Journal of International Money and Finance 49 (2014) 443–469

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Enhanced Debt Management: Solving the eurozone crisis by linking debt management with fiscal and monetary policy

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ARTICLE INFO

Article history:
Available online 14 July 2014

JEL codes:
H63
E63
E51

Keywords:
Bank credit
Credit creation
Enhanced Debt Management
Public debt management
Quantitative Easing
Quantity Theory of Credit

ABSTRACT

Unconventional approaches to suit unusual circumstances have become acceptable in monetary policy, a formerly highly conservative discipline. In this paper it is argued that unconventional approaches should also be considered in sovereign debt management, in order to contribute to resolving the eurozone sovereign debt crisis. First, the Troika crisis lending to indebted sovereign borrowers in the eurozone is reviewed and compared with standard IMF post-crisis lending. The main difference and shortcoming is the unsustainable character of the eurozone approach, due to the omission of demand stimulation components. To address this and other shortcomings, the features of an ideal alternative funding tool are identified. It would solve the funding problems of affected sovereigns, help stabilise the banking system, but most of all stimulate domestic demand and hence end the vicious downward spiral. It is found that this funding method can be implemented as part of enhanced public debt management by each nation's debt management office.

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http://dx.doi.org/10.1016/j.jimonfin.2014.06.007

1. Introduction

There is a close link between the European sovereign debt crises and the banking sectors in the affected countries. Bank bail-outs have contributed to the fiscal problems (visibly in Ireland and Cyprus). Sovereign credit ratings and government bond valuations (and hence public funding costs) are affected by the state of the banking sector, since the sovereign is seen as the guarantor of the banking sector. In turn, since banks often own substantial home-country sovereign debt, the perception of public finances affects the stability of the banking sector (reflected in CDS rates, equity valuations and banks' credit ratings).

There are also close links between the situation in sovereign bond markets, debt management policy and fiscal policy on the one hand and the state of the banking system and monetary policy on the other: Basel regulations (since 'Basel I' of 1988 attaching a zero risk-weighting to government bonds issued by OECD member states, requiring no capital for banks to purchase such bonds; since 'Basel II' encouraging risk measurement methodologies that have resulted in a reduction of the capital cover of large banks), the increased reliance on credit rating agencies (whose rating behaviour tends to be lagging, enhancing pro-cyclicality), international accounting standards on marking to market of traded securities (increasing volatility, contagion and pro-cyclicality; thus government bond price changes immediately affect banks) and increased securitisation (thus expanding the impact of mark-to-market rules, since the latter apply to traded instruments); the design of banking systems as highly leveraged operations with a miniscule capital base (usually less than 10% of bank assets, so that a reduction in the value of bank assets, consisting mainly of bank loans and securities holdings, by less than 10% will render the banking system insolvent)[2]; the high degree of inter-bank cooperation needed for continued solvency (guaranteeing contagion of individual bank problems, rendering the inter-bank market systemically critical); the widespread reliance of finance ministries and debt management offices on technical advice from bond underwriters, who are interested parties, incentivized to favour the issuance of traded instruments in public debt management[3]; and the lack of coordination between different policy-makers.

The aim of this contribution is to consider, in the light of these factors, the sustainability of the conventional approach to tackling sovereign debt crises in the European case, and to highlight the role of debt management – specifically the choice of funding instruments – in the propagation, but also resolution of the existing problems. On conventional public debt management, see Dornbusch and Draghi (1990). We consider how 'unconventional' or 'enhanced' debt management fares, compared to the conventional approach, with respect to sustainability and achieving desired overall goals.

In the official joint guidelines of the IMF and the World Bank (2003), *public debt management* is defined as

> *"the process of establishing and executing a strategy for managing the government's debt in order to raise the required amount of funding, achieve its risk and cost objectives … Sovereign debt managers share fiscal and monetary policy advisors' concerns that public sector indebtedness remains on a sustainable path...."* (p. 2).

The IMF/World Bank report also highlights the close link of debt management with financial instability and crises:

> *"A government's debt portfolio is usually the largest financial portfolio in the country. It often contains complex and risky financial structures, and can generate substantial risk to the government's balance sheet and to the country's financial stability. … Poorly structured debt in terms of maturity, currency, or interest rate composition and large and unfunded contingent liabilities have been important factors in inducing or propagating economic crises in many countries throughout history …. By reducing the risk*

[2] A number of proposals have been put forward to tackle this issue, on occasion also referred to as the 'fractional reserve banking' model. These include Kotlikoff's (2010) 'narrow banking' plan, Benes and Kumhof's (2013) 'Chicago Plan revisited' and Dyson et al. (2010) with the updated Robertson and Huber (2001) plan. Alternative proposals preserving the special status of banks have also been tabled (Werner, 2010, 2013c).

[3] An example of evidence on the role of underwriter incentive structures is Flandreau (2013) considering foreign government debt issued over 200 years in London, New York and Paris by emerging economies.

that the government's own portfolio management will become a source of instability for the private sector, prudent government debt management, along with sound policies for managing contingent liabilities, can make countries less susceptible to contagion and financial risk."

The recommendations and policy responses by international organisations such as the IMF, the World Bank and the Basel Committee on Banking Supervision (BCBS) have favoured the increased use of mark-to-market accounting, VaR-based risk management techniques, policies to broaden and deepen sovereign bond markets, greater securitisation, the use of unregulated derivatives, and reduced reliance on bank credit.[4] Moreover, the official IMF and World Bank (2003) guidelines on public debt management include the following recommendations:

"… debt managers should ensure that their policies and operations are consistent with the development of an efficient government securities market … To the extent possible, debt issuance should use market-based mechanisms, including competitive auctions and syndications … Governments and central banks should promote the development of resilient secondary markets that can function effectively under a wide range of market conditions"(p. 8f).

The IMF and World Bank guidelines encourage securitised debt strategies.[5] No non-securitised alternative is discussed or has been debated in the literature. This contribution helps to fill this gap.

Furthermore, despite the recognition by the IMF and World Bank of the close connection between the actions of the fiscal, debt management, monetary and financial regulatory authorities, the institutional design of public policy favoured by them has increased compartmentalisation, resulting in the creation of independent agencies, at arm's length from the government and each other, but each dealing with particular aspects of closely related issues: a Treasury/finance ministry, an independent central bank, a debt management office and often also one (or several) separate financial regulator(s) (such as a Financial Services Authority in the UK). Governments have been advised to de-couple public debt management from fiscal policy considerations, which in turn should be separated from monetary policy due to the widespread legal repositioning of central banks as independent principals (another IMF demand in client countries) (Marcussen, 2005). Debt management is supposed to be 'delegated' to a separate agency—in some countries not staffed by civil servants, but private sector employees.[6] The benefits of explicit coordination have been neglected. The 'sharing' of each other's goals was thought to be enough.[7] Each branch of the executive contributes to (but does not necessarily coordinate with others) monetary, fiscal and regulatory policy. Since the financial crisis such division of competencies has been criticised, and in the UK this structure was reformed in April 2013 with the abolition of the FSA.

Enhanced Debt Management is public debt management that considers all funding options to seek cost-effective solutions, while taking systemic issues and the need for macroeconomic sustainability and establishing a degree of coordination between fiscal, debt management, regulatory and monetary policy into consideration. It suggests options of how to achieve the common goals of sustainable non-inflationary growth with sustainable government budgets and national debt. It is argued that this approach offers a viable and attractive solution to the current eurozone sovereign debt crisis.

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[4] IMF/World Bank (2003) says that "developed domestic debt markets can substitute for bank financing (and vice versa) when this source dries up, helping economies to weather financial shocks" (p. 3), and is backing this with comments by Alan Greenspan (1999).

[5] A move likely welcomed by the large securities underwriting firms who often offer lucrative employment to former IMF and World Bank staff and government officials.

[6] In the words of IMF/World Bank (2003), needed policies include "a sound institutional structure … including clear delegation of responsibilities and associated accountabilities among government agencies involved in debt management … …there should be a separation of debt management and monetary policy objectives and accountabilities" (p. 5f). In the UK, the Debt Management Office is an executive agency of the Treasury, although "it operates at arm's length from Ministers" (DMO, 2013). When the debt management agencies are operated as limited liability companies with staff who are not civil servants, it may be easier for interested parties, such as bond underwriters, to exert undue influence. Bribing corporate staff has, for instance, been a tax-deductable expense in some countries. Thus it may well be that the new institutional regime created new, different potential conflicts of interest and adverse incentive structures.

[7] "Debt managers, fiscal policy advisors, and central bankers should share an understanding of the objectives of debt management, fiscal, and monetary policies given the interdependencies between their different policy instruments" (IMF/World Bank, 2003, p. 6).

2. Comparing the Troika packages with conventional IMF programmes

The dominant conventional approach to sovereign debt crises has been for international organisations to lend more money to the affected countries, with strings attached, such as the well-known IMF conditionality (see Dreher, 2009). The eurozone rescue packages have been authorised by the so-called 'Troika' of the EU, the ECB and the IMF, together with the governments of the crisis-afflicted countries. When comparing these eurozone packages with the traditional IMF lending – such as applied in the Asian crisis (1997–1999) – many similarities are found, but also one fundamental difference.

Concerning similarities, both the IMF packages and the Troika programmes have attached particular conditions to their rescue loans. These have emphasised fiscal consolidation, i.e. significant cut-backs in public spending. The aim of improving the *budget deficit to GDP* and *national debt to GDP* ratios can indeed be pursued by tackling the numerator of these ratios. This makes sense under the *ceteris paribus* assumption that fiscal retrenchment will not reduce GDP – or at least not by more than it reduces the deficits or national debt. Other similarities of conditionality include the 'recommendations' concerning the sell-off of national assets; the closure/merger/sell-off of particular, named banks to 'foreign strategic partners'; the tackling of large-scale bad debts in the banking system or corporate sector by socialising private sector liabilities and burdening the tax payer; and supply-side policies in the form of structural reforms towards greater deregulation, liberalisation, privatisation and cut-backs in the role and influence of the public sector bureaucracy.

Thus the packages contain many common policies which tend to result in a reduction of domestic demand or an increase in supply, which impart deflationary pressures on the economy. However, there is an important difference: The conventional IMF loan packages have since the 1980s almost always contained a significant pro-growth element. It is this feature that is lacking in the Troika programmes in Europe.

