

Persson, Mats

**Article**

## Debts, Deficits and Multiple Equilibria: A New Role for ECB Monetary Policy?

CESifo Forum

**Provided in Cooperation with:**

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*Suggested Citation:* Persson, Mats (2016) : Debts, Deficits and Multiple Equilibria: A New Role for ECB Monetary Policy?, CESifo Forum, ISSN 2190-717X, ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 17, Iss. 1, pp. 63-71

This Version is available at:

<https://hdl.handle.net/10419/166645>

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## DEBTS, DEFICITS AND MULTIPLE EQUILIBRIA: A NEW ROLE FOR ECB MONETARY POLICY?

MATS PERSSON\*

### Introduction

The debt crisis has now plagued the Eurozone for over half a decade, and the body of literature dealing with it is enormous. The various rescue measures taken by the EU, the ECB and the IMF were motivated by the view that bond markets were malfunctioning, and thus different types of interventions were warranted.<sup>1</sup>

When discussing these interventions with fellow economists, I hear the argument that the government bonds of the crisis countries have been incorrectly priced for long periods of time. A specific claim is that prior to the outburst of the crisis in early 2010, Greece could borrow at the same interest rate as Germany – which shows how irrational the markets were in those days. Now, this statement has been proven plainly untrue; Greece could not borrow at the same interest as Germany during the years preceding the crisis.

Figure 1 shows the interest rate spread against German government bonds for the five most important crisis countries from 2005 to 2009 (for interest spreads during later years, see Figure 2 below). We see that the Greek bond had a premium, compared to the German bond, of around

\* Stockholm University. This paper is based on my Félix Neubergh Lecture, given at the University of Gothenburg on 4 November 2015.

<sup>1</sup> For a recent collection of papers on the crisis, see the contributions in Baldwin and Giavazzi (2015). Sinn (2015) provides a discussion of the measures aimed at dealing with the Greek problems.

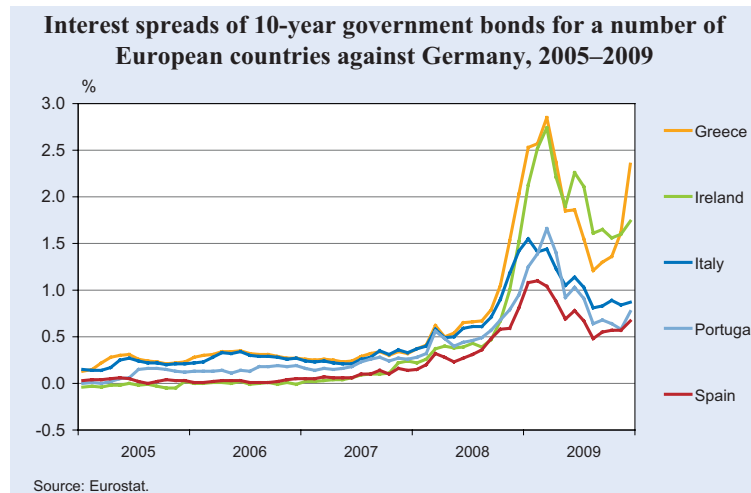
25 basis points as early as 2005–2007. This also holds for most of the other crisis countries, and one might perhaps explain this spread by a liquidity premium – although the volumes traded in Spanish and Italian bonds were fairly large, and the market for these bonds seemed quite liquid, even back in 2005 and 2006. In 2007, however, the interest spreads start to increase; for Greece and Portugal they reached 50 basis points in early 2008, and 100 basis points half a year later. In 2009, the spreads fluctuated around 200 basis points for Greece and Ireland, and between 50 and 150 basis points for Spain, Italy and Portugal.

One may, of course, say that in the case of Greece, the spread was too small, given that Greece's public finances were in such bad shape. Or one may argue that the spread was too large, given that the true state of Greek public finances was hidden from the market; the falsifications of Greece's national accounts were not revealed until early 2010. In any case, the spread was not zero. For whatever reason, the market placed some kind of risk premium on the interest rate of Greek bonds – as well as on bonds of the other crisis countries. Those premia were too large to be explained by low liquidity, and they grew particularly large in 2008 and 2009.

Therefore, it seems somewhat unwarranted to say that the behaviour of interest rates show that the bond markets were malfunctioning prior to the crisis. If an-



Figure 1



anything, the bond markets seemed to express concern over the future path of government indebtedness – a worry that, given later developments, turned out to be well-founded. But even if the markets were well-functioning prior to the crisis, there is still an argument for intervention during the crisis. I will now turn to that argument.

