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Fiscal imbalances and output crises in Europe: will the fiscal compact help or hinder?

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The eurozone crisis has involved sharp output declines and has generated much discussion about the appropriate design of macroeconomic policy both in terms of dealing with the contemporary situation and minimising the risks of future crises. Much of the debate surrounding the crisis has focused on fiscal policy. All but two member states of the European Union have signed a draft treaty, the 'fiscal compact', that seeks to eliminate structural fiscal deficits. This paper examines the relationship between fiscal balances and output shortfalls amongst the eurozone countries allowing for other factors. In the light of the findings it critically assesses the fiscal compact.

Keywords: fiscal policy; economic crises; eurozone

1. Introduction

It is often assumed that large fiscal deficits eventually lead to crises in one way or another. The first generation currency crisis model, for example, presents fiscal deficits as playing the key role in causing crises. Here, fiscal deficits are monetised. This results in inflation, a decline in competitiveness, a current account deficit, a fall in international reserves, evaporating confidence and a collapse in the value of the currency. The Greek crisis that came to a head in the late 2000s has been widely attributed to loose fiscal policy; although in this case it did not lead to a rapid growth in the money supply but to an excessive build up of debt. Economic crises, once they occur, have implications for fiscal balances both automatically as economic activity falls and also via induced changes in discretionary fiscal policy.

Against such a background, it is easy to see why it might be assumed that constraining or eliminating fiscal deficits will significantly reduce the incidence of crises. The 'fiscal compact' negotiated by European states in 2012 appears to reflect this point of view. At the same time, however, fiscal consolidation may have a negative impact on output and economic growth and this will, in turn, affect the fiscal balance by reducing tax revenue and increasing some elements of government expenditure. Doubts are therefore raised as to whether it is always sensible to aim for a budgetary balance.

This paper sets out to examine the relationship between fiscal balances and output crises in the eurozone, with a view to assessing the fiscal compact that has been negotiated by most members of the European Union. The paper is organised as follows. Section 2 provides a brief institutional description of Europe's fiscal compact. Section 3 investigates

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the links between fiscal imbalances and output crises from a theoretical point of view and, in so doing, also discusses the contemporary (and less contemporary) theoretical debates about the effects of fiscal policy. Section 4 uses descriptive data to consider the causes of the output crisis in the eurozone. Section 5 goes on to examine more formally and empirically the connections between fiscal imbalances in Europe and output crises. Section 6 assesses the fiscal compact in the light of the analysis in the previous sections. It also explores the political economy of the compact. The concluding section examines the implications of the analysis for the design of macroeconomic policy within Europe directed towards reducing the likelihood of future crises.

2. Europe's fiscal compact: the institutional background and details

Europe's fiscal compact is formally embodied in the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG). This was signed by all members of the European Union, with the exception of the United Kingdom and the Czech Republic, in March 2012 and is scheduled to be activated in January 2013, subject to ratification by at least 12 eurozone members. The TSCG has the status of an intergovernmental agreement, although the intention is to adopt it as European law within five years of its activation. Only eurozone members are bound by the compact, although other EU signatories will become bound by it if they join the eurozone.

The compact reflects the latest stage in a historical trend towards attempting to impose tighter fiscal constraints in Europe. It builds on the Stability and Growth Pact (SGP), which seeks to limit the size of fiscal deficits in member states to no more than 3% of GDP and the amount of debt to no more than 60% of GDP. In March 2011 the SGP was reformed to make more automatic the procedures for penalising countries that failed to comply with the rules (the so-called Excessive Deficit Procedure, or EDP). The reform of the SGP was referred to as the 'six pack' because it involved five new regulations and one directive. Following the six-pack reform, and according to newspaper reports at the time, some members of the eurozone, led by Germany, sought to strengthen still further Europe's oversight and influence over fiscal policy in member states and to extend enforcement by involving the European Commission and the European Court of Justice. Germany proposed the idea of a 'transfer union' within which access to 'bail-out' funds would be conditional on accepting direct European control of national budgetary policy. Germany also argued in favour of member states adopting balanced budget laws in order to limit the future accumulation of debt (so-called 'debt brakes').

The fiscal compact shares some similar features and involves the following components. First, general government budgets are to be balanced or in surplus, with an annual structural deficit not exceeding 0.5% of GDP (the rule is less strict for countries with government debt significantly below 60% of GDP). Second, member states are required to introduce legislation to enforce this rule, with the legislation incorporating an automatic mechanism for correcting excessive fiscal deficits. The legal provisions (quoting from the draft treaty) should have 'binding force and permanent character, preferably constitutional'. Third, member states with public debt in excess of 60% of GDP are required to reduce it by an average annual rate of 5 percentage points until they comply with the 60% upper limit. Fourth, states with excessive fiscal deficits are required to submit to the European Commission and Council a programme that explains how the deficits will be corrected. The implementation of the programme will then be monitored. Fifth, states that do not adopt a balanced budget rule will be fined up to 0.1% of GDP. Sixth, access to

financial assistance from the European Stability Mechanism (ESM) will be conditional upon compliance with the rules of the fiscal compact.

3. Fiscal imbalances and output crises: theoretical background

The relationship between the fiscal balance and national income and output is complicated with causal connections running in both directions. Changes in the fiscal balance may reflect changes in fiscal policy, and discretionary changes in tax rates and government expenditure, but they may also occur automatically as a result of changes in the level of economic activity.