Since the mid-1980s, IMF and World Bank packages have included currency devaluation as part of the macroeconomic policy mix, offering a boost to exports and thus mitigating the otherwise significant emphasis on austerity by allowing for at least one avenue of macroeconomic policy to deliver economic growth.[8] The survey of studies by Haque and Kahn (1998) finds that most IMF programmes result in an improvement in the current account balance and the overall balance of payments. The IMF policy-mix has relied on the export sector as the crucial stimulant for growth since the 1980s, in response to criticism of the perceived prior anti-growth bias of earlier packages. Thus in the 1980s a 'new orthodoxy' developed (Sachs, 1987) of lending conditionality consisting of 'growth-oriented adjustment programmes' centred on

> *"'outward-oriented' development strategies, designed to produce export-led growth. Increased exports from the debtor countries are seen as the key to more output, more employment, and more foreign exchange to service the foreign debts" (p. 1).*[9]

Lee and Rhee (2003) evaluate the records of all countries that have experienced a currency crisis and joined 159 independent IMF conditionality programmes between 1973 and 1994.[10] They found that within two years after the beginning of IMF programmes there is a sharp recovery, whereby

[8] A majority of IMF programmes is applied to countries that have floating exchange rates (or have recently had to abandon fixed or pegged exchange rate regimes, such as in the case of Thailand, Indonesia and Korea right until the Asian crisis). Knight and Santaella (1997) argue that IMF programme components tend to include measures to increase fiscal revenues, reduce government expenditures, tighten domestic credit, and adjust the exchange rate. Conway (1994) also finds that participation in IMF packages results in lower public investment, reduced budget deficit or increased surplus, and a real depreciation of the exchange rate.

[9] Sachs describes this new IMF orthodoxy as consisting of trade liberalisation, currency depreciation and deregulation and privatisation of the economy. "This "liberalization package" is urged by the U.S. government as part of the Baker Plan, by many influential academicians, and by the IMF and World Bank …" (Sachs, 1987, p. 2).

[10] Using data from the IMF Annual Reports, they identify a total gross number of programmes of 455, consisting of 345 standby arrangements, 42 extended fund facility (EFF) arrangements, 44 arrangements under the structural adjustment facility (SAF) or the enhanced structural adjustment facility (ESAF) and 21 combined programmes of two or more such facilities. They reach the net number of programmes by subtracting double-counting and prior ongoing programmes before crisis-related programmes were commenced.

"the country's export expansion and expansionary macroeconomic policy are highly correlated with the prompt post-crisis recovery" (p. 541).[11]

The modification of IMF policies to stimulate growth is not without logic: Economic growth is important for the sustainability of public debt. Tax revenues and government expenditure on social welfare tend to be functions of economic growth, and economic growth reduces therefore deficit/GDP and debt/GDP ratios by reducing the numerator and increasing the denominator simultaneously. Suitably high economic growth can be argued to be the only way for indebted countries to service and repay their debts, without the alternatives of high inflation, debt forgiveneess/haircuts or default.[12]

Thus the ultimate success of post-crisis policy packages hinges on their ability to stimulate demand.[13] The currency depreciation aspect of IMF packages may constitute a more important aspect than is commonly recognised in achieving overall success. It is precisely this redeeming, pro-growth feature of IMF packages that is missing in the Troika packages for the crisis-affected eurozone economies: exit or devaluation is politically deemed not to be an option. As a result, the restrictive aspects of the conventional approach to the resolution of the European sovereign debt crisis must dominate.

This paper is not concerned with options that are currently without broad political support, and that includes an exit from the eurozone (and hence depreciation), default, or the introduction of eurobonds.[14] Instead, the purpose is to seek an option that avoids default or devaluation, does not rely on European-level socialised risk or fiscal transfers ('transfer union'), while not suffering from the drawbacks of the current (conventional) approach. Furthermore, ideally a solution would rely on domestic demand, not export demand, since even foreign growth cannot be relied upon in times of global instability. Below, the problems of conventional policies are listed and then the features of an ideal solution are specified.

Key problems with the conventional policies in the case of the eurozone crisis are:

(a) Conventional responses to banking, sovereign debt or balance of payments crises centre on large loans from external lenders and thus do not reduce the *total debt burden* of the affected country (Werner, 2012b). They increase total debt – the 'loan shark's solution' – rendering the total (though not immediate) interest burden even heavier. Aggregate eurozone public debt increases, rendering debt problems less, not more sustainable.
(b) Troika conditions focus on fiscal retrenchment, while not including an explicit growth policy (see McKee et al., 2012; Stuckler and Basu, 2013; also on the devastating results for public health: Karger, 2014).
(c) As economic growth contracts or stagnation becomes prolonged, more bank assets become non-performing (Werner, 1997b, 2013a,b). This could result in a significant further increase in

[11] However, the recovery does not take GDP back to its pre-crisis levels, while employment growth remains sluggish throughout, leaving unemployment at a higher level "for a long period after the crisis, even if output growth, inflation rates, etc. are restored to their pre-crisis level" (p. 541).

[12] For the relationship between debt, interest and growth, see Tim Congdon's (1988) classic account.

[13] This is recognised by most investors. For instance, Andreas Utermann, chief investment officer of RCM, the equity fund manager owned by Allianz, was quoted on the UK cover page of the Financial Times upon the announcement of the July 2011 Greek rescue package: "The trouble with all this is that the crisis will only be on its way to full resolution when it becomes clear the eurozone, and in particular the periphery have achieved satisfactory growth rates" *(Financial Times*, Euro rescue deal fails to dispel fears, 23 July 2011). See also the CEO of PIMCO, Mohammed El Erian, on the revised Cyprus rescue: "These challenges are significant, and they will not be overcome easily and immediately. Yet, as large as they are, they pale in comparison to the big elephant in the room: the rescue contains very little to enhance Cyprus's ability to grow and create jobs." (Cyprus: Better Designed Rescue, Challenging Implementation, *Huffington Post*, 25 March 2013). The literature is not in agreement about the total impact of IMF programmes on growth. This is due to different methodologies and samples. Studies that found significant declines in output growth due to the participation in IMF programs include Przeworski and Vreeland (2000), while those with significantly positive output effects include Dicks-Mireaux et al. (2000). Hutchison's (2003) careful methodology yielded a significant decline in output, but this is followed by a significant rebound. Hutchison finds that domestic credit growth, which is commonly restricted as part of the conditionality, also falls significantly under IMF programmes.

[14] Eurobonds are being criticised for further socialising costs across Europe and creating adverse incentive problems, in addition to the absence of a unified fiscal policy or European finance ministry – the latter of which raise a number of other issues.

sovereign liabilities, exacerbating the sovereign debt crisis and further undermining banking systems, as capital flight to core eurozone countries increases (see also the literature on TARGETII).

(d) Continued stagnation means that fiscal deficit/GDP and national debt/GDP ratios remain high due to a falling denominator, despite radical fiscal tightening. As a result, second and third lending packages to affected countries were negotiated – anecdotal evidence of unsustainable projections; more rigorous empirical evidence will be examined below.

(e) The Troika rescues are funded largely by core eurozone countries, especially Germany (the largest net contributor to the EU, Paterson, 1996). Thus a degree of socialisation of risk and the liabilities of affected countries is taking place, which creates adverse incentives and also increases the indebtedness of the less indebted eurozone members, while increasing total debt (as noted in point (a) above).

3. The financial programming model and the Quantity Theory of Credit

The above problems and causal links render the overall problems larger, not smaller. This can be demonstrated in a simple macroeconomic model, based on the IMF financial programming model – one of the most widely used macroeconomic policy models in the world and of course the model applied whenever the IMF engages as lender with a receiver country.[15] It can be described as "a simple flow-of-funds accounting framework of key macroeconomic relationships" (Mussa and Savastano, 2000). The latter authors point out that the policy measures "on which almost all IMF programs focus are the public sector deficit and the creation of domestic credit …" (as quoted in Easterly, 2002, p 3). Surprisingly, not many economic models used in the academic literature have been explicit about the role of these variables. In this section this gap is being addressed.

The IMF's financial programming starts with the traditional 'quantity equation': The basic work horse is that presented by Friedman (1956), where P is the price level, Y stands for real GDP, V for the velocity of money (assumed to be stable) and M for the money supply:

$$PY = MV \tag{1}$$

Equation (1) is a restricted version of Fisher's transactions equation of exchange (2), which says that the money used to defray transactions is equal to their value:

$$PQ = MV \tag{2}$$

Thus equation (1) is true if nominal GDP is a good proxy for the value of all transactions. This may have held true in the 1950s, when Friedman postulated (1). However, it needs to be adjusted to reflect the significant changes in the financial systems since the 1950s. In particular, it is not true that money is primarily and exclusively used to fund transactions that contribute to GDP, so that non-GDP transactions (such as all financial or asset transactions) can safely be ignored. Many economies experience asset transaction volumes and asset stock accumulations that in size amount to large multiples of GDP. In this case, equation (1) will deliver misleading results, including the illusion of a 'velocity decline'. Hence a more differentiated equation of exchange is called for, such as proposed by Werner (1992, 1997, 2005, 2012a). It is necessary (and possible) to disaggregate the credit aggregate into that credit used to defray GDP transactions (C_R), and that credit used for transactions not contributing to GDP (financial transactions, C_F)[16]:

[15] Easterly (2002) explains: "One of the most widely used applied models in macroeconomics is the financial programming model of the International Monetary Fund. The IMF emphasizes monetary, balance of payments, and fiscal identities in its design of macroeconomic programs for developing countries with goals for inflation and foreign exchange reserve accumulation, and secondarily for calculating debt relief requirements and import requirements for growth" (p. 2f).

[16] This is an old idea, mentioned by Fisher (1926), Keynes (1930) and Friedman (1956), but was abandoned, since "dollars of money are not distinguished according as they are said to be held for one or the other purpose" (p. 61). In other words, such a disaggregation could not be implemented while money was defined as bank deposits. However, as Werner (1992, 1997) argued, this is possible when using the credit counterparts definition of money. Considering growth, we can also write, using $\dot{n}$ to denote growth of nominal GDP (P_RY) and $\dot{c}_R$ credit creation for GDP transactions: $\dot{n} = v\,\dot{c}_R$.

$$C = C_R + C_F \tag{3}$$

Deploying this in a disaggregated quantity equation, we obtain for nominal GDP:

$$C_R V_R = P_R Y \tag{4}$$

In words, nominal GDP growth is a stable function of credit creation for transactions that contribute to GDP. This can also be called a disaggregated 'credit counterparts' approach, to use the Bank of England's terminology.[17] Adding recognition of credit creation and credit rationing by banks, this forms the Quantity Theory of Credit. Empirically, it is well established that bank-created money (credit creation) can be used for transactions that do not contribute to GDP (Werner, 1992, 1997). In the case of the UK, the value of such non-GDP transactions (i.e. financial or asset transactions) is a multiple in size of transactions that are part of GDP.

