A HOUSE BUILT ON SAND?

The ECB and the hidden cost of saving the euro

June 2011

by
Raoul Ruparel
Mats Persson

Updated edition

Copyright © 2011 Open Europe
Published by Open Europe
7 Tufton St
London
SW1P 3QN
www.openeurope.org.uk

ISBN: 978-1-907668-23-4

CONTENTS

Executive summary 3

A matter of trust: broken promises to electorates and markets 5

I. From a rock of stability to a dumping ground? 6

The ECB is highly exposed to low quality debt 6

Will the ECB become insolvent? 7

Two impossible choices: print money or get a 'bail-out' 8

II. Why the ECB's role in the eurozone crisis is unsustainable 11

Compromising the ECB's independence and credibility 11

Propping up insolvent governments 12

Propping up an insolvent banking sector 13

Increased moral hazard for banks and governments 14

III. Conclusion: the ECB must become a strong bank again 16

Stop raising the costs for taxpayers and governments 16

Recognising the ECB's vulnerability 17

Annex: Methodology 18

Executive summary:

- The role of the ECB in the ongoing eurozone and banking crisis has been significantly understated. In parallel with the IMF's and EU's multi-billion euro interventions, the ECB has engaged in its own bail-out operation, providing cheap credit to insolvent banks and propping up struggling eurozone governments, despite this being against its own rules. The ECB is ultimately underwritten by taxpayers, which means that there is a hidden – and potentially huge – cost of the eurozone crisis to taxpayers buried in the ECB's books.

- The ECB's balance sheet is now looking increasingly vulnerable. We estimate that the Eurosystem which underpins the ECB has exposure to struggling eurozone economies (the so-called PIIGS) of around €444bn – an amount roughly equivalent to the GDP of Finland and Austria combined. Although not all these assets and loans are 'bad', many of them could result in serious losses for the ECB should the eurozone crisis continue to deteriorate. Critically, through national central banks, struggling banks have been allowed to shift risky assets away from their own balance sheets and onto the ECB's (all the while receiving ECB loans in return). Many of these assets are extremely difficult to value.

- Overall, the ECB is now leveraged around 23 to 24 times, with only €82bn in capital and reserves. In contrast, the Swedish central bank is leveraged just under five times, while the average hedge fund is leveraged four to five times. This means that should the ECB see its assets fall by just 4.25% in value, from booking losses on its loans or purchases of government debt, its entire capital base would be wiped out.

- Hefty losses for the ECB are no longer a remote risk, with Greece likely to default within the next few years – even if it gets a fresh bail-out package from the EU and IMF – which would also bring down the country's banks. We estimate that the ECB has taken on around €190bn in Greek assets by propping up the Greek state and Greek banks. Should Greece restructure half of its debt – which is needed to bring down the country's debt to sustainable levels – the ECB is set to face losses of between €44.5bn and €65.8bn on the government bonds it has purchased and the collateral it is holding from Greek banks. This is equal to between 2.35% and 3.47% of assets, meaning it comes close to wiping out the ECB's capital base.

- A loss of this magnitude would effectively leave the ECB insolvent and in need of recapitalisation. Worryingly, it is not entirely clear how the ECB would cover such heavy losses in practice. A recapitalisation can take various forms with the losses more or less shared out between national central banks. Irrespective of the mechanism that is used, ultimately the bill will be passed on to taxpayers in one form or another. Absent a recapitalisation, the ECB would have to start printing money to cover the losses. This would trigger inflation, which is unacceptable in Germany and elsewhere.

- The ECB's actions during the financial crisis have not only weighed heavily on its balance sheet, but also its credibility. Firstly, as a paper published by the ECB last year noted, "The perceptions of a central bank's financial strength have an impact on the credibility of the central bank and its policy". Secondly, by financing states, the ECB has effectively engaged in fiscal policy – and therefore politics – something which electorates were told would never happen.

- Worried about the risk of these potential losses being realised, the ECB is vehemently opposed to debt restructuring for Greece and other weaker economies. However, continuing the ECB's existing policy of propping up insolvent banks – and intermittently governments – would be even worse for the eurozone as a whole.

- The ECB's cheap credit has served as a disincentive to struggling banks to recapitalise and limit their exposure to toxic assets in weak eurozone economies. This creates moral hazard for banks and governments alike, at times even fuelling the sovereign debt crisis, while transferring more of the ultimate risk to taxpayers across Europe. Therefore, in its attempt to soften the immediate impact of the financial crisis, the ECB may in fact have exacerbated the situation in the long-term, increasing the cost of keeping the eurozone together for taxpayers and governments.

- Moving forward, the ECB must return to its original mission of promoting price stability and a way has to be found to get ailing banks off the ECB's life support. This should include a winding-down mechanism for insolvent banks.

How does the ECB and the Eurosystem work?

The European Central Bank (ECB) is part of the so-called Eurosystem, which is made up of the 17 national central banks (NCBs) of the member states of the eurozone. This should not be confused with the European System of Central Banks, which consists of all the central banks in the EU. The Eurosystem as a whole is responsible for providing monetary policy within the euro area, ensuring its effective execution and maintaining price stability. NCBs are responsible for enacting the monetary policy across the eurozone on *behalf* of the ECB, through liquidity provision (granting loans) and other tools (such as holding reserves from national banking sectors). The ECB is the centre of the Eurosystem and ensures that all tasks are performed and the policy goals met. Unlike the ECB itself, NCBs cannot act autonomously. They have some discretion, however, as long as the ECB decides that their actions do not conflict with overall monetary policy goals (for example controlling inflation).[1] The ECB maintains overall control over the level of currency in circulation and the printing of euros, however, in reality the ECB does not actually print the money, since each NCB is assigned a share of the currency production which is defined by the ECB Governing Council (GC). Upon its creation, the ECB took on significant foreign reserves from the NCBs. It now manages these along with the cash that it has received from NCBs in order to cover operating costs and potential losses.

The financial statements of the ECB amalgamate all the exposures of the various eurozone central banks onto one balance sheet. Therefore, in this paper we refer to the ECB and the Eurosystem interchangeably. Throughout the debt and financial crisis, the ECB has become highly exposed to the problems in peripheral eurozone countries. This is because the ECB has purchased bonds from weaker eurozone economies through its Securities Markets Programme (SMP) and, via the NCBs, it has also accepted large amounts of collateral from struggling banks in return for giving them cheap credit.

1 There are some programmes which the NCBs can enact almost at their own discretion. For example, the Emergency Liquidity Assistance programme which currently allows NCBs to provide their banks with extra loans outside of the normal Eurosystem lending operations, often with lower collateral requirements. This is currently being used extensively by Ireland; although the ECB must be notified of the extent and frequency of the programme's use to ensure it does not become inflationary.

