STRUCTURAL BUDGET DEFICITS AND FISCAL POLICY IN THE PIIGS: PORTUGAL, IRELAND, ITALY, GREECE, SPAIN

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Abstract

Over the past five years the Eurozone has been undergoing a long and painful process of dealing with excess debt and its consequences in member states. Large (Italy and Spain) and small (Greece, Ireland and Portugal) member states alike have adopted austerity measures in order to put a halt to increasing accumulation of fiscal deficits in excess of the acceptable level dictated by the Stability and Growth Pact. In this study, we set out to explore the nature of budget deficits in Greece, Ireland, Italy, Portugal and Spain over the forty-year period 1973-2013 through VAR and VECM models. Our results indicate that in the case of Italy, Portugal and Greece budget deficits are by and large self-reinforced, that is, they are mostly structural and independent of business cycles. By contrast, in the case of Spain, and Ireland, budget deficits are cointegrated with major macroeconomic variables such as GDP, inflation and the trade balance, with deficit variation being explained to a large extend by these variables. These findings carry several policy implications, mainly relating to potential inability of adequate growth rates and/or improvement in the trade balance to account for variation in budget deficits in member states like Italy, Portugal and Greece. Therefore, a policy of primary surpluses may have to be consistently implemented in these countries, leading to further reduction in labor costs and curtailing of government expenditures in general and private transfer payments in particular. At the same time, debt restructuring might be a prerequisite for recovery of these economies, as it appears that they are unable to achieve debt viability through expansion.

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Introduction

The popular post-Keynesian assertion that a growing and stable economy can effectively manage its debt originates in the seminal work of Harrod (1939) and Domar (1946). Arguably, current European Union austerity measures are more along the lines of the Austrian School, which proclaims that in order to achieve healthy growth rates countries with debt problems have to restructure 'in order to kill the old and the wrong' and start afresh with efficient decisions made by capital markets (Von Mises, 1949).

The present study is not intended to question the theoretical underpinnings of the two competing schools of thought. Its contribution is twofold: first it explores the nature of the deficits in Eurozone countries with debt management problems in an attempt to unveil the impact of austerity measures on GDP growth rates and deficit sustainability. Second, the paper questions the claim that positive growth rates are sufficient to assure viability of the public debt in these countries.

We show that only Ireland and Spain can sustain their debt through GDP growth and trade expansion. In contrast, this is not possible in Italy, Greece or Portugal, where a large part of the debt is self-reinforced. The significant policy implication that stems from this analysis is that the policy of fiscal consolidation may have to continue to be implemented in these three countries, leading to further reduction in labor costs and curbing of transfer payments to the private sector. More importantly, after four consecutive years of contraction, debt restructuring is inevitable, as these economies appear to have been unable to achieve viability of their debt through economic expansion.

The remainder of the paper is organized as follows. A review of related literature is conducted in section 2. Our sample and methodology are presented in section 3. Section 4 discusses our main empirical findings. Concluding remarks and suggestions for further research are given in section 5.

2. Literature Review

Sustainability of budget deficits addresses whether the government's intertemporal budget constraint holds, that is, whether the current level of debt equals the present discounted value of primary surpluses (Wilcox, 1989). The relevant empirical studies on the behavior of budget deficit fall under two main categories. A first strand of thought examines the possibility of non-stationary budget deficits by conducting tests of unit roots, with mixed results. In the case of the EU, the studies of Vanhorebeek and Rompuy (1995), Caporale (1995), and Greiner and Semmler (1999) stand out, but give contradicting evidence. In the case of the US, Hamilton and Flavin (1986) find that the budget deficit follows a stationary stochastic process and is, therefore, sustainable. In contrast, Wilcox (1989), Trehan and Walsh (1988, 1991), and Kremers (1989) find that the budget deficit is non-stationary implying that the budget is unsustainable.

