

Belke, Ansgar

Working Paper

A more effective euro area monetary policy than OMTs: Gold-backed sovereign debt

ROME Discussion Paper Series, No. 13-03

Provided in Cooperation with:

Research Network "Research on Money in the Economy" (ROME)

Suggested Citation: Belke, Ansgar (2013) : A more effective euro area monetary policy than OMTs: Gold-backed sovereign debt, ROME Discussion Paper Series, No. 13-03, Research On Money in the Economy (ROME), s.l.

This Version is available at:

<https://hdl.handle.net/10419/98655>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

R O M E

Research On Money in the Economy

No. 13-03 – July 2013

A More Effective Euro Area Monetary Policy than OMTs – Gold-Backed Sovereign Debt

Ansgar Belke

ROME Discussion Paper Series

"Research on Money in the Economy" (ROME) is a private non-profit-oriented research network of and for economists, who generally are interested in monetary economics and especially are interested in the interdependences between the financial sector and the real economy. Further information is available on www.rome-net.org.

ISSN 1865-7052

Research On Money in the Economy

Discussion Paper Series
ISSN 1865-7052

No 2013-03, July 2013

A More Effective Euro Area Monetary Policy than OMTs – Gold-Backed Sovereign Debt*

Ansgar Belke

Prof. Dr. Ansgar Belke
University of Duisburg-Essen
Department of Economics
Universitaetsstr. 12
D-45117 Essen
e-mail: ansgar.belke@uni-due.de
and
Institute for the Study of Labor (IZA) Bonn
Schaumburg-Lippe-Str. 5 – 9
D-53113 Bonn

Member of the Monetary Expert Panel in the European Parliament

The discussion paper represents the author's personal opinions and do not necessarily reflect the views of IZA Bonn.

NOTE: Working papers in the "Research On Money in the Economy" Discussion Paper Series are preliminary materials circulated to stimulate discussion and critical comment. The analysis and conclusions set forth are those of the author(s) and do not indicate concurrence by other members of the research network ROME. Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the author(s). References in publications to ROME Discussion Papers (other than an acknowledgment that the writer has had access to unpublished material) should be cleared with the author(s) to protect the tentative character of these papers. As a general rule, ROME Discussion Papers are not translated and are usually only available in the original language used by the contributor(s).

ROME Discussion Papers are published in PDF format at www.rome-net.org/publications/.

Please direct any enquiries to the current ROME coordinator
Prof. Dr. Albrecht F. Michler,
Heinrich-Heine-University of Duesseldorf, Department of Economics, Universitaetsstr. 1,
Build. 24.31.01.01 (Oeconomicum), D-40225 Duesseldorf, Germany
Tel.: ++49(0)-211-81-15372
Fax: ++49(0)-211-81-15261
E-mail: helpdesk@rome-net.org
michler@uni-duesseldorf.de

Abstract

This paper argues that using gold as collateral for highly distressed bonds would bring great benefits to the euro area in terms of reduced financing costs and bridge-financing. It is mindful of the legal issues that this will raise and that such a suggestion will be highly controversial. However, a necessary condition is that the European System of Central Banks (ESCB) has agreed to the temporary transfer of the national central bank's gold to a debt agency in full independence. This debt agency passes the gold along, in strict compliance with the prohibition of monetary debt financing. The paper also explains that gold has been used as collateral in the past and how a gold-backed bond might work and how it could lower yields in the context of the euro crisis. This move is then compared to the ECB's now terminated Securities Market Programme (SMP) and its recently announced Outright Monetary Transactions (OMTs). Namely, a central bank using its balance sheet to lower yields of highly distressed countries where the monetary policy transmission mechanism is no longer working. Beyond some similarities between the moves, the specific benefits of using gold in this manner vis-a-vis the SMP and the OMTs are highlighted. For instance, there is by and large no transfer of credit risk between high risk/low risk countries, losses are borne by specific countries and not by the largest shareholders of the ECB, it would turn out to be more transparent, it would not be inflationary and would foster reforms.

JEL-Classification: E52, E58, E61, F33

Keywords: bond pricing, collateral, debt crisis, gold, gold-backed bonds, Outright Monetary Transactions, Securities Market Programme

Corresponding author: Professor Dr. Ansgar Belke, Fakultät für Wirtschaftswissenschaften, Jean Monnet-Lehrstuhl für Volkswirtschaftslehre, insbes. Makroökonomik, und Direktor des Instituts für Betriebswirtschaft und Volkswirtschaft (IBES), Universität Duisburg-Essen, Universitätsstr. 12, D-45117 Essen, phone: +49 (0) 201 183 2277, fax: +49 (0) 201 183 4181, e-mail: ansgar.belke@uni-due.de

* Acknowledgments: This paper heavily relies on a Briefing Paper prepared by the author as a member of the "Monetary Experts Panel" for the European Parliament. The author is grateful for valuable comments from Angelo Baglioni, Natalie Dempster, Daniel Gros, René Smits and other participants at presentations in Brussels, Frankfurt, Rome and London.

1. Introduction

The European Central Bank opened up its third round of secondary bond market purchases on 6. September 2012. Whether they deliver a permanent reduction in bond yields in the South is highly uncertain. If the ECB's latest sovereign bond purchase programme consisting of Outright Monetary Operations (OMTs) fails, then Europe's options look grim. Austerity and growth programmes have not met expectations and the outlook is further clouded by the fact that the funds available from the IMF and EFSF/ESM are dwindling as a result of other bailouts. Europe is running out of time and options.

Already the now terminated predecessor of the OMTs, the Securities Market Programme (SMP) has always been a controversial option, riddled with potential dangers. It is seen by many as a de facto fiscal transfer from the North to the South and, moreover, a transfer made without democratic consent. By showing willingness to buy the debt of poorly performing countries, the SMP was seen as reducing incentives for necessary long-term reforms. In addition, although the ECB tries to 'sterilise' these transactions, this is far from an exact science, leaving a risk of higher money supply fuelling inflation (Belke, 2013).

An alternative manner which serves to lower yields might be to issue securitized government debt, for example, with gold reserves. This could achieve the same objectives as the ECB's bond purchases programmes, but without the associated shortcomings. This would clearly raise legal issues but then so too did the ESM, SMP and OMT. This would not work for all countries but would for some of those in most need. In fact, Italy and Portugal have gold reserves of 24 and 30 percent of their two-year funding requirements. Using a portion of those reserves as leveraged collateral would allow those countries to lower their costs of borrowing significantly.

Making use of the national central banks' gold reserves is much more transparent than the SMP, much fairer, and would make it easier to get genuine consent amongst the euro area population and the European Parliament. Nor does it lead to unmanageable fiscal transfers from the North to the South with huge disincentive effects. It does not shift toxic debt instruments onto the ECB. And it does not cause sterilisation problems or increase the difficulty of exiting unconventional monetary policy. Simply speaking, a gold-based solution is much less inflation-prone and does not reduce incentives for the reform of beneficiary countries.

The remainder of the paper proceeds as follows. Section 2 looks at the problems underlying the current escalating crisis which essentially represent the trigger for the active involvement of the ECB in euro area rescue activities. It is stressed that the breakdown of the monetary transmission mechanism has exacerbated the problem which is mirrored by the ECB's sovereign debt market and LTRO activity.