A matter of trust: broken promises to electorates and markets

"I know that in Europe different states are at different stages in the economic cycle. Financial policies have to bear the brunt, which is solely a matter of the governments."
- Then ECB President, Wim Duisenberg 15 June 1998[2]

"The policy [of guaranteeing price stability] should not be watered down in order to attain other objectives which are a matter for governments."
- Then ECB President, Wim Duisenberg 1 November 1996[2]

"No government or country will be able to expect special treatment. The central bank will not change its principles just because the sovereign bonds of a member state no longer fulfil the appropriate criteria."
- ECB President, Jean-Claude Trichet, January 2010[3]

"There is no central bank in the world that is as independent from politics as the European Central Bank."
- Then President of the ECB, Wim Duisenberg, 15 June 1998[4]

"Germany has always benefited from ECB independence […] Protecting people from inflation: that's what really matters. And that's why ECB independence is a crucial aspect we will not accept to put into question again."
- German Chancellor, Angela Merkel, 11 July 2007[5]

"I will defend the European Central Bank's independence under any circumstance and with all my strength".
- ECB President, Jean-Claude Trichet, 11 July 2007[6]

"A key question for the ECB, as for other central banks, concerns the timing of the withdrawal of the medicine to avoid the threat of addiction or dependency. We have made clear that we will unwind enhanced credit support in a timely and orderly fashion."
- ECB President, Jean-Claude Trichet, December 2009[7]

"The euro is based on the same kind of stability as the D-Mark."
- Former EU Commission President, Romano Prodi, September 2001[8]

"The euro will leave the D-Mark forgotten."
- Former German Chancellor, Helmut Kohl, April 1998[9]

---

2 Quoted in *Der Spiegel*, 'The Euro will be world currency', 15 June 1998, see http://www.spiegel.de/spiegel/print/d-7914262.html
3 Quoted in *Handelsblatt*, 'Versprochen, gebrochen', 12 May 2010
4 Quoted in *Der Spiegel*, 'The Euro will be world currency', 15 June 1998, see http://www.spiegel.de/spiegel/print/d-7914262.html
5 Quoted in *La Stampa*, 'Merkel: Germania contraria a misure per svalutare l'euro', 11 July 2007, see http://www.lastampa.it/redazione/cmsSezioni/economia/200707articoli/23575girata.asp
6 Quoted in *Corriere della Sera*, 'Trichet: difenderò l'indipendenza della BCE', 11 July 2007, see http://www.corriere.it/Primo_Piano/Economia/2007/07_Luglio/11/Trichet_bce.shtml
7 Quoted in *iMarketNews*, Speech by Jean-Claude Trichet, 'Timing Exit From Credit Support 'Key Question", 11 December 2009, see http://imarketnews.com/node/5960
8 Quoted in *Der Spiegel*, 'Die Luege von der Stabilen Waehrung', 14 May 2010, see http://www.spiegel.de/fotostrecke/fotostrecke-54834.html
9 Quoted in *Handelsblatt*, 'Die Euro-Luegner', 12 May 2010

I. FROM A ROCK OF STABILITY TO A DUMPING GROUND?

The future of the euro is inexorably linked to the role of the ECB. However, the role of the ECB in the ongoing eurozone and banking crisis has been significantly understated, particularly its role in propping up both insolvent banks and governments.

The ECB is highly exposed to low quality debt

By buying bonds from governments and providing cheap credit to banks around Europe in a bid to stem the debt and bank crisis, the Eurosystem which underpins the ECB has become hugely leveraged. With only €81.187 billion in subscribed capital and reserves, compared to €1.895 trillion in assets, the ECB is now leveraged 23.4 times.[10] In contrast, strong central banks such as the Swedish Riksbank, the Norwegian Central Bank and the Swiss National Bank, are leveraged only 4.7, 5.9 and 6.3 times respectively. Meanwhile, the average hedge fund is leveraged around four or five times.

Table 1: Spot the difference between the ECB and other central banks

(€m)	Capital	Reserves	Assets	Leverage ratio	C+R as % of Assets
ECB	10,761	70,426	1,895,870	23.4: 1	4.25
Swiss National Bank	36,174	-	226,641	6.25:1	15.96
Swedish Riksbank	110	7,235	34,757	4.73:1	21.1
Norges Bank	8,441	-	49,345	5.85:1	17.1

Source: ECB weekly financial statement 24 May 2011, SNB Balance sheet, Swedish Riksbank weekly financial statement and Norges Bank Balance sheet April 2011[11]

As Table 2 shows below, the ECB now has exposure of €444bn to weaker eurozone economies – this amount is roughly equivalent to the GDP of Finland and Austria combined. Primarily, this exposure takes two forms: firstly, the government debt that the ECB has bought up through the Securities Markets Programme and, secondly, the collateral which the ECB has accepted from banks in exchange for cheap credit. Given the financial state of these countries – and the banks within them – it is clear that the ECB now owns billions of high risk debt.

Table 2: The ECB's huge exposure to the PIIGS

ECB exposure (€m)	Greece	Ireland	Portugal	Italy	Spain	Total
Govt debt (SMP) (nominal)	60,000	18,000	20,000	-	-	98,000
Govt debt (SMP) (purchase price)	42,000	14,400	18,000	-	-	74,400
Bank Lending	97,700	126,000	41,000	47,400	57,100	369,200
Total	139,700	140,400	59,000	47,400	57,100	443,600

Source: JP Morgan, Citigroup, ECB, National Central Banks and Open Europe calculations

10 *ECB* Press Release, 'Consolidated financial statement of the Eurosystem', 24 May 2011, see http://www.ecb.int/press/pr/wfs/2011/html/fs110524.en.html
The level of leverage is determined by the ratio of assets to the capital and reserves held by the bank. These figures are those reported by the ECB but it is important to note that the capital level here is actually notional (what has been promised), since some of the money from the capital call in December 2010, around €2bn, is scheduled to be paid in at the end of 2011 and 2012. This could become relevant if the ECB faces losses before then. Assets are defined as holdings which will bring in future returns for the ECB, such as the interest on loans. Liabilities are the exact opposite, holdings which are expected to incur a future cost, such as paying out interest on deposits.

11 *SNB* 'SNB balance sheet items', 4 May 2011, see http://www.snb.ch/ext/stats/statmon/pdf/deen/A1_Ausweise_der_SNB.pdf SR May 2011: http://www.riksbank.com/upload/Dokument_riksbank/Kat_Veckorapport/2011/Weekly%20Report%202011-05-23.xls
NB April 2011: http://www.norges-bank.no/en/about/published/monthly-balance/2011/april/
Exchange rates used: 1CHF = €0.82, 1NOK = €0.13 and 1SEK = €0.11

Greece, Ireland and Portugal now face a real risk of sovereign default, with Greece in particular balancing on the edge. If one or more of these countries default, they will not be able to pay back all the money they owe creditors, amongst them the ECB. Sovereign defaults would also be likely to bring down the banks in these countries to which the ECB is heavily exposed – this is particularly true for Greece's banks that now own huge amounts of Greek government debt (see sub-section below). [12]

Despite this worrying exposure, the ECB continues to accept various assets as collateral from banks in return for giving these banks very cheap loans. Technically, this collateral is taken on by national central banks (which also decide what collateral to accept, although they are required to follow rules established by the ECB), but since these are part of the Eurosystem, their exposures are all amalgamated onto the ECB's balance sheet. Controversially, Greek and Irish government bonds are accepted as collateral, despite the fact that these bonds were originally considered of too low quality to meet the ECB's established standards.

