

FISCAL CONSOLIDATION IN SPAIN: DYNAMIC INTERDEPENDENCE OF PUBLIC SPENDING AND REVENUES

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Meeting fiscal targets set out in the Stability and Growth Pact for EMU countries requires the correction of fiscal imbalances. We consider what is the most efficient strategy to achieve permanent reductions in fiscal deficits in Spain. We analyse the possible interdependence between expenditure and revenues by performing standard Granger causality tests. We find that there is a bias towards deficit in public sector size and long-run bidirectional causality between public revenues and expenditure, although the direction of causality seems to hold mainly from public expenditure to revenues. Achieving fiscal consolidation should be based reducing structural public expenditure.

Keywords: Fiscal consolidation; causality; cointegration.

(JEL E61, H60)

1. Introduction

The commitment to meet the fiscal targets set out in the Stability and Growth Pact for the European Monetary Union (EMU) countries requires an adequate consolidation strategy that guarantees permanent, and not just temporary, reductions in fiscal deficits. In this context, the analysis of the patterns of interdependence between government expenditure and revenues, whether higher taxes lead to expenditure changes or whether expenditure growth leads budget dynamics with taxes following suit, becomes particularly relevant. If the direction of causality goes, for example, from spending to revenue, control of the

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deficit could be achieved through unanticipated increases in the tax burden or strict limits on the level of public spending. Under the “tax and spend” hypothesis, however, increases in the tax burden would only reduce the deficit in the short term, while if public spending and revenue are interdependent, budget discipline would require action to be taken on both sides of the budget simultaneously.

Theoretical arguments give support to any possible direction of causality between public spending and revenue¹. Brennan and Buchanan (1980) suggest that in a Laviathan-type government higher taxes today lead to more spending tomorrow; Barro’s “tax smoothing” theory (1979) predicts that increases in expenditure in the present tend to be followed by tax increases in the future. Other authors provide support for the hypothesis of interdependence between revenues and expenditure when taxes and spending are decided upon by the same group (Musgrave, 1966; Meltzer and Richard, 1981). Finally, independence of public spending and revenue is consistent with the Ricardian equivalence theorem (Barro, 1974). By postulating exogenous government behaviour with respect to spending decisions, under this theory, current tax changes, for example, merely entail future changes in revenue with the same present value and the opposite sign.

The empirical evidence is also far from conclusive. For the US, some studies have reported results showing that revenues cause expenditure (Blackley, 1986) while some others support the opposite conclusion (Anderson et al., 1986) and some researchers have found a bi-directional causality (Owoke, 1995) or cannot reject the hypothesis of absence of causality between spending and revenue (Shibata and Kimura, 1986). The evidence available for other countries is also mixed (Joulfaian and Mookerjee, 1991; Belessiotis, 1995). In the case of Spain, Raymond and González-Páramo (1988) and González-Páramo (1994) obtain evidence of causality running from taxes to the level of public spending, whereas Joulfaian and Mookerjee (1991) find that spending causes revenue when this pair of variables is considered alone. However, when the cyclical position of the economy and inflation are controlled for, the result is independence. Finally, Belessiotis (1995) identifies bidirectional causality.

¹See De Castro, González-Páramo and Hernández de Cos (2001) and González-Páramo (2001) for a deeper analysis of the theoretical relationships between fiscal revenues and expenditure.

In this paper, we provide additional empirical evidence for Spain on the existence of a dynamic interdependence between general government revenues and expenditure. For that purpose, we first perform Granger causality tests including cointegrating relationships; and secondly, we study the variance decomposition and impulse response functions in the context of a VAR analysis. Section 2 presents the empirical results. Section 3 draws the conclusions.

2. Empirical results

The empirical results obtained in this paper are based on Spanish annual data for the period 1964-2000². As a general remark, it should be stressed that we are aware that any long-run analysis based on such a small number of observations may give rise to some doubts. Moreover, the well-known lack of power of unit-root tests added to this problem obliges us to treat the results with the greatest care.

