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Conflicting incentives for the public to support the EMU

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The Brender and Drazen (2009) model is applied to the predicament of the less competitive countries within the Economic and Monetary Union (EMU). The application of a political economy model indicates the extent of the difficulty of maintaining public support for the monetary union within the existing fiscal policy framework. While we do not underestimate the costs of an EMU breakup, the paper provides some preliminary estimates and highlights the importance of a fresh approach to modelling the costs of exit from the monetary union across time frames.

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Exchange Rates, Currency Area**

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POLICY STATEMENT

The research underlying this paper has its origins in a highly policy-oriented initiative: the European Solidarity Manifesto (see <http://european-solidarity.eu/>). This document, signed by academic economists and policymakers from nine European countries calls for the controlled segmentation of the Economic and Monetary Union in order to preserve the core achievements and benefits of the European Union and the single market.

The paper provides an analytical framework to show the difficulty of maintaining public support for the monetary union given the existing set of rules. While we do not underestimate the costs of an EMU breakup, the paper provides some preliminary estimates and highlights the importance of a fresh approach to modelling the costs of exit from the monetary union across time frames.

The paper is contributing to the discussion on how the political elite can persuade the public that in the long term continued participation in Europe's monetary union will prove an effective way to restore prosperity.

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The Brender and Drazen (2009) model is applied to the predicament of the less competitive countries within the Economic and Monetary Union (EMU). The application of a political economy model indicates the extent of the difficulty of maintaining public support for the monetary union within the existing fiscal policy framework. While we do not underestimate the costs of an EMU breakup, the paper provides some preliminary estimates and highlights the importance of a fresh approach to modelling the costs of exit from the monetary union across time frames.

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JEL: E42; E44;F33;F36

Introduction

In times of economic crisis, governments of the affected countries that use the euro can struggle to bring sufficient credibility to their attempts to persuade the public that in the longer term continued participation in Europe's monetary union will prove an effective way to restore prosperity. The question then is how government policy can influence positively public attitudes towards the Economic and Monetary Union (EMU) and therefore increase the probability that the Eurozone survives.

In the discussions leading to the establishment of the EMU, an important concern voiced by the literature was the lack of stabilization mechanism during recessions (Sala-i-Martin and Sachs, 1991). Two related themes became particularly prominent, both at the political level and in the professional economics literature.

The first of these was the no bail-out rule, framed specifically in the light of the reality that the euro would be a common currency used by fiscally sovereign nation states, and designed to avoid a situation where one or more participating countries would free-ride on the backs of taxpayers in other countries (Chari and Kehoe, 2008). This rule was enshrined in two articles of the European (Maastricht) Treaty: Art.101 prohibiting monetary financing of budget deficits; and Art.103 excluding direct bail-outs in the form of cross-border transfers of public funds (Beetsma and Giuliodori, 2010: 607).

The second theme was the importance of economic convergence between the countries participating in the monetary union (Froot and Rogoff, 1991). This is due to the difficulties of correcting external payments imbalances within the envisaged single currency area. The prevalent views in the period immediately

before and after the launch of the monetary union were that current account balances between countries using the single currency ceased to matter and balances of payments crises could be ruled out (Honkapohja, 2014: 264). And this despite papers that appeared both at the time when EMU was still in its planning and preparatory stages (Thirlwall, 1991; Feldstein, 1992; Godley, 1992) and when just introduced (Gourinchas, 2002), warning that balance of payments problems within the monetary union – far from disappearing – would steadily deepen in the event of economic divergence between Eurozone member states, especially diverging levels of competitiveness (proxied by unit labor costs).

Since the available means of correcting such imbalances do not, by definition, include the adjustment of exchange rates which are irrevocably fixed, less competitive Eurozone countries must rely on some mixture of two other means: strictly conditional transfers and “internal devaluation”. Both means come with a cost; transfers are conditional on fiscal retrenchment while internal devaluation means bearing down on unit labor costs. This combination of fiscal retrenchment and bearing down on unit labor costs resulted in rising unemployment (particularly due to the stickiness of nominal wages) and low real growth (and, in several of the worst affected countries, successive years of negative growth). Given, these negative economic effects, the majority public support for the single currency might be expected to come under increasing threat. The question arises of how governments might in these circumstances succeed in convincing the public that the euro is either worth keeping or too costly to leave.

