that $\dfrac{\partial I_1}{\partial T_1} = \dfrac{\partial I_1}{\partial r} \dfrac{\partial r}{\partial T_1}$, it is possible to write

$$\frac{\partial Y_1}{\partial T_1} = -\lambda + \underbrace{\frac{\partial r}{\partial T_1}}_{(-)} \underbrace{\left[(1-\lambda)(1-s) \underbrace{\left[-\underbrace{\frac{Y_2 - T_2}{(1+r)^2}}_{(+)} \right]}_{(-)} + \underbrace{\frac{\partial I_1}{\partial r}}_{(-)} \right]}. \qquad (8)$$

Using w as a notation for the second term of the last equation right-hand side, which again has a positive sign, we have $\partial Y_1 / \partial T_1 > 0$, the non-Keynesian effect, as a feasible result when $|w| > |\lambda|$. The previous conclusions concerning private consumption are also applicable in this case, in terms of the effects on income.

Therefore, and as result of the two assumptions made above, the existence of liquidity constrained consumers, and the fact that the interest rate increasing in the budget deficit, a tax cut has an expansionary effect on the consumption level of credit-constrained consumers by raising their disposable income. On the other hand, the tax cut has a contractionary effect on the consumption level of the non-constrained consumers, since by worsening the fiscal balance of the country it also raises the risk premium component of the domestic interest rate, and thereby induces a negative wealth effect.

Depending on the relative strength of the two effects mentioned above, the expansionary (Keynesian) effect or the contractionary (non-Keynesian) effect would eventually prevail. For instance, the magnitude of the share of credit-constrained consumers in the economy increases the Keynesian outcome, while the responsiveness of the risk premium to the government fiscal balance increases the non-Keynesian effect allowing the possibility of expansionary fiscal contractions.

4. Conclusion

This paper suggested an analytical textbook model with two periods for private consumption that comprises the possibility of both Keynesian and non-Keynesian effects of fiscal policy. The main features of the model are the relation between the interest rate and taxes and the existence of rationed consumers. On the one hand, it is assumed that a negative relation between the domestic interest rate and public revenues may exist, and put differently, a negative link between domestic interest rates and taxes is then suggested. On the other hand, it is also assumed that one of the standard conditions for Ricardian equivalence to occur is not met, with consumers facing liquidity constraints.

One of the main conclusions of the paper is that when the domestic interest rate is more responsive to changes in government taxes, and if some part of the consumers is not credit-constrained, then the existence of expansionary fiscal contractions is more likely. This captures the ambiguous effect of changes in taxes on consumption. Additionally, the bigger the proportion of non-rationed consumers the higher the possibility for the occurrence of non-Keynesian effects, both on private consumption and on income. Alternatively, if all consumers face liquidity constraints then the usual Keynesian effects prevail.

Therefore, the usually assumed positive correlation between private consumption and fiscal expansions may be reversed under some particular conditions, for instance, if consumers are forward looking and if they are not liquidity-constrained. Nevertheless, one should be careful in drawing strong policy conclusions on this issue since empirical and case study based assessments would always be advisable and required.

Appendix – Derivation of the results

The effects on private consumption from a change in taxes are computed as

$$\frac{\partial C_1}{\partial T_1} = -\lambda + (1-\lambda)(1-s)\left\{-1 + \frac{\left[-\dfrac{\partial T_2}{\partial T_1}\right](1+r) - (Y_2 - T_2)\dfrac{\partial r}{\partial T_1}}{(1+r)^2}\right\}, \qquad (A1)$$

$$\frac{\partial C_1}{\partial T_1} = -\lambda + (1-\lambda)(1-s)\left\{-1 + \frac{1}{1+r}\left[-\frac{\partial T_2}{\partial T_1}\right] - \frac{Y_2 - T_2}{(1+r)^2}\frac{\partial r}{\partial T_1}\right\}. \qquad (A2)$$

Using the inter-temporal government budget constraint

$$T_1 + \frac{T_2}{1+r} = \bar{G}_1 + \frac{\bar{G}_2}{1+r} \qquad (A3)$$

it is possible to write

$$\frac{\partial T_2}{\partial T_1} = -(1+r). \qquad (A4)$$

This result can then be substituted into (A2)

$$\frac{\partial C_1}{\partial T_1} = -\lambda + (1-\lambda)(1-s)\left\{-1 + \frac{1}{1+r}[1+r] - \frac{Y_2 - T_2}{(1+r)^2}\frac{\partial r}{\partial T_1}\right\} \qquad (A5)$$

in order to derive the effect on private consumption of a tax increase as presented in the text

$$\frac{\partial C_1}{\partial T_1} = -\lambda + (1-\lambda)(1-s)\left(\frac{\partial r}{\partial T_1}\right)\left[-\frac{Y_2 - T_2}{(1+r)^2}\right]. \qquad (A6)$$

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