While there is little theoretical disagreement about the effects of variations in the level of economic activity on the fiscal balance and about the existence of cyclical automatic stabilisers, there is substantial disagreement about the macroeconomic effects of discretionary fiscal policy. A traditional Keynesian approach sees fiscal policy as influencing the level of domestic aggregate demand and thereby national income and output, with the size of the effect depending on the size of government expenditure and tax multipliers. Expansionary fiscal policy either has an impact on real output or on inflation depending on the size of the output gap.

Monetarists challenge these ideas. First, they argue that there are significant but variable lags in the operation of fiscal policy. These can result in it becoming destabilising. Second, they argue that increases in government expenditure crowd out a broadly equivalent amount of private sector expenditure by driving up the rate of interest. According to this approach, fiscal expansion has little effect on aggregate demand but merely alters its composition.

New classical macroeconomics assumes Ricardian equivalence. It argues that fiscal expansion, deficits and debt accumulation will lead people to expect a future increase in taxation that will encourage them to increase their current saving. Again, in these circumstances, fiscal expansion will have little or no effect on aggregate demand.

More recently, the debate over the effects of fiscal policy has been taken a stage further, with critics of fiscal stimulation arguing that fiscal deficits have a negative effect on economic growth and that, by the same token, 'fiscal austerity' has a positive effect by creating greater market confidence; the so-called 'expansionary fiscal contractions hypothesis'. Much of the recent literature has focused on these issues (see, for example, von Hagen and Strauch 2001, Tsibouris *et al*. 2006, Elmendorf and Furman 2008, Ilzetzki *et al*. 2009, Alesina 2010, Freedman *et al*. 2010, IMF 2010, and Romer and Romer 2010).

What does inherited theory tell us about the relationship between fiscal deficits and the incidence of economic crises? As already noted, according to Keynesian theory, and in circumstances where there is a significant output gap, fiscal deficits will lead to increasing output and falling unemployment. They should not lead to a crisis. However, if the deficits persist beyond the point of full capacity utilisation, they are likely to lead to inflation, an appreciation in the real exchange rate, a loss of competitiveness and balance of payments deficits. The negative effects will be particularly marked where the deficits are monetised. A crisis may be expected to follow.

According to monetarism and new classical macroeconomics these effects on domestic aggregate demand will not ensue but, in spite of this, crises may still be associated with large fiscal deficits via the expansionary fiscal contractions hypothesis.

The simple open economy expression, $X - M = (S - \mathrm{I}) + (T - G)$, where X is exports, M is imports, S is saving, I is investment, T is tax revenue and G is government

expenditure, also suggests that that fiscal deficits may be associated with economic crises where they outweigh private sector surpluses and where the resulting current account deficits are unsustainable.

While first generation currency crisis theory further suggests that fiscal deficits may be a key factor in leading to crises in some circumstances, second and third generation models show that this is not always the case. Economic crises are not always just fiscal in their origins. They may be associated with excessive private sector expenditure, which may be financed through over-leveraging, leading to related instability in the domestic banking sector. There may also be other factors at work such as currency overvaluation.

Whatever their causes, economic crises tend to make fiscal deficits larger. The automatic effect may be accentuated by policy decisions that are based on Keynesian ideas. However, cyclical changes in the fiscal balance may be offset where policy makers believe in the theory of contractionary expansion since this theory implies that fiscal consolidation will lead to a decline in the size of the fiscal deficit during a period of economic recession.

Against this background of theoretical complexity and ambiguity, in this paper we investigate the nature of the simple associations that the theoretical discussion suggests may exist. First, we set out to see whether and to what extent fiscal deficits are associated with subsequent output crises, and whether other factors exert a significant effect. The above discussion raises the possibility that, in principle, crises may be as much or more to do with private sector imbalances and banking crises. Second, we examine what happens to both fiscal balances and private sector balances when there is a contemporary output crisis. This will help to tell us the net effect of automatic stabilisation and discretionary fiscal policy. Third, we examine whether there is evidence of 'fiscal overkill' in circumstances where an output crisis leads to a fall in private sector investment and consumption. In this case, excessive fiscal consolidation will tend to make the output crisis worse than it would otherwise have been. In the light of our findings we move on to assess the fiscal compact negotiated by members of the European Union.

4. Fiscal deficits and crises in Europe: some descriptive statistics

Figure 1 provides information about fiscal deficits in the build up to the crisis in the eurozone. All of the countries shown in the figure have been affected by the crisis but, as the figure shows, not all of them had experienced fiscal deficits in the period prior to it. Thus, in 2007, both Ireland and Spain had fiscal surpluses. Fiscal deficits were more limited in Italy and Portugal than they were in Greece. Indeed, it is Greece that provides the most dramatic evidence of a connection between fiscal deficits and crisis. The question then arises as to whether the situation in Greece has been inaccurately assumed to apply to all problem countries.

Other imbalances, apart from fiscal ones also appear to be connected with the eurozone crisis. Figure 2 for example shows that Portugal, Ireland, Italy, Greece and Spain (conventionally referred to as the PIIGS) had persistent current account deficits in the period since 2000, with Ireland, over the period 2010–2011, being the only exception. Figure 3 shows that for all the PIIGS the real exchange rate appreciated over the period 1996–2011 relative to other members of the eurozone. In the case of Ireland, the data in Figure. 1 show the rapid decline in the budgetary balance that was associated with the government's policies designed to underwrite the banking system. This would suggest that economic crises may, in some circumstances, be the consequence of problems in the private sector and in the banking sector.

