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Article — Published Version

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Intereconomics

Suggested Citation: Doluca, Hasan; Hübner, Malte; Rumpf, Dominik; Weigert, Benjamin (2012) : The European redemption pact: Implementation and macroeconomic effects, Intereconomics, ISSN 1613-964X, Springer, Heidelberg, Vol. 47, Iss. 4, pp. 230-239, <https://doi.org/10.1007/s10272-012-0423-x>

This Version is available at:

<https://hdl.handle.net/10419/68328>

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Hasan Doluca, Malte Hübner, Dominik Rumpf and Benjamin Weigert*

The European Redemption Pact: Implementation and Macroeconomic Effects

One possible solution to the sovereign debt crisis is the European Redemption Pact (ERP) proposed by the German Council of Economic Experts. The ERP provides sustainable financing conditions for participating sovereigns to facilitate bringing public debt ratios below the reference value of 60% within the next 20 to 25 years. In this paper, we describe one possible way of implementing the ERP and analyse the fiscal effects of participating in the ERP. The macroeconomic impact of the proposal is illustrated with the multi-country model NiGEM.

In the summer of 2012 the euro area is still struggling with the debt crisis that has its roots in the unsustainable build-up of public and private debt in some of the euro area countries prior to the outbreak of the financial crisis. The vicious circle of a sovereign debt crisis and a banking crisis had peaked in November 2011 with interest rates on Spanish and Italian government bonds rising to levels not seen since the introduction of the euro. Since this critical escalation of the sovereign debt crisis, the situation had relaxed considerably by early 2012. Nevertheless, in recent months increasing doubts on whether Greece is willing and able to remain inside the euro area again spread uncertainty amongst investors.

The extremely dangerous situation in November was only temporarily stabilised through the unconventional monetary policy measures taken by the European Central Bank. With two successive monetary operations in December 2011 and February 2012, the ECB provided banks in the euro area with extensive liquidity for the next three years at very favourable conditions, in total amounting to roughly a trillion euros. In addition, the ECB has expanded its collateral framework of eligible assets for banks' re-

financing operations. These unconventional measures helped to trigger a temporary decline in risk premiums on government bonds and prevented an acute escalation in the euro area.

All this came at a rather high price, though. With the two long-term liquidity operations, the ECB – the only independent European institution – became even more involved in the crisis resolution, mainly because European governments were unable to coordinate their actions properly to avoid a culmination of the crisis. Thus, the politically well-established division between fiscal policy and monetary policy has become even more blurred. Moreover, by providing banks with excessive liquidity, the ECB is indirectly trying to stabilise and support sovereigns at the periphery of the euro area. As the ECB cannot tie these measures to the form of conditionality associated with the emergency assistance from the European Financial Stability Facility (EFSF) and the European Stability Mechanism (ESM), the ECB's actions ease the pressure on the respective sovereigns in the periphery to consolidate their budgets, to reduce their debt ratios and to implement structural reforms.

As long as governments in the euro area remain unwilling to resolve the crisis through appropriate fiscal policy measures, it will be next to impossible for the ECB to scale down its unconventional measures over the coming years. If changing market sentiments or the inactivity of European fiscal authorities results in the return of an

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* The authors would like to thank Christoph Hesse, Uwe Krüger and Volker Schmitt for excellent research assistance.

The views expressed in this paper are those of the authors and do not necessarily correspond to those of the German Council of Economic Experts.

acute crisis, the ECB will almost surely (have to) step in once more. Even the fiscal compact agreed to by 25 EU member countries in February 2012 will not help to ease the pressure on the ECB to intervene. The compact is certainly a proper and necessary step towards fiscal consolidation and long-term debt reduction in the euro area and is therefore an indispensable element of the long-term stability framework. However, in order to make the fiscal compact a credible framework in even the short and medium run, countries need both strong economic growth and sustainable interest rate levels; at least the latter can be directly influenced by the ECB. As a result, the ECB will remain under immense pressure to support the fiscal policies of highly indebted countries and to assume a role well beyond monetary policy and its original mandate of delivering price stability to the euro area.

The unconventional measures of the ECB have bought European governments some additional time to find a short- and medium-term solution to the most severe problems in the euro area. With the introduction of the EFSF and the recently extended ESM, Europe has already implemented a so-called firewall to support member countries. As long as the crisis only hits small economies, this firewall will probably be sufficient. However, it will be inadequate if economies like Italy or Spain are affected by the crisis or if Greece leaves the euro area and contagion spreads to those countries that are already experiencing very high refinancing costs. Moreover, one of the shortcomings of the EFSF and the ESM in the short run is that they only act *ex post* and cannot be used easily as a preventive measure. In addition, the fiscal compact that addresses fiscal consolidation and debt reduction lacks credibility because at the prevailing risk premiums for sovereign debt, the consolidation paths implicitly tied down by the compact are in most cases highly unrealistic. Therefore, the short- and medium-run solution to the current crisis must re-establish the dividing line between fiscal and monetary policy such that the ECB can concentrate exclusively on maintaining price stability. Any crisis resolution regime has to be organised in the fiscal realm and any support given should be based on strict conditionality and surveillance.