A second strand of thought explores the long-run relationship between government revenues and expenditures using cointegration methodology, with similarly inconclusive reults. Bravo and Silvestre (2002) and Afonso (2005) find limited evidence in favor of cointegration in the intertemporal budget constraint in the EU. In the case of the US, Haug (1991) supports the existence of cointegration, whereas Hakkio and Rush (1991) question the existence of cointegration when the sample period is extended towards the end of the 1980s. The lack of consensus on both these approaches has motivated a further line of research that finds stronger evidence in favor of stationarity, cointegration and sustainability when allowance is made for the existence of structural breaks, be they exogenous (Hakkio and Rush, 1991a) or endogenous (Haug, 1995; Quintos, 1995; Camarero, Esteve and Tamarit, 1998; Makrydakis, Tzavalis and Balfoussias, 1999; Martin, 2000; Katrakilidis and Tabakis, 2006; Holmes, Otero and Panagiotidis, 2010).

In addition, the attention of researchers has turned to the possibility that fiscal policy may have non-linear effects, in the sense that both the size and the sign of the response of macroeconomic variables to fiscal policy actions could be different depending on the way and the initial conditions in which such policy actions are implemented (see, for example, Giavazzi and Pagano, 1990 and 1996; Bajo-

Rubioy, Díaz-Roldán, and Esteve, 2004), the composition of fiscal measures (Alesina and Perotti, 1995) or the initial conditions in which the fiscal adjustment is performed (Perotti, 1999). Furthermore, Cipollini (2001) introduced a regime shift in the adjustment towards a linear long-run (cointegrating) relationship between total government revenues and expenditures for the UK using a smooth transition error correction model to test for nonlinearities or asymmetries in the adjustment process, while Chortareas, Kapetanios and Uctum (2003) used stationarity tests that allow the alternative hypothesis to incorporate nonlinearities, for the case of several Latin American countries. Evidence of nonlinearities in the evolution of the Spanish budget deficit in terms of a threshold autoregressive model is found by Bajo-Rubio, Díaz-Roldán and Esteve (2004). The authors observe that the deficit dynamics differ if the change in the deficit is below or above an endogenously estimated threshold, with mean-reverting occurring once such threshold was reached. A similar analysis has been applied to the US case by Arestis, Cipollini and Fattouh (2004).

More recently, Georgantopoulos and Tsamis (2012) investigate the causal links between budget deficit and other macroeconomic variables such as Consumer Price Index, GDP and Nominal Effective Exchange Rate for Greece, during the period 1980-2009. Based on Variance Error Correction Model (VECM) and variance decomposition estimates, the authors observe that the variables under study are cointegrated and that one-way causalities exist running from NEER to BD and from BD to GDP. Moreover, they find bidirectional causal links between NEER and CPI, but not between the budget deficit and inflation, concluding that policy makers should monitor the impact of NEER on the Greek budget deficit.

3. Data-Methodology

Annual data on major macroeconomic aggregates, namely the budget deficit, GDP, the trade balance and inflation have been collected from the OECD database for the 1974-2013 period. The countries under consideration are Greece, Ireland, Italy, Portugal and Spain.

At the outset, we plot budget deficits and GDP through time for each country examined (Diagrams I and II respectively). The striking observation that stems from

these diagrams is that in the period 2009-2013 it is only after the past four years of austerity, during which GDP growth remained negative, that deficits started to decline.