### Multiple equilibria: the theoretical concept

The argument is largely theoretical – although it does, of course, have practical implications. It can be shown that, in a model of rational investors, expectations about a future default can generate multiple solutions to the price (and thereby the interest rate) of a bond. Let us assume that a country issues government bonds. If the market considers the probability of default as low, the effective interest on these bonds will be low. If, by contrast, the market regards the probability of default as high, the effective rate of interest will be high; in fact, the cost of borrowing may then be so high that the country's stock of debt, which has to be rolled over at regular intervals, is not sustainable. Thus, the probability of default becomes an immediate reality, and the market's expectation of default becomes a self-fulfilling expectation.<sup>2</sup>

Thus, there may be multiple rational-expectations equilibria for such a country. For instance, with two equilibria, there is one low-rate and one high-rate equilibrium. Similar phenomena arise in many contexts, not only in models of financial markets. For instance, in models of crime there are often two equilibria: one 'good' low-crime equilibrium and one 'bad' high-crime equilibrium (see Persson and Siven 2006). The policy problem is then to ascertain that if the economy has ended up in the bad equilibrium (with high crime, or a high interest rate) it will move to the good one (with low crime, or a low interest rate).

However, there is a difficult empirical problem associated with this largely theoretical literature. Let us assume that we observe a crime rate (i.e. a percentage of the population engaged in crime) or a government borrowing cost of, say, ten percent. How do we know that this is a bad equilibrium, and that by suitable policy measures we can attain a good equilibrium with only five percent crime or a five-percent borrowing

cost? The ten percent we observe might actually be the low-crime equilibrium, and by changing some parameter in the model, the system might jump to a high-crime equilibrium of, say, twenty percent.<sup>3</sup> In fact, we do not even know whether there are multiple equilibria in reality, or whether the state we observe is the only possible equilibrium state.

In principle, we could estimate the model and find out exactly where we are, and whether there are other equilibria just around the corner. In practice, however, we simply do not have that kind of empirical knowledge. While the theoretical results are unambiguous – multiple equilibria can occur – the empirical results are, to the best of my knowledge, non-existent. We simply do not know what kind of equilibrium we are observing in reality. Working out empirical methods for identifying the character of a real-world equilibrium is an important topic for future research.

### Multiple equilibria: the role of monetary policy

The notion of multiple equilibria, some of which are 'good' and some are 'bad', thus raises difficult empirical questions. Nevertheless, one may argue that in connection with sovereign debt, the problem is simpler than in other contexts (like crime). In fact, we have cases where a country has enjoyed a relatively low borrowing cost for a long time – and then, all of a sudden and for no obvious reason, the interest rate skyrockets. One may then argue that this rise has been caused by the country being pushed by some external and irrelevant factor from a good to a bad equilibrium.

The comparison to the economics of crime is instructive. There we do not have much material for comparison; observations are few, and if one country has a higher crime rate than another, there are always many differences between the countries that one may point at without having to invoke the theory of multiple equilibria. By contrast, in financial markets there is a much larger number of observations, both across time and across countries, and the existence of multiple equilibria may seem as good an explanation for country differences as any other.

<sup>2</sup> The model is spelled out in Calvo (1988); and Cole and Kehoe (2000).

<sup>3</sup> Please note that we cannot rely on comparative-statics results to determine what type of equilibrium we are in. Unstable equilibria usually display 'perverse' comparative statics (e.g. the borrowing cost is decreasing in the degree of indebtedness, or the crime rate is decreasing in the severity of punishment). But if there are several stable equilibria, they may all display similar, 'normal' comparative-statics properties.

In fact, when the Greek borrowing costs skyrocketed in early 2010, many commentators considered this development ‘unreasonable’. Unreasonable would seem to suggest that Greece was suddenly pushed from a good to a bad equilibrium. Such an argument obviously disregards the notion that the interest rate soars ‘for no obvious reason’. In fact, the revelation in early 2010 of the faked Greek national accounts may be regarded as an obvious reason.