This disaggregated quantity theory of credit also recognises banks as creators of domestic credit and the broad money supply (see also Ryan-Collins et al., 2012; Bank of England 2014a, b). By disaggregating credit creation into that part which funds (and determines) nominal GDP and that part which does not contribute directly to GDP (credit for asset and financial transactions), Werner (1992, 1997) solved the empirical problem of the apparent velocity decline or breakdown of the money demand function, demonstrating that the true velocity had remained stable and hence reestablishing a reliable link between the monetary side of the economy and the real economy, as in equation (4). This says that credit for GDP transactions C_R determines nominal GDP (for empirical tests of this relationship see Werner, 1997, 2005; Lyonnet and Werner, 2012).[18]

Next consider the government budget deficit, which is the change in national debt, given by the excess of government expenditure over tax revenues:

$$\Delta D = G - T \tag{5}$$

whereby taxes T are a fraction of nominal GDP

$$T = t(P_R Y) \tag{6}$$

As modelled in the IMF's financial programming, the budget deficit can be funded from domestic credit creation from the central bank or the banks, sales of bonds to domestic investors or sales of bonds to foreign investors (Mikkelsen, 1998; Easterly, 2002). However, in order to reflect the eurozone institutional design of monetary policy, we must rule out central bank money creation as an autonomous option for a national government (governments have delegated direct involvement in the money supply to the ECB, the System of European Central Banks and the banking system). Also, to keep the model parsimonious, assume a closed economy and no bond issuance to foreigners (it is easier to show an unsustainable fiscal situation in the presence of foreign indebtedness). Finally, we do not consider interest on past debt (the secondary deficit) and instead focus on the primary deficit (as is common in IMF financial programming). This biases the model against us, as it is easier to demonstrate a lack of fiscal sustainability when compounding interest and the secondary deficit from servicing the outstanding debt are added to the analysis.

The government finances its government deficit by issuing bonds, purchased by domestic non-bank investors:

$$\Delta D = \Delta B \tag{7}$$

[17] Defining the money supply by its credit counterpart and disaggregating it into credit creation for GDP transactions, which determine nominal GDP, and credit creation for non-GDP transactions, which determine asset transaction values ('Quantity Theory of Credit', Werner, 1992, 1997).

[18] This replaces the conventional quantity equation 'PY = MV', which ignores financial transactions. They are not part of GDP, but can be an important destination for the use of money and credit.

Consider now the deficit/GDP ratio:

$$\Delta D/P_R Y \tag{8''}$$

We can substitute equations (4) to (7) into (8) to show how the fiscal situation is related to monetary factors:

$$\Delta D/P_R Y = \Delta B/P_R Y = G/V_R C_R - T/V_R C_R \tag{8'}$$

Equation (8') shows that for any level of government expenditure G and tax revenue T, the deficit to GDP ratio (i.e. the net bond issuance) rises, as domestic credit expansion C_R declines. On the other hand, for any given level of credit creation C_R, an increase in government expenditure G or a fall in tax revenues increases debt – as it is not able to boost nominal GDP, which is determined by credit creation C_R.

This indicates that it is not entirely misguided to consider cutting expenditure G and raising the tax rate t in order to reduce the fiscal deficit, as the IMF has imposed in its conditionality. Equation (8'), together with equation (7) also shows that such policies to increase taxes implement a transfer from tax payers to bond holders, i.e. they constitute regressive tax policy. However, if credit creation is negative and hence the economy continues to shrink, such policies cannot offer a solution. To the contrary, shrinking nominal GDP growth results in bankruptcies, rising unemployment and a deterioration in the fiscal balance. Bankruptcies, however, also increase bad debts in the banking system, rendering banks more risk-averse and likely to reduce domestic credit expansion C_R further. In other words, as long as credit creation shrinks, there is no escape from the recessionary spiral – as Japan demonstrated during the past twenty years (Werner, 2005).

The model, and especially equation (8'), highlights the pivotal role of C_R and the risks of engaging in policies that may have a negative side effect on C_R, such as the laudable idea to require banks to increase their capital adequacy (measured for our purposes by the simple capital to asset ratio c/a) – laudable, but a decade too late (if announced in 2004, it might have helped prevent the unsustainable credit bubbles in Ireland, Portugal, Spain and Greece that are the cause of their travails). Why the policy makers did not consider this option in the years before 2007 (given the warnings published in time, such as Werner, 2003, ch. 18), and why they think the years during or after a banking crisis are the right time to introduce such measures is puzzling, though not unpredictable (Werner, 2005).

If we now add that the sovereign credit rating (SCR) is a negative function of the deficit-GDP ratio (among other factors):

$$\text{SCR} = \text{f}(\Delta D/PY, \ldots), \text{with } \delta\text{SCR}/\delta D < 0 \tag{9}$$

and that banks' stock price aggregate (S_b) is negatively affected by a reduction in the SCR, since banks hold substantial legacy amounts of national government bonds:

$$S_b = f(\text{SCR}, \ldots), \text{with } \delta S_h/\delta\text{SCR} > 0 \tag{10}$$

and that a lower stock price renders equity or debt issuance to shore up bank capital more difficult, hence tending to increase the cost of bank capital cc

$$\text{cc} = f(S_b, \ldots) \text{with } \delta\text{cc}/\delta S_b < 0 \tag{11}$$

and if we further postulate that banks' appetite to extend bank credit to the private sector real economy is a function of the desired capital adequacy ratio (c/a)*; is also inversely related to corporate bankruptcies X, as these increase non-performing loans and hence banks' risk aversion,

$$\begin{aligned} &C_R = f(\text{cc}, c/a^*, X, \ldots), \\ &\text{with } \delta C_R/\delta\text{cc} < 0, \delta C_R/\delta c/a^* < 0, \delta C_R/\delta X < 0 \end{aligned} \tag{12}$$

we see how a negative feedback exists that is unsustainable:

$$C_R\downarrow \rightarrow P_R Y\downarrow \rightarrow \Delta D\uparrow \rightarrow \text{SCR}\downarrow \rightarrow S_b\downarrow \rightarrow cc\uparrow \rightarrow C_R\downarrow$$

When shrinking bank credit creation C_R results in a larger-than-expected deficit (ΔD, equation 8'), the credit rating agencies downgrade the sovereign credit rating (SCR, equation (9)). The latter results in lower stock prices (S_b, equation (10)), which render raising capital more expensive for banks (cc, equation (11)). Banks can achieve a targeted capital adequacy ratio by raising capital or reducing assets. So for any imposed capital adequacy ratio c/a*, a higher cost of capital cc is likely to encourage banks to lower bank credits outstanding C_R, in order to lower the denominator of the capital-asset ratio c/a (equation (12)). But lower bank credit creation C_R must increase the government deficit (ΔD, equation 8'), resulting in a further downgrading of the sovereign credit rating, so that the vicious cycle continues.

We also see that the downward spiral is exacerbated by any ill-timed regulatory attempt to *increase* banks' desired capital-asset ratios during this process (equation (12)), which is what happened in recent years in the eurozone under Basel III. The downward spiral would have happened without this, as we see from the equations above, and as the empirical evidence on Japan has demonstrated; but raising capital adequacy requirements accelerates the negative feedback, as had been warned (Werner, 2005).

The above unsustainable cycle interacts with the other negative feedback loop not explicitly modelled here, but implicit in equation (4), namely that lower credit creation for GDP transactions, if falling below the full-employment level of output, will result in unemployment and corporate bankruptcies (X, for exit), which in turn increase banks' non-performing loans (NPL), making them more risk-averse (RA) and hence likely to reduce credit creation again. Both negative feedback loops are illustrated in Fig. 1.

Hence the model indicates that the Troika's policies towards crisis-affected eurozone economies are unsustainable. Anecdotal empirical evidence seems supportive: the Eurostat figures for eurozone national debt in Q1 2013, despite record fiscal tightening, showed risen debt, reaching a new record high of E8.75 trn (92.2% of annual GDP). Some of the biggest rises were recorded by Greece, whose debt rose to 160.5% of GDP (up from 156.9% at the end of 2012), Portugal, whose debt rose to 127.2% of GDP (up from 123.8% three months earlier and 112% a year before), Ireland, whose debt reached 125% of GDP (up from 107% of GDP a year earlier), and Italy (reaching 130.3%, up from 123.8% a year earlier; Evans-Pritchard, 2013a, b).

A sustainable solution without euro exit or default must address the two core issues, namely the need to generate economic growth (without which the state of government finances and the banking sector deteriorate further) and the need to cut through the Gordian knot of the negative feedback between banking sector stability and sovereign credit rating.

One possibility was proposed by the president of the ECB, Mario Draghi, on 6 September 2012, namely that the ECB would engage in 'outright monetary transactions' (OMT), acting effectively as the lender of last resort also to governments, in return for acceptance of Troika conditionality and loss of fiscal control to the ESM (Draghi, 2012). However, there are problems with this approach: Firstly, its legality is in dispute, since it is likely at least to breach the spirit of the no-bailout clause, if not its letter (Siekmann, 2011, 2012). Secondly, similarly to eurobonds, risk would be socialised at the European level, creating moral hazard. Thirdly, new macroeconomic costs may be incurred in the eurozone if outright monetary transactions, due to their expansion of the money supply, result in inflation, asset inflation or other transfers. As inflation is recognised as a common policy adopted by indebted governments to reduce the real debt burden, a further erosion in policy credibility is possible. Fourthly, it is not clear that this solution will be able to tackle the fundamental problem of lack of growth in the affected eurozone periphery: there is no empirical evidence that ECB open market purchases are associated with greater economic growth in the affected countries. To the contrary, in the UK case, such

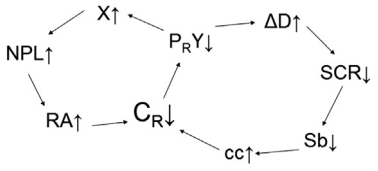

Fig. 1. Negative feedback loops after banking crises.

'quantitative easing' has been shown to have a negative coefficient when regressed on nominal GDP growth (Lyonnet and Werner, 2012a).

4. A better option: Enhanced Debt Management

The crisis started in the sovereign bond markets. When the crisis flared up in Greece in late 2009, yields on outstanding government bonds began to rise, reaching 61% in July 2011 for 5-year government bonds, and 35% in January 2012 for 10-year bonds. The pattern was similar in Ireland, Portugal and Cyprus, with, for instance, Portuguese 5-year government bond yields reaching 18% in December 2011. Even Spanish and Italian bond yields were significantly elevated at the height of the crisis, with Italian ten year benchmark government bond yields approaching 7% in December 2011 and January 2012 and similarly so for Spain in July 2012.

These rising bond yields are problematic, because if newly issued debt requires similarly high issuance yields, servicing the national debt becomes more burdensome, exacerbating the deficit and debt problems and sowing further doubts on the sustainability of the debt. The problem is that speculators may therefore create a situation whereby their collective action of shorting the government bonds of a high-debt country, by raising yields, becomes self-fulfilling, since this action makes the debt more unsustainable and creates incentives for other investors to sell off their bond holdings, further raising yields. It is known that a large proportion of investors pursues 'momentum' strategies, act as a herd and thus can create self-fulfilling outcomes – a vicious cycle in this case (on momentum trading and herding behaviour, see Grinblatt et al., 1995; Shiller and Pound, 1989; on herding see Banerjee, 1992; Brennan, 1990; Froot et al., 1992; Hirshleifer et al., 1994).