However, the ECB's books have an even murkier side. Since the financial crisis erupted, the ECB has taken on a whole range of asset-backed securities as collateral. This has allowed banks to shift many of their risky investments away from their own balance sheet and onto the ECB's in return for loans. The Association for Financial Markets Europe (AFME) estimates that there is currently around €488bn worth of asset-backed securities on the ECB's books as collateral, a figure which has quadrupled over the past five years.[13]

While not all these assets are toxic, it is nearly impossible to estimate the exact potential losses, meaning that they could be overvalued (based on a mixture of not knowing exactly what is inside each security and a huge number of macroeconomic variables across Europe). It is fair to assume, however, that many of these assets will stand to lose a lot of value if the real estate sector in Ireland continues to struggle, for example, or if Greek banks continue to take hits.[14]

What this means is that the ECB does not have a full grasp of exactly how much risk it is taking on through its liquidity programme, since no one can say for sure how much potentially toxic debt the ECB has on its balance sheet. This conjures images of the big banks which failed to grasp the low quality of many of their assets during the financial crisis and therefore faced radical losses once the patchwork started to unravel.

Will the ECB become insolvent?

How large these losses would be depends on a number of factors, most importantly the extent of the default and how much money the ECB could get back for the loans it has given (based on the collateral it holds) (see Annex).

The most critical threat to the ECB's books is Greece, which is likely to face a default within the next few years *even* if the EU and IMF give it a second bail-out package. We estimate that through its bank lending and government bond buying programme, the ECB has taken on around €190bn in Greek assets. In order for Greece to get its debt down to sustainable levels, we estimate that the country needs to impose a haircut of 50% to the majority of its debt, in which case the government bonds the ECB has purchased and the collateral it is holding from Greek banks will take big hits.

As noted, a Greek restructuring would bring down the country's banks, which would not be able to repay any of the loans which they have received from the ECB via the Greek central bank. Consequently, the ECB would take control of the collateral which the Greek banks initially posted to receive the loans. However, the value of this collateral would also fall significantly following a restructuring. This means the ECB

12 This figure is different to the ECB exposure figure to Greece, seen in the table above, since when calculating the cost of a restructuring the fact that the loans which the ECB has given Greek banks are normally over collateralised must be taken into account. (Meaning, for example, that in order to receive a €1bn loan banks must offer €1.35bn in collateral).

13 *AFME*, AFME Securitisation Data Report Q4 2010, see www.afme.eu/AFME/.../Securitisation/2010-Q4AFMEESFFINALAFME.pdf

14 The ECB often relies on the ratings which these instruments are given. However, as the financial crisis demonstrated this system has some serious pitfalls. In some cases the ratings on these securities have not been recently updated, while in others the NCBs simply failed to adhere to the ECB guidelines for how collateral should be valued.

Table 3: What if Greece defaults?

Cost of a Greek restructuring to the ECB (€m)				
	Holdings (nominal)	(purchase price)	Holdings Write downs	Losses
SMP	60,000	42,000	30,000	12,000
Greek Govt. Bonds (Collateral)	45,000	33,750	22,500	11,250
State backed bank paper (collateral) (50% recovery rate)	85,000	63,750	42,500	21,250
State backed bank paper (collateral) (25% recovery rate)	85,000	63,750	63,750	42,500
Total	190,000	139,500	95,000 - 136,250	44,500 – 65,750

Source: JP Morgan, Citigroup and Open Europe calculations[15]

would not fully recoup the loans it has handed out, and would only be left with the remaining value of the collateral. We expect the ECB's holdings of state-backed paper to be worth between 25% and 50% of its original value following a Greek debt restructuring (this is what we assess in table 3).

Under this scenario, we expect the ECB to face losses of between €44.5bn and €65.75bn (equal to between 2.35% and 3.47% of assets). Although such loses would not wipe out all of the ECB's capital and reserves, it would make it between 52 and 123 times leveraged.[16] A business this leveraged would be considered insolvent by any account – Lehman Brothers was leveraged around 30 times when it went under. Therefore, the ECB would in all likelihood need to be recapitalised in such a scenario.

Two impossible choices: print money or get a 'bail-out'

Should the ECB become insolvent, it effectively has two options, both hugely controversial: to print money or itself get a 'bail-out'. It is not clear exactly how a scenario in which the ECB would face heavy losses will play out in practice. The prospect appears to have been considered too unthinkable to plan for—much like the eurozone bailouts themselves. Technically, any losses would have to be shared between the ECB itself and the 17 national central banks in the Eurosystem, as stated in the ECB's statute. However, such burden sharing can take a few different forms and the exact mechanism is likely to be decided by the ECB's Governing Council. Ultimately, regardless of the mechanism used to recapitalise the Eurosystem, the bill will be passed on to taxpayers.

Print money: This option would put the ECB on a collision course with Germany and other member states that want the ECB to stick to its mandate of maintaining price stability and fighting inflation. For the ECB to print large amounts of money risks throwing the eurozone into a dangerous inflationary spiral (prices would increase quickly and would eventually feed through to higher wage demands, a process which is difficult to stop once it has begun). In addition, the cost of borrowing for all eurozone countries would be likely to increase, particularly for the weaker ones, due to the increased economic and financial uncertainty.

The ECB itself is likely to want to stay well clear of this option as well, given its commitment to fighting inflation.

A 'bail-out': The other option would be for the ECB to go cap in hand to eurozone governments to ask to be recapitalised. In addition to being incredibly humiliating, it would also significantly undermine the ECB's independence and its position in any future disputes with governments over economic and financial policies.

15 *JP Morgan*, Global Asset Allocation, Flows and Liquidity, 'Who are the losers from a Greek restructuring?', 6 May 2011 and Citigroup, Equities, 'Hellenic Banks: Fancy a haircut?', 20 April 2011.

16 Cited in *ECB* weekly financial statement, 24 May 2011, http://www.ecb.int/press/pr/wfs/2011/html/fs110524.en.html

Although shrouded in uncertainty, this scenario could play out in a few different ways:

The ECB's reserves take the losses: One mechanism to absorb the ECB's losses would be allowing its reserves and if necessary paid up capital to take the hit. These reserves are posted with the ECB by NCBs for just such an occasion (the NCBs still have a claim on them, so they are technically still theirs), while the capital is directly contributed as a final buffer against losses.[17] The ECB's statute also states that losses incurred on the ECB and the Eurosystem will be shared out according to each NCBs' capital share.