Section 3 brings gold into the debate. For this purpose, the value of Europe's gold reserves is outlined. Moreover, it is explained that gold has been used as collateral already in the past. The main focus then is in section 4 on an explanation of how a gold-backed bond might work and how it could lower yields. Section 5 deals with some of the legal issues involved.

In section 6, the move towards a gold-backing of selected euro area sovereign bonds is compared to the SMP and the OMT. Both programmes relate to a central bank using its balance sheet to lower yields of highly distressed countries where the monetary policy transmission mechanism is no longer working. Similarities and differences between the two

moves are highlighted. Many benefits of using gold in this manner vis-à-vis the SMP and the OMT are derived from as, for instance, the absence of any transfer of credit risk between high risk/low risk countries, the fact that losses are borne by specific countries and not the largest shareholder of the ECB (i.e. Germany), and, finally, that it would not be inflationary.

2. The breakdown of the monetary policy transmission mechanism

The sovereign debt crisis is eroding long standing assumptions around sovereign debt risk. In developed markets, the rising burden of public debt combined with low economic growth is raising concerns around the long-term ability of some euro area sovereigns to repay.

For some countries, the credit spread in their cost of debt financing has increased significantly. This is hampering the so-called monetary policy transmission mechanism. Conversely, changes in long-term sovereign bond yields feed to a certain extent into fluctuations in corporate bond yields and bank lending rates. As a reaction to losses from significant declines in sovereign bond prices, consumers tend to enhance their precautionary savings, which in turn work against the intended stimulus to private consumption from monetary policy easing (Cœuré, 2012; ECB, 2012, pp. 7-10). What is more, sovereign bonds are these days exposed to severe haircuts and, as a consequence, their refinancing capacity has become smaller. The volume of available collateral in the shape of government bonds has become smaller which has curtailed the refinancing opportunities of commercial banks. The price corrections of sovereign debt also exerted an immediate negative effect on the assets on the banks' balance sheets and, hence, on the risks markets attach to them. This works against the refinancing necessities of commercial banks. What is more, it has the potential to work out as a significant impediment to the provision of loans to the real sector of the economy (Cœuré, 2012; ECB, 2012, pp. 7-10).

Although the *ECB's LTRO* facility is helping to address the current liquidity crisis for weaker banks it *does not directly address sovereign solvency issues*. The LTRO facility allows banks to post sovereign debt as collateral to get access to cheap ECB funding. Banks in Portugal, Ireland, Italy, Greece and Spain had a 70 percent share, i.e. EUR 350 bn of the first EUR 500 bn LTRO. However, the risk of default remains with the banks (Belke, 2012a). Sovereign debt still remains on the balance sheet of banks. And there is a collateral top-up requirement if the bonds pledged fall in value or default.

This has prompted the ECB to introduce controversial non-conventional monetary policy tools, such as its Outright Monetary Transactions Programme (OMT) and its predecessor, the Securities Market Programme (SMP). For a deeper assessment of the status quo: the now terminated Securities Market Programme (SMP) and its successor, the Outright Monetary Transactions (OMT) Programme, see in detail Belke (2012d and 2013).

3. Securing Europe's debt with gold

It is by now clear that even in the fourth quarter of 2012 the euro area will stay under significant stress.¹ But it is not at all clear whether the ECB or the euro area governments will de facto be able to act properly to choke market fears and bring down (allegedly) overly high

¹ This view is supported by recent DIW analysis; see Fichtner et al. (2012).

government borrowing costs. As unease builds, it may be time to explore new ideas to cut interest rates.

A new idea would be the *gold backing of new sovereign debt*. It is common knowledge that a few countries which are the most affected by the euro crisis, i.e. Portugal and Italy, hold large stocks of gold. In aggregate, the euro area holds 10,792 tonnes of gold, that is 6.5 per cent of all the yellow metal that has ever been mined, and worth some \$590bn (Farchy, 2011).

As expected, this scenario was the trigger for some to propose that not only the financially distressed governments should sell some of their gold (see, for instance, Prodi and Curzio, 2011). Over the last couple of years, the value of gold has soared. And a popular view is, if there were ever a suitable time that euro area member countries are in need of an unanticipated windfall gain – for instance, to pay interest on their sovereign bonds – it would be now (Farchy, 2011, Plevin, 2011).

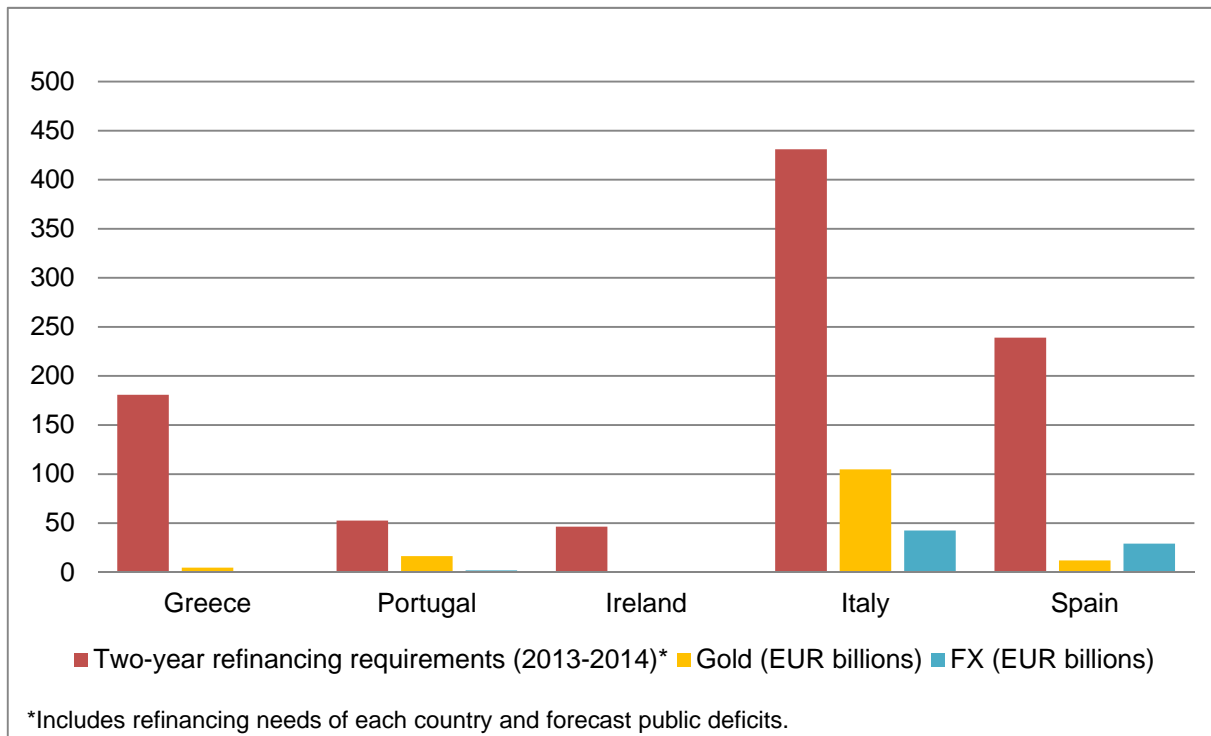
But this would be a mistake. For quite apart from the fact that a massive dump of gold would dampen its price, the euro area debt woes are now so large such that gold sales would only scratch the surface of the problem (Alcidi et al., 2010). This is because the gold holdings of the financially distressed euro area countries (Greece, Ireland, Italy, Portugal and Spain) would account for only 3.3 per cent of their central governments' total outstanding debt.