Following this introduction, we describe the background which leads to the public support for the EMU being threatened since the required policy framework entails contractionary internal devaluation in the context of high debt (both public and private), low economic growth and declining working age population. In Section 3, we apply the Brender and Drazen (2009) model to draw attention to the difficulty of maintaining public support for the monetary union within the existing

policy framework. Section 4 shows that this leaves the governments concerned with two options – avoiding the present rules or depicting the exit from the EMU as ‘scary’. We provide some preliminary estimates and highlight the importance of a fresh approach to modelling the costs of exit from the monetary union across time frames. Finally some concluding remarks are offered.

Background

In the period between the launch of the monetary union in 1999 and the global financial crisis in 2008, the less competitive countries’ external positions vis-à-vis their more competitive Eurozone partners were financed by private sector transfers (in many cases, bank lending collateralized by real estate). Low interest rates close to German levels loosened the budget constraints allowing the political elite to postpone unpopular reforms (Fernández-Villaverde, J., L. Garicano, and T. Santos, 2013). This phenomenon of increased private borrowing to finance current account deficits had become plainly visible as early as in 2002–2003 (Honkapohja, 2014: 263) (Figure 2).

All the while, the divergence of competitiveness deepened, and in particular the gulf between the less competitive countries and Germany (Chen, Milesi-Feretti and Tressel, 2012.) (Table 1).

TABLE 1 - UNIT LABOR COST, PERCENT CHANGE BETWEEN Q3 1999 AND Q4 2008

	France	Germany	Italy	Portugal	Spain
ULC	5.20%	-15.94%	12.54%	10.03%	20.72%
relative to Germany	21.14%	0.00%	28.48%	25.98%	36.67%

Note:

Competitiveness indicator, relative unit labour costs, overall economy, Index: 2005=100, price index, seasonally adjusted

Source: Authors’ calculation, OECD Economic Outlook

The private sector deleveraging after 2008 resulted in a counterpart expansion of budget deficits that was aggravated by the need to bail out the liabilities of

insolvent banks and by conscious counter-cyclical fiscal stimulus measures designed to boost real GDP growth. The effect of this expansionary fiscal policy was measured by Coenen, Straub and Trabandt (2012) using an extended version of the European Central Bank's New Area-Wide Model (NAWM) from 1985: I to 2010: II. Their result was that "discretionary fiscal measures pushed up annualized quarter-on-quarter growth rates by up to 1.6 percentage points (in 2009:II)" (Coenen, Straub and Trabandt, 2012: 74).

These measures led to a dramatic deterioration in budget deficits (Figure 1) and a corresponding increase in public debt levels that unsettled financial markets (Figure 3). The result was a sharp increase in the affected countries' bond yields (Figure 4). Until then, the existence of the single currency had led investors to regard all EMU members' sovereign debt as equivalent, pushing down interest rates of all sovereign debt towards German levels (Gibson, Hall and Tavlas, 2014). One explanation for these low interest rates offered was that the no-bail out clause was not fully credible (Beetsma and Giulodori, 2010: 620). This explanation however is not fully satisfactory as from 2009 onwards this situation was reversed; spreads increased considerably for the countries with the worst deficit problems (Greece, Portugal, Ireland and Spain) and they lost access altogether to the sovereign bond markets (Honkapohja, 2014: 262). Honkapohja's interpretation is that the low interest rates were a manifestation of the general mispricing of risk which was subsequently corrected.