The German Council of Economic Experts recently proposed the European Redemption Pact (ERP), an exit strategy from the debt crisis that re-establishes the dividing line between monetary and fiscal policy. In this paper, we present and elaborate on the original proposal, describe in detail one possible way of implementing the ERP and derive the primary balances needed by each country to fulfil its obligations under this plan. We then use a macroeconomic model to illustrate the potential macroeconomic effects of implementing the proposal.

European Redemption Pact – The Proposal

The proposal, which is described in detail in the Council's 2011 annual report, demands that member countries engage in an irrevocable consolidation of their public finances in return for support in times of a liquidity crisis. The key idea of the proposal is to separate the public debt of participating member countries into one part that is compatible with the debt threshold of 60% of GDP stipulated in the Stability and Growth Pact (SGP) and the remaining debt above this threshold into a separate part. Under the ERP, the EMU member countries' debt exceeding the 60% ceiling on a certain date will be transferred into the European Redemption Fund (ERF), for which all EMU members are jointly and severally liable. In return, the participating countries would enter into payment obligations towards the ERF that are calculated such that each country would repay its transferred debts within 20 to 25 years. Through the joint and several guarantees for the fund, highly indebted member countries will pay a lower interest rate on their transferred debt. This reduction in refinancing costs reduces the primary balances required for reducing debt ratios below the 60% threshold.

The opportunity to take advantage of lower financing costs for the transferred debt is associated with strict conditions. In particular, these conditions comprise earmarking the revenue of a designated tax for fulfilling the payment obligations, depositing collateral, and committing to consolidation and structural reforms. After transferring excessive debt into the ERF, the remaining national debt must thereafter not exceed 60% of GDP again. To this end, debt brakes would be introduced in all participating countries based on the German and Swiss models. In particular, after a transition period, these debt brakes must constrain the structural deficit below the level of 0.5% of GDP set out in the SGP.

Participation in the pact is open to all euro area countries. However, one has to distinguish between those countries that are currently running a structural adjustment programme and the other member countries of the EMU. Those currently running structural adjustment programmes can join the redemption pact immediately but cannot transfer debt to the fund. Regarding the other member countries, at the very least, those countries whose debt ratios exceed 60% of GDP should take part. At present, these would be Austria, Belgium, France, Germany, Italy, Malta, the Netherlands and Spain.

The central parameters of the ERP are consistent with the deficit and debt rules of the intensified Stability and Growth Pact and the fiscal compact. In particular, the commitment to redeeming the debt in the ERF within 20

to 25 years corresponds to the stipulations calling for annual debt reduction by 1/20th of debt exceeding the target level of 60% of GDP. Moreover, the commitment to implement national debt brakes, the key element of the fiscal compact, already fulfils a central precondition for the implementation of the ERP.

To make the proposal operational, countries will enter into payment obligations towards the fund in return for being allowed to transfer part of their debt. Two questions are important:

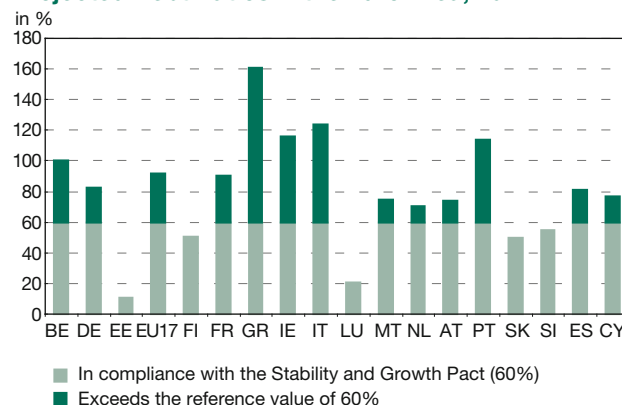
- How can debt be transferred into the fund?
- How must the payment obligations be designed to ensure timely redemption?

Transferring debt into the redemption fund is organised by allowing participating member countries to refinance themselves through the redemption fund until the amount of debt refinanced through the ERF reaches the current difference between the debt accumulated to date and the hypothetical debt that would equal 60% of GDP, i.e. the SGP debt threshold (see Figure 1). The exact length of this transitional phase depends on the sequence of immediate refinancing needs. During this so-called roll-in phase, the participating countries must fulfil consolidation and reform agreements which will be comparable to the structural adjustment programmes of the EFSF. While each country will henceforth have to service its own debt financed via the new fund until it is completely redeemed and the new fund expires, participants will be jointly liable for the debt, thus achieving affordable refinancing costs for all participants.

Payment obligations through which the transferred debt is redeemed are expressed as a constant fraction of GDP. The scale of annual payment obligations relates to the volume of transferred debt. It is set at a level that ensures that each country redeems its debt in the ERF within a period of 20 to 25 years. Accordingly, countries transferring more debt will have to bear higher annual payment obligations. As the ERF can only gain the trust of financial markets if the joint and several guarantee is upheld until the transferred debt is completely redeemed, payment obligations have to be constructed in a way that all participating countries complete the redemption of their debt inside the ERF at approximately the same time.