Prior to the causality test and the variance decomposition and impulse response functions of the vector autoregression (VAR) analysis, we compute traditional unit root tests (see Table 1) to investigate the order of integration of the variables used in the analysis. In none of the cases do the tests reject the null hypothesis of the existence of one unit root for the fiscal variables. Since no constant or deterministic trend turned out to be significant for t_t (public revenues) or g_t (public expenditure), the tests reject the null of the existence of two unit roots. Finally, the Gross Domestic Product (GDP) growth rate ($\Delta\gamma_t$) and inflation rate (Δp_t) are found to be I(1) variables³.

²The data is based on the ESA79 methodology. However, since data for 1999 and 2000 in terms of this methodology are not available, the series have been extended using the rates of growth of the ESA95 figures. The variables are taken in real terms at 1986 prices, using the GDP deflator. The inflation rate has been also calculated from this deflator. The real GDP growth rate ($\Delta\gamma_t$) and the inflation rate (Δp_t) are obtained as the first difference of the natural logs of the original series.

³The result of the inflation rate being I(1) might be conditioned by the small number of observations. In a longer sample we could find that inflation is a stationary variable with a root close to unity.

TABLE 1
Unit root tests

I(1) vs. I(0)						
	ADF statistics			Phillips-Perron statistics		
	t_α	t_{α^*}	$t_{\alpha^{**}}$	$Z(t_\alpha)$	$Z(t_{\alpha^*})$	$Z(t_{\alpha^{**}})$
t_t	1.63	0.63	-2.50	6.03	1.38	-1.87
g_t	0.94	-0.53	-2.03	4.23	0.09	-1.96
Δp_t	-0.76	-1.02	-1.68	-0.92	-1.24	-1.67
Δy_t	-0.92	-1.68	-1.61	-1.38	-2.60	-2.72
I(2) vs. I(1)						
t_t	-0.72	-3.06**	-3.35*	-1.60	-4.43***	-4.74***
g_t	-1.06	-4.01***	-3.93**	-1.53	-4.07***	-3.99**
Δp_t	-3.56***	-3.52**	-3.55**	-6.12***	-6.05***	-6.12***
Δy_t	-6.13***	-6.03***	-5.96***	-7.43***	-7.33***	-7.47***

Note: The symbols *, ** and *** denote rejection of the null at the 10%, 5%, and 1% significance levels, respectively. The number of lags used has been set so as to remove residual autocorrelation. 1964-2000.

2.1 Long-run analysis and causality

The most commonly accepted hypothesis about the behaviour of the Spanish public sector assigns a prominent role to public expenditure. The oil crises, the change of the political system in the mid-seventies and the build-up of the Welfare State have driven this variable, followed with a certain delay by tax reforms and changes in the tax burden. More recently, the fiscal consolidation strategy followed during the nineties has also focused on public spending⁴.

In order to check the empirical basis of this statement we look at Granger causality tests (see Granger, 1969). However, it should be taken into account that these tests are appropriate when the variables involved are stationary and the process is not misspecified. Omission of relevant variables may lead to incorrectly detecting directions of causality or even uncovering causality when it does not really exist, thus yielding spurious results (Granger and Newbold, 1986).

In our context, theories of the behaviour of expenditure and revenues point to GDP and prices as relevant variables to be included in such analysis. "Wagner's Law" links the level of the public expenditure to the degree of economic development, which can be approximated

⁴See Argimón, Gómez, Hernández de Cos and Martí (1999) for a deeper analysis of fiscal policy in Spain.

by real income. Moreover, Musgrave relates tax collecting capacity to technological development and the degree of monetisation of transactions, factors that are also positively correlated with real income⁵. Furthermore, revenues and expenditures respond automatically to the cycle as automatic stabilisers. Finally, taxes and spending also respond to the inflation rate, owing to the existence of indexation clauses in many spending programmes or to a real increase in tax collections in the absence of automatic indexation of tax schedules in personal taxes⁶.