So a core problem is a funding problem – which is why the conventional solution has been to offer external funding from the Troika. The first question should thus be whether all funding options have been considered and exhausted.

The government can fund the public sector borrowing requirement by issuing plain vanilla bonds, bonds with complex and variable interest, indexed bonds, bonds with restrictive covenants and optionality, and synthetic constructions of state contingent debt (by managing the maturity structure of non-contingent debt; see Buera and Nicolini, 2004; Barro, 1997; Bohn, 1988, 1990; Calvo and Guidotti, 1990). A large number of derivatives may be created to facilitate the construction of an optimal debt structure and the management of outstanding debt. All of these possibilities have in common that they refer to securities or otherwise tradable instruments. However, part of the problem, identified above, is the very nature of such tradable instruments: they are subject to speculative attacks, and all corporate owners, in line with GAAP or IFRS accounting standards, have to mark their holdings of such instruments to market. This gives significant leverage to speculators: especially when the 'free float' of actually traded securities, for instance a particular type of government bond, is small, and the majority are in the hands of stable, long-term investors (such as pension funds, insurance companies or, indeed, certain types of banks). Then it is not impossible for speculators to 'corner' the market for traded securities, drive down their prices, force accounting losses on a far larger group of investors, resulting in further liquidations.[19] This accelerates the cascading effect of rising sovereign bond yields and their joint negative impact on banks in the country and the fiscal condition – all of which in turn creates reasons for bond prices to fall further.

Since the tradability of the debt instruments and the requirement by holders to mark them to market is an important propagation mechanism for the crisis, which is exacerbated by the effect of ratings downgrades on debt instruments, a solution would be for governments to issue non-tradable debt which, according to GAAP, does not have to be marked to market and is not rated by the rating agencies. This would unravel the Gordian knot of the contagion between the state of banks and public finance.

Based on our analysis, it is possible to specify the features of an alternative, ideal funding in the form of non-traded debt. One can then examine whether it might be possible to design the appropriate

[19] On market manipulation and the free float, see for instance, Allen et al. (2006), Järvinen and Käppi (2004).

instrument that meets those criteria – possibly using the advanced financial engineering skills of leading experts in debt origination.

If the non-tradable debt instrument could also raise the borrowed funds at a lower cost than that required in the bond markets, the proposition would be highly compelling for the finance ministry or debt management office. Better still if this debt instrument could at the same time solve the problem of shrinking domestic demand and lack of growth stimulus, by somehow acting to boost domestic demand, solving this core problem of eurozone rescues. But if on top this non-tradable debt instrument could also be issued entirely domestically, not involving foreign investors, a further propagation mechanism of the crisis could be eliminated (foreign, especially short-term, liabilities have been recognised in the literature as being a key factor in triggering sovereign debt and balance of payments crises; see Rodrik and Velasco, 2000; Gros, 2013). In addition, this would mean that the debt problem would not be socialised across the eurozone, would not require any 'transfer union' features and would not create adverse incentives, such as moral hazard. It would also mean that the aggregate total debt would be smaller, since the institutions or countries acting as lenders in the conventional rescue packages would then not have to get indebted in order to lend these funds. If, finally, this non-tradable form of government borrowing would also provide a boon to the domestic banks, offering increased revenues that they can use to organically build up reserves and larger capital buffers, then the last of the problem features of the conventional approaches could also be addressed.

But is it possible to design a funding instrument with all these desirable features, namely that it is

(a) non-tradable and would not need to be marked to market by investors, but instead could be kept on their books at face value;
(b) cheaper, requiring a lower interest rate, than the crisis-period bond market yields;
(c) available without rating from the credit rating agencies and hence also not affected by potential ratings downgrades;
(d) available domestically, hence not requiring borrowing from abroad, thus resulting in lower total debt and greater fiscal and financial stability domestically and in the eurozone;
(e) generating returns for the domestic banking sector, allowing organic growth of reserves and capital buffers;
(f) boosting domestic demand, delivering overall economic growth, and hence lower deficit/GDP and debt/GDP ratios by increasing the denominator; such reliance on domestic demand would be superior to the reliance on external demand of IMF-style packages, as foreign demand is an exogenous factor.
(g) available without the conditionality of required deep fiscal tightening, asset sell-offs and deflationary structural reform?

Given how utopian the wish-list may already appear, one might as well add another, even taller-sounding feature, which would be the most attractive of all: The ideal alternative funding source would also

(h) be available on demand by being created *ex nihilo* domestically, without the need for any capital by the lenders.

Should such a debt instrument or funding source exist, it would be the most attractive source for the sovereign borrowers concerned, and not utilising it would be negligent. To find it, one could ask the debt origination experts at a leading international bond investment bank whether it could be designed. But securities firms could hardly expect to earn money on such an instrument. Fortunately, they will not be needed to design such an instrument: It already exists.

It is one of the oldest and simplest debt 'products' in existence: *a bank loan contract.* In our modern monetary system, which is dominated by digital money transactions, the total amount of digital money is controlled by banks and their bank credit creation (Werner, 2005; Ryan-Collins et al., 2012; Bank of England 2014a, b). For nominal GDP to grow, more (GDP-based) transactions must take place. This requires a larger amount of money to change hands to pay for this larger amount of transactions. The

main way in our debt-based monetary system for more money to be used for transactions is for banks to create more bank credit. In other words, banks need to find borrowers willing and able to borrow from them, so that they can purchase the promissory notes issued by these borrowers. Such promissory notes can be tradable (corporate bonds for instance) or non-tradable (such as standard loan contracts).

Past approaches to debt management have focused on a narrow set of funding tools and debt restructuring, including complex derivative instruments. But the simplest, most plain-vanilla of debt instruments, the bank loan contract, has been unduly neglected, despite superior characteristics.

Enhanced Debt Management suggests that governments of crisis-affected countries should immediately halt the issuance of new government bonds and also the borrowing from the Troika, and instead raise the public sector borrowing requirement by entering into loan contracts from the banks in their country. Since aggregate private debt is much larger than government debt, and banks are the single biggest providers of the former, they are also able to provide for all the funding needs of the government. Banks used to be involved in direct lending to governments, but as the IMF/World Bank manual underlines, this has been actively discouraged for the past twenty years or so.[20]

From our model we can immediately see the advantage of bank financing of the government deficit, as this possibility is reflected in a more complete equation for government funding. It turns out equation (7) was a special case of the more general equation (13), whereby additionally it was assumed that no bank funding was to take place (15):

Hence there are two options to finance the deficit:

$$\Delta D = \Delta B + \Delta C_{RG} \tag{13}$$

whereby

$$C_R = C_{RG} + C_{RP} \tag{14}$$

i.e. bank credit creation for GDP transactions can be disaggregated into such bank credit extended to the public sector (C_{RG}) and to the private sector (C_{RP}). Equation (13) is by no means unusual. Instead, it conforms to the standard IMF programming formula of the options to fund the budget deficit, for instance, as described by IMF (and World Bank) staff Fisher and Easterly (1990) or Mikkelsen (1998). It seems, this possibility has however been neglected by the members of the Troika, including the IMF itself.

It is now possible to compare the case of bond issuance with the case of bank credit finance:

Case A (bond finance):

$$\Delta C_{RG} = 0 \tag{15}$$

$$\Delta D/P_R Y = \Delta B/P_R Y = G/V_R C_R - T/V_R C_R \tag{8'}$$

As discussed, this describes an unsustainable situation, whereby reductions in bank credit will result in rising deficits, which in turn will result in lower credit extension. The situation is different in the case of bank credit finance:

Case B (bank finance):

$$\Delta B = 0 \tag{16}$$

so that equation (13) simplifies to

$$\Delta D = \Delta C_{RG} \tag{17}$$

And the deficit/GDP ratio becomes:

[20] Concerning government borrowing from foreign banks, this was fairly common for emerging markets in the past. The Brady plan of 1989 switched bank lending to emerging market sovereign borrowers into tradable securities.

$$\Delta D/P_R Y = \Delta C_{RG}/V_R C_R \tag{8''}$$

Equation (17) now replaces the former equation (7). To simplify further, assume that private firms are repaying as many loans as they are taking out, so that real circulating bank credit to the private sector remains unchanged:

$$\Delta C_{RP} = 0 \tag{18}$$

so that

$$\Delta C_R = \Delta C_{RG} \tag{19}$$

Equation (8'') then becomes:

$$\Delta D/P_R Y = \Delta C_R/V_R C_R \tag{8'''}$$

Equation (8''') describes the static relationship in a sustainable dynamic process, whereby any given deficit results in credit creation for GDP transactions, which, according to equation (4) boosts nominal GDP and according to equation (6) increases tax revenues, thus reducing the deficit, rendering the new required credit creation in the following period smaller, until the deficit has disappeared. The economy can of course continue to grow, as (a) the government is free to borrow and thus boost credit creation even without a deficit, and (b) in reality bank credit to the private sector, ΔC_{RP}, is likely to expand, as banking sector health is restored and the economy recovers. Higher nominal GDP means that the deficit to GDP ratio declines. Thus we know over time, as credit creation rises:

$$\lim_{t\to\infty} \Delta D/P_R Y = 0 \tag{20}$$

The deficit to GDP ratio will approach zero, as credit creation for GDP transactions boosts the denominator and increased tax revenues and reduced government expenditure reduce the deficit. In contrast to the unsustainable (explosive) deficit situation with bond issuance for government funding in case A, the new policy of not issuing bonds and borrowing from banks is sustainable and delivers the desired policy outcomes.