By agreeing to redeem their debt in the Redemption Fund within 25 years and to keep the remaining debt below the 60% threshold, participating countries implicitly commit to certain upper limits for their primary balances. The exact development of these figures depends on several

Figure 1
Projected Debt Ratios in the Euro Area, 2012¹



¹ In relation to gross domestic product at current prices.

Source: AMECO database (May 2012).

assumptions on GDP growth and country-specific refinancing costs. In addition, required primary balances are determined by the sequencing of refinancing needs that each country is allowed to cover through the redemption fund during the roll-in phase.

Implementing the ERP – Illustrative Examples and Calculations

In general, there are several options for implementing the ERP. Several design decisions will have to be made, and each decision leads to a specific implementation of the proposal. Important implementation decisions concern the following three dimensions:

- The inclusion of short-term debt in the roll-in phase. Currently, most countries refinance a significant part of their debt in the form of short-term treasury notes. If this debt can also be refinanced through the ERF, the roll-in phase will be shortened as countries roll in more debt into the fund in any given year.
- The design of the roll-in phase. During the roll-in phase, countries will obtain funding from the ERF. Whether annual payment obligations towards the ERF are created immediately with the beginning of the roll-in phase or only after the maximum amount of debt has been transferred to the fund must therefore be specified before the concrete implementation of the proposal.
- The assumptions with respect to future real GDP growth and interest rates.

Each decision along these three dimensions affects the size of annual payments to the ERF and the time until all debt in the ERF has been redeemed. In addition, it may

also affect the debt-to-GDP ratios of participating countries at the time the ERF expires. In this section, we describe one specific approach to implementing the ERP. When having to make implementation decisions, we seek to ensure redemption of the debt in the ERF within some 20 to 25 years. The primary balances associated with this specific instance of the ERP thus arise endogenously from our implementation decisions. In describing this one possible implementation approach in detail, we answer technical questions that arise when implementing the ERP such as, e.g. how the debt of each country will be transferred into the ERF and how payment obligations for each country are calculated.

Designing the Roll-in Phase

The total amount that each country is allowed to refinance via the ERF depends on the amount of debt that exceeds the 60% of debt threshold at a certain date, as set out by the Maastricht Treaty (to simplify the subsequent analysis, we use 1 January 2013 as the ERF starting date). Currently, this excessive debt amounts to 2698 billion euros. Countries currently facing high deficit figures might be admitted to transfer a slightly higher amount. Without this deficit surcharge, which was not part of the Council's original proposal, they would either face unrealistically high consolidation needs during the first years or end up with debt-to-GDP ratios exceeding the 60% ceiling after the roll-in phase. In the following, we design the deficit surcharge in a way that prevents high deficit countries from having to improve their fiscal balances by more than 1.5 percentage points in 2013. Together with the deficit surcharges, the total amount of transferred debt would equal 2,766.6 billion euros. Of this amount, Italy would account for 1,009.7 billion euros, equal to 36.5% of the total amount. It would be followed by France with 624.7 billion euros, equal to 22.6%, and Germany with 582.8 billion euros, equal to 21.1% (see Table 1).¹

In our calculations, the transfer of national debt to the ERF, which we call the roll-in phase, will be stretched over three to six years, and short-term debt will not be included. In some cases a country's refinancing needs during the roll-in phase will exceed the amount to be transferred to the ERF. Given the overproportional amount of debt that has to be refinanced over the next one or two years, the total amount to be transferred is allocated such that 50% is used in the first year, 30% in the second and 20% in the third. However, any other allocation rule, e.g.

33.33% in each year, can be implemented without altering the basic results. Italy would be allowed to roll in debt of about 1009.7 billion euros, which covers nearly 100% of its refinancing needs over the six years from 2013 to 2018 (see Table 1), and no specific allocation rule would be necessary. In contrast, Germany, with a much lower debt-to-GDP ratio and consequently less debt exceeding the 60% threshold, would cover only a fraction of its refinancing needs by using the ERF. The same holds true for the Netherlands.

Annual Payment Obligations to the Fund and Debt Accounting

The scale of annual payment obligations depends on the volume of transferred debt. Countries transferring more debt have to bear higher annual payment obligations. A country's annual payments to the fund are a constant fraction of GDP – the “annual payment key”. They have to comprise the prorated interest payments by the redemption fund on the country's transferred debt and a redemption payment. Given a certain annual payment key, the time until a country has redeemed its debt in the fund depends on the assumed growth rate and the refinancing costs of the ERF. Given our assumptions on future GDP growth, all debt in the Redemption Fund will be redeemed after a period of 20 to 25 years if the annual payment keys are calculated according the following two-step rule: first, total payments in the first year equal one per cent of the amount of debt to be transferred plus the ERF's prorated annual interest payments. In a second step, the sum of these two components is then set in relation to the country's 2012 GDP. This ratio is the annual payment key, which is held constant from then on. More precisely, a country's annual payment key is obtained from the following formula:

annual payment key = (ERF interest rate + 1 percentage point)

$$\times \frac{\text{amount to be transferred to the ERF}}{2012 \text{ GDP}}$$

This formula illustrates that with economic growth, a country's payment obligations rise in absolute terms over the course of time.