In addition, usual Granger causality tests contain a specification error if the variables involved are linked by long-term equilibrium relationships. In this case, the estimated cointegrating vectors should be included in the specification of the VAR used to test Granger-causality⁷ (Granger, 1988). Thus, the inclusion of the so called “equilibrium residuals” may modify the direction of the causality, and thus could provide useful information by distinguishing between long-term and short-term causality. Furthermore, in our case, the analysis of the existence of cointegration between revenues and expenditures is particularly important since it may indicate the existence of a possible long-term relationship between deficit and public sector size. On the one hand, a coefficient affecting revenues in the cointegrating vectors equal to -1 implies that the public deficit is independent of the tax burden or the size of the public sector. Therefore, a long-lasting reduction of the deficit would require altering its generating process either reducing its structural component or changing the elasticity to the cycle or to inflation. On the other hand, if this coefficient is greater than one in absolute value, fiscal consolidation could be achieved through a downsizing of the public sector. Without altering the generating process, that is, without structural breaks, consolidation should rely on expenditures, revenues, or both, depending on the causality structure.

⁵A brief survey of theories explaining public expenditure growth can be found in González-Páramo and Raymond (1988). As regards public revenues, the classical reference is Musgrave (1969).

⁶This phenomenon is known as fiscal drag.

⁷A relevant critique to Granger causality tests resides on their economic interpretation. The fact that one variable helps to predict another does not necessarily mean that economic causality holds. A deeper conclusion should also rely, for example, on the institutional framework of each country, in particular, in the way expenditure and tax collecting programs are decided.

Cointegration analysis

Given the arguments stated above, we first estimate a model to test whether there is cointegration⁸ among the relevant variables (see Table 2). The model is estimated with an unrestricted constant and a time trend in the cointegrating equations, which implies that the model includes a linear deterministic trend in levels. Thus, the specification of the VAR is

$$\Delta X'_t = \mu_0 + \alpha\beta' (X'_{t-1}, tr) + \sum_{i=1}^2 \Gamma_i \Delta X'_{t-i} + \varepsilon_t; X'_t = (g_t, t_t, \Delta y_t, \Delta p_t) \quad [1]$$

where tr is a time trend, β is the matrix containing the coefficients of the cointegrating vectors and α is the matrix that captures the short-run correction from deviations of the long-run relationships.

This model has been estimated using the maximum likelihood procedure suggested by Johansen (1988), Johansen and Juselius (1990) and Johansen (1991). The critical values have been taken from Osterwald-Lenum (1992). Likelihood ratio (LR) tests were performed in order to test several hypotheses that could give us clues regarding different specifications.

Two cointegrating vectors are found according to the $Trace$ and LR_{max} statistics at usual significance levels, although at the 10% significance level, the possibility of a third cointegrating vector cannot be disregarded. In principle, the existence of several cointegrating vectors poses a problem of subidentification of the equations. Thus, in order to achieve an economic interpretation of the long-run coefficients some restrictions are needed. Accordingly, it is possible to obtain different cointegrating vectors depending on the set of restrictions imposed. In order to support the robustness of our conclusions, we impose two dif-

⁸Prior to these results we estimated three models by ordinary least squares (OLS) in which the dependent variable was public expenditure and the regressors were public revenues, growth rate of real output and the inflation rate; public revenues and growth rate of real output and public revenues only. These estimates gave coefficients for the public revenues between 1.14 and 1.17. The augmented Dickey-Fuller (ADF) test performed on the residuals from the three specifications was unable, in any of the cases, to reject the null hypothesis of absence of cointegration. However, due to the well-known problem of common factor restrictions implied in this way of testing cointegration we considered it advisable to proceed in a different way. Nevertheless, the coefficients for the public revenues can be informative about the long-run relationship between expenditures and revenues. This coefficient seems in all cases to be greater than one.

ferent sets of long-run exclusion restrictions that are not rejected and lead to two different models (see table 2)⁹. With both sets of restrictions the inflation rate turns out to be weakly exogenous ($LR(2)=3.07$ for model [a] and $LR(2)=4.25$ for model [b]), although the joint hypothesis of weak exogeneity and long-run exclusion of the inflation rate is rejected at the 5% significance level.