Given that the losses we have been discussing would either wipe out the ECB's reserves, or come close to it, the ECB clearly would need to be recapitalised in such a scenario. The ECB would then put in a capital call to NCBs, which would be required to contribute according to their share in the ECB (as laid out in a capital key – see below). Non-eurozone countries would not contribute as they are only required to pay towards the running cost of the ECB, meaning that the UK would *not* be on the hook.On a relatively small scale, the ECB put in a capital call like this in December 2010, when it asked NCBs for €5 billion to bolster its capital and reserves.

However, according to the ECB's rules, the "extent to which and the form in which the capital will be paid up" would be decided by a Qualified Majority Vote in the ECB Governing Council. [18]

Since the losses would be absorbed by both capital and reserves, NCBs may be allowed to provide reserves (such as gold or foreign currency) as well as direct capital (cash). If a particular NCB could not meet its required subscription the GC could also vote to suspend the requirement or break up the payments (although it is not clear if this means that other NCBs would be required to pay more). Alternatively, the NCB could ask its national treasury to provide the money. In any case, both treasuries and NCBs are underwritten by taxpayers, who will ultimately shoulder the cost.

The losses are shared amongst the ECB and NCBs: The other likely option is that the losses are shared between the ECB and the NCBs determined by its share of the euro currency in circulation - the same formula used to calculate the Eurosystem's profits on bank notes. This would see the ECB only take 8% of the hit, with the rest of the loss shared out between NCBs. Such a scenario is not unlikely, given that a huge chunk of the losses for the ECB in the event of a sovereign default will come via its exposure to the bank collateral that NCBs have taken on, so the GC might opt for central banks taking some of the hit directly.

However, given the current crisis, it is unlikely that the size of NCBs monetary income will be large enough to account for the potential losses from the Eurosystem's risky exposure, meaning that both the NCBs and the ECB itself would need to be recapitalised (for the NCBs via national treasuries). Just as with the option above, this will land taxpayers with the final bill. [19]

Other options: Some other options have also been discussed, with certain observers making a distinction between how to cover losses incurred by the government bonds the ECB has purchased and the collateral it holds via NCBs. Some have suggested that in case of a sovereign default – as opposed to a bank going bankrupt – the main part of the loss will fall on the central bank in the country that defaults given that the specific NCB holds most of the collateral from domestic banks. But this seems implausible. How would the Greek central bank, for example, absorb the huge losses that it will face should the Greek government default? If the GC decides to go for this option, then the bill would still come back to European taxpayers as the Greek treasury most certainly would not have enough money to recapitalise its central bank, meaning that bail-out money would have to pick up the slack.

---

17 Some of the reserves have also been accrued thanks to the profits which the ECB has made in previous years.

18 Each NCB has a representative and votes are weighted according to the level of capital shares each country has in the ECB. A majority is defined as two thirds of capital and at least half the members of the GC, see *ECB*, 'Protocol (No 4) on the Statute of the European System of Central Banks and of the ECB', May 2008: http://www.ecb.int/ecb/legal/pdf/en_statute_from_c_11520080509en02010328.pdf

19 According to the ECBs own annual account, its monetary income in 2010 was €654 million. Total net monetary income was €1,422bn. This includes the interest it received on its purchases of covered bonds and SMP throughout 2010 and constitutes a small return given the huge risk they now seem to represent, see ECB Annual Accounts 2010 http://www.ecb.int/press/pr/date/2011/html/pr110303_1.en.html

In the table below we highlight the potential cost to the NCBs in the Eurosystem of having to recapitalise the ECB, under a scenario in which the ECB uses its reserves and capital holdings to absorb any losses from a Greek default (the first scenario). As mentioned above, this is only one of a few possible scenarios, but it does highlight the potential high costs to NCBs if the ECB's balance sheet tips over the edge. Also, the costs for each NCB in the table below are close to those that will be incurred under the second scenario. The main difference is that the ECB itself would technically be on the hook for 8% (which would bring down the cost for the Bundesbank from roughly 28% to 25% for example). Therefore, whether the first or second scenario, the end game will not change: central banks are backed up by national treasuries, which in turn are backed up by taxpayers. Regardless of the scenario, the latter are set to take a big hit, with German taxpayers on the hook for the most.

Table 4: Countries' contribution towards the ECB should it need to be recapitalised

	ECB Contribution (%)	Cost from Greek restructuring (€bn)	
NCBs		50% recovery rate	25%recovery rate
Austria	2.86	1.27	1.88
Belgium	3.57	1.59	2.35
Cyprus	0.20	0.09	0.13
Estonia	0.26	0.12	0.17
Finland	1.84	0.82	1.21
France	20.91	9.31	13.75
Germany	27.85	12.39	18.31
Greece	0.00	0.00	0.00
Ireland	1.63	0.73	1.07
Italy	18.38	8.18	12.08
Luxembourg	0.26	0.11	0.17
Malta	0.09	0.04	0.06
Netherlands	5.86	2.61	3.86
Portugal	2.57	1.15	1.69
Slovakia	1.02	0.45	0.67
Slovenia	0.48	0.22	0.32
Spain	12.21	5.43	8.03
Total	100	44.5	65.75

Source: ECB contribution key and Open Europe calculations[20]

20 Here we have assumed that Greece will not be asked to contribute since the scenario involves a Greek debt restructuring. However, it may have to pay its share at some point. For ECB contribution key see: http://www.ecb.int/ecb/orga/capital/html/index.en.html

II. WHY THE ECB'S ROLE IN THE EUROZONE CRISIS IS UNSUSTAINABLE

As the data in section I shows, by propping up struggling eurozone governments and providing cheap credit to insolvent banks, the ECB has engaged in its own bail-out operation, in parallel with the IMF and EU governments. In the process, the ECB has become highly leveraged, heavily compromised its independence and original mission of promoting price stability – something EU leaders promised would never happen – while creating a series of further negative side effects for the eurozone as a whole.

Compromising the ECB's independence and credibility

The ECB's actions over the last 18 months have blurred the line between fiscal and monetary policy, in effect hugely compromising the bank's political independence, while breaking the promises that were made to electorates in the 1990s. This has happened in two ways: firstly, by the ECB agreeing to buy bonds from struggling governments, in effect financing states and budget deficits (which is the domain of fiscal, not monetary policy); and, secondly, by allowing banks to post Irish and Greek government debt as collateral to obtain credit – even though this debt possessed too poor a credit rating to meet the ECB's established minimum criteria.

The ECB's political independence is a founding principle of the Single Currency – and was seen as absolutely essential in order to avoid the ECB ever being used as a tool for politicians to finance government deficits (for example by printing money or engaging in other expansionary monetary policy).