Through issuing sovereign bonds backed by gold, euro area member countries should *securitise part of that gold* instead. The latter could be enacted in a rather simple way. But one could also structure it to contain tranches of different risks. The main point in both variants is that gold would serve to provide sovereign bonds with further safeness – and thus comfort investors who do not give credence to euro area government balance sheets any more.

3.1 Materiality of gold reserves

Using gold as collateral would not work for all countries but would do so for some of those in most need. France and Germany hold significant reserves but enjoy low unsecured borrowing costs. Greece, Ireland and Spain, on the other hand, don't hold enough gold for it to be a viable solution. Italy and Portugal, however, hold gold reserves of 24 and 30 percent of their two-year funding requirements and could have a material impact of their debt servicing costs (Figure 1).

Figure 1: Refinancing requirements and reserves



Source: Bloomberg, World Gold Council as of July 2012.

3.2 Gold as collateral: historical experience

In history, collateral schemes have been utilized before on quite a few occasions. In the 1970s, for instance, Italy and Portugal employed their gold reserves as collateral to loans (i.e., direct loans not bonds) from the Bundesbank, the Bank for International Settlements and other institutions like the Swiss National Bank. Italy, for instance, received a \$2bn bail-out from the Bundesbank in 1974 and put up its gold as collateral.² More recently, in 1991, India applied its gold as collateral for a loan with the Bank of Japan and others. And in 2008, Sweden’s Riksbank used its gold to raise some cash and provide additional liquidity to the Scandinavian banking system (Farchy, 2011, World Gold Council, 2012).

As Paul Mercier (2009), at that time deputy director of market operations at the ECB, expressed it: *“In a generalised crisis that leads to the repudiation of foreign debts or even the international isolation of a country [...] gold remains the ultimate and global means of payment that is still accepted and it is one of the reasons used by some central banks to justify gold holdings.”*

According to this statement, countries have in history headed towards their gold reserves only in their toughest situations. What is more, lenders are most probably requiring that this gold is transported to a neutral location. Gold-backed bonds could help in some respects but would not be a full and all-comprising solution. Questions arise, for instance, over the unintended impact on unsecured debt yields. There is scant evidence that the idea has received any significant support from policy makers up to now. Even if euro area political leaders accepted the idea in the end, significant legal obstacles would loom on the horizon most notably

² But the resulting interest rate reductions were not made public in both cases.

connected with the fact that a large share of the gold is held by central banks and not by treasuries (Farchy, 2011, Tett, 2012). Nonetheless, the concept of gold-backed bonds certainly is worth a closer discussion.

Only a decade ago, it appeared rather “old-fashioned to ever suggest that any investor would claim gold as collateral; in the era of cyber finance, securities such as treasury bonds tended to rule” (Tett, 2012). However, over the past few months, groups like LCH.Clearnet, ICE and the Chicago Mercantile Exchange have to an increasing extent begun to accept gold as collateral for margin requirements for derivatives trades (World Gold Council, 2012). In addition, in summer 2012 the Basel Committee on Banking Supervision issued a working paper in which it suggested that gold should be one of six items to be employed as collateral for margin requirements for non-centrally cleared derivatives trades, joint with assets such as treasury bonds (Basel Committee on Banking Supervision, 2012, p. 22).

Finally, Curzio (2012) acknowledges that when Romano Prodi suggested in 2007 that Italy should use its gold reserve to pay the debt, the reaction was negative. The Italian Finance Minister in 2009 wanted to tax gold and the European Central Bank opposed the idea. Curzio concludes that Italy at the moment has little resources to invest in growth and should consider asking Germany or any other Asian sovereign fund for a loan with its gold reserve as collateral. Rather, Curzio and Prodi suggest using gold reserves as collateral for a bond.³

Much in the same vein, Giuseppe Vegas, Chairman of Consob recently suggested a treasury fund with the rating of ‘*Triple A*’ collateralized by the jewels of the state namely the shares of ENI, ENEL, buildings, gold reserves and currency as an instrument to reduce the interest payment on the government debt.⁴

All these moves taken together suggest that a creeping change of attitudes is going on. This evolution takes place less in terms of the desirability of gold per se, but more through the growing riskiness and undesirability of other allegedly “safe” assets like sovereign bonds. This pattern will probably not reverse soon. This is so especially because markets long waited to see what the ECB might really do after September 6th and, after this date, whether Spain would be the first case for outright market operations a couple of weeks later in October 2012 (Rees, 2012, and Tett, 2012).

4. Estimating the yield reduction of gold-backed debt

Gold reserves are not typically considered in sovereign yield analysis during normal conditions (in history, default has often been triggered with reserves intact); so the chosen bond structure would need to offer *very explicit risk reduction* to benefit from lower risk spread. Sovereigns have historically sought to retain their gold to assist recovery, and thus often default on debt obligations rather than sell down reserves. Examples from the past are Argentina and Russia.

It can be shown that gold backing of sovereign debt reduces the annual yield, thus supporting the monetary transmission mechanism. Clearly, the functioning of the monetary policy transmission mechanism could be improved in the short-run since the yields on government

³ See: <http://www.firstonline.info/a/2012/09/11/alberto-quadrio-curzio-usare-loro-come-collaterale/4097075e-c2ac-4bd4-9567-0d6877d3a1e0>.

⁴ See: Corriere della Sera, 26 June 2012, http://www.corriere.it/economia/12_giugno_26/fondo-immobili-societa-quotate-bot-vegas_31aeeb20-bfa8-11e1-8089-c2ba404235e2.shtml.

bonds - as a key reference point for other interest rates - fall significantly because of sharply falling risk premia of gold-backed bonds. In the case of Portugal, for instance, this would make up for several percentage points on 5-year bonds. The *hedge* that the gold would provide against a default as an example of an extreme event would surely attract investors such as emerging market governments and sovereign wealth funds. If a country such as Portugal or even Italy were to default, the price of gold, especially if it is denominated in euro would sky-rocket (Baur and Lucey, 2010, Saidi and Scacciavillani, 2010, and Farchy, 2011).

To show this for the example of Portugal, we take the following approach (see Table 1). A top-down model is developed to quantify the change in yield when sovereign debt is backed by gold. The credit risk characteristics of bonds/debt are driven by three main factors: the *probability of default* (PD), the *expected unsecured recovery rate* in the event of default and the *collateral/guarantee recovery* in the event of default. The yield rate is modeled as: (*risk free rate*) + (*risk premium*) with the risk premium as a proxy for the compensation for the credit risk of the asset and calculated as $PD \cdot (1 - \text{total recovery rate})$. Financial stress on a sovereign leads to increase in its bond yields as the severity of the crisis translates into an increase in risk free rate, an increase in the probability of default and a decrease in expected recovery rate in the event of default. In the following, we give an illustrative analysis of the issues.