TABLE 2
Cointegration results (Johansen tests). 1964-1993

$H_0(r)$	LR_{max}	Trace	Critical values for LR_{max}			Critical values for Trace		
			90%	95%	99%	90%	95%	1%
r=0	34.34**	85.28***	29.12	31.46	36.65	59.14	62.99	70.05
r≤1	27.32**	50.94***	23.11	25.54	30.34	39.06	42.44	48.45
r≤2	17.8*	23.62*	16.85	18.96	23.65	22.76	25.32	30.45
r≤3	5.82	5.82	10.49	12.25	16.26	10.49	12.25	16.26

Identification										
	Cointegrating vectors					LR tests on the null hypothesis of: weak exogeneity of Coef. on				
	<i>g</i>	<i>t</i>	Δy	Δp	<i>trend</i>	<i>g</i>	<i>t</i>	Δy	Δp	<i>t=-1</i>
Model [a]	1	-1.40	-584.38	-129.51		7.50**	17.61***	6.43**	3.07	22.15***
	1	-1.80			313.34					
Model [b]	1	-1.27	-229.68			9.81***	13.41***	5.33*	4.25	5.44*
	1	-1.44		48.63	131.48					

Note: LR tests presented are distributed as chi-squared with two degrees of freedom. Accordingly, *, ** and *** denote rejection of the null hypothesis at the 10%, 5% and 1% significance levels, respectively. The sample period in the estimations covers from 1968 to 2000 (33 observations).

Given these results, we proceed with the restricted estimation so as to get more precise estimates. The null hypothesis of weak exogeneity of the rest of the variables is rejected. It is worth noting that the public revenue coefficients in the cointegrating vectors are always greater than one in absolute value. The null hypothesis that this coefficient equal to -1 is rejected, according to the LR test, at the 1% significance level for model [a] and at the 10% significance level for model [b].

⁹The LR test for the restrictions of model [a] in table 2 yields a value equal to 1.76. These are long-run exclusion restrictions consisting of imposing a zero coefficient for the trend in the first cointegration vector and setting to zero the coefficients for the GDP growth rate and the inflation rate in the second. The LR test for the restrictions of model [b] in table 2 is 0.38. These restrictions are the exclusion of the trend and the inflation rate in the first cointegration vector and the exclusion of the GDP growth rate in the second. None of the LR tests are significant and the restrictions were easily accepted.

Given the weak exogeneity of Δp_t , as a means of robustness check, the model is re-specified including $\Delta^2 p_t$ in the VAR. This corresponds to the following VAR:

$$\Delta Z_t = \mu_0 + \alpha \beta' (X'_{t-1}, tr) + \Gamma_0 \Delta^2 p_t + \sum_{i=1}^2 \Gamma_i \Delta Z'_{t-i} + \varepsilon_t; Z_t = (g_t, t_t, \Delta y_t) \quad [2]$$

The results obtained from the estimation of [2] lead to similar conclusions to those derived from [1]. These results are not reported for brevity¹⁰.

According to the results presented above, the GDP growth rate affects positively expenditures, associating the level of the public expenditure to the degree of economic development. Moreover, there seems to be a bias towards deficit in the public sector's size. This bias arises because the coefficient for t_t in the cointegrating vectors is greater than one in absolute value. This implies, as stated before, that fiscal consolidation could be achieved with a downsizing of the public sector. As regards the most adequate strategy of fiscal consolidation to be selected to reach this target, the analysis of the direction of causality between the fiscal variables can offer a relevant guideline.

Causality analysis with cointegrated variables

Now we perform Granger-causality tests including the cointegrating vectors¹¹. The degree of correlation between the residuals from the expenditure and revenue equations (around 25% for the estimation with two lags in the VAR) leads us to estimate these equations by both OLS and seemingly unrelated regression equations (SURE), which is a more efficient method than OLS. Nevertheless, both procedures yield similar results. In this context, short-term causality is understood as a situation in which lagged changes in one variable have predictive power in current changes in another, whereas long-term causality is detected when the lagged level of one variable (equilibrium residuals) explains current changes in another variable. Wald tests, distributed as chi-squares, are shown in table 3 and have been performed with one

¹⁰Tests of lag reduction have been performed and are significant in all cases, indicating the need for two lags in the VAR. The F tests for model reduction are $F(16,49)=2.31^{**}$ and $F(9,43)=2.14^{**}$ for VARs [1] and [2], respectively.