We assume that annual payments to the fund start in the first year, even though not all debt will have been transferred to the fund yet. During the roll-in phase, the annual payments are therefore proportionally adjusted to reflect amount of debt not yet transferred. In line with common budget accounting rules, we split annual payments into an interest and redemption component, of which only the former affects a country's deficit.

¹ Note, however, that the maximum size of the ERF depicted in Figure 2 is slightly smaller than the total amount of transferred debt, as countries start making redemption payments already during the roll-in phase.

Table 1

Financing of General Governments via ERF within the Roll-in Phase

		2013	2014	2015	2016	2017	2018	Total
Germany	Financial demand ¹	198.3	216.8	255.3	252.7	181.6	114.7	1,219.5
	thereof via ERF	198.3	216.8	167.6	0.0	0.0	0.0	582.8
	Ratio (%)	100.0	100.0	65.6	0.0	0.0	0.0	47.8
France	Financial demand ¹	156.4	216.6	214.3	174.8	136.1	101.8	1,000.1
	thereof via ERF	156.4	216.6	214.3	37.3	0.0	0.0	624.7
	Ratio (%)	100.0	100.0	100.0	21.3	0.0	0.0	62.5
Italy	Financial demand ¹	163.9	192.7	257.5	137.1	164.0	99.7	1,014.9
	thereof via ERF	163.9	192.7	257.5	137.1	164.0	94.4	1,009.7
	Ratio (%)	100.0	100.0	100.0	100.0	100.0	94.8	99.5
Spain	Financial demand ¹	86.4	138.5	122.2	104.9	54.5	50.4	557.0
	thereof via ERF	86.4	138.5	66.0	0.0	0.0	0.0	291.0
	Ratio (%)	100.0	100.0	54.0	0.0	0.0	0.0	52.2
Netherlands	Financial demand ¹	41.5	59.3	64.0	25.0	50.3	23.4	263.4
	thereof via ERF	30.5	18.3	12.2	0.0	0.0	0.0	61.1
	Ratio (%)	73.6	30.9	19.1	0.0	0.0	0.0	23.2
Belgium	Financial demand ¹	33.3	40.7	41.8	38.8	35.2	14.8	204.5
	thereof via ERF	33.3	40.7	41.8	36.8	0.0	0.0	152.5
	Ratio (%)	100.0	100.0	100.0	94.7	0.0	0.0	74.6
Austria	Financial demand ¹	18.4	35.6	21.2	29.3	21.2	15.0	140.6
	thereof via ERF	18.4	16.7	8.8	0.0	0.0	0.0	43.9
	Ratio (%)	100.0	46.8	41.4	0.0	0.0	0.0	31.2
Malta	Financial demand ¹	-	-	-	-	-	-	0.0
	thereof via ERF	0.5	0.3	0.2	0.0	0.0	0.0	1.0
	Ratio (%)	-	-	-	-	-	-	n/a
Total ²	Financial demand ¹	698.3	900.3	976.3	762.7	642.8	419.6	4,400.0
	thereof via ERF	687.8	840.7	768.4	211.2	164.0	94.4	2,766.6 ^a
	Ratio (%)	98.5	93.4	78.7	27.7	25.5	22.5	62.9 ^a

¹ Without short-term debt. ² Without Malta. ^a The amount lies above the total overhang of debt exceeding the level of 60% of GDP at the end of 2012 by about 50 billion euros because of the deficit surcharge.

Source: Own calculation based on data from Thomson Financial Datastream as of 8 June 2012.

A Stylised Model of Debt Dynamics

To discuss in detail how each country's fiscal position will be affected by participating in the ERP as well as the resulting evolution of its public debt, it is helpful to use a simple theoretical framework of public debt dynamics. A country's gross public debt-to-GDP ratio ($d \equiv \text{debt}/\text{GDP}$) evolves over time according to the following stylised dynamic equation:

$$d_{t+1} - d_t = -p_t + (i_t - g_t)d_t \quad (1)$$

where i_t denotes the average nominal interest rate to be paid on the amount of public debt at year t , g_t denotes

the year t growth rate of nominal GDP, and p_t denotes the primary fiscal balance relative to GDP. The primary fiscal balance is the balance before interest payments are deducted. By using this stylised model, we abstract from any one-time effects that directly affect the level of gross public debt, such as receipts from privatisation or additional liabilities assumed by bank bailout packages. These are not always considered in the official deficit figure.

As can be seen from Equation (1), a consolidation path can be expressed in target values for the debt ratio or the primary balance. In the former case, primary balances required to meet the desired reduction in debt ratios be-

come a function of assumed interest and growth rates. In the latter case, commitment to a certain path for primary balances ties down debt ratios, which also depend on the interest and growth rate assumptions. Participation in the ERP defines a target debt ratio of 60% to be reached after no more than 25 years. In addition, the level of annual payments to the ERF affects the consolidation path for the next 25 years. With the path of debt ratios fixed, we thus see that the primary balances as required by the ERP become a function of assumed growth and interest rates.