Table 1: Yield differential of gold-backed sovereign bonds: *the case of Portugal*

Parameters	Stress unsecured Sovereign bond	Gold backed facility @ 33% Collateral	Gold backed facility @ 50% collateral
a. Gold secured portion	0%	33%	50%
b. Estimated annual yield	10.0% ¹	6.00%	5.00%
c. Risk free rate	2.00%	2.00%	2.00%
d. Risk premium $e \cdot (1-f)$	8.00%	4.00%	3.00%
e. Annual probability of default	16% ²	12% ³	12% ³
f. Total recovery after collateral		66.7%	75.0%
$(1-a) \cdot g + (a \cdot h)$			
g. Expected unsecured recovery	50% ⁴	50%	50%
h. Gold collateral recovery (approx)		100%	100%

Assumptions:

1. Standalone unsecured yield as per example from a 5Y Portugal bond yield
2. As per 5Y CDS value
3. Estimate a 25% PD reduction in a gold backed structure
4. Sovereign default recoveries historically 30%-80% (depends on debt size and bargaining power) – 50% conservative average assumed

The logic behind the calculations runs as follows. Starting with the analysis of *unsecured* debt, we begin with the estimated annual yield of unsecured debt. In this example we are looking at a 5 or 6 year bond, so have taken as a starting point a hypothetical distressed yield of 10% (assumption 1). Then look at an equivalent CDS rate to calculate an annual probability of default (assumption 2). Next calculate the recovery in the event of a default. Historically this has been 30 to 80%, so take 50% (assumption 4). Total recovery in the case of unsecured debt is then 50%. A check of the calibration of the calculations delivers the following: the total recovery equals 50%; the annual likelihood of default is 16%, therefore the risk premium amounts to 8% (= (100-50) times 0.16). Adding this to the risk-free rate of 2% equals a 10% yield.

Now consider the case of *secured debt* and compare it to unsecured debt, using a similar calculation logic. Next take the Euro risk free rate, which is conservatively taken as 2% (looking at German 2 year yields for example). The risk of default is assumed to be 25% lower due to the incentive of losing gold collateral and now amounts to 12% (assumption 3). Assume now that total recovery in the event of default is increased due to the partial gold backing. Calculate the overall recovery rate using the assumption of 100% recovery of the gold element and of a 50% recovery of the rest in the partially collateralised structure. Calculate the risk premium by multiplying the probability of default by the loss given default (1 - recovery rate). Add the risk premium to risk-free rate to obtain the estimated annual yield.

Now consider that Table 1 has a Portuguese example bond which is 33% and 50% collateralised by gold. This obviously implies that it only collateralises part of its two-year needs. If the example should be one whereby all its bonds are collateralized, the percent collateral backing will be needed to be reduced, to something below 30%. If one takes exactly 30%, the total recovery after collateral is 0.35 (i.e. (1-0.3) times 0.5) and the risk premium amounts to 4.2% (i.e. 0.35 times 12%). The estimated annual yield then is 6.2%.

The *calibrated* sovereign bond yield reductions could in principle be compared to the econometrically estimated effects of the SMP. Due to the recent character and limited time range of the SMP, empirical investigations of its effectiveness are still rare. Kilponen et al. (2012) investigate the impact of an array of different euro area rescue policies on the sovereign bond yield spreads, but only through dummy variables coded as one on the day of announcing the respective measure. Hence, they do not test for a permanent impact of SMP measures. They find a significant effect of SMP announcement. Steinkamp and Westermann (2012) make use of a SMP variable as a control variable in an estimation equation – however, with an insignificant result.

5. Legal practicalities

It has to be recognised that there are legal and political considerations, as there were with the SMP.⁵

The first critical issue is *reserve ownership*. In most countries, gold reserves are held and managed by central banks rather than governments. Specifically, in the euro area, gold reserves are managed by the Eurosystem which includes all member states' central banks and

⁵ For this chapter see also World Gold Council:
http://www.gold.org/government_affairs/new_financial_architecture/gold_and_the_eurozone_crisis/.

the ECB (Treaty on the Functioning of the European Union, Article 127, and Protocol on the Statute of the European System of Central Banks (ESCB) and of the ECB, Article 12).

The second issue is *central bank independence*. National central banks must remain independent of governments in pursuit of their primary objective of price stability. The EU treaty expressly prohibits direct financing of governments by central banks. One should be mindful of the legal issues that this will raise and that such a suggestion will be highly controversial. It is specifically likely to raise questions as to whether or not this represents a breach of the prohibition on monetary financing. National central banks must remain independent of governments in pursuit of their primary objective of price stability (EU Treaty, Article 130). What is more, the EU treaty expressly prohibits direct monetary financing of governments by central banks (EU Treaty, Article 123).

The third issue is related to the *limited potential of gold reserve sales*. There are longstanding gold sale limits which are valid until 2014 that could potentially limit collateral transfers and would need to be addressed. The Eurosystem central banks are currently signatories to the 3rd Central Bank Gold Agreement (CBGA) which restricts net sales of gold reserves to 400 tonnes p.a. combined⁶. A number of other major holders - including the US, Japan, Australia and the IMF - have announced at other times that they would abide by the agreement or would not sell gold in the same period. Hence, the CBGA agreement could serve as a constraint on the size of potential gold reserve transfers until 2014, as it commits signatories to collectively sell no more than 400 tonnes of gold p.a. between September 2009 – 2014. Gold collateral could be interpreted as outside the scope of the CBGA or the maturity of the bonds could be staggered in order to limit the amount of gold coming onto the market in the event of a default.

There are clearly important legal issues that need to be addressed, but then that was also the case with the ESM, SMP and OMT. European legislation may need to be amended to accommodate a gold pledge for sovereign debt. This could be done by elaborating an amendment to the Treaty which establishes pledged gold as segregated from Eurosystem central banks and other national banks (for details see, for instance, Smits, 2012).

6. Gold-backed bonds versus SMP/OMT

Recent events – including the results of the most recent Italian elections, the Cypriot haircut combined with a steady decline of countries like Italy and Greece on the World Bank's governance indicators - have vividly demonstrated that in the absence of a mechanism to manage an orderly sovereign default, adjustment programmes lack credibility and the balance sheet of the ECB is put at risk. *Only sovereign funds* (including gold-backed sovereign bonds) tend to reveal the true opportunity costs to the initiators. However, if one chooses the way through the ECB and the printing press, the *opportunity costs* of adjustment programmes *wrongly* appear to be close to *zero*.⁷ This is especially so if (as in the current case of the SMP) these programmes are *not transparent* enough.

Disappointing results from bond purchasing programmes – a case for gold-backing

⁶ See: <http://www.ecb.int/press/pr/date/2009/html/pr090807.en.html>.