In 1998, the then President of the ECB, Wim Duisenberg, boasted that, "There is no central bank in the world that is as independent from politics as the European Central Bank."[21] It was on this premise that the Single Currency was sold to electorates across Europe. The ECB, they were told, was going to be a reincarnation of the Bundesbank – the heir to the trusted, wholly independent central bank that uncompromisingly pursued a policy of 'hard money', low inflation and prudence.

The ECB's statute states that:

> "When exercising the powers and carrying out the tasks and duties conferred upon them by the Treaties and this Statute, neither the ECB, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a member state or from any other body".[22]

The ECB's wobbly balance sheet has also undermined its credibility. A paper published by the ECB in May last year noted,

> "The perceptions of a central bank's financial strength have an impact on the credibility of the central bank and its policy. If it is expected that the central bank is not capable of or willing to incur losses, then costly objectives and policies are not credible and the target cannot be achieved or only at a higher cost to the economy. Financial strength helps the central bank to protect its independence, which is a crucial component of credibility." [23]

In other words, as the paper published by the ECB notes, poor finances, weakened credibility and compromised independence are all inter-linked, seriously undermining a central bank's ability to enact its core functions: monetary policy – including fighting inflation – and acting as the lender of last resort.

---

21 Quoted in *Der Spiegel*, 'The Euro will be world currency', 15 June 1998, see http://www.spiegel.de/spiegel/print/d-7914262.html

22 *ECB*, Article 7, Statute of the European System of Central Banks (ESCB) and of the European Central Bank, see .ecb.int/ecb/legal/pdf/en_statute_2.pdf

23 *ECB Occasional Papers* No. 111, 'Main drivers of ECB Financial Accounts and ECB Financial Strength over the first 11 years', May 2010, see http://www.ecb.europa.eu/pub/pdf/scpops/ecbocp111.pdf

Propping up insolvent governments

One of the biggest indicators of the ECB's compromised political independence was its extraordinary decision, in May 2010, to begin buying government bonds in an effort to prevent weak eurozone states from going bust. As noted above, this practice effectively amounts to fiscal policy, and is explicitly prohibited by the ECB's own rule book, which states:

> "…overdrafts or any other type of credit facility with the ECB or with the national central banks in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the ECB or national central banks of debt instruments."[24]

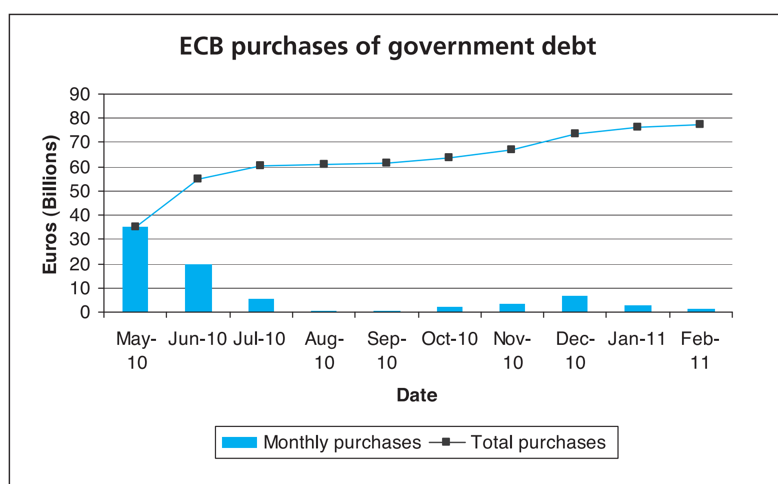
The ECB argues that since it buys the bonds from the secondary market (from banks rather than directly from governments), it is not violating these rules. However, it is hard to see how a programme specifically geared towards helping governments that would otherwise go bankrupt does not defy the intention of the rules.

Since June 2010, the ECB has purchased €77.5bn in government bonds through its Securities Markets Programme. Although information is scarce, it is widely believed that nearly all of this money has been spent on debt from peripheral eurozone economies, mainly Greece, Ireland and Portugal.[25]

In 2010, the ECB is estimated to have purchased almost all of the long term government debt available from Greece and Portugal, although through financial intermediaries. This meant that these countries were only able to stay afloat due to credit provided on the back of the extra demand created by the ECB.[26] Importantly, this operation amounts to just as much of a bail-out as the rescue packages agreed by EU leaders for Greece, Ireland and Portugal, with taxpayers ultimately liable for any losses in the likely event that one or more of these countries will eventually default (see above).

The decision to buy government bonds resulted in widespread criticism, not least from heavyweights within Germany. Then Bundesbank President Axel Weber said that the move posed "severe risks"[27] while one of his predecessors, Karl Otto Pöhl, noted that,

> "Against all its vows, and against an explicit ban within its own constitution, the ECB has become involved in financing states. Obviously, all of that will have an impact."[28]



Source: ECB [29]

24 *ECB*, Protocol (No 4) on the Statute of the European System of Central Banks and of the European Central Bank. Article 21.1, see http://www.ecb.int/ecb/legal/pdf/en_statute_from_c_11520080509en02010328.pdf

25 *Irish Times*, 'Portuguese borrowing costs rise', 16 February 2011, see http://www.irishtimes.com/newspaper/breaking/2011/0216/breaking31.html

26 Estimates put ECB holdings of Greek and Portuguese debt at around €60bn and €20bn respectively. These amounts are in nominal or original value, but the ECB most likely bought much of the debt at a discount meaning actual spending on debt from these countries would be lower.

27 Quoted in *Seuddeutche Zeitung*, 'The euro-crisis: Many join the discussion, speculators aren't frightened off', 12 May 2010

28 Quoted in *Der Spiegel Online*, 'Bailout plan is all about rescuing banks and rich Greeks', 18 May 2010, see http://www.spiegel.de/international/germany/0,1518,695245,00.html

29 *ECB*, ECB Open market operations, see http://www.ecb.int/mopo/implement/omo/html/index.en.html

Again, the ECB's credibility suffered a major blow. Following the monthly meeting of the ECB governing board on 6 May 2010 – at the height of the first Greek crisis – when asked whether the ECB would start buying Greek government bonds, ECB President Jean-Claude Trichet told journalists that "We haven't discussed this possibility".[30] However, only a few days later Trichet made a U-turn and announced that, in fact, the ECB would start buying government bonds. The decision was widely seen as a sign of the ECB giving in to political pressure, as it came during the same weekend that panic-stricken EU leaders agreed the €750bn eurozone bail-out package.

U-turn's such as Trichet's might be expected from politicians, but not from central bankers. Apart from undermining the ECB's ability to manage market expectations by eroding participants' trust, the practice of buying government bonds does, in its own right, increase the risk of inflation.