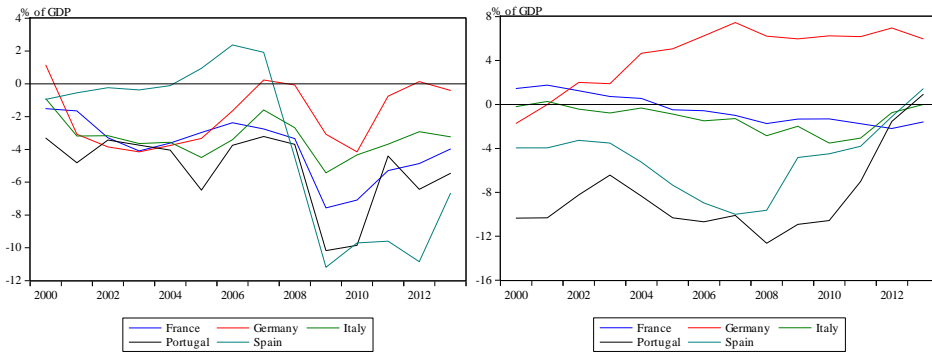


FIGURE 1 - GOVERNMENT DEFICIT/SURPLUS, PERCENTAGE OF GDP FIGURE 2 – CURRENT ACCOUNT BALANCE, PERCENTAGE OF GDP

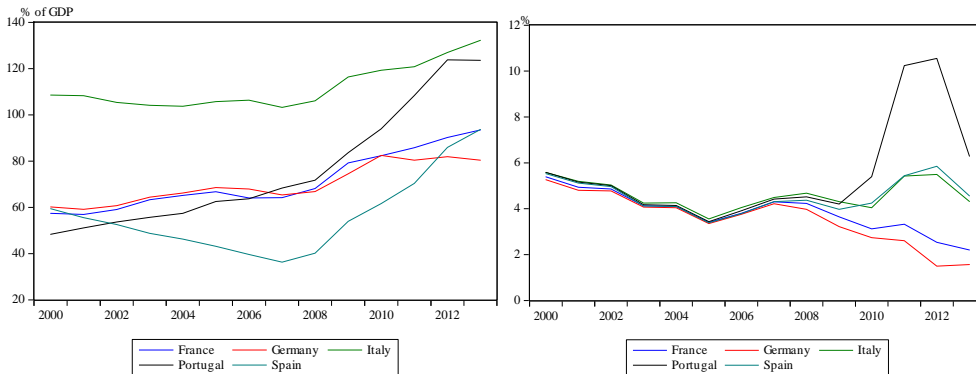


FIGURE 3 – GENERAL GOVERNMENT GROSS DEBT, PERCENTAGE OF GDP FIGURE 4 – LONG TERM NOMINAL INTEREST RATES

Note:

Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable. Thus, all liabilities in the GFSM 2001 system are debt, except for equity and investment fund shares and financial derivatives and employee stock options. Debt can be valued at current market, nominal, or face values (GFSM 2001, paragraph 7.110).

EMU convergence criterion series, Maastricht criterion bond yields (mcby) are long-term interest rates, used as a convergence criterion for the European Monetary Union. The Maastricht Treaty EMU convergence criterion series relates to interest rates for long-term government bonds denominated in national currencies. Selection guidelines require data to be based on central government bond yields on the secondary market, gross of tax, with a residual maturity of around 10 years. The bond or the bonds of the basket have to be replaced regularly to avoid any maturity drift. The legal basis is the Article 121 of the Treaty establishing the European Community and Protocol on the convergence criteria

Sources: International Monetary Fund, World Economic Outlook Database, October 2013 and Eurostat

These less competitive Eurozone countries therefore became dependent on official transfers that, in accordance with the “no bail-out” principles of the monetary union, were strictly conditional on fiscal tightening designed to ensure compliance with the rules laid down in the relevant treaties from Maastricht to the

latest such treaty – the Fiscal Compact which entered in force in January 2013. Monetary policy also became more supportive in the form of potential “Outright Monetary Transactions” (OMT) announced by the European Central Bank (ECB) in August 2012 and involving the unlimited purchase of short-term government bonds. But, as with the fiscal transfers (by this time channeled through the newly-established European Stability Mechanism (ESM)), OMT would be conditional on externally-supervised fiscal retrenchment programmes and would therefore serve only to prevent sovereign bankruptcy rather than cushion the effects of the required external adjustment which, in the absence of larger available transfers, could now only be achieved by internal devaluation.

This combination of fiscal retrenchment and bearing down on unit labour costs resulted in rising unemployment (particularly due to the stickiness of nominal wages) and low real growth (and, in several of the worst affected countries, successive years of negative growth) (O’Rourke and Taylor, 2013; Schmitt-Grohé and Uribe, 2013). This result was well anticipated by Feldstein (1997: 32).