¹¹As Δp_t turns out to be weakly exogenous in models [a] and [b], it is included as $\Delta^2 p_t$ in the short-run specification of the VAR.

and two lags (the number of lags is k), even though lag-reduction tests indicate the need for two lags.

We observe long-run bidirectional causality between expenditures and revenues when two lags in the VAR are used, although the expenditure-to-revenue direction is more pronounced according to the higher magnitude of the coefficients affecting the *equilibrium residuals* in the expenditure equation and the significance of the Wald tests¹². In the short-run the picture is reversed in that though we collect some evidence of bidirectional causality, the revenues-to-expenditures hypothesis seems to dominate¹³.

TABLE 3
Granger causality tests with cointegrated variables

Null hypothesis	OLS estimates				SURE estimates			
	$k=1$		$k=2$		$k=1$		$k=2$	
	Short run	Long run	Short run	Long run	Short run	Long run	Short run	Long run
t_i does not G-cause g_i								
Model a	3.00*	1.08	14.27***	8.48**	3.01*	1.07	14.87***	8.64**
Model b	3.10*	1.25	16.07***	10.31***	3.37*	1.43	17.91***	11.49***
g_i does not G-cause t_i								
Model a	0.21	10.64***	6.91**	14.27***	0.21	11.05***	6.97**	14.69***
Model b	0.50	10.64***	5.83*	11.98***	0.53	11.25***	5.41*	11.24***

Note: The Wald tests shown are distributed as chi-squared with the degrees of freedom equal to the number of restrictions. Thus, *, ** and *** denote rejection of the null hypothesis at the 10%, 5% and 1% significance levels, respectively. The number observations employed is 33 in the case of the inclusion of two lags and 32 when only one lag is included in the VAR.

These results, together with the bias towards deficit in the size of the public sector, tend to support the idea that efficient fiscal consolidation should be attained by paying special attention to public expenditures, since this variable seems to play a crucial role in the long term.

2.2 VAR analysis

A complementary way of characterising the interdependence between the most relevant variables in our analysis, public expenditures and revenues, is by means of the variance decomposition and impulse re-

¹² Only long run causality from expenditures to revenues is detected with the inclusion of only one lag in the VAR.

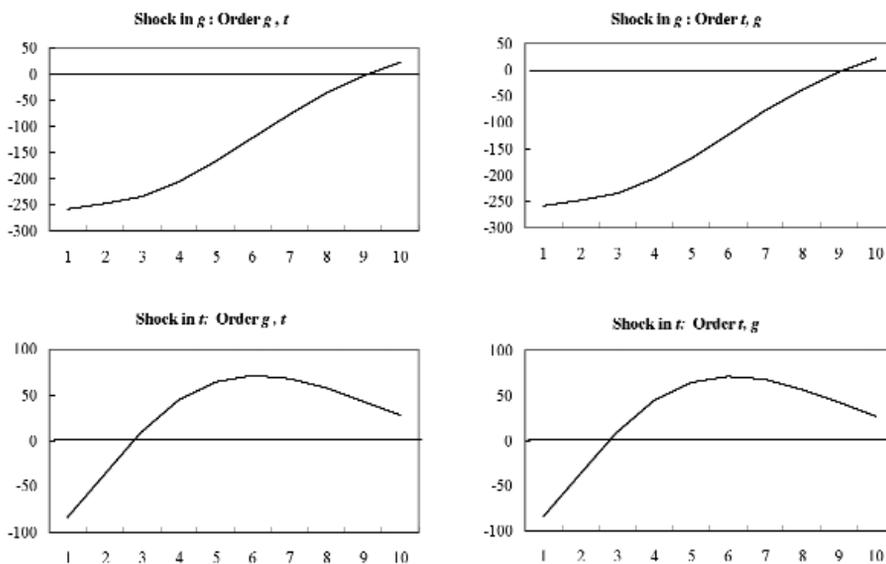
¹³ With only one lag we only find evidence of causality at the 10% significance level in the revenues-to-expenditures direction.