Equation (1) also shows that certain assumptions about key parameters are necessary to calculate the evolution of the public debt-to-GDP ratio, namely, the average nominal interest rate that will prevail in the future and prospective nominal GDP growth rates. Additionally, after joining the ERP, part of a country's public debt is refinanced via the ERF while the remainder is still refinanced in the market. Therefore we need to distinguish between two different nominal interest rates: interest rates that will be paid by the ERF and interest rates that will be paid by the sovereign in financial markets. The crucial interest rate for total debt dynamics is the weighted average of both interest rates.

Assumptions: Interest Rates

With regard to interest rates we consider two different scenarios. The first scenario covers the current situation with highly stratified interest rates for various member countries of the euro area and assumes sustained high interest rates for most of the member countries (scenario "without ERP"). In Italy's case, interest rates of 7% have already been reached and even surpassed in recent months, and there is a risk that high interest rates will prevail in the future.

The second scenario describes the interest rates likely to prevail after the introduction of the ERP (scenario "ERP"). Of course, for this scenario, it is essential to come up with a plausible assumption on the refinancing costs for the ERF. The main challenge in this respect is to assess how the financial market would receive the new bond class created by the ERF.

Bond yields depend, alongside other factors, in particular on the following two key parameters: (1) the probability of default and (2) the bond's liquidity. When trying to project the interest rates on bonds to be issued by the ERF, one can thus draw on the yields of existing bonds which are also guaranteed by European countries. Bonds issued by the European Investment Bank (EIB) or the EFSF are

therefore a natural reference point for potential yields on ERF bonds. For ten-year bonds, these two institutions currently pay interest rates of around 3.0% and 3.3% respectively (as of 23 January 2012). For the two reference bonds (EIB, EFSF), the default probability can be considered comparable to that of the bonds to be issued by the ERF. With respect to the EFSF, it bears noting that only partial liability is involved, and thus there is a somewhat higher default probability than under joint and several liability.

Market liquidity for ERF bonds would presumably be higher than that for the two reference bonds. The impact of a more liquid market on the yield can best be estimated by comparing the yields of the bonds issued by the *Kreditanstalt für Wiederaufbau* (KfW) and the far more liquid Bunds. A ten-year paper issued by the KfW is currently traded at about 0.5 percentage points higher than the Bunds despite the identical default probability. The liquidity advantage for the ERF bonds will probably be on a similar order.

Based on these considerations, the ERF's financing costs can be expected to fall within a range of around 2.5-3%. However, higher yields also seem possible given present market uncertainty. In the light of the currently exceptionally low-interest rate environment for riskless assets, yields above those on bonds issued by the EFSF, i.e. around 3.3%, seem improbable, however. To reflect a future normalisation of the interest rate, we assume ERF financing costs of 4% – compared to an EFSF interest rate of 3.3% today.

Furthermore, in the scenario "ERP" interest rates on nationally issued debt are assumed to be significantly higher but still lower than in the scenario "without ERP" (Table 2). Exceptions are those countries in the euro area that currently benefit from lower interest rates due to safe haven effects, i.e. Germany and the Netherlands. For these countries, interest rates on nationally issued debt would normalise with the introduction of the ERF. Accordingly, we assume higher interest rates for these countries in the "ERP" scenario than in the "without ERP" scenario.

Assumptions: Nominal GDP Growth

GDP in 2013 is assumed to grow according to the European Commission's growth forecast as published in the AMECO database for each country in May 2012. From 2014 on, we assume a nominal GDP growth rate of 3%, which is derived from a real GDP growth rate of 1-1.5% and an average inflation rate of 1.5-2%, in line with the ECB's inflation target.

Table 2
ERP: Key Figures for Participating Countries

		2012			Interest rates assumed, % p.a.		
		Gross domestic product	Public debt	Primary balance	ERF ² bonds	national issued bonds with ERP	without ERP
Germany	euro billion	2,629.9	2,160.7	27.9			
	% of GDP	100	82.2	1.1	3.5	3.0	2.5
France	euro billion	2,035.1	1,845.8	-63.8			
	% of GDP	100	90.7	-3.1	3.5	3.5	4.0
Italy	euro billion	1,590.4	1,963.9	14.8			
	% of GDP	100	123.5	0.9	3.5	4.5	7.0
Spain	euro billion	1,064.3	861.5	-47.9			
	% of GDP	100	80.9	-4.5	3.5	4.5	7.0
Netherlands	euro billion	606.2	424.8	-14.6			
	% of GDP	100	70.1	-2.4	3.5	3.0	2.5
Belgium	euro billion	376.6	378.5	-1.2			
	% of GDP	100	100.5	-0.3	3.5	4.0	5.0
Austria	euro billion	309.6	229.6	-2.4			
	% of GDP	100	74.2	-0.8	3.5	3.5	4.0
Malta	euro billion	6.6	4.9	0.0			
	% of GDP	100	74.8	0.2	3.5	4.5	5.5

Source: Own calculations based on AMECO database (May 2012).