4.1. Quantity crowding out due to bond issuance

During major recessions and banking crises with corporate bankruptcies, rising bad debts and large-scale unemployment there may not be much demand for bank loans from the private sector (while banks may be reluctant to lend to private sector borrowers due to their higher degree of risk aversion that results from their rising portfolio of non-performing loans). It is thus almost by fortunate coincidence that the nations affected by the sovereign debt crisis experience a government funding problem: their governments are keen to borrow money. When this takes the form of bond issuance that is not bought by banks (case A above), there is no increased credit creation and hence there cannot be an increase in economic growth. A missed opportunity, and a situation whereby 'Keynesian' government spending will not be effective. Considering changes (growth), this can be seen by dividing nominal GDP growth into private (consumption C + private investment I + net exports NX) and public expenditure (G, equation (23)), substituting in equation (21), the growth version of equation (4), and solving for private nominal GDP as dependent variable:

$$\Delta(P_R Y) = V_R \Delta C_R \tag{21}$$

$$\Delta(P_R Y) = \Delta G + (\Delta C + \Delta I + \Delta NX) \tag{22}$$

$$(\Delta C + \Delta I + \Delta NX) = V_R \Delta C_R - \Delta G \tag{23}$$

We expect in an empirical test of case A that the coefficient of ΔG is negative and significant (and in an ideal world without data inaccuracies approaches −1). In other words, to the extent that non-banks

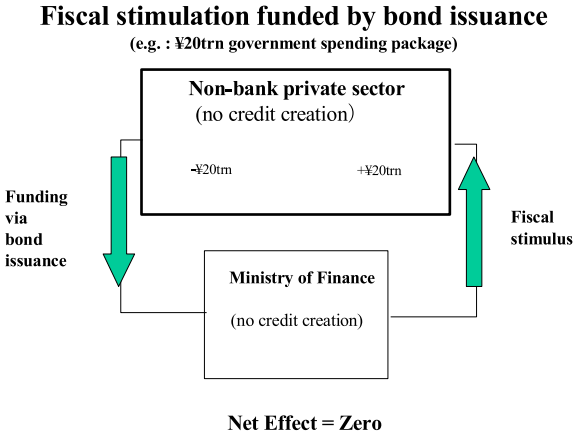

Fig. 2. Traditional bond finance and crowding out of private demand.

purchase government bonds issued by the government to fund its fiscal expenditure, these will crowd out private demand. This is indeed what Werner (2012a) reports for Japanese data, robust over different time periods. To the extent that banks purchase government bonds, this will increase bank credit creation, but the banks' own stability is affected when the credit rating of the sovereign issuers is downgraded or bond market speculators sell the government bonds. As discussed above, in this case the tradability of these credit instruments is problematic. Hence a simple switch from tradable IOUs to non-tradable IOUs offers tantalising prospects.

Fig. 2 shows the impact of non-monetised fiscal policy on the amount of money circulating in the economy: as the government borrows from the non-bank private sector to fund government expenditure, there is no increase in the amount of money circulating in the economy. Since the latter has been shown to determine nominal GDP growth (Werner, 1997, 2005), such fiscal policy cannot address the problem of weak economic growth. Fig. 2 illustrates the situation when government fiscal stimulation is funded by the issuance of bonds that are primarily bought by the non-bank sector. As no new money creation takes place, the bond issuance must crowd out private activity.

Fig. 3 illustrates the situation when a given government expenditure stimulus is funded by borrowing from banks via loan contracts. This increases bank credit creation for GDP transactions and hence the money supply. Nominal GDP is boosted.

5. Empirical evidence

The model of nominal GDP growth recognises banks as creators of the money supply, suggesting causation to run from credit aggregates to other variables.[21] Empirical work has found support for these features of the model. Werner (1997, 2005) on Japan; Lyonnet and Werner (2012) on the UK and

[21] See also Werner (2005, 2012a,b). Lyonnet and Werner (2012) apply the model to the UK and present empirical evidence that GDP growth is linked to and unidirectionally Granger-caused by bank credit growth extended for real economy transactions. The Bank of England and the ECB recently endorsed the Quantity Theory of Credit: The former justified the Funding for Lending Scheme (FLS) by arguing that a successful quantitative monetary stimulation policy needs to be "designed to incentivise banks and building societies to boost their lending to UK households and private non-financial corporations (PNFCs) — the 'real economy'" (Churm et al., 2012). This is C_R in equation (4), while the precise definition used by the Bank of England for FLS (Churm et al., 2012) mirrors that presented in Lyonnet and Werner (2012), which was submitted to the Bank of England in July 2011, and presented to the ECB in November 2011. On 5 June 2014, the ECB announced "measures to enhance the functioning of the monetary policy transmission mechanism by supporting lending to the real economy" (http://www.ecb.europa.eu/press/pr/date/2014/html/pr140605_2.en.html), hence also acknowledging the importance of disaggregating credit for real vs. financial transactions (Werner, 1997), which is not backed by any conventional economic models.

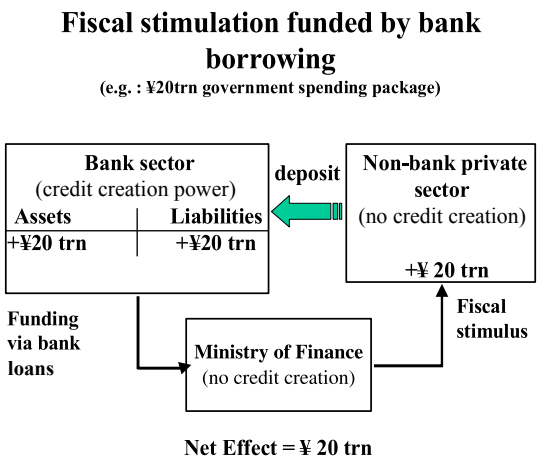

Fig. 3. Enhanced Debt Management and its positive net effect.

Castle et al. (2014) on the UK have shown that bank credit creation for GDP transactions is indeed a statistically superior determinant of nominal GDP growth, encompassing alternative monetary aggregates when the powerful general-to-specific (GETS) empirical methodology is applied, whereby a sequential downward reduction from the initial general model to the parsimonious model with valid restrictions is implemented. The resulting parsimonious model had no statistical problems. Furthermore, co-integration and Granger-causality analysis in these studies suggests unidirectional causation from bank credit creation to nominal GDP growth. Other empirical evidence in support of the Quantity Theory of Credit is also cited in Werner (2012a).

Here we test the following four predictions of the model as applied to the eurozone:

Prediction 1: Credit creation for GDP transactions (C_R) is a significant explanatory variable of nominal GDP (equation (4) above).

Prediction 2: Private demand is a positive function of credit creation for GDP transactions (C_R) and a negative function of government expenditure (equation (23) above), and, in the pure case, government expenditure crowds out private demand one to one.

Prediction 3: The market for domestic bank credit, dealing in untraded promissory notes (loan contracts) is not well integrated with the market for traded government debt (bonds), which should be reflected in a significant divergence between the bank lending interest rate for prime customers (prime rate) and the benchmark sovereign bond yield, especially during crisis periods.

Prediction 4: Equation (8') is empirically supported, whereby a rise in credit for GDP transactions (C_R) results in a reduction in the deficit/GDP ratio, and for any given level of credit C_R, an increase in government expenditure G or a fall in tax revenues increases the deficit-GDP ratio – as fiscal measures are not able to boost nominal GDP, which is determined by credit creation C_R.

We chose Spain as a suitable test case, since detailed data on bank credit, disaggregated by industry (agriculture, industry, construction, finance, real estate, various types of service industries) is available for this important eurozone economy. Furthermore, since the financial situation in Spain has not been as critical as in Ireland, Portugal or Greece, which required IMF involvement, whereas Spain did not, it is a stricter test of the relevance of our framework. The empirical results are as follows:

Test of Prediction 1 (Credit for GDP transactions is a significant explanatory variable of nominal GDP):

The model of nominal GDP as a function of credit for GDP-transactions can be empirically verified with a test that has high power by adopting the general to specific modelling methodology (GETS, see Hendry and Mizon, 1978), whereby nominal GDP is regressed against standard variables suggested in macroeconomics, namely interest rates, a measure of the traditional money supply (in line with equation (1)), as well as the variable predicted by the Quantity Theory of Credit (credit for 'real' transactions, C_R). If the step-by-step downward reduction from the general model to the parsimonious form (consisting only of

statistically significant variables that cannot be dropped, based on linear restriction tests) coincides with our theoretical expectation, this constitutes strong empirical support for our model.

The Bank of Spain's definition of the money supply (M1) was used, as well as the 10-year benchmark government bond yield (Datastream). The GDP series were obtained from the Spanish Instituto Nacional de Estadistica, whereby nominal, non-seasonally adjusted data were used (all variables in the model are kept in nominal terms). We could obtain quarterly data from Q1 1995 to Q3 2013 (the most recently available data, as of 16 June 2014) for total and disaggregated bank credit (Bank of Spain). Credit for the 'real' economy was defined as total bank credit, but excluding bank credit extended to other financial intermediaries, to the real estate sector and to the construction industry, in line with the same definition of financial credit (C_F) used by Werner (1992, 1994, 1997, 2005) and Voutsinas and Werner (2011) when modelling Japanese nominal GDP growth. Like in Japan, in the 2000s the Spanish property market had become dominated by speculative financial transactions. Calculating the year-on-year percentage changes (proxied by seasonal log differences), the general model was formulated, using a lag structure to account for partial adjustment dynamics (4 lags) and tested. The results are reported in Table 1. The standard summary tests indicate no obvious statistical problems, specifically no problems with the normality of the errors.

The model was then sequentially reduced, by imposing linear restrictions, whereby each time only one variable is dropped (the most insignificant one) and the model is re-run, until only variables are left whose coefficient is significant, and/or whose reduction is not permissible according to the linear restriction tests. Table 2 presents the model after the sequential downward reduction to the parsimonious form.

Table 2 shows that interest rates and money supply and their lags drop out in the sequential downward reduction procedure. The objective 'GETS' empirical testing procedure shows that apart from the lagged dependent variable, only credit creation for 'real' transactions is sufficient to account

Table 1
General Model of Spanish Nominal GDP by OLS. The estimation sample is: 1997 (1) to 2013 (3).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
YoYGDP_1	1.02330	0.1492	6.86	0.000	0.5003
YoYGDP_2	−0.24206	0.2187	−1.11	0.274	0.0254
YoYGDP_3	0.165908	0.2247	0.739	0.464	0.0115
YoYGDP_4	0.0649837	0.1652	0.393	0.696	0.0033
Constant	0.00107905	0.01003	0.108	0.915	0.0002
YoYCr	0.203033	0.06809	2.98	0.005	0.1591
YoYCr_1	−0.143448	0.09383	−1.53	0.133	0.0474
YoYCr_2	−0.117890	0.09021	−1.31	0.198	0.0351
YoYCr_3	0.0257736	0.08716	0.296	0.769	0.0019
YoYCr_4	−0.00669813	0.06262	−0.107	0.915	0.0002
YoYM1	−0.00365226	0.01159	−0.315	0.754	0.0021
YoYM1_1	0.00461205	0.01390	0.332	0.742	0.0023
YoYM1_2	0.000783806	0.01335	0.0587	0.953	0.0001
YoYM1_3	0.00854402	0.01340	0.638	0.527	0.0086
YoYM1_4	−0.00634763	0.01088	−0.583	0.562	0.0072
10YRYIELD	0.295657	0.3517	0.841	0.405	0.0148
10YRYIELD_1	0.0383619	0.4339	0.0884	0.930	0.0002
10YRYIELD_2	−0.451482	0.4351	−1.04	0.305	0.0224
10YRYIELD_3	0.405638	0.4156	0.976	0.334	0.0199
10YRYIELD_4	−0.278791	0.3094	−0.901	0.372	0.0170