These negative economic effects had predictable social and political consequences in the form of widespread public protests and the electoral defeat of incumbent governments as in France (May 2012), Portugal (March 2011), Spain (July 2011) and Italy (November 2011). In other words, democracy seems to bar the way of European political elite and “has become a central target of complaints by the European elite” (Bordo and James, 2014: 283).

In these circumstances, the majority public support for the single currency shown, for example, in the Eurobarometer survey 80 (2013) (Table 2) might be expected to come under increasing threat.

TABLE 2 – QA17.1 WHAT IS YOUR OPINION ON EACH OF THE FOLLOWING STATEMENTS? PLEASE TELL ME FOR EACH STATEMENT, WHETHER YOU ARE FOR IT OR AGAINST IT. A EUROPEAN ECONOMIC AND MONETARY UNION WITH ONE SINGLE CURRENCY, THE EURO

	Spain	France	Italy	Portugal	Germany
Against	37	32	36	42	25
For	56	63	53	50	71
Don't know	7	5	11	8	4

Source: standard eurobarometer 80 (2013).

The challenge of maintaining public support for EMU

The Brender and Drazen model was originally developed to analyze public and political elite attitudes to recently established democracies and government policy designed to affect these attitudes with a view to preserving democracy. For the reasons set out in the previous section, government's attempts to persuade the public that in the longer term, the EMU will prove to be a regime bringing economic prosperity, may lack credibility and persuasive power.

The public's observed income y_t^P at any point in time is:

$$y_t^P = y^{EMU} + g_t + \varepsilon_t \quad (1)$$

Where y^{EMU} stands for the EMU economic performance assumed constant, g_t for 'government intervention' at t, and ε_t is a shock to the EMU economic performance which in our case is the euro sovereign debt crisis. In the Brender-Drazen model, the public does not observe either the 'government intervention' nor the 'shock to current performance' (ε_t). In the EMU context, by contrast, the 'government intervention' is not an increase in public spending designed to strengthen voter support for new democracies, but instead a fiscal tightening meaning a reduction in expenditures required to comply with the Fiscal Compact. Therefore for the purpose of this application of the model, g_t is the balance of

spending cuts required by the Fiscal compact and the use of ‘fear’ (that under a national currency, the costs would be much higher) or other similar ‘European’ arguments.

The distribution of subjective public perceptions posited in the model as a result of the interventions not being observed is applicable here, despite the intervention (reduced spending) being very much observed, owing to the fact that the government aims to boost public perceptions of the desirability of the system (i.e. EMU) by depicting the alternative to EMU as a worse condition to be feared. This engenders subjective responses from the public, with a distribution from those who assent that the alternative to the euro is something to be feared to those who dismiss any such fears.

Let y^{NC} be the economic performance associated with a return to a national currency. Given y_t^P and the public’s subjective distribution termed $H^P(z_t)$ with $z_t = g_t + \varepsilon_t$, the public assesses y^{EMU} being no less than y^{NC} , with the probability:

$$Pr(y^{EMU} \geq y^{NC} | y_t^P) = Pr(y_t^P - z_t \geq y^{NC}) = Pr(z_t \leq y_t^P - y^{NC}) = H^P(y_t^P - y^{NC}) \quad (2)$$

The government knows or (thinks it knows) what are the future benefits under EMU. But in order to assess the scale of the intervention required to convince the public of those benefits, the government needs to know the probability assigned by the public to economic performance being no less under EMU than under a restored national currency. The government’s expectation of the probability that the public allocates to $y^{EMU} \geq y^{NC}$ as a function of g_t , with the actual distribution of ε be $J(\varepsilon)$, is:

$$\int_{\varepsilon} H^P(y^{EMU} - y^{NC} + g_t + \varepsilon) dJ(\varepsilon) \quad (3)$$

y^{NC} differs across individuals according to a distribution $F(y^{NC})$.