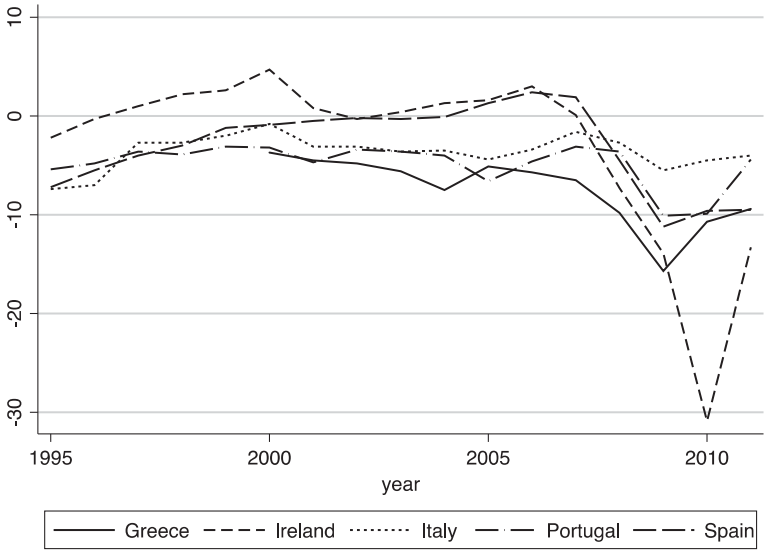

Figure 1. Budget Balance (%GDP), PIIGS (1995–2011).

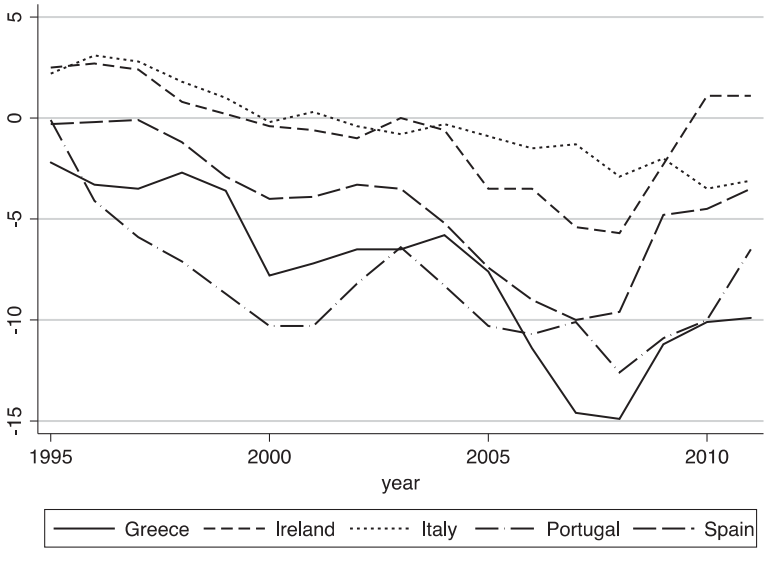

Figure 2. Current account balance (% GDP), PIIGS (1995–2011).

The descriptive data revealed by the charts therefore imply that, while fiscal deficits are certainly far from irrelevant, they are not by any means the whole story. Other imbalances and macroeconomic misalignments appear to have played an important part in leading to the eurozone crisis. A similar argument is developed in more detail by Wihlborg *et al*. (2010) where they claim that the eurozone crisis 'isn't just fiscal'.

The implication follows that a policy response that focuses narrowly on eliminating fiscal deficits may not be sufficient to eradicate, or even significantly reduce, the

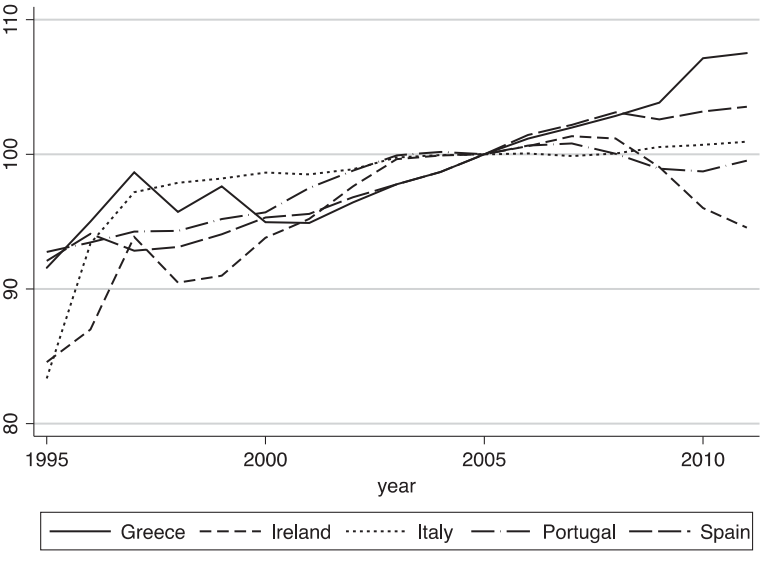

Figure 3. Real effective exchange rate, PIIGS versus eurozone partners (1995–2011).

possibility of future crises. A more rounded approach that deals with other imbalances and misalignments may be needed.

However, before returning to this issue and a fuller examination of the logic behind Europe's fiscal compact, in the next section we empirically investigate the association between fiscal deficits and economic crises in a little more detail.

5. Fiscal deficits and crises in Europe: regression analysis and results

An economic crisis can manifest itself in several ways. In this paper, we confine ourselves to examining factors that are associated with significant drops in real output. We define an output crisis as an annual percentage reduction in real GDP that lies in the 20th percentile of the empirical distribution (for each country).[1] Figure 4 shows that output crises tend to cluster in particular years, i.e. they tend to be synchronised. This is particularly evident for the recent crisis, during which every EU country experienced a significant drop in output.