⁷ This opportunity cost argument is also a counter-argument against those arguing that the ECB does not risk to suffer in financial terms from holding sovereign bonds because the ECB could agree to get repaid far in the future, say in twenty years or so, if the respective country really goes bankrupt.

The dependence of Italian, Spanish and French commercial banks on financing through the ECB is now significantly higher than usual. The bigger this share gets, the more demanding it will be for Southern euro area banks to tap other ways of financing, especially with an eye on the fact that the ECB enjoys a de facto preferred creditor status. Finally, emancipating the banks from ECB funding may turn out to be more and more complicated. As in July 2012 alone, deposits of approximately EUR 75 bn left Spain and partly landed in Germany (where the money supply is by now increasing more strongly), it is clear that we have to deal with a huge dimension of capital flight from the South which is funded by the ECB money printing press (Belke, 2012c). Later on, after the announcement of the OMT programme by Draghi in September 2012, sovereign bond yields in Southern euro area member countries went down. However, this must not necessarily be interpreted as a sign of sustainable recovery. On the contrary even: because you have toxic debt instruments on board of the ECB, there is a huge degree of path dependence: in order to defend the value of the ever riskier assets on its own balance sheets, the ECB is forced to stand ready with ever larger bazookas – and the ECB is very credible in defending its own fate. For investors such as Goldman Sachs, Blackrock and other Hedge Funds in London's Westend it is thus a quite safe bet to invest in the financially distressed euro area member countries' bonds for the time being. In other words, there might be the possibility that in the months to come there will be silence on the sovereign bond yield front - but for the wrong reasons. What is more, it will be combined with financial repression and fiscal dominance (Belke, 2013).

Against this background, it is clear that the bazookas and even ECB government bond purchases cannot be expected to reduce the borrowing cost of its government in a systematic fashion - rather the opposite (Belke, 2013). If anything, they put downward pressure on the euro and favor the euro area core and exporting country, Germany. This adds to the steadily increasing lack of structural convergence in the euro area. Persistently high bond yields lead to a divergence and fragmentation of the euro area member states. Going through a continuation of its policy to flood the economy with money, the ECB risks that any specific monetary policy measure will no longer have a uniform effect on all euro area economies. If the impression among outside investors grows that the current stance of monetary policy is easing the pressure for reform in the problem countries too greatly and the euro zone fragments slowly thereby, their departure from the euro zone as a whole would become a true risk (Belke, 2012b).

Sooner rather than later secondary market purchases by the EFSF / ESM might be deemed necessary, in order to substitute foreign investors (which currently flee abroad for structural reasons) in Spanish government debt securities almost at any price.

Accordingly, it might turn out after some weeks that the complementary ECB measures announced on September 6th will not deliver a permanent reduction in bond yields in the South. Then, at the latest, *one should look for a "last resort" solution*, since the supply of alternative options looks to be exhausted because all austerity and growth programmes do not meet the expectations. Additionally, international support from the IMF, the EFSF and other institutions usually granted to troubled economies and preferred over gold-backed issuance is stretched as a result of other bailouts (Bundesbank, 2012).

One obvious *alternative* would be to go for *gold-backed sovereign debt*. Despite all current denials, the point in time may have come to use valuable and fungible assets such as gold to provide the Southern countries with temporary, but crucial in the current crisis of confidence,

bridge-financing heading towards a complete long-term solution. To be explicit, such a proposal does not address the gold-backing of euro or stability bonds whose usefulness is conceded by the EU Commission only in the very long perspective.⁸ Nor is it directly related to the recent debt redemption funds proposal by the German Council of Economic Advisors according to which the EFSF and later also the ESM firepower should ultimately be increased by a gold coverage of bonds.⁹

As mentioned before, Gold has been already used in the 1970s by Portugal and Italy to raise loans from the Bundesbank and the Bank for International Settlements (BIS). More recently, India managed to take a gold-backed loan from Japan (see section 1). Gold prices tend to move counter-cyclically, which is likely to reinforce its stabilizing effect in the current situation of financial stress. We do explicitly not propose to simply raise revenue from any short-term selling of the gold reserves, as recently agreed by Cyprus.¹⁰ That would only drive down the price of gold (Alcidi et al., 2010, Plevin, 2011, World Gold Council, 2012). Moreover, it would represent a clear breach of the prohibition of monetary financing public debt. Finally, gold sales simply raise additional revenues to finance the public budget which allows new expenditures and would be counter-productive because they would lead to even higher indebtedness. In contrast, gold-backing of sovereign bonds exerts disciplinary effects on the budget since the government does not want to get rid of its gold pledge.

We now compare the move to gold-backed bonds to the ECB's SMP and OMT programmes according to which the central bank uses its balance sheet to lower yields of highly distressed countries where the monetary policy transmission mechanism is no longer working. We also outline similarities between the two moves.

Comparison of gold-backed bonds with the bond purchasing programmes

Gold-backed bonds/using gold as collateral are consistent with the logic underlying the SMP and the OMTs and achieves similar outcomes. It is available to the ESCB on its balance sheet and is under the independent control of the Governing Council. It would significantly lower yields in malfunctioning markets, thus re-opening the monetary transmission mechanism.

But it is superior to the SMP and OMT with respect to a couple of criteria. Admittedly, it could be argued at first glance that the transfer of gold reserves to say a debt issuing agency which in turn will serve investors would be in breach of the prohibition of monetary financing of government debt. But gold is not directly sold to euro area governments and, hence, cannot

⁸ The European Commission (2011), p. 9, proposes in its Green Paper "on the feasibility of introducing Stability Bonds that "... Stability Bonds could be partially collateralised (e.g. using cash, gold, shares of public companies etc.). See also Farchy (2011). Prodi and Curzio (2011) argue that further innovation is necessary with a European Financial Fund (EFF) that issues EuroUnionBonds (EuBs). According to their proposal, euro area member States confer capital to the EFF proportionally to their stakes in the ECB. The capital should be constituted by gold reserves of the European System of Central Banks. Gold could be placed as collateral.

⁹ German Council of Economic Advisors (2011), p. 79: "To this end, each country participating must guarantee 20 per cent of its loan by pledging currency reserves (gold or foreign exchange holdings)". The Telegraph mentions in this context that Southern Europe's debtor states must pledge their gold reserves and national treasure as collateral under a €2.3 trillion stabilisation plan gaining momentum in Germany. See <http://www.telegraph.co.uk/finance/financialcrisis/9298180/Europes-debtors-must-pawn-their-gold-for-Eurobond-Redemption.html>.

¹⁰ The gleaming bars in the vaults of the Greek central bank are worth \$5.8 billion. If Athens were to sell that gold, the Greek state would theoretically be able to meet at least part of the debt payments due soon without any outside help. See <http://www.time.com/time/world/article/0,8599,2080813,00.html#ixzz27U4AE3Uw>. For the Cypriot case see Terazono, Peel and Hope (2013).

without further ado be viewed as a fiscal transfer between the central bank and the government.