Diagram I: Budget Deficits

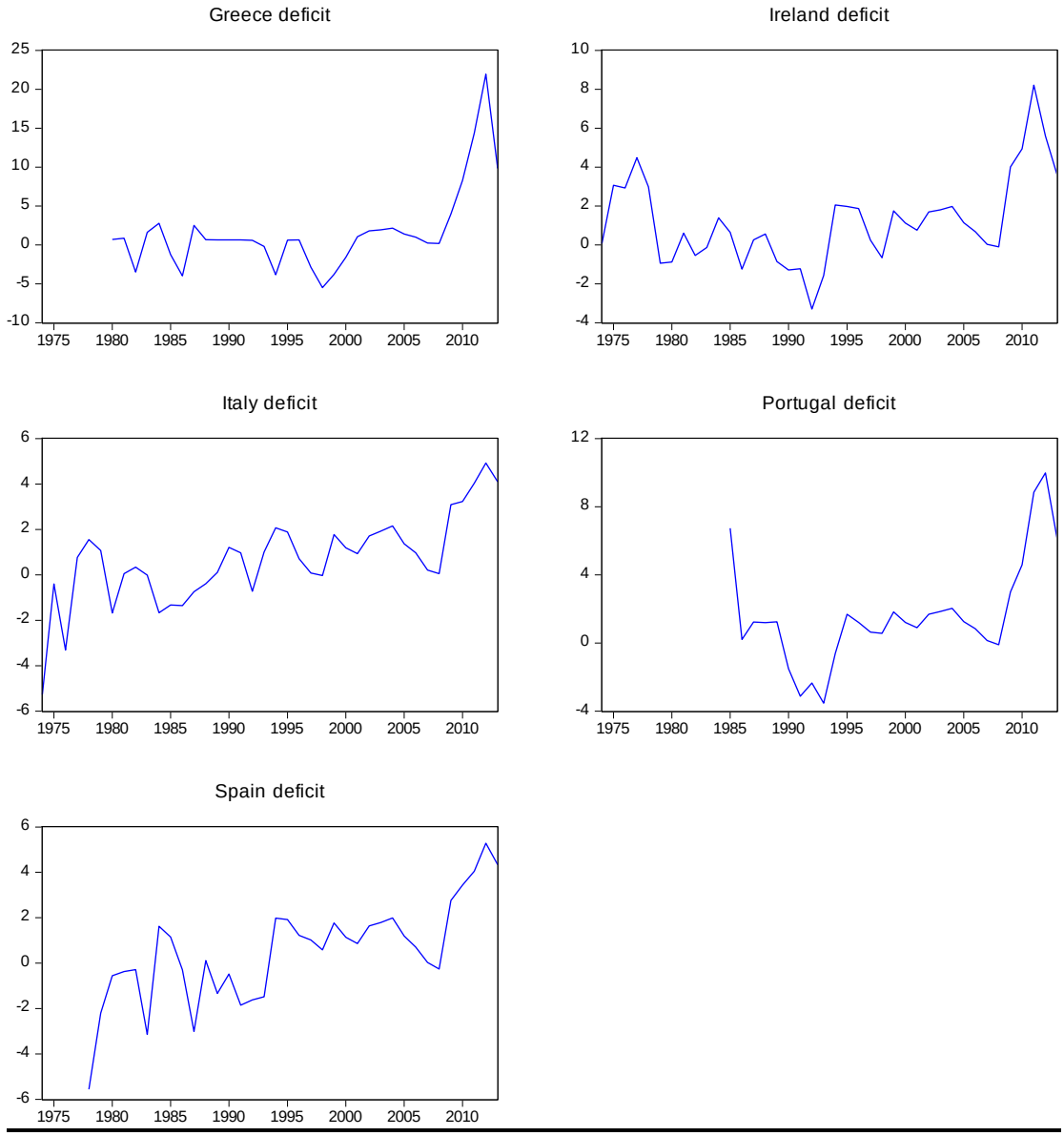
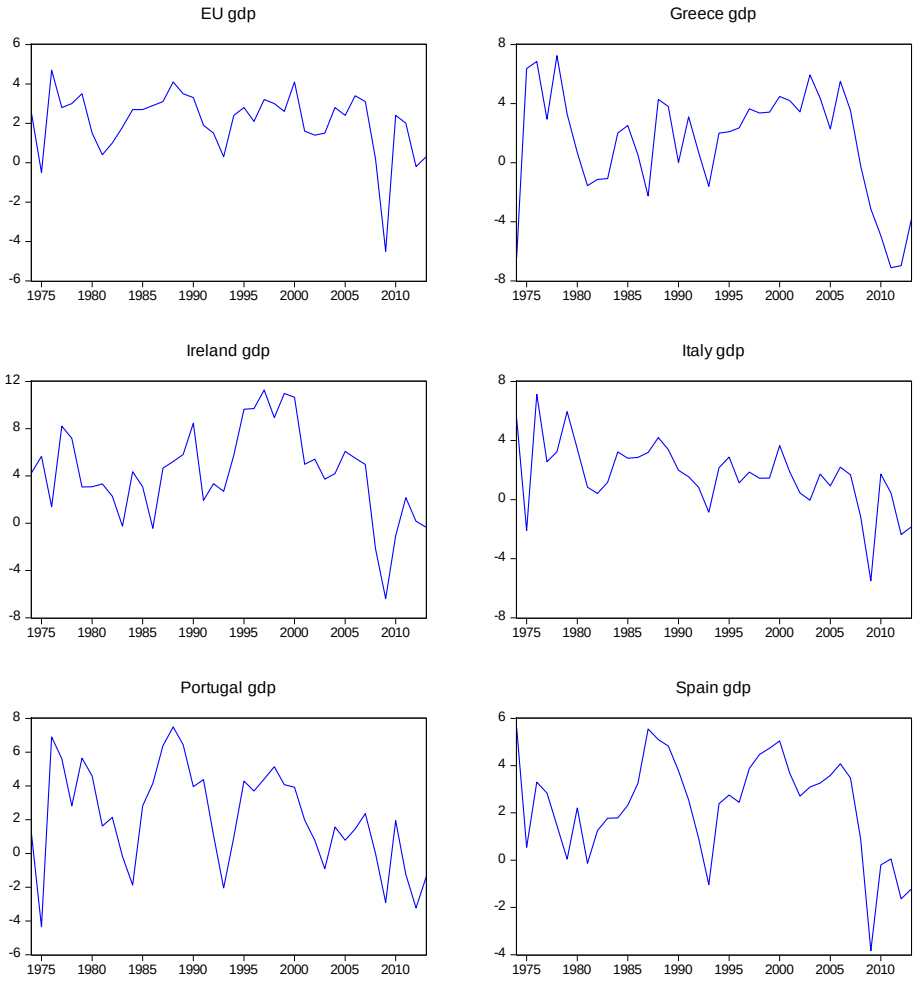