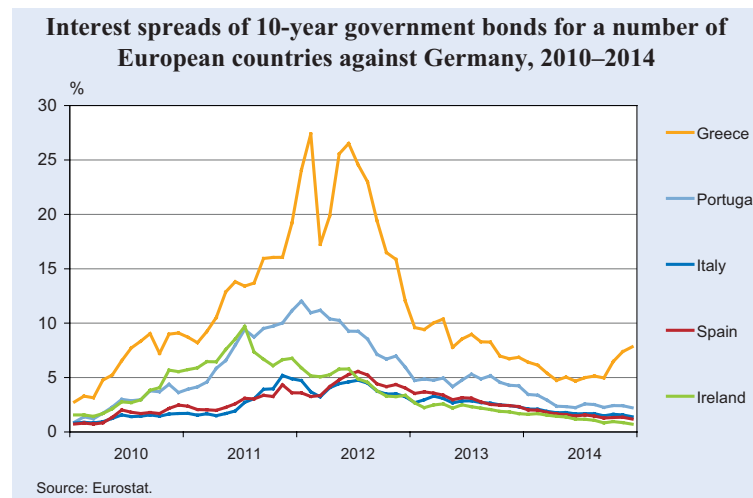
Let us now look at the interest rates of some of the other crisis countries from 2010 onwards (Figure 2). We see that the Greek rates continue to increase to ‘unreasonable’ levels in 2011 and 2012. As for the interest rates of Spain, Portugal and Italy, there may initially have been fears of manipulations of the national accounts in those countries too, but their national accounts were soon found to be reliable – and nothing dramatic happened to their interest rates during 2010. Their spreads against the German Bund did, however, increase over the years, to a maximum of 5 percent in 2012 for Spain and Italy, and to a maximum of 10–12 percent in 2011 for Ireland and Portugal.

Disregarding the development in specific countries, we may nevertheless discuss the theoretical model. Therefore, let us assume that we somehow know that the present interest rate has been caused by self-fulfilling, pessimistic expectations and that there is another, lower interest rate just around the corner. This means that we have abstracted from the practical problem of distinguishing between *illiquidity* and *insolvency*. Distinguishing between these two concepts may be difficult in practice; and I will return to this issue below.

We thus assume that we somehow know that a country is basically solvent, but that it for some reason has ended up in a high-interest equilibrium, with such high borrowing costs that it would become insolvent. There is then room for the central bank to get things right. By buying government bonds in the market, the central bank drives up the price of the bonds, thereby driving down the interest rate – and, ideally, the ‘good’ equilibrium can be thus attained.<sup>4</sup> There is a terminol-

<sup>4</sup> See Corsetti and Dedola (2013) for the details of this model.

Figure 2



ogy for such a policy: it says that the central bank acts as the government’s ‘lender of last resort’; or that it provides a ‘monetary backstop’. In fact, many economists claim that the ECB functioned successfully as such a lender during the Eurozone crisis (for references, see footnote 9 below).

The above mainly being a theoretical argument, there is a theoretical counter-argument. Let us assume that a country is in an expectations-driven, bad equilibrium. In the ideal case, an intervention by the central bank would not affect inflation; one can show that the intervention would be automatically sterilized. But since we are in a world of expectations that are perhaps not entirely justified, observing the central bank taking actions in the bond market might fuel fears of the bank monetizing government spending and thereby creating inflation. The country might then move from a situation with a bad equilibrium with self-fulfilling expectations about *default* to another bad equilibrium with self-fulfilling expectations about *inflation*.

This model soon becomes very complicated and it is not obvious whether one equilibrium is better than the other. The scope for the central bank to act as a successful lender of last resort to the sovereign is therefore rather difficult to analyse theoretically – and without a clear-cut theoretical model, it is probably impossible to analyse empirically. There may be cases where the central bank will improve the situation and other cases where it will make the situation worse. It all depends on the model parameters – and we have very little knowledge about the true values of those parameters. At the same time, there are large sums at stake among the private banks that own sovereign debt, and

one may be certain that those banks – *via* their lobbying organisations – will swiftly present evidence in favour of a solution whereby the central bank bids up the prices of various assets held by the banks.