Table 1 reports descriptive statistics for all variables used in the analysis disaggregated at the country level.[2] It includes the number of years for which a country has been an EMU member, the number of output and banking crises experienced during the sample period, as well as the average levels of real output growth, private balance, government balance (including interest payments), general government consolidated debt, real effective exchange rate changes and international reserves. These variables are used in the econometric analysis that follows.

The baseline specification relates output crises to the government balance, the private balance and EMU participation.[3] We estimate the parameters of a logit model by pooling all observations.[4] Panel A of Table 2 reports results from a specification where all the variables on the right-hand side have been lagged by one year.[5] Panel B in the same table reports the contemporaneous estimates.

In the lagged specification, all estimated coefficients are statistically significant. Deteriorating private and government balances precede output crises. Were the results to be

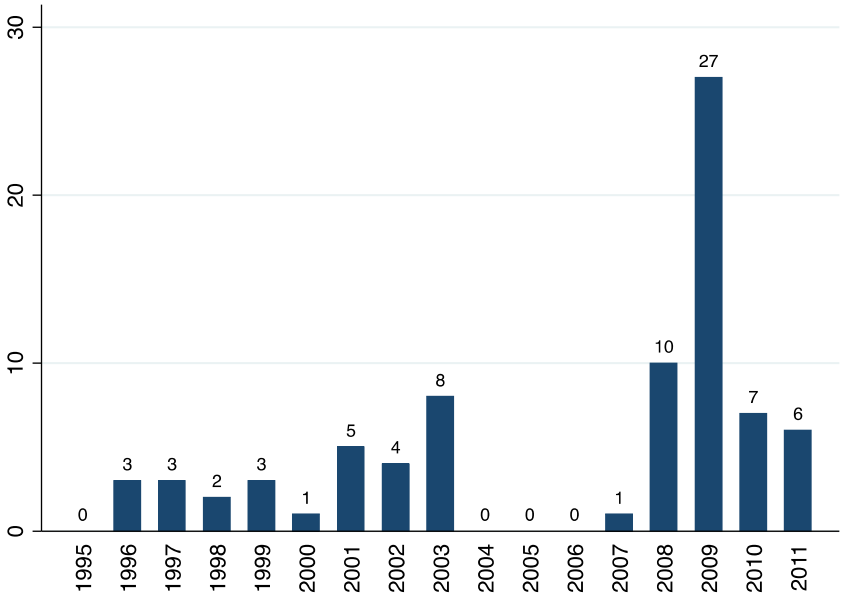

Figure 4. Output crises in the EU, 1995–2011.

interpreted as causal, the suggestion would be that reductions in tax revenues and/or increases in public spending lead to substantial output shortfalls. Of course, interpreting the results as causal would be misguided, as the deterioration in public finances could in fact be the result of reductions in output in previous years. So, the fact that deteriorating government balances precede output crises does not mean that they cause these crises. The same is true of private balance considerations.

The significance of the EMU dummy indicates that Eurozone participation is linked to a higher incidence of output crises. This may imply that the loss of the exchange rate instrument has carried a cost in terms of output shortfalls. It turns out, however, that in other specifications the dummy loses its significance so one should not read too much into it.

Moving on, we consider two further specifications that feature additional lagged control variables. In specification II, we include the percentage change in the real effective exchange rate (REER) as a measure, albeit imperfect, of the loss or gain in competitiveness. In addition, we include international reserves (in percentage change form) since, in principle, these should allow countries to cushion themselves against output shortfalls.

Including the REER and reserves in the estimation makes the budget balance statistically insignificant. The private balance's marginal effect is only significant at the 10% level. The EMU dummy has largely remained unaffected other than a slight increase in the size of the estimated coefficient. Consistent with expectations, increases in REER – a loss of competitiveness – are positively linked to output crises. Reserves do not seem to have the cushioning role assigned to them by the theory – subsequent estimations raise doubts about the existence and the direction of a relationship between output crises and reserves.

The third specification includes a variable capturing banking crises.[6] The estimated coefficient is sizeable and statistically significant; banking crises and sharp recessions tend to go together. Interestingly, the estimated coefficients of all other variables are now statistically insignificant.

Table 1. Descriptive statistics, all EU countries (1995–2011).

	EMU Dummy	Output Crisis	Banking Crisis	Growth	Private Balance	Gov. Balance	REER	Debt	Reserves
	(Sum)	(Sum)	(Sum)	(Mean)	(Mean)	(Mean)	(Mean% Change)	(Mean)	(Mean)
Austria	13	3	3	2.12	3.39	–2.39	–0.33	66.17	6.82
Belgium	13	3	3	1.89	5.45	–1.70	–0.09	103.71	5.32
Bulgaria	0	3	0	2.81	–8.07	–0.11	4.02	44.19	31.04
Cyprus	4	3	0	2.99	–1.89	–3.19	0.64	61.18	7.02
Czech Rep.	0	3	0	2.85	0.55	–4.46	3.57	24.78	21.31
Denmark	0	3	9	1.36	1.85	1.48	0.12	48.89	14.06
Estonia	0	3	0	5.04	–7.65	0.30	3.40	5.81	74.08
Finland	13	3	4	2.80	2.98	1.49	–0.40	45.28	5.71
France	13	3	5	1.66	3.78	–3.64	–0.28	84.81	4.38
Germany	13	3	3	1.40	5.39	–2.72	–0.93	65.43	4.60
Greece	11	3	8	1.89	–5.73	–7.42	0.98	109.49	5.77
Hungary	0	3	8	2.29	0.20	–5.48	2.76	66.82	22.19
Ireland	13	3	4	5.03	1.82	2.97	0.66	50.79	4.08
Italy	13	3	6	0.87	3.30	–3.65	1.15	111.32	4.94
Latvia	0	3	0	4.57	–5.39	–2.29	3.25	18.08	16.61
Lithuania	0	3	0	4.73	–3.90	–3.59	4.88	21.36	14.79
Luxembourg	13	3	0	3.75	Na	1.99	0.30	9.04	0.88
Malta	4	2	0	1.75	0.10	–5.38	1.15	59.56	7.50
Netherlands	13	3	3	2.18	7.92	–1.91	–0.02	58.65	5.30
Poland	0	3	5	4.41	1.45	–4.87	1.90	45.42	15.31
Portugal	13	3	3	1.63	–3.78	–4.82	0.44	65.92	10.13
Romania	0	3	10	2.57	–1.02	–3.75	3.07	19.17	15.83
Slovakia	3	3	0	4.31	–0.08	–5.59	4.86	37.52	26.31
Slovenia	5	3	0	3.13	1.62	–3.25	0.61	27.28	2.13
Spain	13	3	9	2.60	–1.35	–3.06	0.73	54.71	4.77
Sweden	0	3	4	2.72	5.85	.18	–0.12	53.52	7.52
UK	0	3	6	2.29	1.80	–3.52	–0.33	50.20	2.71
Totals	170	80	93	2.81	0.45	−2.74	1.33	51.48	12.39