A deeper analysis of this issue has to take into account that our proposal leads to a change of items on the asset side of the ESCB, i.e. an exchange of gold against claims of the debt agency. But whereas gold is a pledge and thus automatically returns onto the ESCB's balance sheet, the purchased sovereign bonds have in the end to be sold actively by the ESCB. (Note also that, for the same reason, a gold-backed bond very much like a covered bond is much more attractive for risk-averse private investors.) This makes significant and permanent fiscal transfers under bond purchasing programmes even more likely. However, it would clearly be preferable to a revival of the ECB bond-buying programme SMP in the shape of the OMT, which shares the same inherent flaw.

Making use of the national central banks' gold reserves is much more transparent, being an important argument vis-à-vis the euro area population and also the European Parliament which traditionally lays much emphasis on transparency of EU governance. It does not necessarily lead to unmanageable and disincentivising fiscal transfers from the North to the South (Belke, 2013). Hence, gold-backed bonds do not imply significant transfers of credit risk between high risk/low risk countries. Potential losses are on closer inspection borne by specific countries and not by the largest shareholder of ECB and main guarantor of the rescue funds. (i.e. Germany). This in turn reduces the probability of a downgrading of Germany and its final step-out from the funds and, thus, makes the ESM firewall more sustainable. This adds to the benefit of gold-backed bonds that also Italy and Portugal would become even stronger guarantors of the ESM.

It could be argued theoretically from a general equilibrium point of view that gold constitutes an asset accruing to the economy as a whole. To pledge it, then means to take it away from debt covered by unsecured bonds or even from the debt of the private sector. A "two-tier market" would emerge: consisting of gold-backed bonds and less attractive uncovered bonds. In that way, the effect of gold-backed bonds might net out. What is more, the introduction of gold-backed bonds might have an impact on the balance sheet of the ESCB through exactly this channel – in combination with a potential impact on the distribution of seigniorage.¹¹ However, under gold-backed bonds you bring in something new to the equation with an asset that was not previously used. An investor holding unsecured debt should not automatically assume that he has recourse to compensation in the form of gold should there be a default on the unsecured bond.

Additionally, the implementation of gold-backed bonds does not shift toxic debt instruments on board the ECB as is the case with respect to the OMTs for which the Governing Council of the ECB has decided on September 6th, 2012, to suspend the application of the minimum credit rating threshold for central government assets as collateral. On the contrary, gold serves as high-value collateral.

Nor does it lead to any sterilization problem and growing problems of exiting unconventional monetary policy which make the SMP path-dependent and nearly irreversible in the short- to medium run which contradicts any bridge-financing character. Simply speaking, a gold-based

¹¹ This argument is well-known from the discussion about the net benefits from the introduction of Eurobonds and from the preferred creditor status or seniority in the case of government insolvency (Modigliani-Miller theorem). I owe this insight to Daniel Gros.

solution would be less inflation-prone. Those arguing that the gold-backing solution would decouple the money supply and hard currency potentially leading to hyperinflation neglect the current non-role of gold for backing a currency.¹² But above all, the use of gold as collateral avoids or at least lessens in importance the reduction of incentives for reform in the beneficiary countries under the SMP and the OMT. The reason is that lacking fiscal discipline or reform effort of a eurozone member country puts its gold reserves at risk and gold thus delivers the best incentive structure. What is more, gold-backing of bonds strictly follows the above mentioned principle that only sovereign funds tend to reveal the true opportunity costs to the initiators.

Remember that we argued earlier in this contribution that the ESCB can *attach conditions to its gold transfer* such as the implementation of structural reforms. The move would not only fix the monetary policy transmission mechanism but also provide the time to implement the necessary reforms.

The main message boils down to the following. First, a gold-backed bond could be justified in the same manner as the SMP and the OMT. Second, a gold-backed bond would not have the intrinsic disadvantages of the SMP and/or the OMT: there is no immediate fiscal transfer, no risk of an inflation tax and it should increase incentives for structural reform and not reduce those. Hence, also countries like Cyprus should think about gold-backing their sovereign bonds instead of selling their gold in order to make sure some sound bridge-financing.

Indeed, gold prices have found themselves in a multi-year rally for which easy global monetary policies have been credited quite frequently. And it has turned out in the meantime that the recent decrease in the gold price since mid-of April has been caused on the one hand exactly by growing concerns that Cyprus would be forced to sell gold from its reserves and, thus, potentially mirrors a stronger monetarisation of gold reserves.

On the other hand, both the recovery of the US currency and US growth forecasts have contributed to the recent fall in the gold price. Gold has been running up in the recent weeks against redemptions by large exchange-traded funds – such as that led by George Soros who significantly profited also from the recent announcement of nearly unlimited quantitative easing by the Bank of Japan - which have been investing in the metal. But note that at the same time central banks and especially small and private investors not only in India and Turkey have invested in gold to an increasing extent.

Returning to the first argument, it is important to note that Cypriot sales volumes are expected to amount to about 10 tonnes but the initial announcement raised some fears that other euro area member countries may feel inclined to sell their gold reserves to shore up their finances.¹³ So the general assessment prevailing on the markets is that “gold should remain in demand as an alternative currency against the backdrop of a possible devaluation race between currencies” or even a currency war.¹⁴ In addition, an increasing number of central

¹² Instead, potential costs would admittedly arise, if the gold pledge would get lost in case of government insolvency and would lack as a backing of the new currency in the case of a eurozone exit of the specific country.

¹³ See A. Belke (2013), Cyprus: Don't Sell, Go for Gold-backed Bonds, The Financial Mirror, 17 April, Web: <http://www.financialmirror.com/news-details.php?nid=29535>.

¹⁴ See D. Shellock (2013): Central Bank Optimism Drives Equities Higher, Financial Times, 7 May, Web: <http://www.ft.com/intl/cms/s/0/64b215fc-b6c3-11e2-93ba-00144feabdc0.html#axzz2Sn3GqFaU>, and A. Belke (2013), Impact of a Low Interest Rate Environment – Global Liquidity Spillovers and the Search-for-yield,

banks interprets falling gold prices as an opportunity to increase their gold reserves. And central banks such as the Central Bank of South Korea emphasise that the recent fall in the gold price is no source of concern because gold positions are part of its long-term strategy of diversifying its currency reserves.¹⁵ Exactly this aspect should make gold investments attractive for investors in general: not only the absolute movements in the price of gold are important but its development *in comparison to* other asset prices such as stock prices. In the past, the incredible increase in gold prices took place independent on the development of stock returns. Gold has thus contributed to a lower volatility exposure of portfolios and thus clearly served as an insurance and stabilisation mechanism. In this context, it is also important to note that gold has preserved its purchasing power, which way well be volatile in the short run, in the medium to long-run. With an eye on the historical experiences with any paper money standard as well as on the current crisis, it seems highly advisable to include gold in any portfolio – because not only the loss of the money’s purchasing power is emanating but there also savers risk to be expropriated as shown by the case of the Cyprus rescue.

What is more, inflation expectations in the euro area are characterised by the stylised fact that a decreasing number of forecasters expect a rate slightly below 2 percent, the ECB’s target rate. Instead, both the likelihood that inflation may take values beyond 2.5 percent and the probability of inflation rates below 1.5 percent have increased substantially.¹⁶ Hence, there is absolutely no necessity to follow those anticipating deflationary momentum only because there is a short- to medium-run buckle in the gold price development.