We now consider how government may increase public support. The variable μ is the government's expected fraction of the public $1 > \mu > 0$ supporting the EMU:

$$\mu(g_t) = \int_{y^{NC}} \int_{\varepsilon} H^P(y^{EMU} - y^{NC} + g_t + \varepsilon) dJ(\varepsilon) dF(y^{NC}) > 0 \quad (4)$$

The effect of the government intervention g_t on public support μ depends on the distribution $H^P(\cdot)$. μ is the product of two types of positive public beliefs about the euro: first the view of the euro as the lesser evil compared to the alternative of dismantlement (this amounts therefore to a measure of the effectiveness of the government's 'fear' argument); second, a commitment in principle to EMU seen as the high point to date of the desirable project of European integration. On this basis the government intervention relevant to μ hinges on the effectiveness of the intervention:

$$\frac{d\mu}{dg_t} \int_{y^{NC}} \int_{\varepsilon} h^P(y^{EMU} - y^{NC} + g_t + \varepsilon) dJ(\varepsilon) dF(y^{NC}) > 0 \quad (5)$$

In case the euro gets dismantled, the public incurs a cost θ . The condition for the public to favour dismantling the euro is that the public net income is greater under a restored domestic currency than under the EMU:

$$(1 - \theta(\mu))(1 + \beta)y^P > (1 - \tau_1)y^P + T_1 + \beta E_1^P((1 - \tau_2)y^P + T_2) \quad (6)$$

Where β is the discount factor, τ_1 is the current tax rates which differ from future tax rates, τ_2 , T_1 is the level of current transfers, future transfers T_2 may also differ from current transfers, E_1^P is the expectation of the public about future fiscal policies.

Given the Fiscal Compact constraint, the government's challenge is to preserve the EMU while minimizing expenditures in the context of strictly conditional and limited transfers such that equation (7) is satisfied with equality.

For the public to support the EMU, the income loss from dismantling the euro has to appear prohibitive:

$$(1 + \beta)\theta(\mu)y^P \geq \tau_1 y^P - T_1 + \beta E_1^P [\tau_2 y^P - T_2] \quad (7)$$

With equality if either $g_1 > 0$ or $T_1 > 0$

Where $\tau_1 y^P - T_1$ is the net tax on the public (tax payments minus transfers) in the current period and the second term on the right side is (discounted) expected future net tax.

Condition (7) is the ‘support for the EMU’ constraint. For the EMU to be fully secured, condition (7) has to hold with inequality without any government intervention or transfers to boost public support. This also assumes that both the level of current taxes τ_1 and the public’s expectations of their future net tax burdens under a continuation of the EMU are perceived as acceptable.

This implies that the choice of government policy is conditional on the effectiveness of these measures $(\frac{d\mu}{dg_1})$ in boosting public perceptions of the desirability of the EMU and on the extent to which the level of public support for EMU affects the perception of the costs associated with a return to a national currency $(\frac{d\theta}{d\mu})$:

$$(1 + \beta)y^P \frac{d\theta}{d\mu} \frac{d\mu}{dg_1} \leq 1 \quad (8)$$

With equality if $g_1 > 0$

where $\frac{d\mu}{dg_1}$ is given by (5)

Free-riding vs. Exit

The application of the Brender and Drazen model points to the extent of the difficulty of maintaining public support for the monetary union within the existing policy framework. This leaves the governments concerned with two options: avoiding the present rules or scaring the public out of an exit.

Avoiding the present rules

There are, in turn, three ways of realizing this option. The first would be a decision by the ECB to raise its inflation target by a material margin (say, to 4%) as discussed by Shambaugh (2012), Schmitt-Grohé and Uribe (2013) and by Reis (2013). This might be characterized as an internal rule change since such a decision lies within the exclusive competence of the ECB itself and would not require any amendment to the ECB's Statute or the underlying Treaties that would require the unanimous consent of the EU member states. It might be argued, however, that the ECB's formal power to vary the inflation target could only be exercised in practice with a high level of acquiescence on the part of the Eurozone member states, first and foremost Germany.

On this view, this first way of avoiding the present rules would be hardly less challenging than the second and seemingly more radical way –namely, changing the actual Treaty provisions on no bail-outs and monetary financing of budget deficits. The desired changes would bring about joint liability among all Eurozone countries for the debts both of its individual governments and also, albeit with some qualifications, of the banks – together with a more permissive approach to the monetary financing of state budget deficits with no (or far fewer) restrictions

than presently envisaged under the ECB's OMT programme. Unless and until any such rules changes – involving much deeper political union between countries using the euro – were to occur, the framework for adjustment described above – that is, strictly conditional transfers and internal devaluation – will persist. The political question of the necessary support for either of these two ways of changing the rules lies outside the scope of this paper, although we may note that it would require the unanimous support of all the existing Eurozone member states, with Germany once again in the forefront – a country whose original consent to the monetary union in the political negotiation with France in 1989-91 was based precisely on those rules.