By buying government bonds that otherwise would have been close to unsellable, the ECB is monetising otherwise illiquid debt – which is one of the reasons why the practice is (in theory) explicitly prohibited by the ECB's own rules. The ECB claims to have 'sterilised' any inflationary effects of its bond buying programme.[31] However, the real impact of such sterilisation is debatable, and the long term effect on inflation is likely to be similar to a programme of 'quantitative easing' (which the Bank of England has pursued for example, although on a much larger scale).[32]

Propping up an insolvent banking sector

The second part of the ECB's eurozone bail-out programme involves it providing huge amounts of funding to insolvent banks. Although it has decreased its funding in recent months, the ECB is still providing around €450bn in short and long term liquidity to banks within the eurozone. This programme was designed to provide market stability during the financial crisis – and as Europe's banking system was on the verge of the abyss it did help to avoid a complete meltdown in the short-term.

However, by rushing to the aid of ailing banks, the ECB has also shifted risks amounting to hundreds of billions from individual banks to its own books – with the taxpayer as the ultimate guarantor. Many of these banks are not viable absent this funding and the ongoing support creates a number of economic costs (see sections I and III).

Table 5: Propping up banks across Europe

	ECB lending to European banks, by country (€bn)[33]			
	Oct-10	Nov-10	Dec-10	Jan-11
Austria	7.1	6.8	9.5	7.8
Germany	103	93	103.1	82.5
Greece	92.4	95.1	-	97.7
Ireland	130	136.4	132	126
Italy	32	28.8	47.6	47.4
Portugal	40	37.9	40.9	41
Spain	71.3	64.4	69.7	57.1
Total	534.1	523.2	546.7	494.8

Source: ECB[34]

A large proportion of ECB funding goes to insolvent banks in struggling economies, particularly in Ireland (whose banks receive around 26% of the ECB's total lending).[35]

30 Quoted in *Le Figaro*, 'Grèce: la BCE n'achetera pas de dettes d'États', 6 May 2010, see http://www.lefigaro.fr/conjoncture/2010/05/06/04016-20100506ARTFIG00755-grece-la-bce-n-achetera-pas-de-dettes-d-etats.php

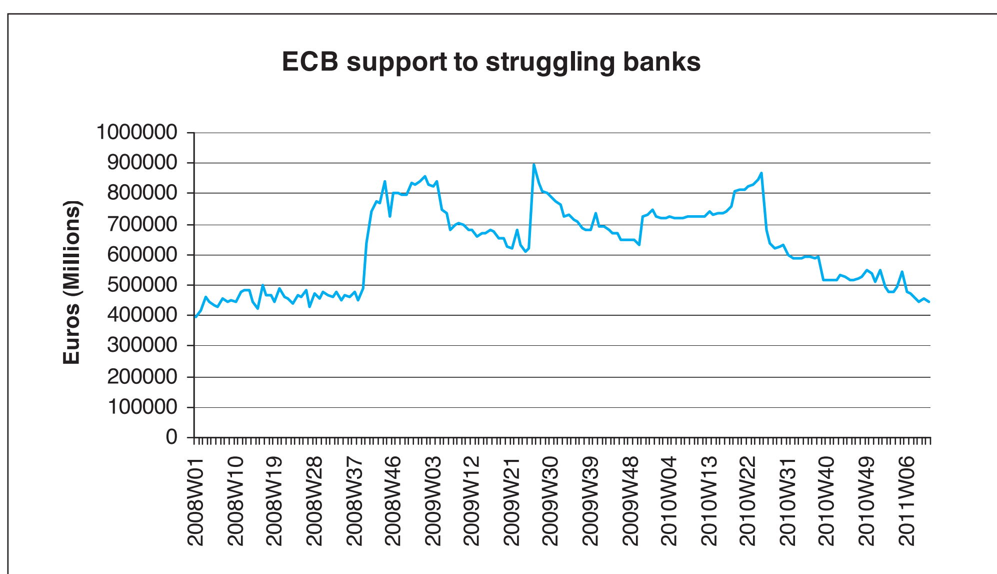
31 The ECB does this by taking on weekly deposits equal to the total amount of bonds bought. This changes little since it is not targeted at those who have received the liquidity boost. The ECB has also often failed to take in enough deposits to offset the total amount of bonds purchased. Furthermore, these deposits can also be used as collateral for ECB loans, meaning they have virtually no impact on inflation.

32 *Citi Global Economics View*, 'Games of 'Chicken' Between Monetary and Fiscal Authority: Who Will Control the Deep Pockets of the Central Bank?', 21 July 2010. Buiter refers to the sterilisation programme as "semantic not substantive".

33 This table shows the level of liquidity which the ECB has provided to the banking sectors of certain eurozone countries over the past few months. The total shown is a sum of the total ECB lending in the eurozone. Ireland, see http://www.financialregulator.ie/publications/Pages/QuarterlyBulletin.aspx Greece, see http://www.bankofgreece.gr/BogEkdoseis/Isol2010.pdf

34 *ECB*, see http://sdw.ecb.int/quickview.do?SERIES_KEY=123.ILM.W.U2.C.A050.U2.EUR

35 The ECB provides loans to the banking sector through its 'open market operations' which are used to steer liquidity and short term interest rates in the eurozone financial markets. The loans usually last a week or three months, however since the start of the financial crisis, loans of one month are also available. The ECB has guaranteed unlimited liquidity until July 2011. The loans are usually in the form of repurchase agreements or collateralised loans. See the ECB's website for more details: http://www.ecb.int/mopo/implement/intro/html/index.en.html and http://www.ecb.int/mopo/implement/omo/html/index.en.html



Source: ECB[34]

As we note above, the ECB is supporting struggling banks across Europe by allowing them (via NCBs) to post various assets, including all kinds of debt, as collateral in return for cheap credit. As with the purchases of government debt, Trichet also made a spectacular U-turn on the ECB's willingness to accept low quality Greek and Irish government bonds as collateral. As late as January 2010, the ECB President said:

"No government or country will be able to expect special treatment. The central bank will not change its principles just because the sovereign bonds of a member state no longer fulfil the appropriate criteria".[36]

However, since then, the ECB has lowered its threshold several times for Greek and Irish debt, and this year, it suspended its criteria altogether – exactly the kind of "special treatment" that Trichet promised never to engage in. As shown in Table 3 (page 8), the ECB now holds €45bn in collateral from Greek government debt alone.

Increased moral hazard for banks and governments

As we can see, in the run up to the sovereign debt crisis the cheap money dished out by the ECB might have mitigated the impact of the financial meltdown by saving some financial institutions, but it also provided perverse incentives for undercapitalised banks. It deterred them from attempting to increase capital stocks externally (by issuing debt or shares) as would happen under a business-as-usual scenario. In fact, the availability of cheap liquidity encouraged them to take on *more* risk in an attempt to increase profits and raise capital internally. With liquidity coming so cheap, banks could invest money into what looked to be relatively high return yet low risk assets – in an effort to maximise profits and avoid issuing capital calls. At the time (2009 - 2010) these assets were mostly weaker eurozone government bonds which have now lost value, making these banks even more vulnerable.[37]

In turn, this had significant knock on effects for eurozone governments, since it actually led to an increase in market demand for peripheral debt as banks continued to buy government bonds (using cheap ECB credit).[38] For their part, peripheral eurozone governments took this increase in demand to mean that markets were not overly worried about their poor finances, which reduced the pressure for these governments to reform.