Hence, seen on the whole, this contribution clearly adopts the expectations of numerous analysts who see the long-term trend into gold as a crisis and inflation-proof save haven as unabated. Particularly since the exit from unconventional monetary policies turns out increasingly difficult due to the lack of interaction among the world’s leading central banks.

Finally, Portugal finds itself in an increasingly dramatic economic downturn and Italy is suffering from declining credibility due to institutional insufficiencies such as quality of government and the rule-of-law. In this scenario, reputational gains by issuing gold-backed bonds appear to be increasingly desirable. Also gold-backed bonds are represent a beneficial way out of the controversially debated gold sales in the context of the Troika agreement.¹⁷

References

- C. Alcidi, P. De Grauwe, D. Gros, Y. Oh: The Future of the Eurozone and Gold, in: Centre for European Policy Studies, CEPS Special Reports, Brussels, 2010.
- Basel Committee on Banking Supervision: Margin Requirements for Non-centrally-cleared Derivatives, in: Consultative Document, Board of the International Organization of Securities Commissions, Basel, Issued for comment by 28 September 2012, 2012.

Briefing paper prepared for presentation at the Committee on Economic and Monetary Affairs of the European Parliament for the quarterly dialogue with the President of the European Central Bank, February, Brussels.

¹⁵ Handelsblatt (2013): Goldeinbruch macht Zentralbanken ärmer, 18 April, Web: <http://www.handelsblatt.com/finanzen/rohstoffe-devisen/rohstoffe/milliardenverlust-goldeinbruch-macht-zentralbanken-aermer/8080182.html>.

¹⁶ See, for instance, M.J. Lamla and J.-E. Sturm (2012), Die EZB und ihre politische Unabhängigkeit, Wirtschaftsdienst, Vol. 92, pp. 85-88, and EEAG (013), Rebalancing Europe, European Economic Advisory Group, Munich, p. 35.

¹⁷ See A. Belke (2013), Cyprus: Don't Sell, Go for Gold-backed Bonds, ...

- D. G. Baur, B. M. Lucey: Is Gold a Hedge or a Safe Haven? An Analysis of Stocks, Bonds and Gold, in: *The Financial Review*, Vol. 5(3), 2010, pp. 217–229.
- A. Belke: 3-Year LTROs – A First Assessment of a Non-Standard Policy Measure, in: Briefing paper prepared for presentation at the Committee on Economic and Monetary Affairs of the European Parliament for the quarterly dialogue with the President of the European Central Bank,, Brussels, March, 2012a.
- A. Belke: Warum Europa keine Schuldenunion werden darf, in: *Financial Times Deutschland*, August 8, 2012b.
- A. Belke: EZB-Bazookas sorgen für Börsen-Strohfeuer, in: *Handelsblatt Online*, September 4, 2012c.
- A. Belke: A More Effective Eurozone Monetary Policy Tool – Gold-backed Sovereign Debt, in: Briefing paper prepared for presentation at the Committee on Economic and Monetary Affairs of the European Parliament for the quarterly dialogue with the President of the European Central Bank, Brussels, September, 2012d.
- A. Belke: Debt Mutualisation in the Ongoing Eurozone Crisis – A Tale of the ‘North’ and the ‘South’, in: Steven N. Durlauf, Lawrence E. Blume (eds.): *The New Palgrave Dictionary of Economics*, Palgrave Macmillan, http://www.dictionaryofeconomics.com/article?id=pde2013_D000273, April 10, 2013.
- Bundesbank: Der Internationale Währungsfonds in einem veränderten globalen Umfeld, in: *Monatsberichte*, Frankfurt/Main, September, 2012, pp. 63-77.
- B. Cœuré: The Euro Area Sovereign Debt Market: Lessons from the Crisis, in: Speech delivered at the 12th IMF Annual Forum on Managing Sovereign Risk and Public Debt: “Managing Sovereign Debt: A Seismic Shift in Demand and Supply Dynamics?”, Rio de Janeiro, June 28-29, 2012.
- A. Quadrio Curzio: Risorse per la Crisi - Prestiti internazionali più facili se mobilitiamo le riserve di oro, in: *Corriere de la Sera*, June 20, 2012.
- M. Draghi: Introductory Statement to the Press Conference, in: European Central Bank, Frankfurt/Main, September 6, 2012.
- European Central Bank: *Monthly Bulletin*, Frankfurt/Main, September, 2012.
- European Commission: *Green Paper on the Feasibility of Introducing Stability Bonds*, in: COM, 818 final, Brussels, November 23, 2011.
- J. Farchy: Case for Gold in the Eurozone Bailout, in: *Financial Times*, November 22, 2011.
- F. Fichtner, S. Junker, K. Bernoth, F. Bremus, K. Brenke, M. Breuer, C. Dreger, C. Große Steffen, H. Hagedorn, D. Kunst, K. Pijnenburg, K. Van Deuverden, M. Winkler: Gebremste Expansion in Deutschland und der Welt, in: *DIW Wochenbericht, Sommergrundlinien 2012, Weekly Report 26-27*, Berlin, 2012.
- German Council of Economic Advisors: *Assume Responsibility for Europe*, in: *Annual Report*, Wiesbaden, 2011/2012.
- J. Kilponen, H. Laakkonen, J. Vilmunen: Sovereign Risk, European Crisis Resolution Policies and Bond Yields, in: *Bank of Finland Research Discussion Papers*, Vol.22, 2012.
- P. Mercier: Keynote Speech, in: *The LBMA Annual Conference*, <http://www.lbma.org.uk/assets/merciertranscript.pdf>, Edinburgh, 2009.

- L. Pleven: All That Glitters...Will Not Solve Europe's Debt Woes, in: Financial Times, December 14, 2011.
- R. Prodi, A. Quadrio Curzio: Euro Union Bonds, Here Is What Must Be Done, in: Il Sole 24 Ore, August 23, 2011.
- A. Rees: Constitutional Court Raising the Green Flag, in: Economics and FI/FX Research, Economic Flash, UniCredit, Munich, September 12, 2012.
- N. Saidi, F. Scacciavillani (2010): Gold in the New Financial Architecture, in: Economic Note, No. 13, December, 2010.
- R. Smits, Innovative Ways Out of the Crisis: Can Gold be Used as Collateral by EU Member States?, Hoofddorp, 2012, web: [http://renesmits.eu/Innovative ways out of the crisis - use of gold as collateral_31 October 2012.pdf](http://renesmits.eu/Innovative%20ways%20out%20of%20the%20crisis%20-%20use%20of%20gold%20as%20collateral_31%20October%202012.pdf).
- S. Steinkamp, F. Westermann: On Creditor Seniority and Sovereign Bond Prices in Europe, in: Institute of Empirical Economic Research, Working Paper, No. 92, August, 2012.
- E. Terazono Q. Peel, K. Hope: Cyprus to Dive into Its Gold Reserves, Financial Times, April 10, 2013, web: <http://www.ft.com/cms/s/0/e0999506-a204-11e2-ad0c-00144feabdc0.html#axzz2Q8ay1wae>.
- G. Tett: Time for Eurozone to Reach for the Gold Reserves?, in: Financial Times, August 30, 2012.
- World Gold Council: Gold's Role in Solving the Euro Crisis, in: http://www.gold.org/government_affairs/new_financial_architecture/gold_and_the_eurozone_crisis/golds_role_in_solving_the_euro_crisis/, 2012.