Diagram II: GDP Growth



We proceed with a unit root test for each of the variables under consideration for each country separately. The Table below shows the results of the ADF (Augmented Dickey Fuller) test.

	ADF Test							
	Level Deficit	1st difference deficit	Level GDP	1st difference GDP	Level inflation	1st difference inflation	Level trade	1st difference trade
Greece	-2.508500	-5.116792	-3.868021		-2.541499	-9.262653	-2.76287	-5.229064
Ireland	-2.687463	-5.947461	-2.727070	-4.567649	-3.601530		-2.39319	-4.631377
Italy	-5.180579		-6.630590		-1.975055	-5.949525	-2.27856	-6.764712
Portugal	-2.226215	-4.945862	-4.126078		-2.676216	-4.719587	-2.97401	-6.145912
Spain	-4.532057		-2.945993	-8.045926	-2.232026	-6.484089	-2.39307	-5.143605

Critical values: 1% level = -4.273277, 5% level= -3.557759, 10% level=3.212361

The results show that at the 5% level of significance, in the case of Greece only GDP growth is I(0),the other variables are I(1). For Ireland, at the 5% level inflation is I(0) while the other variables are I(1). For Italy only the deficit and GDP growth are I(0). For Portugal only GDP growth is I(0), while for Spain only the deficit is I(0).