Results and Macroeconomic Analysis

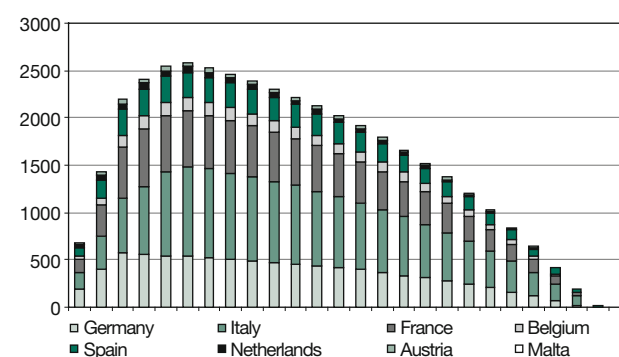
Based on these assumptions, we are now able to calculate primary balances, debt ratios and the evolution of the size of the ERF over time. Further, by using NiGEM, a multi-country model, we quantify the macroeconomic effects of participation in the ERP.

Evolution of the ERF Volume over Time

Countries participating in the ERF already start serving and redeeming their ERF debt at the beginning of the roll-in phase. As a consequence, even though the size of the ERF grows during the roll-in phase, its maximum size of 2,580.6 billion euros is slightly smaller than the total sum of all amounts refinanced by the ERF, which add up to 2,766.6 billion euros. At the end of the roll-in phase, the fund begins to shrink in size. As each country's annual payment to the ERF is defined as a fixed percentage of nominal GDP, the actual annual amount paid to the fund grows at the same rate as GDP. In addition, the share of interest payments in annual payment obligations declines relative to the share of payments devoted to redeeming debt. While annual payments to the fund are initially used

mainly to service interest payments, redemption becomes more and more important towards the end of the retention period. The speed at which the volume of the ERF shrinks therefore accelerates over time. In 2038 each country will make its final payment to the fund and the ERF will cease to exist (see Figure 2).

Figure 2
Debts in European Redemption Fund by Country



Source: Own calculations.

Primary Balances

During the roll-in phase, primary balances improve incrementally up to the level that is necessary to fulfil the requirements of the national debt brakes which ensure a structural deficit below 0.5% of GDP and national debt (i.e. debt not transferred to ERF) not exceeding 60% of GDP. For each scenario and country, Table 3 shows the primary surplus that has to be reached to reduce debt levels to 60% between 2013 and 2038. For highly indebted countries, such as Italy, Belgium and Spain, participation in the ERP lowers required primary balances substantially. For Italy, the country with the highest debt ratio, the primary balances required to meet the consolidation targets improve by up to 2.8 percentage points. For Germany, which together with the Netherlands faces higher average interest rates when participating in the ERP, required primary balances worsen by only 0.4 percentage points.

For some countries, the required primary balances in the ERP scenario remain just below the historical upper bound of primary balances that were sustained over a longer time horizon. In the past, only a small number of countries were able to sustain primary balances well beyond 4% of GDP for a decade (see Figure 3). Taking Italy as an example, Table 3 shows that it still needs to run a primary surplus of 4.2% of GDP to comply with the requirements of the debt brakes even when it can benefit from reduced interest rates achieved through the implementation of the ERP.

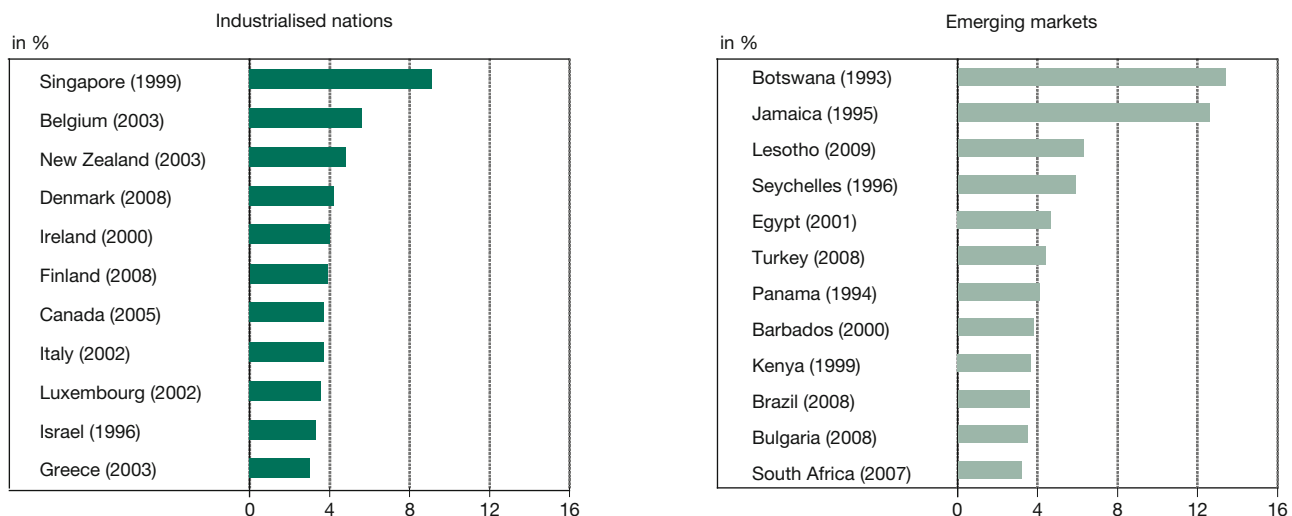
However, to comply with the same debt reduction path without the implementation of the ERP, Italy would have

to achieve a primary surplus of 7.1%. This is well above the maximum primary balances observed historically. At the interest rates prevailing in the “without ERP” scenario, Italy already needs a primary surplus of 4.8% just to stabilise its debt-to-GDP ratio. This means that if interest rates remain at 7% over the coming years, any successful consolidation would probably be just enough to compensate for the resulting higher interest payments, without being able to reduce the debt-to-GDP ratio. These illustrative calculations show that bringing down risk premiums on sovereign debt is a necessary precondition for the successful reduction of debt-to-GDP ratios in the euro area.