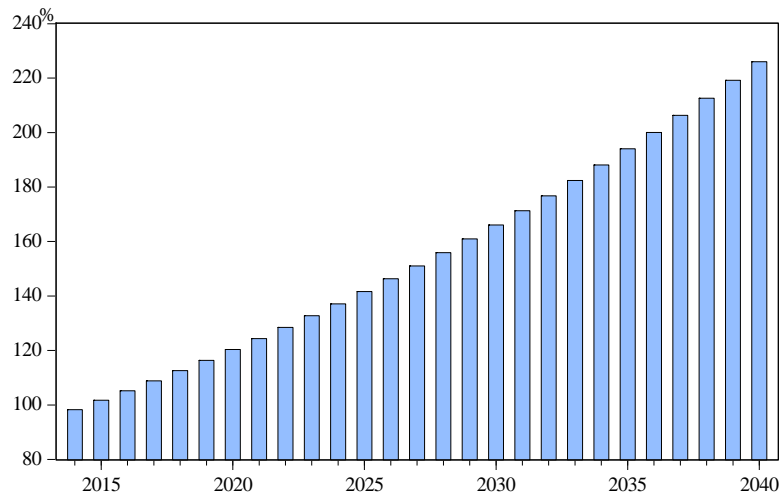
The third possible way of avoiding these rules would be to rely on other countries' toleration of non-compliance. This free-riding approach might be available to larger countries – notably, Italy and even the largest of the Eurozone's less competitive economies, France. However the debt to GDP ratio would rise rapidly.

Let us take the example of France and assume that France is successful in obtaining additional flexibility. By December 2013, France's budget deficit stood at 4.3% (Figure 1) and level of debt to GDP ratio at 93.5% of GDP (Figure 3) – both levels exceeding the norms laid down in the Fiscal Compact (a target for budget deficit of no more than 3% of GDP, -0.5 percent of GDP for the structural deficit, that is adjusted for the cycle and net of one-off measures, for countries with a debt to GDP ratio higher than 60 percent, and the debt-to-GDP ratio must fall at an average pace equal to one-twentieth of its excess over 60% each year in order to reach 60% over a period of 20 years). At the same time, economic growth was close to zero.

We assume that neither the potential growth rate nor the primary deficit dynamic improves. Interest rates on French and German government bonds tend to move closely together (Figure 4) allowing France to borrow at relatively low

interest rates. Assuming that low interest rates close to German levels persist, this loose budget constraint will account for the current pace of debt accumulation continued by means of unchanged structural deficits and a persistent wedge between debt-servicing costs and nominal GDP over the long term of about 2%. No debt monetization is assumed. Debt accumulation may further accelerate and follow an explosive trajectory as illustrated by our debt projections (Figure 5).

FIGURE 5 – PROJECTIONS OF FRANCE’S PUBLIC DEBT TO GDP RATIO, 2014-2040.



Notes: In order to arrive at the debt sustainability projections, we assume that the government budget constraint takes the following form $b_t = \frac{1+i_t}{1+g_t} b_{t-1} - pb_t$ where b_t is the government debt to GDP ratio, i_t is the nominal interest rate, g_t is the nominal growth rate of GDP, pb_t is the primary balance of the general government budget. Simple arithmetic gives the debt-accumulation equation derived from the government budget constraint $\Delta b_t = \frac{i_t - g_t}{1 + g_t} b_{t-1} - pb_t$.

Source: Authors' calculations, data from IMF WEO, October 2013.

The French political elite may decide to delay compliance with the budget targets mandated by the Fiscal Compact, and this may bring some political rewards at home; but the debt burden would rise. We should note however that even if the French government decides to comply with the budget targets, of course the budget deficit will be reduced but the debt to GDP ratio will still rise given the current situation of zero economic growth and low inflation rate (about 0.7 %) and this with bond yields as low as 1.7%.