sponse functions in the context of a VAR analysis. Variance decomposition functions indicate what part of the variance of the forecast error in one variable can be attributed to innovations in another after some periods. Accordingly, this decomposition can be used to approximate the contribution of each variable to the variability of the whole system. In order to identify the model we shall use a simple recursive system based on the Cholesky decomposition, which admittedly is not the most appropriate one. However, our purpose here is not to analyse in depth the effects of fiscal shocks, but to show that, even with such an extreme simplification, both fiscal variables behave interdependently. Thus, we perform the estimations with the orders $(\Delta y, \Delta p, g, t)$ and $(\Delta y, \Delta p, t, g)$. The decision of putting first Δy and Δp relies on the well-known fact that that policy measures are not immediately transmitted to other macro variables, although we again admit that other identification schemes can be more accurate.

The four-variable VAR shows that expenditure forecast error variance is explained by revenues in percentages ranging between 3.57% and 35.54%, depending on the ordering. The percentage explained by the growth rate and the inflation rate amounted to 4.6% and 3.49%, respectively. In the case of revenues, the variance is explained in 30.64% by the GDP growth rate and in 32.78% by the inflation rate, whereas the percentage explained by expenditures ranged between 11.76% to 5.79%, depending, as above, on the ordering. The detailed tables are not presented for brevity. Consequently, there is no evidence of either, revenues or spending, behaving independently from the other.

Figure 1 shows impulse response functions of public deficit to innovations in revenues and expenditures. Both specifications yield very similar results. A large degree of persistence in the shocks is clearly observed in all cases. A negative shock to g_t yields a long lasting surplus, whereas a positive shock to t_t leads in the medium term to larger deficits due to the induced response of expenditure, in accordance with the long-run causality observed from t_t to g_t . This result also provides support to our previous finding of the existence of a bias towards deficit of the public sector's size.

FIGURE 1
Impulse response function for public deficit. VAR with four variables



2.3 Restricted sample analysis

Our purpose is now to analyse whether the previous results are related to changes in the dynamic relationship between revenues and expenditures. In particular, we check whether the direction of causality obtained above is conditional, to some extent, upon the more recent realisations of the variables of interest. Thus, we restrict the sample period to finish in 1993, since this year represents the break point for public expenditure in Spain. Accordingly, model [a] is re-estimated. The estimation does not reject the null of weak exogeneity of the inflation rate, although the null of long-run exclusion of this variable is rejected at the 1% significance level ($LR(1)=9.91^{***}$). Thus, we perform a restricted estimation according to [2].

The results confirm the hypothesis that there is a bias towards deficit in the public sector's size (see Table 4). However, contrary to our analysis for the whole sample period, there is only evidence in favour of the revenues-to-expenditures direction, both in the long and short term and irrespective of the number of lags included in the VAR (ta-

TABLE 4
Cointegration results (Johansen tests). 1964-1993

$H_0(r)$	LR_{max}	Trace	Critical values for LR_{max}			Critical values for Trace		
			90%	95%	99%	90%	95%	1%
r=0	41.54***	84.55***	23.11	25.54	30.34	39.06	42.44	48.45
r<1	28.56***	43.01***	16.85	18.96	23.65	22.76	25.32	30.45
r≤2	14.46**	14.46**	10.49	12.25	16.26	10.49	12.25	16.26

Identification									
Cointegrating vectors						LR tests on the null hypothesis of: weak exogeneity of Coef. on			
	g	t	Δy	Δp	$trend$	g	t	Δy	$t=-1$
Model [a]	1	-1.36	-130.99	-21.65		35.28***	21.80***	25.45***	23.47***
	1	-1.24	-70.77		-53.69				
		1	-452.65		-622.88				