Sigma	0.0102916		RSS		0.00497813315
R2	0.955787		F(19,47)	=	53.47 [0.000]**
log-likelihood	223.429		DW		1.99
no. of observations	67		no. of parameters		20
mean(YoYGDP0)	0.0479131		var(YoYGDP0)		0.00168049
AR 1-5 test:	F(5,42)	=	0.56734		[0.7245]
ARCH 1-4 test:	F(4,39)	=	1.1179		[0.3620]
Normality test:	Chi2(2)	=	3.1473		[0.2073]
hetero test:	F(38,8)	=	0.38878		[0.9762]
RESET test:	F(1,46)	=	0.012830		[0.9103]

Table 2
Parsimonious Model of Spanish nominal GDP by OLS. The estimation sample is: 1997 (1) to 2013 (3).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
YoYGDP_1	0.966656	0.05406	17.9	0.000	0.8376
Constant	0.00229636	0.001944	1.18	0.242	0.0220
YoYCr	0.149046	0.05322	2.80	0.007	0.1123
YoYCr_1	−0.0741633	0.07422	−0.999	0.322	0.0159
YoYCr_2	−0.0917735	0.04956	−1.85	0.069	0.0524

Sigma	0.00961219		RSS		0.00572843973
R2	0.949123		F(4,62)	=	289.2[0.000]**
log-likelihood	218.726		DW		1.87
no. of observations	67		no. of parameters		5
mean(YoYGDP)	0.0479131		var(YoYGDP)		0.00168049
AR 1-5 test:	F(5,57)	=	0.41098		[0.8392]
ARCH 1-4 test:	F(4,54)	=	1.5289		[0.2068]
Normality test:	Chi2(2)	=	6.9109		[0.0316]*
hetero test:	F(8,53)	=	0.85089		[0.5630]
hetero-X test:	F(14,47)	=	0.60100		[0.8504]
RESET test:	F(1,61)	=	0.85396		[0.3591]

for nominal GDP growth. It can be seen that partial adjustment dynamics are at work. The R-square remains relatively high, and the Durbin–Watson statistic shows good results. Checking the usual summary test statistics, only a potential problem with normality is identified (at the 5% level). As a robustness test, we re-ran the equation with a slightly shorter sample, beginning a year later. The results are presented in Table 3, where coefficients and t-values are very similar, but there is no problem with error normality or omitted variables.

Test of Prediction 2 (Private demand is a positive function of credit creation and a negative function of government expenditure):

Using the empirical model estimated for nominal GDP (Table 2), we disaggregate nominal GDP (Y) into private demand (C + I + NX) and government expenditure (G). Testing the postulate that private demand is a function of credit creation and government expenditure (equation (23) above), we regress private demand against credit for the 'real' economy, as well as government expenditure G. We could not expect to obtain a coefficient close to −1, if we used log differences or year-on-year growth rates, hence the model was this time estimated using absolute changes. The results are presented in Table 4.

Table 4 shows that government expenditure and credit for 'real transactions' are significant explanatory variables of private demand, accounting for about half of the variation in private demand. Importantly, the coefficient of government expenditure is −0.9 and thus not far from the theoretically postulated ideal result of −1.

Test of Prediction 3 (There is a significant divergence between the bank lending interest rate for prime customers, the prime rate, and the benchmark sovereign bond yield, especially during crisis periods):

We examine the time series data for sovereign bond yields (two different benchmark maturities, shown in red and green) and the bank lending prime interest rate (prime rate, shown in blue). Figs. 4 to 8 show the benchmark bond yields (5-year and 10-year government bonds) and the prime rate for bank loans (usually for maturities of 5 years and longer, in blue colour) in Greece, Ireland, Portugal, Italy and Spain (GIPIS). The data indicate that the interest margin between government bond yields and the prime borrowing rate has reached *several hundred basis points*, on occasion even *several thousand basis points*. Given these unusually large spreads between the bank credit market for top borrowers and the bond market for top borrowers, it is concluded that the prediction is corroborated, and eye inspection is sufficient to verify this result.

Test of Prediction 4 (Equation (8') is empirically supported, whereby a rise in credit for GDP transactions (C_R) results in a reduction in the deficit/GDP ratio, and for any given level of credit C_R, an increase in government expenditure G or a fall in tax revenues increases the deficit-GDP ratio – as fiscal measures are not able to boost nominal GDP, which is determined by credit C_R):

As is readily seen from equation (8'), an empirical application should not use the same data to describe the deficit that is used to specify the explanatory variables. Since the deficit can be proxied by

Table 3
Parsimonious Model of Spanish nominal GDP by OLS. The estimation sample is: 1998 (1) to 2013 (3).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
YoYGDP_1	0.984538	0.05724	17.2	0.000	0.8361
Constant	0.00230338	0.002043	1.13	0.264	0.0214
YoYCr	0.144682	0.05795	2.50	0.015	0.0970
YoYCr_1	−0.0864437	0.07981	−1.08	0.283	0.0198
YoYCr_2	−0.0845474	0.05408	−1.56	0.123	0.0404

Sigma	0.00981712		RSS		0.00558980048
R2	0.949715		F(4,58)	=	273.9 [0.000]**
log-likelihood	204.5		DW		1.87
no. of observations	63		no. of parameters		5
mean(YoYGDP)	0.0469207		var(YoYGDP)		0.00176449
AR 1-4 test:	F(4,54)	=	0.58566		[0.6744]
ARCH 1-4 test:	F(4,50)	=	1.3475		[0.2655]
Normality test:	Chi2(2)	=	5.8139		[0.0546]
hetero test:	F(8,49)	=	0.77524		[0.6262]
hetero-X test:	F(14,43)	=	0.61475		[0.8378]
RESET test:	F(1,57)	=	0.50023		[0.4823]

the change in outstanding government debt (ΔB) (source: Ministry of Finance), we use the latter definition for the dependent variable, and deploy the national income accounts in order to obtain time series for government expenditure and tax revenues. Credit for GDP transactions C_R is modelled using the same variable as above. Next, we formulate the general model of equation (8'), allowing for partial adjustment dynamics by the application of a lag structure (4 lags). The deficit/GDP ratio is then regressed against its own lags, a constant, and the ratios of government expenditure G to C_R and tax revenues T to C_R and their respective lags. The model was sequentially reduced to the parsimonious form. The specific model is reported in Table 5.

The table shows that over 88% of the variation in the deficit to GDP ratio is accounted for, without serial correlation problems. Both theoretical explanatory variables (G/C_R and T/C_R) are highly significant (with lag structure) and, most importantly, the signs are as expected: positive for government expenditure/credit and negative for tax revenues/credit. The summary test statistics however show a problem with autoregressive errors. In order to check for robustness and error normality, equation (8') was recast in logarithms as follows:

$$\ln(\Delta D/P_R Y) = \alpha + \beta \ln(G - T) - \gamma \ln C_R \tag{24}$$

The empirical test results are reported in Table 6.

Table 6 indicates that the deficit is not significant as explanatory variable of the deficit-GDP ratio, since it is to a large extent explained by credit for GDP transactions (C_R). Meanwhile, the standard tests showed no problems with the specification. This is a stronger result than expected, and it prompted us to examine the adjustment dynamics a bit closer, by formulating a general model with four lags and reducing down to the parsimonious model. The final result of the downward reduction is presented in Table 7.

We now find that over 67% of the variations in the deficit/GDP ratio are explained by the lagged dependent variable and credit for GDP transactions (C_R), without any error normality problems or

Table 4
Model of Spanish Private-Sector GDP by OLS. The estimation sample is: 1997 (1) to 2013 (3).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
Constant	4217.34	830.0	5.08	0.000	0.2874
DG	**−0.924730**	0.4175	−2.21	0.030	0.0712
DC_R	0.000228509	3.287e-005	6.95	0.000	0.4302

Sigma	5252.43		RSS		1.7656301e+009
R2	0.499559		F(2,64)	=	31.94 [0.000]**
log-likelihood	−667.486		DW		0.208
no. of observations	67		no. of parameters		3
Mean (DPrivateGDP)	6401		var(DPrivateGDP)		5.2659e+007

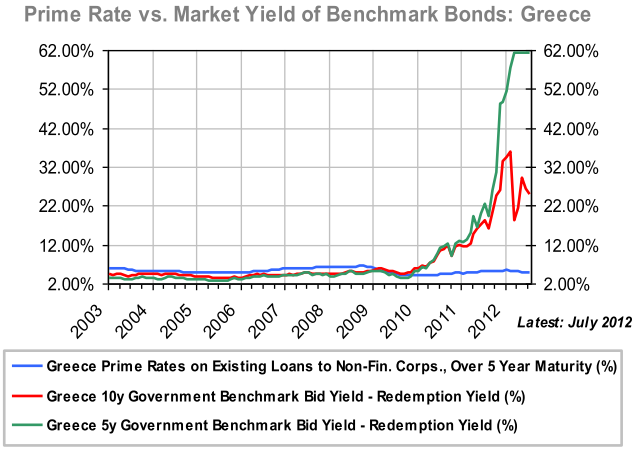

Fig. 4. Greece: Bank funding costs (blue) vs. bond funding costs (green, red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

visible biases due to omitted variables. LnC_R carries the expected sign (negative) and is highly significant. It must be concluded that the empirical evidence suggests that a key factor in determining deficit-GDP ratios in particular and sovereign debt problems in general is the quantity of credit for GDP transactions (C_R), which has been unduly neglected in Troika policy deliberations and packages.

We conclude that the empirical evidence supports the predictions made based on our model. Predictions 1 to 4 all lend empirical support to the view that the traditional eurozone approach to the sovereign debt crisis has been unsustainable, and that the key explanatory variable, credit creation for GDP transactions, has remained neglected by the Troika. While credit creation shrank, the attempts to solve the crisis could not succeed. Enhanced Debt Management, by switching funding of the public sector borrowing requirement from bond issuance to borrowing from domestic banks, is a promising policy that is likely to end the eurozone sovereign debt crisis.