The 'scary' Exit

An alternative way to overcome the difficulty of convincing the public of the case for remaining in the monetary union would be for the political elite to present a case that the (rising) costs of remaining would still be lower than the costs of leaving. Portrayed as unacceptable, the short-term costs of EMU exit lead the public to fear an exit from the euro. This highlights the importance of providing some preliminary estimates of the costs of exiting from the monetary union.

Consider a four-to-five variable vector autoregression (VAR) estimated with quarterly national statistics for France, Germany, Italy, Portugal and Spain from 1983: I and 2013: III. We apply the same set of equations and time frame to our sample of five countries to ensure comparability of results. The model covers the longest possible horizon (subject to structural break testing) to maximize the precision of pass-through estimates.

Currency impact: based on the evolution of the ULC since the euro started trading in January 1999, we measure the degree of currency adjustment post EMU dissolution (Table 3). The real exchange rate is the nominal exchange rate adjusted by wage and productivity (ULC) differentials (Golub, 1994).

The results based on the relative evolution of broad-economy price indices are in line with the results given by the relative labor costs. We define the real exchange rate as $e_t \equiv n_t - p_t + p_t^*$, where n_t represents the long exchange rate in units of domestic currency per units of foreign currency and * denotes the foreign economy. We assume that price indices are averages of prices of tradable and non-tradable goods and services: $p_t = \theta p_t^N + (1 - \theta)p_t^T$ and $p_t^* = \theta^* p_t^{N*} + (1 - \theta^*)p_t^{T*}$. Assuming that the weights of tradables in the price baskets are

equal, we introduce inter-country relative indices of tradables and non-tradables in the real exchange rate equation: $e_t = n_t - p_t + p_t^* - \theta(r_t^N - r_t^T)$ where r_t^N and r_t^T denote the inter-country log differences in price levels. Chinn (2006) argues that changes in the relative prices of non-tradables are small for most economies while according to Engel (1999), equalising prices of tradable goods would not be an appropriate assumption to make. As such, the relative exchange rate may be adequately represented by: $e_t = n_t - p_t + p_t^*$. It is the exchange rate that achieves external balance in trade in goods and services. We now use the framework to introduce the concept of cost competitiveness (Marsh and Tokarick, 1996). We use a mark-up model of pricing: $p_t^T = \log[(1 + \alpha_t) \left(\frac{W_t}{A_t}\right)]$ where W_t is the nominal wage rate, A_t is hourly productivity and α_t is percentage mark-up. Substituting into the real exchange rate equation and assuming constant mark-up, we get: $e_t = n_t - (w_t - a_t) + (w_t^* - a_t^*)$, where a_t represents hourly productivity and $(w_t - a_t)$ stands for unit labour cost.

TABLE 3 – SHORT TERM IMPACTS OF EXIT: CURRENCY, ANNUALIZED INFLATION AND EXPORT IMPACTS BASED ON FX PASS-THROUGH (95 PER CENT CONFIDENCE) (IN PERCENT). 1983-2013 Q3 DATASET.

	Currency impact	Inflation impact	Inflation impact	Export impact
	Over (+)/ undervaluation(-)	4 quarters cumulative impact	8 quarters cumulative impact	4 quarters cumulative impact
Germany	-15.4%	-3.7%	-7.4%	-8.1%
France	+20.2%	+0.8%	+1.1%	+8.7%
Spain	+17.9%	+4.3%	+7.9%	+4.3%
Italy	+27.2%	+2.2%	+4.5%	+11.95%
Portugal	+18.1%	+2.7%	+4.2%	+1.44%

Note:

Germany's currency adjustment versus its 10 largest trading partners. Other countries adjust versus Germany.

Sources: Authors' calculation; OECD Economic Outlook, National Statistics Institute, Bloomberg.

Table 3 (column 1), based on OECD's relative ULC evolution, shows that Germany would see a 15.4% currency appreciation versus trading partners following the EMU break up while France would see 20.2 % currency depreciation, Italy, 27.2%, Portugal, 18.1% and Spain, 17.9%.

Inflation impact: The inflation impact critically depends on the degree of domestic price changes owing to exchange rate variations (i.e. the so called exchange rate pass-through) (Devereux and Engel, 2003). We therefore estimate the inflation impact of these currency adjustments by estimating the exchange rate pass-through to inflation in both debtor and creditor economies.

