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ALTERNATIVE STRATEGIES TO REDUCE PUBLIC DEFICITS: THE CASE OF SPAIN

High government deficits are a matter of concern in many European countries. We examine the effects of several alternative measures intended to reduce public deficits, distinguishing between those acting through either taxes or spending. Our analysis is applied to the Spanish economy, using a computable general equilibrium model.

Key words: Government deficit, taxes, spending, computable general equilibrium

Introduction

Major fiscal imbalances are a matter of concern in many developed countries, which is particularly true for most European countries, especially those belonging to the euro area. Accordingly, fiscal consolidation strategies are being pursued in those countries in order to reduce such “excessive” government deficits, and so recovering the confidence of financial markets and avoiding the risk of sovereign default.

The effectiveness of fiscal policy on the levels of economic activity is a recurrent topic on the academic literature. However, the traditional “Keynesian” effects of fiscal policy (i.e., a fiscal expansion leading to an increase in output and a fiscal contraction leading to a decrease in output) have been challenged in recent years; see [1]. According to the so called “non Keynesian” effects of fiscal policy, a contractionary fiscal policy can provoke an expansionary effect on output, due to the increased confidence of the private agents on government’s solvency, which would lead to lower expected taxes in the next future.

The generality of these “non Keynesian” effects of fiscal policy has been put into question. On the one hand, successful expansionary fiscal contractions have been coupled with other simultaneous events (such as a decrease in interest rates, a depreciation of the exchange rate, episodes of wage moderation, or a decrease in taxes on labour), which makes rather risky trying to explain the favourable economic evolution just from the restrictive fiscal policy; see [2]. On the other hand, recent studies using a novel methodology (namely, identifying changes in fiscal policy motivated by the desire to reduce the budget deficit from historical documents) find that fiscal consolidations have a contractionary effect on economic activity, as expected from standard Keynesian models; see [3].

Recent literature has also discussed the composition of the fiscal adjustment measures. According to [4], in the case of a fiscal consolidation, spending cuts are more effective than tax increases in order to stabilize the debt and avoiding a recession; whereas, for the case of a fiscal stimulus, the opposite result would hold, i.e., tax cuts are more expansionary than spending increases.

In this paper, we will present the first results of a more detailed work in process, where we examine the effects of several alternative measures intended to reduce public deficits, distinguishing between those acting through either taxes or spending, for the case of Spain. The recent evolution of public finances in Spain is summarized in Table 1, which offers data on general government expenditure, revenue, surplus (i.e., net lending/borrowing of consolidated general government sector) and consolidated gross debt, as a percentage of GDP, for Spain and the euro area, from 1999 (i.e., the year in which the European monetary union started) to 2011.

Table 1. Government expenditure, government revenue, government surplus and government debt in Spain and the euro area, 1999-2011 (% of GDP)

	Government expenditure		Government revenue		Government surplus		Government debt	
	Spain	euro area	Spain	euro area	Spain	euro area	Spain	euro area
1999	39,9	48,1	38,7	46,7	-1,2	-1,4	62,4	71,6
2000	39,2	46,2	38,2	46,2	-1,0	0,0	59,4	69,2
2001	38,7	47,2	38,1	45,3	-0,5	-2,0	55,6	68,1
2002	38,9	47,6	38,7	44,9	-0,2	-2,7	52,6	67,9
2003	38,4	48,0	38,0	44,9	-0,4	-3,2	48,8	69,1
2004	38,9	47,5	38,8	44,6	-0,1	-2,9	46,3	69,5
2005	38,4	47,4	39,7	44,9	1,3	-2,6	43,1	70,1
2006	38,4	46,8	40,7	45,4	2,4	-1,4	39,6	68,5
2007	39,2	46,1	41,1	45,4	1,9	-0,7	36,2	66,3
2008	41,5	47,2	37,0	45,1	-4,5	-2,1	40,2	70,1
2009	46,3	51,2	35,1	44,8	-11,2	-6,4	53,9	79,9
2010	45,6	51,0	36,3	44,7	-9,3	-6,2	61,2	85,3
2011	43,6	49,4	35,1	45,3	-8,5	-4,1	68,5	87,2

Source: Eurostat.