Notes: Private balance, government balance, debt and reserves are expressed as percentages of GDP.

Given that the baseline model is nested in specification II and the latter is nested in specification III, it is relatively straightforward to determine which model constitutes a best description of the data. Likelihood ratio (LR) tests suggest that specification III is the preferred one.[7] However, two caveats need to be raised here. First, owing to the limited number of observations for the banking crisis variable, in order to compare the second and third specifications we need to adjust the sample for specification II. Second, to ensure the validity of the LR tests we estimate the models with conventional, non-robust standard errors.

Turning to the contemporaneous estimations we see that the sign of the private balance has changed. In addition, the positive relationship between output crises and the private balance remains statistically significant across specifications. The gap between private saving and investment increases during output crises. In additional estimations, not reported here, we find that this result is driven by the investment component of the private balance, i.e. it is the reduction in investment during crises that underlies the

Table 2. Marginal effects from logit estimations.

	Baseline		Specification II		Specification III	
	Estimate	Marg. eff.	Estimate	Marg. eff.	Estimate	Marg. eff.
			Panel A: Lagged			
Private balance	–0.049**	–0.007**	–0.040	–0.006*	–0.042	–0.006
	(0.024)	(0.003)	(0.025)	(0.004)	(0.033)	(0.004)
Gov. balance	–0.081*	–0.012*	–0.049	–0.007	0.052	0.007
	(0.042)	(0.006)	(0.044)	(0.006)	(0.055)	(0.007)
EMU	0.979***	0.144***	1.176***	0.172***	0.589	0.079
	(0.271)	(0.039)	(0.306)	(0.042)	(0.375)	(0.050)
REER			0.067**	0.010**	0.022	0.003
			(0.031)	(0.004)	(0.037)	(0.005)
Reserves			0.016***	0.002***	0.007	0.001
			(0.005)	(0.001)	(0.007)	(0.001)
Banking crisis					2.084***	0.280***
					(0.457)	(0.051)
Constant	–2.092***		–2.228***		–2.058***	
	(0.240)		(0.269)		(0.318)	
Observations	381		360		242	
Pseudo *R* sq.	0.047		0.072		0.143	
Wald test	16.0***		23.26***		33.26***	
			Panel B: Contemporaneous			
Private balance	0.094***	0.0112***	0.107***	0.013***	0.120***	0.014***
	(0.030)	(0.004)	(0.030)	(0.004)	(0.036)	(0.004)
Gov. balance	–0.234***	–0.029***	–0.235***	–0.029***	–0.109	–0.013
	(0.051)	(0.006)	(0.054)	(0.006)	(0.068)	(0.008)
EMU	0.666**	0.084**	0.711**	0.088**	0.465	0.056
	(0.286)	(0.035)	(0.302)	(0.036)	(0.406)	(0.048)
REER			0.050	0.006	0.099*	0.012*
			(0.042)	(0.005)	(0.053)	(0.006)
Reserves			–0.002*	–0.0003*	0.018	0.002
			(0.001)	(0.0001)	(0.011)	(0.001)
Banking crisis					1.164**	0.141**
					(0.484)	(0.057)
Constant	–2.714***		–2.827***		–2.647***	
	(0.313)		(0.338)		(0.416)	
Observations	386		384		241	
Pseudo *R* sq.	0.173		0.185		0.210	
Wald test	36.37***		37.46***		39.33***	

Notes: Dependent variable is a reduction in real output, which is in the 20th percentile. The private balance and government balance are expressed as percentages of GDP. The real effective exchange rate (against 41 EU trading partners) and reserves are expressed as percentage changes over the previous year. EMU and banking crises are dummy variables. Asterisks *, ** and *** denote significance at the 10, 5 and 1% levels, respectively. Hubber-White standard errors are reported in parentheses.

positive relationship between output crises and the private balance. This is a point that we discuss further later in the paper.