We follow the simultaneous-equation frameworks proposed by McCarthy (2000) and Hahn (2003). The structural shock is identified by careful ordering of the variables of interest and the use of Cholesky decomposition to the covariance matrix of the reduced form residuals.

We consider a four-variable VAR ordered as: an oil price variable $crude_t$, a real output variable y_t , an exchange rate variable e_t , a consumer price index variable cpi_t . We have altered the original McCarthy and Han pass-through frameworks by excluding market interest rate variables as they have been affected by unconventional monetary policy post 2009. The oil price variable and the output variable capture the effects on the real economy.

Sensitivity analysis does not alter the results meaningfully for other specifications. The key results remain consistent across identification schemes. A standard structural break test validates our view that pass-through can be estimated for the full 1983-2013 period, as opposed to focusing solely on the euro existence period (starting in 1999). Given that all of our variables are likely to be non-stationary (based on PP, ADF and KPSS testing), a VAR in the first differences is the appropriate specification (Marcet, 2005). The lag length of the model for each country is determined by looking at a range of information criteria as well as specification tests. The optimal lag length for the economies in our sample is generally between 2-3 quarters.

Table 3 (columns 2 and 3) shows that Germany (a nation of savers) would see a period of disinflation; the inflationary impact on Italy and Spain seems relatively

strong whereas that on France reasonably muted, highlighting that France is the debtor nation with the greatest incentive to exit the EMU. Spain and especially Italy's debt to GDP dynamics and slow progress of micro-reforms indicate that debt monetization may be the most utilized option in these economies post EMU-dissolution, justifying the result further. Similarly, France is an economy where its capital base and the structure of the economy make it most suited to benefit from an export boost on the back of a weaker currency. Campa and Goldberg (2005) suggest that short but in particular medium to long-term inflation pass through in Spain is substantially higher than it is in France.

Export impact: Based on our estimates of the currency adjustments required, table 3 (column 4) reports the impact on exports of the exchange rate movements following an EMU dissolution. We consider a five-variable VAR applying the Ito and Sato (2008) and Shioji (2012) framework, used by the Bank of Japan, ordered as: oil price index $crude_t$, exchange rate e_t , general price level cpi_t , exports price level $cpix_t$, real exports x_t .

Our preliminary estimates show that while in the short to medium term Germany would suffer a substantial reduction of exports and net foreign asset losses following EMU dissolution, France would see a relatively muted inflation impact and a significant exports boost. Germany loses its competitive advantage (REER undervaluation). The 8% decrease in German exports can be translated into a one-off GDP loss of -4%; we also expect a lower long-term equilibrium contribution of net exports to GDP estimated as costing about 0.6% of annual GDP. The restored deutschmark's adjustment against Eurozone currencies would result in a net foreign assets loss equivalent to 16% of German GDP. This is a function of simple multiplication of the degree of Deutschmark adjustment versus major trading partners and the absolute stock of Germany's net foreign assets.

France sees a nominal exchange rate depreciation, and decline in the value of foreign liabilities because liabilities to non-residents are subject to domestic law contracts, allowing the French government to redenominate those liabilities into the reintroduced – and devalued – national currency.

Conclusion

Based on the use of the Brender and Drazen model, we come to the conclusion that within the current EMU macroeconomic policy construct, it is very unlikely to find outcomes that will be feasible from both the fiscal-sustainability and political economy perspectives.

This leaves Eurozone governments with two options namely avoiding the rules (this may be open to large countries such as Italy and France) or instilling public fears about the cost of the exit option. Avoiding the present rules may bring some political rewards to the political elite but the debt burden would rise. Scaring the public out of an eventual exit has motivated our attempt to provide some preliminary estimates of the short term costs of exiting the EMU.

We recognize that we are using an equilibrium framework to model a transition dynamic and hence our estimates can be biased. While we recognize that our estimates should be taken with caution, it is our view that the governments of the EMU will face increasing challenges in maintaining public support for EMU. While break up costs cannot be underestimated and are difficult to estimate econometrically, they affect EMU economies in a very heterogeneous manner, and the long-term consequences for the less competitive countries of remaining in the EMU need to be also taken into account in these deliberations.

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