Macroeconomic Analysis

So far, we have seen that by lowering interest rates for public debt inside and outside the redemption fund, participating countries need smaller primary surpluses in order to comply with a given debt reduction path relative to a situation in which this path has to be reached without the ERF. Apart from lowering interest rates for public debt, participation in the ERF also has further macroeconomic effects. By easing the constraints on public spending and allowing domestic demand to improve, participation in the ERF stimulates economic activity. This effect is reinforced through another channel: the joint and several guarantees on the transferred debt would reduce the risks on the balance sheets of the banks in the deficit countries. This allows them not only to regain access to cross-border capital markets but also to raise credit supply and private investment, thus ampli-

Figure 3
Primary Balances of Selected Countries¹



¹ In relation to nominal GDP. Highest average primary balance over a ten-year period. Years in brackets are the last year of the corresponding period.

Source: IMF.

Table 3
Consolidation Requirements and ERP

	Primary balance 2012		Primary balance required...			Improvement of actual primary balance required to meet budget rules	
	actual ¹	structural ²	to meet budget rules ³		to stabilise current debt ratio without ERP	with ERP	without ERP
	%		with ERP	without ERP		percentage points	
Germany	1.7	2.1	1.9	1.5	-0.4	0.3	-0.2
France	-1.9	-0.5	2.3	2.8	0.9	4.2	4.7
Italy	3.4	4.8	4.2	7.1	4.8	0.8	3.7
Spain	-3.3	-1.4	3.1	5.0	3.1	6.3	8.2
Netherlands	-2.3	-0.3	1.7	1.3	-0.3	4.0	3.7
Belgium	0.4	1.1	2.8	4.0	2.0	2.4	3.5
Austria	-0.3	-0.0	2.1	2.3	0.7	2.4	2.6
Malta	0.8	0.8	2.7	3.2	1.8	1.9	2.5

¹ As a ratio of GDP in current prices. ² As a ratio of potential GDP. ³ Maximum primary balance which is necessary to ensure deficit not exceeding 0.5% of GDP and national debt (not transferred to ERP) not exceeding 60% of GDP. Without ERP: maximum primary balance needed to reach same evolution of debt ratio.

Source: Own calculations based on AMECO (May 2012).

fying the impact of the fiscal resources invested in assisting the deficit countries.

We can quantify the macroeconomic effects of participation in the ERF with the macroeconomic model NiGEM.² NiGEM is a dynamic estimated model of the world economy in which the different sectors of the OECD economies are modelled in detail through a number of error-correction equations. Nominal rigidities slow the adjustment in response to a shock. With regard to fiscal policies, the model distinguishes between direct and indirect taxes as sources of revenue. On the expenditure side, the government spends money on public consumption and investment. Each government follows a target for the debt-to-GDP ratio and the budget balance. Direct taxes adjust automatically to ensure convergence of the deficit and debt ratio to their target values.

To quantify the macroeconomic effects of participation in the ERP, we compare a baseline scenario in which a given debt reduction path has to be reached without the ERP to a scenario in which the same path has to be reached under the interest rates obtained from participation in the ERP. The baseline can for instance be interpreted as a scenario in which the countries under consideration comply with the consolidation paths implicitly locked in by the fiscal compact. The scenario with the

ERP would then correspond to a situation where countries comply with the fiscal compact, but where the ERP is implemented as described in this article. This analysis allows us to calculate the effect of reducing interest rates for the problem countries, which corresponds to the difference in GDP between the baseline and ERF scenarios. To calculate the size of this effect, we simulate a change in a country's refinancing costs implied by the assumptions in Table 2 for eight quarters and compare real GDP under this scenario to NiGEM's actual forecast, which thus serves as the baseline scenario.