The following ROME Discussion Papers have been published since 2007:

- | | | | |
|---|------|--|--|
| 1 | 2007 | Quo vadis, Geldmenge? Zur Rolle der Geldmenge für eine moderne Geldpolitik | Egon Görgens
Karlheinz Ruckriegel
Franz Seitz |
| 2 | 2007 | Money and Inflation. Lessons from the US for ECB Monetary Policy | Ansgar Belke
Thorsten Polleit |
| 3 | 2007 | Two-Pillar Monetary Policy and Bootstrap Expectations | Peter Spahn |
| 4 | 2007 | Money and Housing – Evidence for the Euro Area and the US | Claus Greiber
Ralph Setzer |
| 5 | 2007 | Interest on Reserves and the Flexibility of Monetary Policy in the Euro Area | Ulrike Neyer |
| 1 | 2008 | Money: A Market Microstructure Approach | Malte Krueger |
| 2 | 2008 | Global Liquidity and House Prices: A VAR Analysis for OECD Countries | Ansgar Belke
Walter Orth
Ralph Setzer |
| 3 | 2008 | Measuring the Quality of Eligible Collateral | Philipp Lehmbecker
Martin Missong |
| 4 | 2008 | The Quality of Eligible Collateral and Monetary Stability: An Empirical Analysis | Philipp Lehmbecker |
| 5 | 2008 | Interest Rate Pass-Through in Germany and the Euro Area | Julia von Borstel |
| 1 | 2009 | Interest Rate Rules and Monetary Targeting: What are the Links? | Christina Gerberding
Franz Seitz
Andreas Worms |
| 2 | 2009 | Current Account Imbalances and Structural Adjustment in the Euro Area: How to Rebalance Competitiveness | Ansgar Belke
Gunther Schnabl
Holger Zemanek |
| 3 | 2009 | A Simple Model of an Oil Based Global Savings Glut – The “China Factor” and the OPEC Cartel | Ansgar Belke
Daniel Gros |
| 4 | 2009 | Die Auswirkungen der Geldmenge und des Kreditvolumens auf die Immobilienpreise – Ein ARDL-Ansatz für Deutschland | Ansgar Belke |

5	2009	Does the ECB rely on a Taylor Rule? Comparing Ex-Post with Real Time Data	Ansgar Belke Jens Klose
6	2009	How Stable Are Monetary Models of the Dollar-Euro Exchange Rate? A Time-varying Coefficient Approach	Joscha Beckmann Ansgar Belke Michael Kühl
7	2009	The Importance of Global Shocks for National Policymakers – Rising Challenges for Central Banks	Ansgar Belke Andreas Rees
8	2009	Pricing of Payments	Malte Krüger
1	2010	(How) Do the ECB and the Fed React to Financial Market Uncertainty? The Taylor Rule in Times of Crisis	Ansgar Belke Jens Klose
2	2010	Monetary Policy, Global Liquidity and Commodity Price Dynamics	Ansgar Belke Ingo G. Bordon Torben W. Hendricks
3	2010	Is Euro Area Money Demand (Still) Stable? Cointegrated VAR versus Single Equation Techniques	Ansgar Belke Robert Czudaj
4	2010	European Monetary Policy and the ECB Rotation Model Voting Power of the Core versus the Periphery	Ansgar Belke Barbara von Schnurbein
5	2010	Short-term Oil Models before and during the Financial Market Crisis	Jörg Clostermann Nikolaus Keis Franz Seitz
6	2010	Financial Crisis, Global Liquidity and Monetary Exit Strategies	Ansgar Belke
7	2010	How much Fiscal Backing must the ECB have? The Euro Area is not the Philippines	Ansgar Belke
8	2010	Staatliche Schuldenkrisen – Das Beispiel Griechenland	Heinz-Dieter Smeets
9	2010	Heterogeneity in Money Holdings across Euro Area Countries: The Role of Housing	Ralph Setzer Paul van den Noord Guntram B. Wolff
10	2010	Driven by the Markets? ECB Sovereign Bond Purchases and the Securities Markets Programme	Ansgar Belke

11	2010	Asset Prices, Inflation and Monetary Control – Re-inventing Money as a Policy Tool	Peter Spahn
12	2010	The Euro Area Crisis Management Framework: Consequences and Institutional Follow-ups	Ansgar Belke
13	2010	Liquiditätspräferenz, endogenes Geld und Finanzmärkte	Peter Spahn
14	2010	Reinforcing EU Governance in Times of Crisis: The Commission Proposals and beyond	Ansgar Belke
01	2011	Current Account Imbalances in the Euro Area: Catching up or Competitiveness?	Ansgar Belke Christian Dreger
02	2011	Volatility Patterns of CDS, Bond and Stock Markets before and during the Financial Crisis: Evidence from Major Financial Institutions	Ansgar Belke Christian Gokus
03	2011	Cross-section Dependence and the Monetary Exchange Rate Model – A Panel Analysis	Joscha Beckmann Ansgar Belke Frauke Dobnik
04	2011	Ramifications of Debt Restructuring on the Euro Area – The Example of Large European Economies' Exposure to Greece	Ansgar Belke Christian Dreger
05	2011	Currency Movements Within and Outside a Currency Union: The Case of Germany and the Euro Area	Nikolaus Bartzsch Gerhard Rösl Franz Seitz
01	2012	Effects of Global Liquidity on Commodity and Food Prices	Ansgar Belke Ingo Bordon Ulrich Volz
02	2012	Exchange Rate Bands of Inaction and Play-Hysteresis in German Exports – Sectoral Evidence for Some OECD Destinations	Ansgar Belke Matthias Göcke Martin Günther
03	2012	Do Wealthier Households Save More? The Impact of the Demographic Factor	Ansgar Belke Christian Dreger Richard Ochmann
04	2012	Modifying Taylor Reaction Functions in Presence of the Zero-Lower-Bound – Evidence for the ECB and the Fed	Ansgar Belke Jens Klose

05	2012	Interest Rate Pass-Through in the EMU – New Evidence from Nonlinear Cointegration Techniques for Fully Harmonized Data	Joscha Beckmann Ansgar Belke Florian Verheyen
06	2012	Monetary Commitment and Structural Reforms: A Dynamic Panel Analysis for Transition Economies	Ansgar Belke Lukas Vogel
07	2012	The Credibility of Monetary Policy Announcements: Empirical Evidence for OECD Countries since the 1960s	Ansgar Belke Andreas Freytag Jonas Keil Friedrich Schneider
01	2013	The Role of Money in Modern Macro Models	Franz Seitz Markus A. Schmidt
02	2013	Sezession: Ein gefährliches Spiel	Malte Krüger
03	2013	A More Effective Euro Area Monetary Policy than OMTs – Gold Back Sovereign Debt	Ansgar Belke