In the same estimations, we also break down the government balance into its components, tax and government spending. We find a significant negative relationship between

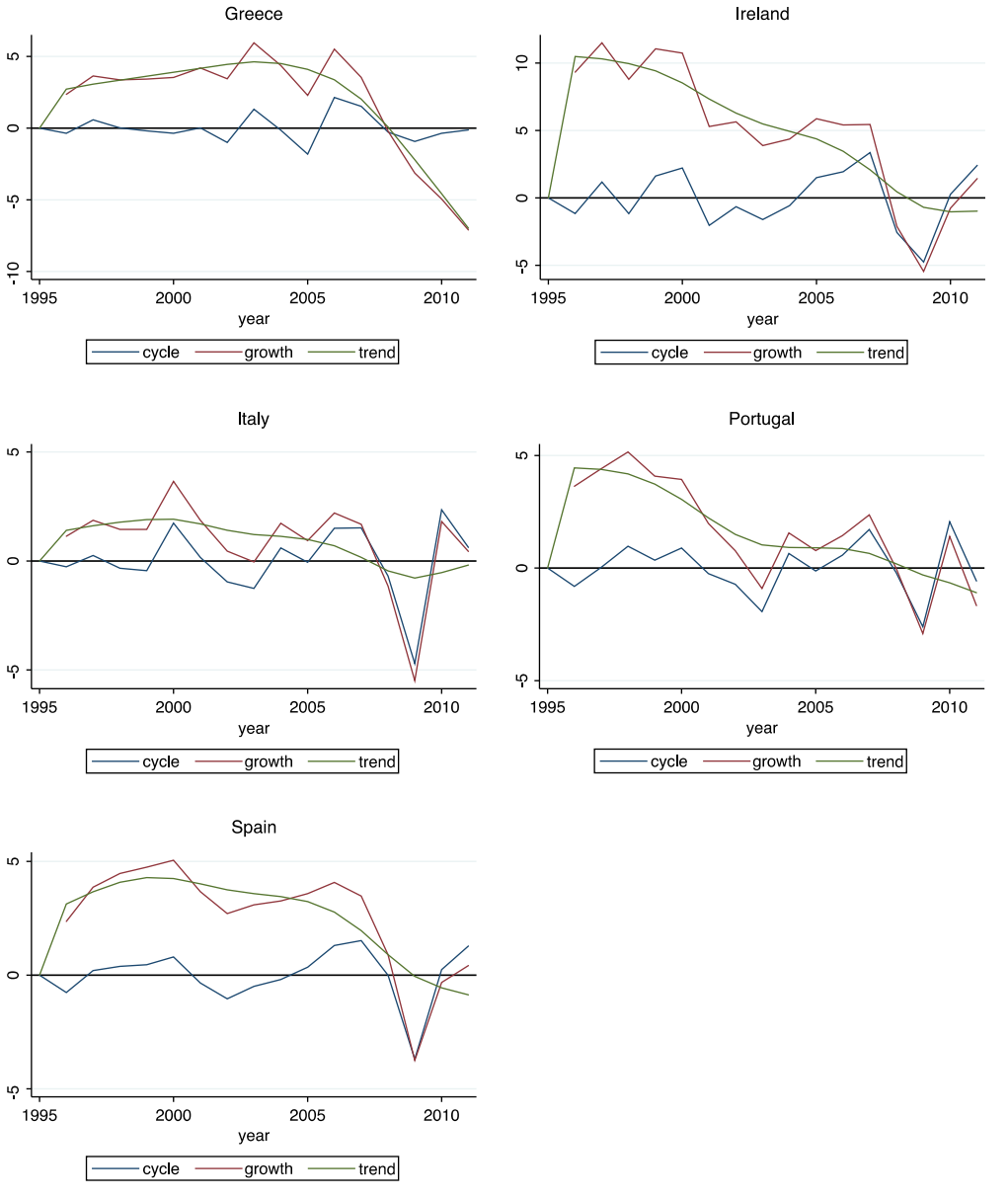

Figure 5. Growth, trend and cycle, PIIGS (1995–2011).

tax and output crises across the three specifications, indicating that when there is a crisis, tax revenue declines. Correspondingly, the relationship between output crises and government spending is positive, showing that government expenditure rises during crises.

Robustness of results

As a robustness check, we interact the government balance with the debt ratio. This allows us to gauge the role of the budget conditional on the debt level. The results – not

Table 3. Results from pooled OLS estimations.

	Baseline	Specification II	Specification III
Private balance	–0.083***	–0.099***	–0.047**
	(0.024)	(0.026)	(0.023)
Gov. balance	0.094**	0.070	0.044
	(0.038)	(0.043)	(0.036)
EMU	0.117	0.067	–0.069
	(0.229)	(0.229)	(0.216)
REER		–0.072**	–0.040*
		(0.028)	(0.024)
Reserves		0.016∗	–0.023***
		(0.009)	(0.007)
Banking crisis			–0.008
			0.436
Constant	0.263	0.282	0.193
	(0.169)	(0.166)	(0.173)
Observations	407	385	242
Pseudo *R* sq.	0.099	0.143	0.169
F test	5.60***	4.52***	4.76***

Notes: Dependent variable is the deviation from trend growth (Hodrick-Prescott decomposition). See Table 2 for more notes.

reported here – are in line with those shown in Table 2. The interactive variable has a negative sign but is statistically significant only in the first two of the contemporaneous specifications.

As a further check, we decompose the growth rate into its trend and cycle components using a Hedrick-Precott filter – see Figure. 5. This allows us to model the cycle as a continuous variable. How does the cycle relate to the private and government balances?

We run Philips-Perron panel unit root tests to assess the stationarity of the variables used in the OLS estimations. For each of the variables, the tests reject the hypothesis that all panels have a unit root. Then, we conduct *F* tests to determine whether to use a fixed effects model or simply pool the available data. The tests fail to reject the hypothesis that panel-level variances are insignificant. Therefore, we estimate the models with pooled OLS.