As can be seen, the Spanish government deficit was lower than the average of the euro area until 2007; an even a surplus was registered between 2005 and 2007. The start of the crisis meant a dramatic change, with government deficits reappearing in 2008, soaring in 2009 to 11% of GDP, and slowly decreasing after that date; however, the Spanish government deficit as percentage of GDP in 2011 stands for twice that of the euro area. On the other hand, even though government expenditure as a percentage of GDP has increased in Spain after the start of the crisis at a rather similar than in the euro area, the ratio of government revenue to GDP has experienced a huge fall (six percentage points between 2007 and 2011) that is strongly at odds with its stability for the euro area. Finally, these developments have led to a large increase in the ratio of government debt to GDP, which is however still lower than the average of the euro area.

Accordingly, in the rest of the paper we will provide a first empirical assessment of several alternative policy measures intended to reduce the Spanish government deficits, from both the expenditure and revenue sides. The empirical methodology will make use of a computable general equilibrium (CGE) model, which allows one to gather the consequences of changes in a particular variable on the whole economy under analysis, as well as to obtain the specific effects across the different productive sectors. Thus, the potential of CGE models lies in their ability to integrate micro and macro elements. As an additional advantage, CGE modelling allows the evaluation of consumers' welfare.

The model

The model is an extension of [5]: a static CGE model describing an open economy disaggregated in 18 productive sectors, with a representative consumer, a public sector and a foreign sector (i.e., the rest of the world). Due to the high unemployment rate in the Spanish economy, the model includes unemployment in a way derived from trade unions models. The equilibrium of the model involves the simultaneous solution of three sets of equations: zero-profit conditions for firms, market clearing in goods and capital markets, and constraints on disposable income (total revenue must equal total expenditure), labour market (includes unemployment) and macroeconomic closure of the model. The zero profit conditions are derived from the behaviour of producers, who maximize their profits subject to technology constraints, characterized by a nested structure of intermediate inputs, capital and labour.

On the consumption side, there is a representative consumer household behaving as a rational consumer, endowed with a fixed amount of capital and time that can allocate to labour and leisure. The representative consumer maximizes her nested utility function, defined over (consumption of) goods, leisure and savings, subject to the budget constraint.

The role of the public sector in the model is twofold. As an owner of resources, its wealth includes income from capital rents, net transfers received from the representative household, and tax revenues; where taxes include social contributions paid by employers and employees, value added taxes, other net indirect taxes, and income taxes. Also, as a purchaser of goods, we distinguish between market goods (i.e., output provided at economically significant prices) and non-market goods (i.e., output provided at non-economically significant prices).

The foreign sector follows the small open economy assumption, where the difference between receipts and payments from the rest of the world is exogenous to guarantee the closure of the model.

Finally, regarding factor markets, there are two productive factors, capital and labour. Capital is provided through fixed endowments both for the representative household and the public sector; there is no international mobility, and no mobility across domestic sectors, which implies that capital is specific. Labour is owned by the representative household; again, there is no international mobility, but labour is now mobile across domestic sectors. Since workers have some market power, wages are related to unemployment.

Calibration and results

Calibration has been made using a Social Accounting Matrix (SAM) for the Spanish economy, which represents the benchmark equilibrium of the model. The SAM has been built from the last available input-output symmetric table, for the year 2005, recently published by the Spanish National Institute of Statistics. The model is solved as in [6], using the software GAMS/MPSGE.

Regarding the sectoral classification, the 72 sectors in the input-output table have been aggregated into 18:

- 3 directly representing the main public spending: Public administration; Non-market education; Non-market health services.
- 7 where public spending is over 1600 million €: Chemicals; Retail trade, repairs; Research and development; Market education; Market health and social services; Non-market public cleanup services; Non-market cultural and recreation activities.
- 6 whose outputs are intermediate inputs for the first three: Electricity; Medical and precision instruments; Other transport equipment; Wholesale trade; Communication services; Other business activities.
- 1 with a small amount of public spending: includes Paper; Transport; Travel agents; Real estate; Market cultural and recreation activities; and Personal services.
- 1 with no public spending: includes the rest of the 72 sectors.