Note: LR tests presented are distributed as chi-squared with the degrees of freedom equal to the number of restrictions. Accordingly, *, ** and *** denote rejection of the null hypothesis at the 10%, 5% and 1% significance levels, respectively. The sample period in the estimations covers from 1968 to 1993 (26 observations).

ble 5)¹⁴. This confirms previous empirical evidence (González-Páramo, 1994) and supports the hypothesis that in the last few years there has been a change in the dynamic relationship between both variables. The fiscal consolidation strategy followed since the mid-nineties, which was mainly based on the reduction of spending¹⁵, may have contributed to this change in the direction of causality.

TABLE 5
Granger causality tests with cointegrated variables (1964-1993)

Null hypothesis	OLS estimates				SURE estimates			
	$k=1$		$k=2$		$k=1$		$k=2$	
	Short run	Long run	Short run	Long run	Short run	Long run	Short run	Long run
t_i does not G-cause g_t	4.83**	25.29***	26.80***	34.16***	4.70**	23.64***	28.37***	37.97***
g_t does not G-cause t_i	1.54	1.33	0.04	0.96	1.63	0.89	0.03	0.86

Note: The Wald tests shown are distributed as chi-squared with the degrees of freedom equal to the number of restrictions. Thus, *, ** and *** denote rejection of the null hypothesis at the 10%, 5% and 1% significance levels, respectively. The number of observations employed is 26 in the case of the inclusion of two lags and 27 when only one lag is included in the VAR.

¹⁴The results drawn from the variance decomposition and impulse response functions (not presented here) yield similar conclusions to those obtained for the whole sample.

¹⁵Public expenditure relative to GDP fell by more than 6 percentage points between 1993 and 2000.

3. Conclusions

In this paper, we consider which is likely to be the most efficient strategy to achieve permanent reductions in fiscal deficits in Spain. For this purpose, we first carry out Granger causality tests. We find clear evidence of long-run bidirectional causality with public expenditures G-causing public revenues and also, albeit less clearly, evidence of long-run G-causality from revenues to public expenditure. In the short run, the direction of causality seems to hold mainly from revenues to public expenditure. These findings provide support for the *interdependence* hypothesis in contrast with the conclusions previously obtained by Jouffaian and Mookerjee (1991), González-Páramo and Raymond (1988) and González-Páramo (1994). In addition, we find evidence on the existence of a bias towards deficit in public sector's size.

Second, we perform a variance decomposition and impulse response functions analysis in a VAR framework. The results derived from this analysis confirm the existence of a non-negligible dynamic relationship of dependence between revenues and expenditure and of a bias towards deficit in public sector's size.

These results lead us to conclude that a credible fiscal consolidation strategy in Spain should be achieved through downsizing of the public sector and requires public expenditure cuts.

Finally, we perform the causality analysis for a restricted sample (1964-1993). The results offer a somewhat different picture, in that we find evidence of causality from revenues to expenditure both in the short and long term. This result confirms previous empirical evidence for similar sample periods (González-Páramo, 1994) and supports the hypothesis that in the last few years there has been a change in the dynamic relationship between both variables, probably as a result of the fiscal consolidation strategy implemented, that was based mainly on a drop in spending.

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Resumen

El Pacto de Estabilidad y Crecimiento para los países del área del euro impone límites explícitos a las finanzas públicas, que exigen una corrección de los desequilibrios fiscales. Esto nos lleva a plantearnos cuál puede ser la estrategia más eficiente para obtener reducciones permanentes de los déficit públicos en España. Para ello, analizamos la posible interdependencia entre los ingresos y los gastos públicos mediante tests de causalidad de Granger. Encontramos un sesgo deficitario en el tamaño del sector público y causalidad bidireccional a largo plazo entre ingresos y gastos, aunque la dirección de causalidad de gastos a ingresos es más fuerte. De esta forma, la estrategia de consolidación más adecuada consistiría en una reducción del gasto público estructural.

Palabras clave: Consolidación fiscal; causalidad; cointegración.

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