Table 3 highlights the importance of private savings.[8] In contrast, the budget is not significant in specifications II and III. LR tests indicate that the former is preferred to the latter. In the preferred specification, a loss of competitiveness is related to deteriorating output. Higher reserves, in contrast, are linked to improved output. The results from the pooled OLS estimations using a continuous measure that captures the business cycle are supportive of the results from the logit model.

6. The fiscal compact: discussion and assessment

While the theoretical analysis in Section 3 suggests that fiscal deficits may sometimes be an important or determining factor in causing economic crises, the empirical evidence presented in this paper raises some doubts about their relevance in the context of sharp output shortfalls in Europe. Even though results from a subset of specifications are compatible with the existence of a significant negative relationship between the government

balance and output crises, appropriate statistical tests reject these specifications in favour of others in which the relationship disappears. Even if the relationship had been a robust one, it would be extremely difficult to substantiate a causal effect of deficits on output shortfalls.

Our econometric analysis has shown that such shortfalls may be more significantly linked to private sector imbalances. The contraction of investment during output crises is statistically significant, while private savings appear unchanged. The overall result is that the private sector balance increases. Two other factors that may be associated with sharp declines in output are the changes in competitiveness associated with real exchange rate appreciation, and banking crises. Seeking to eliminate fiscal deficits and aiming for balanced budgets throughout the eurozone may do little to reduce the likelihood of future economic crises. When faced with an output crisis, fiscal consolidation, as envisaged in the fiscal compact, may even make matters worse and lead to more crises.

Whether or not fiscal deficits are excessive depends on a range of other factors including the size of the output gap, the size of private sector imbalances, the amount of outstanding debt and the relationship between fiscal deficits and economic growth, which itself may be different in the short term and in the long run (see, for example, Giavazzi and Pagnano 1990, IMF 2010, and Cottarelli and Jaramillo 2012).

If the assumption behind Europe's fiscal compact is that balanced budgets will lead to current account balance of payments equilibrium across all member countries of the eurozone, then it follows from the algebra of the open economy expression presented earlier that all private sectors throughout eurozone countries will also need to be in balance. This is neither how things have stood in the past nor how they seem likely to stand in the foreseeable future. In any case, the idea of achieving balance between domestic saving and investment is at odds with the basic purposes of monetary integration. If it is accepted that some countries will, at certain times, be running balance of payments deficits while others are running surpluses, then the implication is that there will have to be either private sector or public sector imbalances that reflect this state of affairs. Or, to put the point another way, if it is accepted that private sector saving may not always equal private sector investment in all countries, with saving exceeding investment in some, and falling short of it in others, then it follows that current account balance will require the public sector to be in deficit in the former group and in surplus in the latter group.

There is a strong analytical connection between the stance of fiscal policy and the observation that the balance of payments is a zero sum game. Not all countries can simultaneously run current account surpluses. Attempts to reduce current account deficits will fail if they are not accompanied by a willingness amongst surplus countries to see their surpluses decline. In the absence of this willingness, such attempts will result in falling income and rising unemployment. Similarly, if within the eurozone the fiscal compact forces countries to eliminate fiscal deficits, but does nothing to encourage countries with fiscal surpluses to reduce them, then it is likely that there will be a significant fall in eurozone income and a significant increase in eurozone unemployment.

Evidence collected by the IMF, and briefly referred to earlier, confirms that adopting tighter fiscal policy has a contractionary effect. In a comprehensive examination of the effects of 'fiscal consolidation' based on historical experience and simulation, the Fund concludes that it "typically reduces output and raises unemployment in the short term" (IMF 2010). The Fund also claims that its findings suggest that "budget deficit cuts are likely to be more painful if they occur simultaneously across many countries, and if monetary policy is not in a position to offset them." This is the position in which Europe finds itself in 2012/13.

A further potentially fundamental problem with Europe's fiscal compact is its built-in asymmetry. It discourages structural fiscal deficits but does not discourage, and even encourages, structural fiscal surpluses. The compact would be internally consistent if the objective was to achieve universal balance across current accounts, private sector and public sector accounts – although, as noted above, this undermines the basic purposes of economic and monetary integration. But there is an internal inconsistency where a limit is imposed on structural budgetary deficits but no similar limit is imposed on structural fiscal surpluses. Such asymmetry creates a recessionary bias. It makes economic crises involving sharp output declines more likely. Countries will be left with no instruments with which they can seek to manage aggregate domestic demand.

Why then would countries sign up to the compact? There are a number of potential explanations. We merely raise them here and do not attempt to analyse them in any depth or test them empirically. First, there is the bargaining power of Germany as Europe's strongest economy. It is difficult for countries that may need Germany's financial support to resist German pressure to sign the compact. It may appear that the design of the compact reflects Germany's influence and preferences. Contemporary German policies are not constrained by it.

Second, there is, one suspects, a strong element of time inconsistency. Countries may believe that they can derive short term benefits by signing up to the compact, both by maintaining Germany's commitment to providing financial assistance, and by having a positive effect on market confidence, thereby minimising the risk premium they have to pay on the debt they issue. In the long term, they may believe that the details of the compact leave enough scope for them to evade the rules. There are ambiguities in the treaty document over what constitutes a structural deficit as opposed to a cyclical one. There are certainly disagreements about how best to measure fiscal consolidation and cyclically adjusted primary balances (see, for example, IMF 2010, for a summary of some of them). The fiscal compact makes allowance for 'exceptional circumstances' and also for prolonged recessions or, in the words of the draft treaty, 'severe economic downturns.' This may mean that reluctant signatories believe that they will be able to continue to use discretionary fiscal policy to some extent.