We then continue our analysis with cointegration testing among the variables chosen for each country separately. We use the Johansen cointegration test. For Ireland, Portugal and Spain the test shows that there is cointegration among the variables under consideration, i.e. the deficit, GDP growth, inflation and the trade balance. Thus, we proceed with the use of VECM. For Greece and Italy, the variables are not found to be cointegrated, so we proceeded with an unrestricted VAR. The results of the tests are to be shown upon request.

4. **Main Empirical Findings**

VAR DECOMPOSITION FOR **GREECE**:

PERIOD	S.E.	DF	GDP	D(IN)	TR
1	3.713334	100.0000	0.000000	0.000000	0.000000
2	4.684247	94.89262	3.424647	0.103956	1.578783
3	5.242940	80.86265	11.15701	0.133829	7.846510
4	5.674671	71.19625	13.71077	0.373327	14.71965
5	6.056551	68.56429	13.01975	0.651464	17.76450
6	6.579105	69.31509	11.91354	0.713178	18.05819
7	7.106050	68.46128	12.14402	0.686596	18.70811
8	7.588882	65.64008	13.23092	0.687721	20.44128
9	8.053770	63.13587	13.83204	0.752127	22.27996
10	8.542880	61.98084	13.81654	0.819697	23.38292

The table of variance decomposition for Greece shows that 61.98% of the deficit at the end of the 10^{th} year is explained by itself. Of the remaining, 13.81% depends on GDP, 0.81% depends on the first difference of inflation, while 23.38% depends on trade. As a result, the Greek budget deficit through time and hence the Greek debt are primarily self-reinforced. Therefore, it appears utopic to expect that either of these could be eliminated through adequate growth rates.

VECM DECOMPOSITION FOR **IRELAND**:

PERIOD	S.E	DF	GDP	IN	TR
1	1.432176	100.0000	0.000000	0.000000	0.000000
2	1.757444	82.64565	15.68358	0.670146	1.000631
3	1.997326	67.40012	29.16225	0.982545	2.455087

4	2.164972	58.30965	36.73539	0.965808	3.989150
5	2.277721	53.03425	40.54248	0.875092	5.548175
6	2.355967	49.74978	42.27168	0.859498	7.119042
7	2.414662	47.47651	42.86053	0.978030	8.684934
8	2.462946	45.72121	42.81231	1.237713	10.22877
9	2.505930	44.23956	42.40232	1.620430	11.73769
10	2.546342	42.91127	41.78548	2.099336	13.20392

Similar analysis for Ireland indicates that at the end of the 10th year, 42.91% of Ireland's debt depends on itself. The remaining 57% is separated as follows: 41.78% of debt depends on GDP, 2% depends on inflation and 13.20% depends on country's trade. As a result, adequate growth rates could potentially eliminate the debt.

VAR DECOMPOSITION FOR **ITALY**:

PERIOD	S.E	DF	GDP	IN	TR
1	1.160322	100.0000	0.000000	0.000000	0.000000
2	1.321639	88.21066	0.116434	8.702955	2.969949
3	1.378199	84.86966	1.220514	8.396457	5.513373
4	1.413410	81.32954	3.433173	8.002890	7.234398
5	1.440394	79.01932	4.545005	7.821891	8.613787
6	1.464909	77.77771	4.913791	7.750241	9.558261
7	1.490196	76.90911	5.148538	7.672980	10.26938
8	1.513466	75.92017	5.492831	7.632263	10.95473
9	1.535119	74.73858	5.949615	7.690332	11.62148
10	1.555960	73.51757	6.413210	7.846615	12.22261

In contrast, we see that at the end of the 10th year, 73.5% of Italy's debt depends on itself. The remaining 26.5% is separated as follows: 6.41% of debt depends on GDP, 7.84% depends on inflation and 12.22% depends on country's trade. As a result, it

would be extremely difficult to eliminate the Italian budget deficit through growth or changes in any other of the macroeconomic factors examined here.