6. Extensions of Enhanced Debt Management

Enhanced Debt Management is not a panacea. It helps sovereigns in various ways, including by stimulating growth, and it helps banks, by providing an opportunity for significant organic growth and

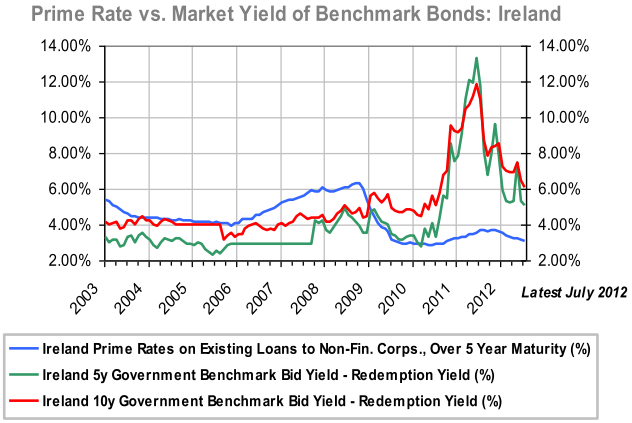

Fig. 5. Ireland: Bank funding costs (blue) vs. bond funding costs (green, red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

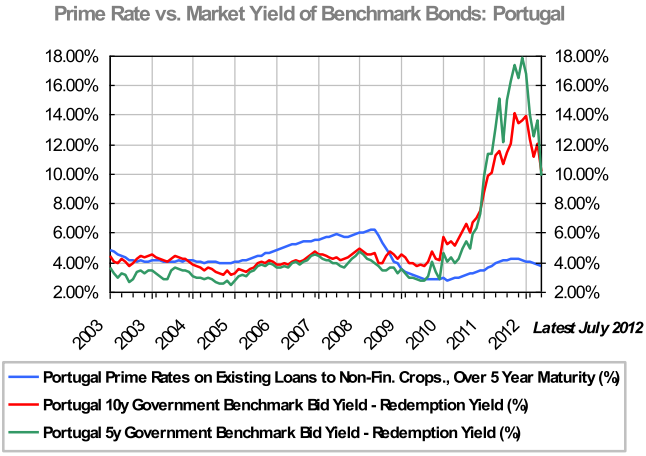

Fig. 6. Portugal: Bank funding costs (blue) vs. bond funding costs (green, red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

hence revenue, while taking away the uncertainty and potentially high capital costs of holding depreciating government bonds that must be marked to market. However, it does not directly address the problem of large and rising non-performing loans in the banking system. So Enhanced Debt Management does not deal with the issue of unsound banking systems that require significant recapitalisations within a very short period of time – of an extent so large that organic revenue growth offered by Enhanced Debt Management is insufficient.

For this contingency, a second, related though separate measure can be adopted. Banking crises are the result of non-performing assets in the banking system. As mentioned, since banks have less than 10% of capital to back their loan and securities books, only a decline of less than 10% in the valuation of their assets will render them bankrupt. This is another reason why it is important for banks to ensure that a large proportion of their assets are loan contracts that are not tradable, and hence do not have to be marked to market. It is why securitisation of loans tends to increase instability in the financial system: securitised loans need to be marked to market, are subject to the influence of credit rating agencies and can be targets for speculative attacks.

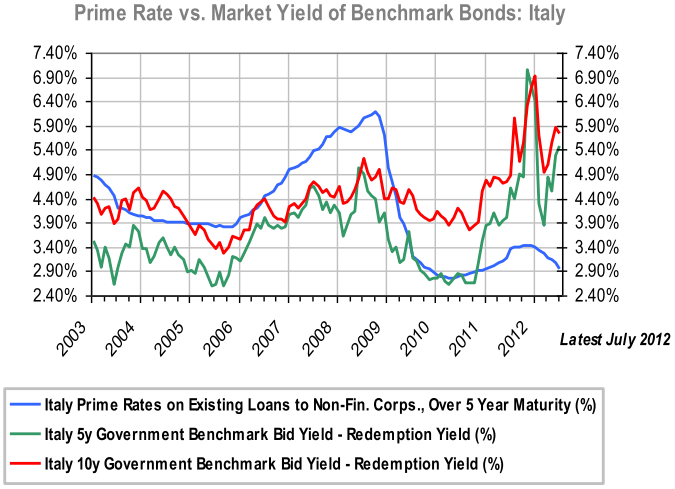

Fig. 7. Italy: Bank funding costs (blue) vs. bond funding costs (green, red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

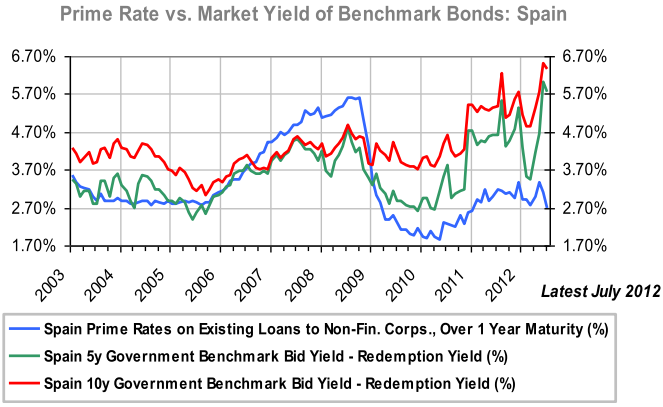

Fig. 8. Spain: Bank funding costs (blue) vs. bond funding costs (green, red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

When this scenario comes true (for instance, because the value of the banks' securitised asset portfolio falls by enough to amount to a drop in total asset values of 10%) and banks are insolvent, an emergency measure is needed. What features would an ideal policy response to such a banking crisis have? The following list can be identified:

(a) It would eliminate the non-performing assets from the banks' balance sheets.
(b) The banks would obtain the original face value of the non-performing assets in cash, thus rendering their balance sheets solid and highly liquid. There would no longer be a banking crisis or instability in the banking system.
(c) It would achieve this at zero new costs for the tax payer.
(d) There would not be any further repercussions, national debt or interest payments as a result of this removal of the non-performing assets from the banks' balance sheets.
(e) The method should not increase the amount of money in circulation in the economy, as this could potentially result in inflationary pressures and an inflation cost to tax payers and the economy.

Table 5
Modelling Deficit/GDP by OLS. The estimation sample is: 1997 (1) to 2013 (3).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
Deficit/GDP_1	0.501375	0.09665	5.19	0.000	0.3169
Deficit/GDP_3	0.243561	0.1130	2.16	0.035	0.0742
Deficit/GDP_4	−0.425029	0.09895	−4.30	0.000	0.2413
Constant	0.0454516	0.05744	0.791	0.432	0.0107
G/CR0_2	2.16915	0.5539	3.92	0.000	0.2091
G/CR0_3	2.61507	0.5427	4.82	0.000	0.2859
T/CR0_1	−3.17989	0.9363	−3.40	0.001	0.1659
T/CR0_2	−3.64912	1.052	−3.47	0.001	0.1719
T/CR0_3	−1.85276	0.7384	−2.51	0.015	0.0979

Sigma	0.0532019	RSS			0.164165612
R2	0.887268	F(8,58)	=		57.06 [0.000]**
log-likelihood	106.319	DW			1.72
no. of observations	67	no. of parameters			9
mean(Deficit/GDP)	0.146199	var(Deficit/GDP)			0.021735
AR 1-5 test:	F(5,53)	=		4.4560	[0.0018]**
ARCH 1-4 test:	F(4,50)	=		0.99865	[0.4171]
Normality test:	Chi2(2)	=		0.29119	[0.8645]
hetero test:	F(16,41)	=		1.2282	[0.2889]
RESET test:	F(1,57)	=		1.1963	[0.2787]

Table 6
Modelling LDeficit/GDP by OLS. The estimation sample is: 1996 (1) to 2004 (4).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
Constant	33.2629	5.654	5.88	0.000	0.5119
LG-T	0.0171783	0.3576	0.0480	0.962	0.0001
LCr	−2.96886	0.4922	−6.03	0.000	0.5244

Sigma	0.718826	RSS		17.0514568
R2	0.560695	F(2,33)	=	21.06 [0.000]**
log-likelihood	−37.6307	DW		1.6
no. of observations	36	no. of parameters		3
mean(LDeficit/GDP)	−2.65345	var(LDeficit/GDP)		1.07818
AR 1-3 test:	F(3,30)	=	1.4699	[0.2426]
ARCH 1-3 test:	F(3,27)	=	1.4168	[0.2595]
Normality test:	Chi2(2)	=	1.8950	[0.3877]
hetero test:	F(4,28)	=	1.6386	[0.1924]
hetero-X test:	F(5,27)	=	1.3372	[0.2788]
RESET test:	F(1,32)	=	0.71438	[0.4043]

Table 7
Modelling LDeficit/GDP by OLS. The estimation sample is: 1997 (1) to 2004 (4).

	Coefficient	Std. Error	t-value	t-prob	Part.R2
LDeficit/GDP_2	−0.411587	0.1731	−2.38	0.025	0.1731
LDeficit/GDP_3	0.458077	0.1909	2.40	0.024	0.1757
LDeficit/GDP_4	−0.696792	0.2009	−3.47	0.002	0.3083
Constant	58.4438	11.65	5.02	0.000	0.4825
LCr0_2	−5.17792	1.011	−5.12	0.000	0.4928

Sigma	0.635421	RSS		10.9015187
R2	0.672909	F(4,27)	=	13.89 [0.000]**
log-likelihood	−28.1767	DW		1.91
no. of observations	32	no. of parameters		5
mean(LDeficit/GDP)	−2.78703	var(LDeficit/GDP)		1.04152
AR 1-3 test:	F(3,24)	=	0.38313	[0.7661]
ARCH 1-3 test:	F(3,21)	=	0.041499	[0.9884]
Normality test:	Chi2(2)	=	4.6562	[0.0975]
hetero test:	F(8,18)	=	0.44824	[0.8760]
hetero-X test:	F(14,12)	=	0.65919	[0.7735]
RESET test:	F(1,26)	=	0.053692	[0.8186]

(f) To avoid moral hazard, banks would in exchange for this bail-out be required to follow general rules concerning the extension of credit, in order to avoid future banking crises.[22]

Again, we find that this ideal policy measure already exists – and it has in the past been used successfully for this purpose: instead of the government using tax money to bail out banks, *the central bank can purchase the non-performing assets from banks (if needed, via a subsidiary) at face value*. The equity (e.g. in the untraded subsidiary) does not have to be marked to market by the central bank. There is no cost to the tax payer. This method has been used by the Bank of England in 1914, the Bank of Japan in 1945 and the Federal Reserve in 2008. It is puzzling, why the Bank of England did not use this method in 2007–2009, why the ECB has so far not employed it, and why the Irish central bank was not asked to undertake this task – and instead decision-makers chose to use tax money, thereby massively increasing debt and future compound interest liabilities – making the job of debt management all the harder, effectively bankrupting Ireland and causing the IMF/Troika to be called in.