Third, experience with the Stability and Growth Pact (SGP) may be interpreted to imply that the imposition of penalties, as laid out in the fiscal compact, is not entirely credible. In any event, short term benefits may be perceived to outweigh longer term costs that are heavily discounted. If the weaker constraints involved in the SGP have been found to be unenforceable, is there a reasonable chance that the stronger ones involved in the fiscal compact will be? If the compact lacks credibility the perceived short term benefits in terms of influencing market confidence may then fail to materialise.

Furthermore, research into the impact of fiscal responsibility laws (FRLs) in nine emerging economies as measured by key fiscal balances suggests that they did not have a significant effect (Thornton 2009). Although fiscal performance improved in the countries with FRLs, it also improved in much the same way in countries that did not have them.

7. Concluding remarks

The evidence presented in this paper helps to inform the issues raised in the introduction. First, and in the context of the eurozone, it appears to be invalid to assume that fiscal deficits are always a significant factor in leading to economic crises that involve sharp declines in output. The causes of crises are more varied and nuanced than this and involve private sector deficits, with investment exceeding saving, banking crises and

currency overvaluation. Eliminating the exchange rate instrument by entering into a full monetary union also appears to have made it more difficult to avoid output crises in Europe.

Second, and once confronted with a crisis, fiscal deficits show little significant tendency to increase. They therefore fail to offset the impact on the private sector where the negative effect on private sector investment is particularly pronounced. In these circumstances, there is a danger that discretionary fiscal policy aimed at consolidation will err in the direction of overkill, making output crises worse than they would otherwise be.

Our findings suggest that there may be some similarities between the eurozone crisis in the period since 2008 and the East Asian crisis in 1997/98. In the latter case, it is widely acknowledged that fiscal deficits played a relatively marginal role and were not the root cause of the problem. The unexpectedly sharp decline in private sector investment during the crisis led the International Monetary Fund initially to overestimate the extent of fiscal consolidation required to achieve the desired improvement in the current account of the balance of payments. IMF-supported programmes were then modified to reduce the degree of fiscal austerity they embodied in order to minimise their negative impact on economic activity. On the basis of our findings, a legitimate cause for concern is that Europe's fiscal compact may institutionalise equivalent fiscal overkill by emphasising balanced budgets.

Ruling out (or strictly limiting) the scope for discretionary fiscal policy may make macroeconomic management more difficult and constrain policy makers' ability to deal with output crises. Although there are brief allusions to them in the draft Treaty, there is little emphasis in the fiscal compact on other potential ways of minimising the risks of future economic crises that focus on controlling private sector deficits as well as the vulnerability of the banking system. Moreover, the emphasis is on eliminating fiscal deficits or creating fiscal surpluses, rather than on coordinating fiscal policy in a way that allows for an appropriate mix of expansionary and contractionary fiscal policy across European economies.

On the basis of projections published in the IMF's *Fiscal Monitor* (IMF 2012) and the effects of fiscal consolidation reported earlier in this article, complying with the fiscal compact would imply a contraction in eurozone output of more than 1% over a two-year period, as well as a rise in unemployment of nearly one percentage point. However, there would be considerable variation within the eurozone. The output and unemployment costs in Germany would be zero, while the costs in Spain, for example, would involve a reduction in GDP of more than 1.5%, and a rise in the rate of unemployment of more that one percentage point.

While Europe's fiscal compact aims at reducing the incidence of crises, our findings raise doubts as to whether it will achieve this. Furthermore, the compact will reduce the scope for handling crises if and when they do occur. This is of particular concern when other adjustment tools, including monetary policy and, perhaps in particular, exchange rate policy, are not available. This could mean that the European EMU becomes more prone to deep economic crises involving shortfalls in output and increases in unemployment, and this may adversely affect the durability of the eurozone itself.

The analysis in this paper raises the question of whether there may be policy initiatives that are superior. These could involve a more rounded view of fiscal deficits that takes into account private sector imbalances and puts banking sector reform centre stage. Fiscal coordination could also be organised in a way that recognises the fact that imbalances can take the form of surpluses as well as deficits. It would seek to exert pressure

on countries with structural (non-cyclical) surpluses and with private sector surpluses to relax rather than tighten fiscal policy.

In addition, if there is a desire to limit the scope for discretionary fiscal policy by imposing constraints on the size of structural deficits there may be a case, as recently articulated by Blanchard *et al*. (2010), for increasing the degree of automatic fiscal stabilisation, such that stronger counter-cyclical effects are built into the fiscal balance.

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Notes

1. All data used in the analysis, with the exception of the banking crises variable, are from Eurostat.
2. Our sample consists of the 27 European Union members, as of 2011.
3. The private balance is the difference between private saving and investment. The former is calculated as national saving minus the government balance (including interest), whereas the former is captured by gross capital formation.
4. The reason why we do not employ a panel estimator is that likelihood-ratio tests, which we run for the baseline as well as for additional model specifications, cannot reject the hypothesis that panel-level variances are insignificant. It follows that the use of panel-level effects is unnecessary.
5. Lagging the variables does not necessarily alleviate potential endogeneity issues. It does, however, allow us to examine the sequence of events and compare the results to those from a contemporaneous estimation.
6. Data are from Reinhart and Rogoff (2008).
7. All results are available from the authors upon request.
8. Note that whereas in Table 2 the binary dependent variable captures a substantial shortfall in real output, in Table 3 the continuous dependent variable measures deviations from trend output (the business cycle), which can be positive or negative. Hence, we expect the signs of the estimates to be the opposite. For example, an increase in the value of the budget balance is expected to be positively correlated to an improvement in the business cycle – irrespective of the direction of causality.

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