In particular, there is one argument that might be pursued: the above model, by Corsetti and Dedola (2013), applies to one individual country with its own central bank. In a monetary union, with many countries and one central bank for all of them, the argument is simpler. If ECB functions as a lender of last resort to a small member state like Greece, the effect on the union's inflation rate will be negligible. Even if we were sure that the ECB was monetizing Greek spending, this would hardly affect overall inflation. Thus, a bad rational-expectations equilibrium with high inflation is very unlikely to emerge (although we cannot dismiss it altogether, since the model deals with expectations that are unfounded, but that can nevertheless emerge and push the whole economy to another equilibrium). If we choose to abstract from multiple equilibria in terms of inflation, but retain the notion of multiple equilibria in terms of default risk, the policy conclusion is clear. The ECB should inter-

vene when a small member country has ended up in a high-interest equilibrium – still assuming, of course, that the ECB can distinguish between illiquidity and insolvency.<sup>5</sup>

### Does the 'multiple equilibria model' help us understand what happened during the crisis?

According to the model, a bad equilibrium can emerge for a country that is, in every relevant aspect, identical to a country in a good equilibrium. The empirical question now is whether the crisis countries were identical to the non-crisis countries in every relevant aspect. Table 1 shows data on the budget deficits for all EU countries during the period 2009–2015.

Obviously, if multiple equilibria existed, they did not hit countries in an arbitrary fashion. Let us first look at the entries of the year immediately preceding the

<sup>5</sup> When analysing a situation with several members of a currency union, other problems might arise. For instance, insolvency in one member country, together with the existence of mutual rescue funds like the European Stability Mechanism, might fuel self-fulfilling expectations about default of the entire union. This possibility is discussed in Corsetti *et al.* (2014).

Table 1

Budget deficits in the EU, 2009–2015

	General budget deficit, percent of GDP						
	2009	2010	2011	2012	2013	2014	2015
Austria	5.3	4.4	2.6	2.2	1.3	2.7	1.9
Belgium	5.4	4.0	4.1	4.1	2.9	3.1	2.7
Bulgaria	4.1	3.2	2.0	0.6	0.8	5.8	2.8
Croatia	5.8	5.9	7.8	5.3	5.4	5.6	4.9
Cyprus	5.5	4.8	5.7	5.8	4.9	8.9	0.7
Czech Rep.	5.5	4.4	2.7	4.0	1.3	1.9	1.9
Denmark	2.8	2.7	2.1	3.6	1.3	-1.5	3.3
Estonia	2.2	-0.2	-1.2	0.3	0.1	-0.7	-0.2
Finland	3.5	2.6	1.0	2.1	2.5	3.3	3.2
France	7.2	6.8	5.1	4.8	4.1	3.9	3.8
Germany	3.2	4.2	1.0	0.1	0.1	-0.3	-0.9
Greece	15.2	11.2	10.2	8.8	12.4	3.6	4.6
Hungary	4.6	4.5	5.5	2.3	2.5	2.5	2.3
Ireland	13.8	32.3	12.5	8.0	5.7	3.9	2.2
Italy	5.3	4.2	3.5	3.0	2.9	3.0	2.6
Latvia	9.1	8.5	3.4	0.8	0.9	1.5	1.5
Lithuania	9.1	6.9	8.9	3.1	2.6	0.7	1.0
Luxemb.	0.5	0.5	-0.5	-0.2	-0.7	-1.4	0.0
Malta	3.3	3.2	2.6	3.6	2.6	2.1	1.7
Netherlands	5.4	5.0	4.3	3.9	2.4	2.4	2.1
Poland	7.3	7.5	4.9	3.7	4.0	3.3	2.8
Portugal	9.8	11.2	7.4	5.7	4.8	7.2	3.0
Romania	9.1	6.9	5.4	3.2	2.2	1.4	1.2
Slovakia	7.9	7.5	4.1	4.2	2.6	2.8	2.7
Slovenia	5.9	5.6	6.6	4.1	15.0	5.0	2.9
Spain	11.0	9.4	9.5	10.4	6.9	5.9	4.7
Sweden	0.7	0.0	0.1	0.9	1.4	1.7	1.4
UK	10.8	9.7	7.7	8.3	5.7	5.7	4.3

Source: European Commission AMECO Database. Forecast for 2015.