VECM DECOMPOSITION FOR **PORTUGAL**:

PERIOD	S.E	DF	GDP	IN	TR
1	1.718799	100.0000	0.000000	0.000000	0.000000
2	2.261097	99.25331	0.477426	0.266213	0.003050
3	2.532934	95.81848	3.912032	0.218871	0.050620
4	2.764199	87.63092	10.72922	0.241406	1.398446
5	2.937877	80.19643	14.12013	0.390524	5.292913
6	3.083243	74.29352	15.07249	0.514738	10.11925
7	3.211358	70.29266	15.00408	0.567331	14.13593
8	3.333548	67.94617	14.66562	0.561521	16.82669
9	3.458765	66.62048	14.39646	0.533865	18.44920
10	3.589876	65.63466	14.36746	0.502218	19.49566

In the case of Portugal, we see that at the end of the 10^{th} year 65.6% of the Portuguese debt depends on itself. The remaining 34.5% is attributable to the macroeconomic factors examined as follows: 14.36% of debt depends on GDP, 0.5% depends on inflation and 19.5% depends on the country's trade. As a result, the economy of Portugal has a deficit that depends by 65.6% on itself. It, therefore, is not feasible to eliminate it through growth or any positive changes in any of other macroeconomic aggregates examined.

In the case of Spain, because we have co-integration we proceed with VECM test.

PERIOD	S.E	DF	GDP	IN	TR
1	0.889478	100.0000	0.000000	0.000000	0.000000
2	1.026799	75.20460	3.848068	14.13388	6.813455

3	1.152700	75.16549	3.053391	14.52954	7.251572
4	1.673269	53.75709	29.69411	8.290860	8.257937
5	1.894314	45.22801	34.27053	6.669040	13.83242
6	2.034864	41.46024	30.32680	6.646129	21.56683
7	2.098805	40.72060	28.59603	6.340395	24.34297
8	2.166920	40.14225	28.88709	6.290471	24.68019
9	2.205926	39.26628	29.27526	6.253789	25.20467
10	2.240449	38.56450	28.91476	6.479709	26.04103

We observe that at the end of the 10th year, 38.56% of the Spanish debt depends on debt itself. The remaining 61.5% is separated as follows: 28.91% of debt depends on GDP, 6.47% depends on inflation and 26.04% depends on the country's trade. Thus, it is possible for the Spanish economy to recover via growth of GDP as well as trade.

5. Conclusion

In this paper we have set out to investigate the nature of budget deficits in five Eurozone economies which face the challenge of debt management. The cases of Greece, Ireland, Italy, Portugal, and Spain have been explored in an attempt to reveal the impact of austerity measures on GDP growth rates and debt sustainability. Second, the paper seeks to query the claim that positive growth rates are sufficient to ensure viability of the public debt in these countries. In the period under consideration (1974-2013), we observe that budget deficits have persisted throughout, especially during 2009-2013, when austerity measures were implemented. In the latter sub-period, the presence of budget deficits coincided with negative GDP growth rates in most of the cases examined.

The empirical analysis conducted indicates that budget deficits in the cases of Greece, Italy and Portugal are largely self-reinforced and feebly associated with business cycles. This finding is taken to suggest that in these countries budget deficits are mostly of structural nature and, therefore, neither GDP growth rates nor trade surpluses can constitute a remedy for coping with high debt. Consequently, the policy implication for these countries is that they should be aiming at continuing

to pursue primary budget surpluses, but also restructuring to achieve debt viability. In contrast, for Spain and Ireland our findings indicate that growth rates are capable of sustaining the public debt under the present austerity measures, since it is shown that budget deficit can be explained by GDP, inflation and the trade balance. This result provides an insight into the fact that growth rates of GDP and trade could help curtail those countries' debt. Future research should be directed to empirically investigate and assess different ways towards debt restructuring and their impact on the viability of debt.

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