Could the answer be that a fear of inflation has cautioned central banks against this measure? Central banks have, as part of their QE programmes, purchased significant amounts of securities and private sector

[22] These rules would require banks not to extend credit for transactions that do not contribute to GDP (and hence are capital-gains oriented asset transactions that tend to fuel asset boom–bust cycles and cause instability in the financial system).

assets – often, as in the UK, not from the banking sector. Such purchases may indeed be linked to inflationary pressure (including asset inflation, see Bernardo et al., 2013). However, concerning the purchase of non-performing assets by the central bank from banks, such a fear is unfounded: This method constitutes an accounting transaction within the banking system (consisting of the banks and the central bank), without the injection of new funds from the banking system into the non-banking sector of the economy. This would explain why the trebling of the Fed balance sheet in late 2008, due to purchasing non-performing assets, did not result in a significant weakening of the US dollar or inflation: no money was injected into markets due to this banking sector accounting mop-up operation. It did, however, have the desired result of strengthening banks' balance sheets enough to produce more than 5% bank credit growth in 2012 and a significant recovery – while in the UK, where the Bank of England did not undertake such a policy, bank credit contracted by more than 2% and the economy experienced a double-dip. Such 'Enhanced Bank Rescues' by the central bank, as opposed to the tax payer, also produced a swift recovery in bank credit growth in the UK in 1914 and in Japan in 1946, delivering significant nominal GDP growth. The US is currently enjoying similar fruits of this method: the economy has recovered, thanks to a recovery in bank credit creation. The ECB's latest proposal to purchase asset-backed securities seems to reflect this proposal, presented to the ECB in November 2011. To minimise transfers across borders, however, these purchases should be undertaken by the respective national central banks, and not without conditions.

7. Conclusions

The analysis indicates that Enhanced Debt Management (EDM) yields a number of significant advantages over traditional bond finance:

1. Bank loan contracts are not tradable and do not have to be marked to market. Speculative attacks on the debt are impossible.
2. During the crisis, untraded bank loan funding has remained significantly cheaper than traded bond finance for governments. It is surprising that debt management offices have not switched from bond issuance to borrowing from banks via loan contracts. Italy in 2012 could have saved billions of euros thanks to lower interest charges.[23]
3. With EDM, sovereign credit ratings are not needed (saving costs) and rating downgrades would be irrelevant, not affecting banks' balance sheets or the government's ability to borrow from banks.
4. Bank loans are available domestically and hence deliver a more stable debt structure, independent from borrowing from abroad.
5. When banks need to generate returns as reserves or capital buffers, a sustainable method is to allow them to earn these through growth, by lending to the government.
6. Bank credit creation for transactions that are part of GDP has been identified as the main determinant of nominal GDP growth.[24] Hence an increase in bank credit is required to boost

[23] An estimate can be readily made using the 2012 bond issuance of E 260bn, the 10-year benchmark yield at the beginning of 2012 and the prime borrowing rate for maturities of 5 years or later.

[24] Also according to the ECB, the weak bank credit data is the main reason for the uninspiring growth outlook in the eurozone. In his press statement of 6 September 2012, President Draghi first explained the downward revision of growth forecasts by Eurosystem macroeconomics staff, followed by the ECB's monetary analysis: "Turning to the **monetary analysis**, the underlying pace of monetary expansion remained subdued. The annual growth rate of M3 increased to 3.8% in July 2012, up from 3.2% in June. The rise in M3 growth was mainly attributable to a higher preference for liquidity, as reflected in the further increase in the annual growth rate of the narrow monetary aggregate M1 to 4.5% in July, from 3.5% in June. The annual growth rate of loans to the private sector (adjusted for loan sales and securitisation) remained weak at 0.5% in July (after 0.3% in June). Annual growth in MFI loans to both non-financial corporations and households remained subdued, at −0.2% and 1.1% respectively (both adjusted for loan sales and securitisation). … Looking ahead, it is essential for banks to continue to strengthen their resilience where this is needed. The soundness of banks' balance sheets will be a key factor in facilitating both an appropriate provision of credit to the economy and the normalisation of all funding channels" (op. cit.). Both the downward revision of the growth forecast and the assessment that "the underlying pace of monetary expansion remained subdued" could not have been based on the traditional monetary aggregates, since these showed an acceleration, not slow-down. Instead, they seem to be based on the *bank credit aggregates* and the outlook for the state of health of the banking system. This, as well as recent attempts to boost 'credit for the real economy', suggests that the ECB has accepted Werner's (1992, 1997, 2011, 2012) Quantity Theory of Credit.

nominal GDP. By borrowing from banks, governments can pump-prime bank credit creation. This boosts nominal GDP growth and hence domestic demand, resulting in greater employment, lower expenditure on unemployment benefits, greater tax revenues and hence lower deficits and also larger GDP, lowering the deficit/GDP and debt/GDP ratios by lowering the numerator and increasing the denominator.

7. The bank loans are available from domestic banks without the need to request government assistance from the Troika, and thus avoid the intrusive conditionality, including deflationary structural supply-side reforms or cuts in welfare or education budgets.
8. The banks could create the required funds out of nothing by crediting the government's accounts with them (as is usual banking practice; see Werner, 2005; Ryan-Collins et al., 2012). No capital is required for such bank lending to the sovereign according to the Basel rules.
9. The government would save the bond issuance fee, which may be small in percentages (0.4% in times of stability, but up to 2% during crises and for emerging markets; Nieto-Parra, 2009), but can be substantial in absolute amounts.
10. Finally, banks are able to utilise these non-tradable loans as sovereign collateral with the ECB to refinance themselves (ECB, 2011a, b).

We conclude that Enhanced Debt Management is an attractive option to end the eurozone sovereign debt crisis. While such debt, in the form of bank loan contracts, is highly traditional, the institutional and debt management policy changes of the past twenty years or so have rendered it 'unconventional' today.

Is Enhanced Debt Management proposing a 'free lunch'? Sadly, there is no such thing. The banking crises, sovereign debt crises, recessions and high unemployment in the eurozone periphery countries are vivid reminders that this crisis has been highly costly and indeed must rank, in terms of the costs of the resource misallocation, among the most expensive economic dislocations in peacetime history. Instead, Enhanced Debt Management can only offer a method to *end* the ongoing and highly costly *destruction of economic value* and deadweight loss of potential output (not to mention human cost) due to underutilisation of resources (such as large-scale unemployment), and doing so in a way that is *cheaper than alternative* (and flawed) methods pursued by the Troika.

The proposed measure is similar to the long-term refinancing operation (LTRO) announced by the ECB on 8 December 2011. This allowed banks to switch from securitised, traded funding instruments to OTC (over-the-counter) funding via direct loans from the ECB. Over E1trn in such 3-year loans at very favourable conditions were granted by the ECB as part of this programme. With this measure the ECB took the step of allowing banks to swap tradable securities for non-tradable loan contracts – with the ECB as counterparty. The Enhanced Debt Management proposal was presented to over 30 senior staff of the ECB in the ECB Council Room on 28 November 2011 (Werner, 2011). The subsequently announced LTRO reflects the recognition by the ECB that tradable securities are not always the most attractive or suitable form of funding and instead non-tradable debt in the form of direct loan contracts must be considered. Although the LTRO has ensured high bank liquidity, the funds have largely accumulated as unused excess reserves of the banks held at the ECB, and have not contributed to credit creation and hence monetary and GDP growth. The proposed measure would change this and constitutes a needed counterpart to the LTRO.

According to the IMF/World Bank (2003) manual on public debt management,

> *"The main objective of public debt management is to ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk" (p. 9).*

Given this main objective, it is difficult to see how the finance ministries and debt management offices, as well as the Troika have overlooked the fact that far cheaper public debt financing has been available for many of the crisis-affected countries than in the securitised bond markets. This cheaper funding (EDM) via bank credit would trigger an economic recovery, boosting tax revenues. The negative spiral would quickly be turned into a positive one. The humble switch in the funding technique of the public sector borrowing requirement – a debt management policy – turns out to

be a powerful tool to solve a major international financial conundrum, by offering a stable pro-growth stimulation policy that however does not cost any extra money. Enhanced Debt Management would unite debt management, fiscal and monetary policies in order to achieve the goal of a sustainable recovery.

There is also an historical precedent for this type of policy: the economics is the same as that of the system of short-term bills of trade issued by semi-public entities in the years from 1933 onwards in Germany, which were bought by the German banks, hence increasing bank credit creation. These are known as 'Mefo Wechsel', after one of the issuers, the Metallurgical Research Corporation. This method was introduced by Dr. Hjalmar Schacht, President of the Reichsbank, the German central bank, in 1933 (Werner, 2003). The method, which was called 'silent funding', was highly successful. It was introduced by the UK Treasury during WWII in the form of non-negotiable Treasury Deposit Receipts issued only to English and Scottish banks. In the 1930s the bills of trade were a preferable method (instead of direct loan contracts with banks), since banks did not have to mark securities to market, and credit rating agencies did not exist. The method suggested here, of direct loans by banks to governments, is a modern version more suitable to today's regulatory and financial market environment.[25] The effect of stimulating a recovery would be the same.

Acknowledgements

Thanks to HSH Prince Max von Liechtenstein for suggesting the 'enhanced debt management' terminology. I would also like to thank Dr Konstantinos Voutsinas and Mr Shamsher Dhanda for their very effective research assistance, and Nicholas Dimsdale for pertinent comments. Many thanks to three anonymous referees, as well as the journal editor, and, last but not least, the editor of the special issue, Professor Taufiq Choudhry, for pertinent comments that helped improve the paper. This paper was originally commissioned by the Oxford Review of Economic Policy for the issues on Sovereign Debt (vol. 29, nos. 3 and 4, Autumn/Winter 2013). The editors invoked 'exceptional circumstances' to withdraw their commission, with Dr. Christopher Bowdler asserting that "a solution cannot be so simple" and arguing that "it doesn't seem credible to argue that banks will be able to source funding for such loans on cheaper terms than the markets fund the sovereign". In fact, interest rates on current and savings deposits are almost always lower than sovereign borrowing yields. Besides, banks are not dependent on prior borrowing to lend. Finally, I would like to thank Prof. Em. Charles Goodhart, who as discussant commented favourably on this paper when it was presented at the April 2013 University of Southampton International Conference on the Global Financial Crisis: European Financial Markets and Institutions. His words were: "Richard has proposed a new mechanism by which bank credit can be stimulated … It is a very interesting idea and do take it seriously, as it is well worth taking seriously. One could implement it, too, in the UK …. This approach undoubtedly would enable fuller monetary expansion, in essence allowing monetary policy [in the eurozone] to be brought back to the nation state…". Many thanks also go to Bernhard Winkler and colleagues for inviting me to present the proposals in this paper to more than 30 senior ECB staff, including NCB deputy governors, at the ECB on 28 November 2011. Finally, should some grains of wisdom be found in this paper, I would like to acknowledge the source of all wisdom (Jer 33:3, Ps 27).

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[25] The author first proposed it in 1995 in Japan. See also Werner (1998, 2000, 2003). It has since been endorsed by Andrew Smithers, Tim Congdon and Martin Wolf, as well as by an FT editorial (Martin Wolf, The risky task of relaunching Japan, *Financial Times,* 6 March 2013; Leader: Japan's monetary upheaval arrives, *Financial Times,* 3 March 2013).

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