Table 2

	Gross government debt, percent of GDP						
	2009	2010	2011	2012	2013	2014	2015
Austria	79.7	82.4	82.2	81.6	80.8	84.2	86.6
Belgium	99.5	99.6	102.2	104.1	105.1	106.7	106.7
Bulgaria	13.7	15.5	15.3	17.6	18.0	27.0	31.8
Croatia	48.1	57.0	63.7	69.2	80.8	85.1	89.2
Cyprus	53.9	56.3	65.8	79.3	102.5	108.2	106.7
Czech Rep.	34.1	38.2	39.9	44.7	45.2	42.7	41.0
Denmark	40.4	42.9	46.4	45.6	45.0	45.1	40.2
Estonia	7.0	6.6	5.9	9.5	9.9	10.4	10.0
Finland	41.7	47.1	48.5	52.9	55.6	59.3	62.5
France	79.0	81.7	85.2	89.6	92.3	95.6	96.5
Germany	72.5	81.0	78.4	79.7	77.4	74.9	71.4
Greece	126.7	146.2	172.0	159.4	177.0	178.6	194.8
Hungary	78.0	80.6	80.8	78.3	76.8	76.2	75.8
Ireland	61.8	86.8	109.3	120.2	120.0	107.5	99.8
Italy	112.5	115.3	116.4	123.2	128.8	132.3	133.0
Latvia	36.6	47.5	42.8	41.4	39.1	40.6	38.3
Lithuania	29.0	36.2	37.2	39.8	38.8	40.7	42.9
Luxemb.	15.5	19.6	19.2	22.1	23.4	23.0	22.3
Malta	67.8	67.6	69.8	67.6	69.6	68.3	65.9
Netherlands	56.5	59.0	61.7	66.4	67.9	68.2	68.6
Poland	49.8	53.3	54.4	54.0	55.9	50.4	51.4
Portugal	83.6	96.2	111.4	126.2	129.0	130.2	128.2
Romania	23.2	29.9	34.2	37.4	38.0	39.9	39.4
Slovakia	36.0	40.8	43.3	51.9	54.6	53.5	52.7
Slovenia	34.5	38.2	46.4	53.7	70.8	80.8	84.2
Spain	52.7	60.1	69.5	85.4	93.7	99.3	100.8
Sweden	40.4	37.6	36.9	37.2	39.8	44.9	44.7
UK	65.7	76.6	81.8	85.3	86.2	88.2	88.3

Source: European Commission AMECO Database. Forecast for 2015.

crisis, i.e. 2009. We see that the crisis countries were similar in one respect: they had government budget deficits amounting to around 10 percent of GDP the year preceding the crisis.<sup>6</sup> The only other countries with deficits of a similar order of magnitude were Latvia, Lithuania, Romania and Britain – but those countries had much smaller stocks of accumulated debt (see the debt data in Table 2).<sup>7</sup>

As for the stock of government debt, we can see from Table 2 that Greece and Italy, with debt-to-GDP ratios in excess of 100 percent, were in a different league to the other crisis countries in 2009. Spain, Portugal and Ireland all had deficits amounting to 60–80 percent of GDP, which was high compared to most EU countries – but not dangerously high, provided they could bring down their budget deficits quickly. Obviously, when assessing the sustainability of government debt, stock and flow data for only one year is not sufficient. What really matters is also the

<sup>6</sup> One exception is Italy, which did not have a very large deficit in 2009 (5.3 percent of GDP), but which, on the other hand, had a very large debt (112.5 percent of GDP). Italy never received any bail-out loans, but benefited from ECB interventions in the bond market.

<sup>7</sup> In fact, Lithuania and Romania also received support loans in those years.

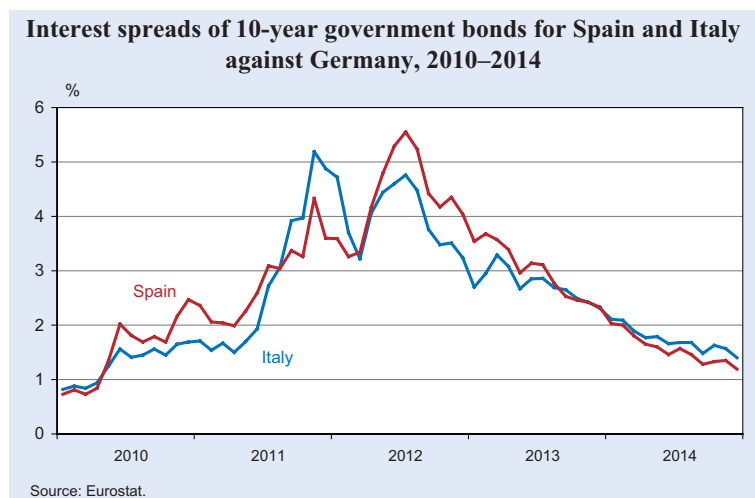
long-term history of the country, plus the political viability of budgetary discipline. This involves a great deal of subjective assessment, and a full discussion of these factors is beyond the scope of the present paper.