36 Quoted in *Handelsblatt*, 'Versprochen, gebrochen', 12 May 2010

37 *Global Economic Forum Morgan Stanley*, 'The lure of liquidity', 18 June 2010, see http://www.morganstanley.com/views/gef/archive/2010/20100618-Fri.html#anchor9de3d540-7aa9-11df-8b0b-e198f17171a5

38 Banks knew that they would always be able to post these bonds as collateral with the ECB, getting further loans in exchange. The interest paid on these loans was much lower than the interest received on the government bonds. These banks were also able to invest the loans in other high yielding assets further increasing the potential return.

The amount of liquidity which the ECB has been providing to European banks illustrates just how fragile the EU's banking sector is. Many banks continue to be highly leveraged and under-capitalised with significant exposure to risky assets. This, in combination with the interconnectivity between Europe's banks and poorly-targeted regulation means that Europe is left with serious systemic risks on its hands.

In reality, banks have had more than enough time to increase their capital ratios and reduce their exposure to risky sovereign debt, particularly Greece. Even up to the end of last year the price offered for Greek debt on secondary markets was reasonable and represented a much higher recovery rate than under a debt restructuring. The possible reasons for banks missing these opportunities range from greed to complacency. However, what many banks knew - or at least confidently gambled on - was that the ECB would continue to provide cheap credit, which certainly did not provide the right incentives either.[39] This growing moral hazard (through continuous government/central bank funding and pooling of risk at the European level) now constitutes a threat to financial stability.

The ECB is therefore contributing to a situation which has left the root causes of the problems within Europe's banking sector and the sovereign debt crisis unaddressed – storing up more problems for the future.[40]

39 For an interesting discussion on this see Zero Hedge, 'If Greece Default Would Wreak Havoc On European Banks Then CEO's Should Be Fired' 26 May 2011, http://www.zerohedge.com/article/guest-post-if-greece-default-would-wreak-havoc-european-banks-then-ceo%E2%80%99s-should-be-fired

40 CES ifo, 'EEAG report on the European Economy 2011', February 2011, see http://www.cesifo-group.de/portal/page/portal/ifoHome/B-politik/70eeagreport

III. CONCLUSION: THE ECB MUST BECOME A STRONG BANK AGAIN

Given the potential embarrassment of having to go cap in hand to governments to ask for money following a Greek default, it is not surprising that the ECB is so opposed to debt restructuring for struggling eurozone economies. With particularly eye-catching rhetoric, ECB board member Lorenzo Bini Smaghi stated in May 2011 that, "a debt restructuring, or exiting the euro, would be like the death penalty – which we have abolished in the European Union."[41]

The ECB's huge exposure may also seem like an argument in favour of avoiding defaults at any cost. However, while a restructuring would be painful, continuing the ECB's current policy of propping up insolvent banks – and intermittently governments – would be even worse for the eurozone as a whole. As we note above, in its attempt to soften the immediate impact of the eurozone crisis, the ECB may in fact have exacerbated the crisis in the long-term.

Stop raising the costs for taxpayers and governments

Ultimately, the problems of the eurozone crisis are bigger than the ECB and so the solution will need to be as well. Some sort of debt relief in one or more eurozone economies – Greece, Ireland and Portugal in that order – now looks inevitable. The crucial point is that the cost of a debt restructuring will only increase with time. Greece's debt burden will continue to grow over the next few years, also making the country's banks more exposed to Greek state debt (since they continue to be the main purchasers of it). With Greece needing to sell between €60bn and €80bn worth of debt over the next few years, the country's banks are likely to take on even more Greek debt, given that very few others would be willing to purchase it.

It is possible that the ECB could reduce its exposure by reining in its liquidity programme and taking some risky assets of its books. But this is far from certain. Again taking the example of Greece, there is no sign of the country's banks receiving funding from elsewhere given their weak state, meaning that they will also have to rely on the ECB in future. Similarly, it is also unlikely that the majority of the Greek debt bought under the SMP is very short term. This means that the ECB's exposure and potential losses through its holdings of Greek debt are not expected to decrease by much over the next few years. This suggests that the ECB will face these large losses despite its delaying tactics.

Perhaps even more critically, absent a default, more and more debt will fall into the hands of the taxpayer through the ongoing EU and IMF back bail-out operations. Gradually, more debt will be underwritten by taxpayers and less by private bondholders, meaning more of the risk (and potential cost) will be transferred to the former. With fewer private bondholders, the ones remaining would also have to accept larger write downs for a restructuring to have an impact.

Therefore, the apparent benefits of the ECB's current policies – and resistance to any form of debt restructuring – are painfully short term. The ECB must now realise that although its predicament is not entirely of its own making, by staying the current course, it is increasing the potential cost for everyone else in the medium-term, including, most importantly, taxpayers.

41 Quoted in *Reuters*, 'ECB's Bini Smaghi warns against default repercussions', 30 May 2011; http://uk.reuters.com/article/2011/05/30/uk-greece-ecb-binismaghi-idUKTRE74S30Q20110530

The ECB's vulnerability must be recognised

As we note in section I, the unknown value of many of the assets which the ECB now has on its balance sheet – and the risks involved in holding them – is a serious threat to the ECB's solvency. In many cases the banks posting this collateral are yet to fully realise their losses or fully disclose their level of exposure to the problems in weaker eurozone economies.[42] This is clearly a 'known unknown' that could create huge problems if, for example, a country defaults and banks are forced to record losses on assets which they have not yet publicised or marked-to-market.[43] In turn, this would exacerbate market instability – similar to what happened in the financial crisis when some banks suddenly had to record previously unknown losses on overvalued Collateralised Debt Obligations.

As we note above, no one really knows what potential losses the ECB could be facing. What is clear is that buried in the ECB's books is a hidden – but potentially huge – cost to taxpayers. This is a potential cost of keeping the eurozone intact which is not properly understood and which must now be subject to a throrough and open discussion. Trying to hide the problem is not a sustainable policy. That is how we ended up in this situation in the first place.

Instead of continuing its evasion tactics, the ECB must now return to its original mission of price stability, including immediately closing down the SMP. In addition, a way has to be found to get ailing banks off the ECB's life support. This should include a winding-down mechanism for insolvent banks.

42 This has lead to the creation of a series of institutions known as 'zombie banks' which are dependent on the funding provided by the ECB but still pose a systemic risk were they to fail.