We have simulated a reduction of the public deficit amounting to 1% of Spain's GDP in 2011, so that the ratio public deficit/GDP decreases in 1 percentage point. In turn, the reduction of the public deficit can be achieved through:

- either a decrease in public spending in 3 alternative sectors, namely: Public administration, Non-market education, and Non-market health services;

- or an increase in tax collection in 2 alternative taxes, namely: Value Added Tax (VAT), and Other indirect taxes.

Notice that, even though a reduction of the public deficit lowers the ratio deficit/GDP, it also decreases GDP, which in turn leads to an increase in the ratio deficit/GDP, both directly and through a higher deficit via automatic stabilizers. Therefore, the effect of a lower public deficit on the ratio deficit/PIB is not clear-cut.

The effects of the simulations on the main macroeconomic variables are presented in Table 2 as % changes from benchmark for all variables, except for the ratio public deficit/GDP and the unemployment rate, where the figures refer to the change in percentage points.

Table 2. Effects on macroeconomic variables (% change from benchmark)

	∇ public administration	∇ education	∇ health	Δ VAT	Δ indirect taxes
GDP	-0,52	-0,58	-0,39	1,28	0,70
Employment	-0,81	-1,10	-0,84	-0,09	-0,43
Real wage rate	-0,31	-0,43	-0,32	-0,05	-0,28
Real capital rental rate	-1,30	-1,81	-1,66	-0,23	-0,53
Public revenue	-0,85	-0,71	-0,50	6,22	5,81
Public expenditure	-7,99	-7,83	-7,30	0,42	-0,23
Public deficit/GDP (p.p.)	-1,22	-1,23	-1,17	-1,23	-1,28
Unemployment rate (p.p.)	0,43	0,58	0,44	0,07	0,39

Source: Authors' elaboration.

Summarizing the main results, in all cases GDP and employment decrease, and the unemployment rate increases. Notice that the increase in GDP observed when taxes are raised is simply an accounting issue, since GDP is measured at market prices, i.e., including indirect taxes; when GDP is measured at factor costs it decreases in both cases (results available from the authors). In addition, both the real wage and capital rental rates also decrease, as well as the ratio public deficit/GDP. Comparing the results from decreases in spending versus increases in taxes, the former leads to worse results in terms of the evolution of the levels of activity (especially when spending cuts are performed in education), unlike the latter (especially when VAT is increased). The effects on the ratio public deficit/GDP are similar for both types of measures.

Conclusions

In this paper, we have presented the first results of a more detailed work in process, which tries to provide an empirical assessment of several alternative policy measures intended to reduce the Spanish government deficits, from both the expenditure and revenue sides, using a CGE model calibrated and simulated for the Spanish economy. In particular, we have simulated a reduction in the public deficit amounting to 1% of Spain's GDP in 2011, so that the ratio public deficit/GDP decreases in 1 percentage point. We have presented the results of five simulations. In the first three, the reduction in the public deficit has been achieved through a decrease in public spending in 3 alternative sectors, namely, Public administration, Non-market education, and Non-market health services, which represent three potential areas of intervention in the field of expenditure: the wages of the public sector workers, and expenditures on education and health, respectively. In the last two, the reduction in the public deficit has been achieved through an increase in tax collection in 2 alternative taxes, namely, VAT and Other indirect taxes.

Summarizing the main results, all the simulated policies lead to a fall in the levels of activity and an increase in the unemployment rate, at the same time that the ratio public deficit/GDP is lowered. Finally, while the results on the latter variable are similar in all cases, the most contractionary effects on output and employment follow from a decrease in spending in education, and the least contractionary ones when VAT is increased.

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