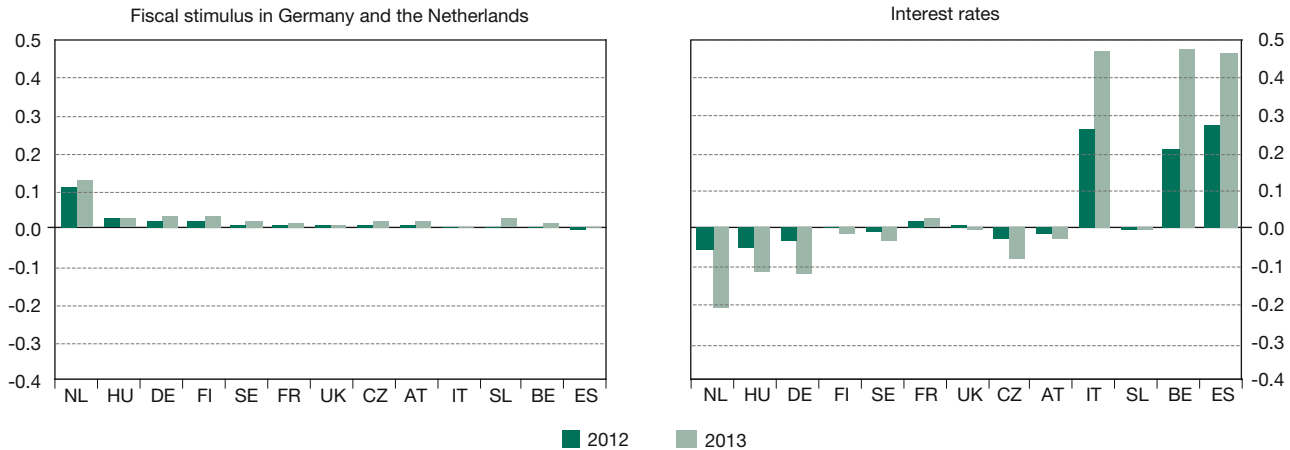
The simulation results show that for countries with above-average refinancing costs, participation in the ERP improves output substantially. The effect is largest in countries which either have very high debt-to-GDP ratios or are currently facing high interest rates (or both). In Spain, Italy and Belgium participation in the ERP boosts GDP by up to 0.5% relative to the baseline scenario in which similar consolidation paths would have to be reached under current interest rates. Germany and the Netherlands are the only countries where participation in the ERP is associated with higher interest rate expenditures; in these countries, the governments have to scale back government spending in order to comply with their consolidation paths. This effect reduces GDP, although the effect is small.

In interpreting these results, one needs to bear in mind that our simulations are based on the presumption that by issuing safe bonds through the ERP and bringing capital flight from the periphery to a halt, the balance sheets of banks in the euro area will be fully repaired. Of course,

2 R. Barrell, K. Dury, I. Hurst, N. Pain: Modelling the world economy: the National Institute Global Economic Model. Presented at an ENEPRI workshop on Simulation Properties of Macroeconometric Models, CEPII, Paris, 2001.

Figure 4
Macroeconomic Effects

Derivation of GDP from baseline (%)



Source: Own calculations using the National Institute Global Econometric Model (NiGEM).

this ignores the fact that banks in some countries might also have to write down loans to the residential property sector, which would also impair remediation. Taking this into account, the effects obtained from the simulation constitute an upper bound of the true effect.

In a second analysis, we compare the effect calculated above with the traditional fiscal stimulus, resulting in a hypothetical situation in which Germany and the Netherlands raise government spending. The size of the fiscal stimulus is exactly the same as the interest rate disadvantage these countries would suffer as a result of establishing the ERF. Instead of lowering interest rates abroad, this policy would stimulate external demand in the other EMU countries merely through the trade channel. This scenario corresponds to a situation in which countries comply with the fiscal compact and Germany and the Netherlands delay consolidation, but there is no further fiscal risk-sharing as under the ERP.

The results of the simulation show that the implementation of the ERP is much more effective in raising growth in the highly indebted countries compared to a fiscal stimulus in Germany and the Netherlands (see Figure 4). Assuming a joint and several guarantee for the excessive debt makes it possible to target the impulse to problem countries, because the more it improves the fiscal balance of a country, the more this country benefits from lower interest rates. In comparison, raising domestic demand in Germany and the Netherlands would stimulate external demand primarily in the East European countries, such as Hungary and the Czech Republic, which have strong trade linkages with Germany. On the contrary, Spain and Italy, which are amongst the countries with the most pressing adjustment needs,

would hardly benefit from the fiscal impulse. Furthermore, while the fiscal stimulus affects GDP growth only through the trade channel, a lower interest rate also helps the private sector to obtain access to credit. By helping to improve private investment, the effect of a given amount of financial resources spent in the more solvent countries is magnified. The effect of reduced interest rates therefore exceeds the effect of a fiscal stimulus by roughly a factor of four.

Conclusion

In this paper, we have illustrated one possible implementation of the European Redemption Pact proposed by the German Council of Economic Experts. Based on a set of assumptions about future growth rates and the interest rates of bonds issued by sovereigns and under joint and several liability, we were able to illustrate primary balances required in each of the euro area member countries to reduce public debt below the 60% threshold enshrined in the SGP within the next 20 to 25 years. Our calculations show that required primary balances become sustainable if interest rates on public debt can be reduced by allowing member countries of the euro area (that are not yet taking part in an adjustment program) to transfer their excessive debt beyond the 60% threshold into a redemption fund that is able to issue bonds under joint and several liability. Additionally, by using the macroeconomic model NiGEM, we first show that participation in the ERP substantially improves output for countries with above average refinancing costs. Second, we determine that the reductions in primary balances caused by a joint and several guarantee show this to be a much better targeted instrument to help the high-debt countries than a fiscal expansion in Germany and the Netherlands.