43 Mark to Market means assessing the fair value of an asset according to the value it would gain if sold on the market at that point in time. In many cases this is lower than the original purchase price. If these values are not updated, particularly during a crisis when many assets have lost significant value, they can still appear on an institution's books at their original price, therefore significantly overstating their value.

ANNEX: METHODOLOGY

Calculating ECB exposures

To estimate the ECB exposure to the PIIGS we looked at the level of loans which the ECB had disbursed to the banks in these countries at the start of this year. These figures can be found in the financial statements or balance sheets of the NCBs, usually defined as 'Lending to euro area credit institutions related to monetary policy operations denominated in euro'. The total amount of lending within the Eurosystem is taken from the ECB's weekly financial statement.

This was then combined with the estimates of what the ECB had purchased under its SMP programme. Since this data is not published we had to work from a variety of different estimates. It is known that the ECB has purchased €77.5bn in government bonds on the secondary markets since May 2010. JP Morgan's Flows and Liquidity team provides the breakdown of the expected holdings of Greek government bonds and collateral, suggesting that the ECB holds around €40bn in bonds from the SMP and around €91bn in loans, giving total exposure of around €131bn compared to collateral of around €194bn. These figures, combined with the fact that the ECB is applying up to a 13.5% haircut to Greek government bonds while also asking for extra collateral on loans to Greek banks, gives us our estimate that, on average, Greek loans have been overcollateralised about 1.35 times (around €135bn of collateral on €100bn worth of loans).[44]

The purchases of Portuguese and Irish government bonds are directly related to the amount spent on Greek government bonds. After Greek purchases we estimate that the rest has been split almost evenly between the other two countries with a slight bias towards Portugal. Our figures also incorporate estimates from Barclays Capital and Citigroup.[45] Our estimates on the purchase prices of sovereign debt under the SMP are based on estimates again from JPM, Citigroup and Barclays Capital but combined with average discounts which this debt has been trading at on secondary markets over the past year. We also accounted for a pricing sheet reportedly sent round by the ECB at the end of last year, revealed by Zerohedge.[46] In any case our estimates line up closely with what has been suggested elsewhere and are an attempt to shed light on what is a very opaque programme.

Cost of restructuring

Calculating the cost of a Greek debt restructuring to the ECB comes with a number of caveats, particularly due to the lack of publicly verified data. In our analysis the ECB holdings are split into three parts: Greek government bonds bought through the Securities Markets Programme (SMP), Greek government bonds posted as collateral with the ECB and Greek state backed bank paper also posted as collateral. All of these will see significant decreases in value if Greece were to restructure. We assume a 50% haircut on Greek government debt; this is the level of haircut which would be needed to get Greek debt levels back to a sustainable point (90% of GDP). It is also based on comments by Moody's following their recent downgrading of Greek debt, that evidence suggests that post default recovery rates average around 50% (although it does give a wide range).[47] Furthermore, the price of Greek debt on secondary markets combined with the trading of recovery swaps suggest that any restructuring is expected to be of the magnitude of 50%.

We expect that the bonds bought through the SMP were purchased at a significant discount, around 30% (explained above). That means under our 50% haircut scenario the actual loss to the ECB will be 20%. For the collateral a similar rule applies since the ECB has made sure that loans to Greek banks are overcollateralised, taking around 135% of the loan in collateral. This means that the actual realised loss

44 Cited in *ECB*, ECB haircut schedule, 2010, see http://www.ecb.int/press/pr/date/2010/html/sp090728_1annex.en.pdf?2052e5f304dfbaf6310ecb327bbd458f

45 Cited in *FT Alphaville*, 'Irish Government Debt Needs You', 14 September 2010, see http://ftalphaville.ft.com/blog/2010/09/14/341491/irish-government-debt-needs-you/

46 *Zero Hedge*, 'Eurobond Trading Desk Commentary: "The ECB Is The Only Buyer Out There Right Now"', 9 December 2010, see http://www.zerohedge.com/article/eurobond-trading-desk-commentary-ecb-only-buyer-out-there-right-now

47 Cited in *Moody's Investor Service*, 'Moody's downgrades Greece to Caa1 from B1, negative outlook' 1 June 2011, see http://www.moodys.com/research/Moodys-downgrades-Greece-to-Caa1-from-B1-negative-outlook?lang=en&cy=global&docid=PR_220046

will only be 25% since some will be absorbed by the extra collateral.[48] However, we also had to consider that while the 50% haircut would be directly applied to the holdings of government bonds, both those taken as collateral and those bought directly, the same may not be true for the state backed bank paper.

Initially we assume that the loss will be similar, meaning a 50% recovery rate on the state backed bank paper (that it will be worth half of what was originally envisaged after the restructuring). Estimating the value of state backed bank paper post a Greek restructuring is particularly tricky since there is no direct trading from which a price can be drawn. Firstly, since this debt is only guaranteed by the state it would almost certainly be susceptible to at least the same write downs as actual government debt. Our assumption of 50% losses on this collateral is therefore a lower bound and is far from guaranteed.

It is distinctly possible that the Greek state could look to renege on a significant amount of its banking sector related debt which would likely skyrocket during a restructuring (firstly due to the guarantees it has offered and secondly through a possible nationalisation of the Greek banking sector). As such we also consider that the bank paper will only be worth 25% of its original value. In reality, the actual recovery rate on state backed bank paper will depend on negotiations between Greece and its individual creditors as well as the approach it takes to dealing with the Greek banking sector. The losses on the ECB's holdings of Greek government bonds combined with the different scenarios regarding the potential value of the state backed paper after a restructuring give us our range estimate for the cost to the ECB.

Cost to National Central banks

We have assumed that the ECB will either call for the NCBs to replenish its capital and reserves to cover its losses, or the losses will be shared out directly through the monetary income across the Eurosystem. Either way the losses will be shared out proportionately based on the ECB's contribution key. The Statute on the ECB and the European System of Central Banks states that any losses will only be covered by those NCBs in the euro area, while non eurozone NCBs only contribute very small amounts to help cover the running of the ECB. Therefore we have extrapolated the likely shares for which each eurozone NCB will be liable. In table 4, we have not directly accounted for the ECB's own share of monetary income as it is not directly clear whether this would take a hit or not in the case of the ECB facing large losses. Since the ECB is only liable for 8% of Eurosystem monetary income this amount spread over all the other NCB's would not change the costs to them substantially.

48 Similar approach to that taken by JPMorgan, Flows & Liquidity, 'Who are the losers from a Greek debt restructuring?'. 6 May 2011, see https://mm.jpmorgan.com/stp/t/c.do?i=757FA-3&u=a_p*d_591058.pdf*h_2m4heucd%0D%0A There is some risk of double counting here, given that the latest figures on the ECB holdings are much more recent than those of the banking sector, and as such some may have been transferred from the latter to the former. This is hard to avoid due to the massive data limitations. However, since the banks covered here only represent 65% of total European banking assets our figures are still likely to be an underestimate.