In addition to the outbreak of the crisis in 2010, there is one episode that deserves more attention. That is the summer of 2012, when the ECB more explicitly claimed that it was its role to move the bond market from a bad to a good equilibrium. The next section is devoted to that episode.

### The events of the summer of 2012

The ECB's actions in the summer of 2012 can be seen as a case where the theoretical reasoning of the previous sections was put into practice. On 26 July, ECB President Mario Draghi stated that: “the ECB is ready to do whatever it takes to preserve the euro”. Immediately after that statement, the ECB launched its so-called Outright Monetary Transactions programme,

Figure 3



signalling its readiness to buy massive amounts of the bonds of fragile countries.

The behaviour of the Spanish and Italian interest rates during that dramatic summer has been seen as an indication that these rates were actually expectations-driven in the sense of the multiple-equilibria model, and that the ECB managed to curb these expectations. Given the scale of Figures 1 and 2, it is difficult to see in detail how these interest rates moved. They are therefore illustrated in a separate diagram, in Figure 3.<sup>8</sup>

We see that both the Spanish and the Italian rates peaked in July 2012 and subsequently started to fall almost monotonically. Now, is that convincing evidence of the multiple-equilibria model?

That interest rates react to new information – in this case the ECB declaring its willingness to buy large amounts of bonds in 2012 – is hardly surprising. Such price movements are not by themselves proof that there are multiple equilibria around. Even with a unique equilibrium that is solely determined by fundamentals, the announcement of a new policy by a major player can, of course, affect that equilibrium. Nevertheless, many writers have regarded the behaviour of the Spanish and Italian rates during the summer of 2012 as evidence in favour of the multiple-equilibria model.<sup>9</sup>

<sup>8</sup> Véron (2015) has a detailed high-frequency data diagram of Spanish and Italian interest rates, with a vertical line at 26 July 2012 (the date of Draghi's 'whatever it takes' speech). That diagram gives a more vivid, day-to-day picture of the events.

<sup>9</sup> See, for example, Corsetti (2015); De Grauwe (2015); Véron (2015). By contrast, Mendoza (2014) points out that the events may have nothing to do with multiple equilibria, but may instead have been driven by fundamentals.

As we see from Table 1, Spain had a long history of large budget deficits up to 2012, with no tendency for the deficits to decrease. That Spanish interest rates rose in 2011 and 2012 is therefore not a particularly convincing example of a solvent, but illiquid, country suffering from a 'bad equilibrium'. The same seems to hold for Italy. Table 2 shows that Italy started out with a very high stock of government debt, and although the deficits were only moderate (around 3–5 percent of GDP according to Table 1), there was no

tendency towards any budget surpluses, and thus no tendency towards any drop in Italy's debt. In fact, Italy's sovereign debt increased from 112.5 to 123.2 percent of GDP during the period up to Mr Draghi's speech in the summer of 2012.

Admittedly, the fall in Spanish and Italian interest rates in late 2012 may be attributed to the launching of the ECB's Outright Monetary Transactions (OMT) programme. As pointed out above, this is not surprising; one does not need any model of multiple equilibria to understand that a big player buying virtually unlimited amounts of sovereign bonds will drive down their interest rates. But it seems unconvincing to attribute the rise in those interest rates *prior to* Draghi's speech to the result of multiple equilibria playing their sinister game. The development of Spanish and Italian finances during the period 2009 to 2012 (Tables 1 and 2), does not paint a picture of basically solvent countries that for some inexplicable reason are suffering from temporary illiquidity.

But maybe the ECB, in the summer of 2012, had access to information relevant for forecasting the *future* development of Italian and Spanish public finances – information that private investors lacked? If that was the case, the information cannot have been very accurate. Looking at the development of Spanish and Italian public finances for the period 2012–2015 (Tables 1 and 2), we see that their budget deficits never turn into surpluses, and that their debt-to-GDP ratios continue to increase monotonically. Spanish debt increased to 100.8 percent of GDP in 2015, while Italian debt increased to 133.0 percent. These are not the sort of debt levels that we would associate with basically solvent countries, suffering from a temporary bout of

illiquidity in 2012. While many Eurozone countries have improved their debt situations, either thanks to higher GDP growth or because of a budget surplus, Italy and Spain do not belong to that group.<sup>10</sup>

Quite independently of the multiple-equilibria reasoning, there is another rationale for intervention. If a country is hit by an asymmetric shock, and that shock is so large that the individual country finds it difficult to handle, there is a case for risk-sharing among countries. This risk-sharing can take the form of either bail-out loans, administered by the EU funds, or by the ECB driving down the interest rate on the country's bonds. And this holds true regardless of whether the shock makes a basically solvent country insolvent (like in the multiple-equilibria model), or is merely costly, without completely wrecking public finances.

This argument is different from the lender-of-last-resort argument discussed earlier. In fact, it is an argument about insurance, and often lies behind calls for a 'fiscal union' raised in the aftermath of the Greek crisis. But even if the fiscal union is no longer on the political agenda, insurance in various forms is. To put this issue into perspective, it will be discussed in a separate section.

### The insurance argument

The advantage of insurance is risk-sharing. But there is also a disadvantage: moral hazard. Normally, there is a trade-off between the two. If it is possible to design an insurance contract striking such a trade-off between risk sharing and moral hazard that the advantages dominate, then insurance is warranted. Otherwise it is not.<sup>11</sup>

The Maastricht Treaty of 1992 took a clear stand on this issue: no insurance is warranted. In fact, fiscal-union arrangements in the form of loans, transfers and central-bank actions like the OMT were not permitted, according to Articles 123 and 125. Is there any new information available today that could lead us to

conclusion that differs from that of the Maastricht Treaty? In other words, have recent events demonstrated that moral hazard is less of a problem than the architects of the Treaty thought 24 years ago?

The Greek debt crisis in 2010 was mainly self-inflicted, and thus constituted an example of moral hazard.<sup>12</sup> Although it is hard to dismiss the multiple equilibria-argument empirically, such an argument seems less reasonable for Greece than the alternative view, namely that of an equilibrium driven by fundamentals. In fact, most economists today recognise that Greece was not merely illiquid, but rather insolvent, in 2010.<sup>13</sup> And that insolvency was self-inflicted.

As for the other crisis countries, things are more complicated. One may argue that the interest hikes on Spanish, Portuguese and Irish government bonds during 2010 and 2011 (Figure 2) could have been 'contagion' from Greece, and therefore not the result of moral hazard.

These facts call for a more thorough discussion of moral hazard. One might say that the large budget deficits of Ireland and Spain were not self-inflicted. Instead, they were exogenous, resulting from attempts by those countries to rescue their banks. These banks had run into serious trouble because of housing bubbles that burst during the international recession of 2008–2009 – and that recession was certainly exogenous to Ireland and Spain.

But such reasoning defies the background to those particular banking crises, namely the failure of national banking supervision authorities to prevent reckless lending to the real estate sector. With more prudent supervision, the Irish and Spanish banking crises would have been much milder, and would not have wrecked the public finances of these two countries. Now, it is always easy to say *ex post* what a government should have done. I do not want to moralize over the actions (or non-actions) of the Irish and Spanish governments,<sup>14</sup> but I do want to point out that the view of the banking crises as exogenous shocks to the Irish and Spanish public finances can be questioned. Incidentally, this also holds for some of the

<sup>10</sup> Incidentally, France and Portugal – countries that are also sometimes referred to as examples of the multiple-equilibria model at work – also show a deteriorated financial situation. However, for Portugal, the trend might have been reversed in 2015.

<sup>11</sup> Needless to say, the benefits of insurance and the problems of moral hazard are not limited to countries that are members of a currency union. Even non-union countries might be in need of insurance – but since countries in a currency union have a closer cooperation, and the individual union members have abstained from their own monetary policy, the notion of risk-sharing seems more natural in such cases.

<sup>12</sup> Here we disregard the rather subtle philosophical question of whether the actions of a corrupt and incompetent government are beyond the control of the voters in a democracy, and thus of whether the voters should be insured against such a government.

<sup>13</sup> This is the view of, for instance, most of the contributions to the Baldwin and Giavazzi (2015) volume.

<sup>14</sup> Strictly speaking, bank supervision in Spain and Ireland was the task not of the government, but of the Banca de España and the Bank of Ireland.



smaller crisis countries not discussed here such as Cyprus, for example.

When looking at the figures in Tables 1 and 2, and considering the background actions and non-actions of the governments in question, it is hard to see that moral hazard can be altogether dismissed as an explanation. Thus the question is whether new information in favour of insurance really has been forthcoming. Such information should show that the fear of moral hazard among the architects of the Maastricht Treaty was unfounded. I find it hard to see that this is the case. The policy conclusion of the Maastricht Treaty, namely that no insurance is warranted, has therefore not been obviously proven wrong by the events of 2010–2015. It is worth noting, however, that it has not been proven right, either. Those who want to maintain the Maastricht view can claim that all interest hikes in the crisis countries in the period 2010–2015 are the result of moral hazard. On the other hand, those who want to discard the ‘no-bailout principle’ can claim that the crisis countries (except Greece) were simply illiquid, that they were innocently hit by real-estate bubbles and banking crises, and that no moral hazard has been at work.

The matter is thus complicated and can probably not be definitely resolved. Discussing the evidence over and over again is, however, necessary – if for no other reason than that the discussion will make us intellectually more prepared when the next crisis erupts. If we are better prepared than we were in 2010, we will probably be better at handling the skillful lobby groups that try to sway policy decision-making in their favour.

### Concluding comments

I would like to end with some reflections on the new role assumed by the ECB when it launched the OMT in the summer of 2012. By taking the stand that Italy and Spain were solvent but illiquid, the ECB took a great risk. The budget situation of these countries does not seem to have improved after the OMT. It may therefore turn out that the ECB has wasted money on failing countries, instead of just helping illiquid ones to overcome a temporary problem.<sup>15</sup>

<sup>15</sup> Every year, the ECB pays a dividend to the treasuries of Eurozone countries. That dividend basically comes from seignorage, and capital losses on bonds reduce the amount the ECB can pay in dividends. Thus, such capital losses are ultimately borne by the tax payers of the Eurozone countries.

By launching the OMT programme, the ECB also opened up its doors to other countries asking for help and claiming that they are not insolvent either – or at least not more insolvent than Spain and Italy. This may prove a source of conflict within the Eurozone in coming years, especially if the debt situation does not improve. A particularly interesting case is that of France, which is not only an important country in its own right, but also a country that is rapidly approaching an indebtedness level of 100 percent (Table 2).

One may guess that the ECB is following the development of Spain and Italy, as well as of France and Portugal, with great interest. A recovery may improve the debt/GDP ratio – but a recovery will also create demand for government spending on social services that have been neglected during the years of austerity. A spell of inflation may help to reduce the real value of the debt, and we can guess that the ECB will not be too eager to curb future inflation in the Eurozone. An inflation rate slightly above the target of two percent will reduce the risk of a major embarrassment to an ECB that has claimed that it is able to distinguish between insolvency and illiquidity.

This issue becomes even more intriguing when one looks at the debt/GDP ratio of the entire Eurozone – see Table 3. During the last decade, indebtedness has increased almost monotonically from 67.3 to 92.1 percent of GDP. And this in an area where, according to both the Maastricht Treaty of 1992 and the Growth and Stability Pact of 1997, the critical level for sustainability is 60 percent – a level that not even Germany has been able to adhere to.

The prestige invested by the ECB in its ability to distinguish between insolvency and illiquidity, and the

Table 3

#### Gross government debt in the entire Eurozone (19 countries), 2006–2015

Year	Debt (% of GDP)
2006	67.3
2007	64.9
2008	68.5
2009	78.3
2010	84.0
2011	86.7
2012	91.3
2013	93.4
2014	94.5
2015	94.0

Source: European Commission AMECO Database, Forecast for 2015.

difficulties encountered by the Eurozone countries in keeping debt at sustainable levels, might have implications for the level of inflation rates expected by the financial markets over the next decade. Thus complicated mechanisms of inflation and default, of the kind discussed above, may be set in motion, and we may witness higher nominal interest rates in the years to come – accommodated or not accommodated by the ECB allowing higher inflation.

However, let me end on a positive note. Everything does not look totally gloomy. Firstly, it is not all that surprising that indebtedness has increased since 2006. The last decade has not been a normal period, but a period of repeated crises and prolonged recession. Once we return to more normal times, we may witness higher GDP growth rates and improved public finances. This does not, however, mean that all individual countries will be out of danger. The fact that so many countries had failed to build up reserves during the good years, and thus were so vulnerable when the crises started, is a bad sign.

Secondly, many of the Eurozone countries have not only witnessed austerity and contraction, but also structural reform. This holds for Greece, Spain, Portugal, Ireland and Italy and may lead to higher growth rates in the future. The lack of reform in France is nevertheless problematic – the question is whether just a ‘normal’ business-cycle recovery will be enough to reduce French public debt as a percentage of GDP.

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