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Curing Europe's addiction to borrowing: Germany's debt brake as a panacea?

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With the European Union ravaged by a debt crisis never seen since World War II, a feverish search for working solutions among Europe's politicians never ceased. The stakes are huge: in most of the Member states, neither national level approaches like voluntary fiscal discipline, nor European level mechanisms like the Stability and Growth Pact have succeeded in preventing governments from excessive borrowing. In doesn't come as a surprise then, that at the level of the Union, and of the Euroarea as well, the public debt ratio has been on the rise for decades. More rigorous debt avoiding policies are called for and keeping policy makers away from meddling with the budgetary process is meanwhile seen quite advantageous.

A flexible fiscal tool for limiting public debt that can be insulated against political interference is the so called debt brake. Germany, the economic heavy weight of the Union, decided on such a mechanism and even amended its constitution to make fiscal policy immune against bids to manipulate it. Other member states have declared they will follow. At a cursory glance this looks appealing. To reverse the destructive trend of high indebtedness is a good idea not just because of the high economic cost of debt but also given Europe's fast ageing population.

Sacrifice bills and opportunity cost of debt reduction

Much hope is attached to the German debt brake, yet would it deliver? Before getting into details[1] it should be born in mind that policy makers inevitably face a tradeoff between cutting budget deficits and subsequent reductions of the debt ratio on the one hand, and the ensuing economic and political cost on the other. In monetary policy, the cost associated with getting the inflation rate down is called "sacrifice ratio". Using the same approach, we can calculate the respective sacrifice ratio of implementing a German-style debt brake across the EU, i.e. the economic cost of rebalancing the budget. It can be econometrically estimated as a GDP loss per every percent of budget deficit reduction. Then the ratio would be, say, 2, 3, 4 or the like; however, this wouldn't be a good guidance for policy makers and economists. A better approach would be then to show the pain in real terms, for instance, with regard to the sensitive issue of unemployment. Intuitively, one would expect unemployment to rise if there is a resolve to stop borrowing and to crack down on the process of ever growing indebtedness, at least in the short run. Historically, it always has been this sort of pain policy makers wanted to spare the voters that made the public debt expand.

[1] For a summary of the merits of Germany's debt brake see more recently Lars P. Feld, „Sinnhaftigkeit und Effektivität der deutschen Schuldenbremse", in: *Perspektiven der Wirtschaftspolitik*, 11 (2010) 3, p. 233ff.

On the design of the German debt brake

The German debt brake (GDB) is a new-style fiscal tool converting the hitherto discretionary (case to case) deficit policy of the German Federal and local governments into a rule based budget balance policy and thus allowing for deficits in downswings while enforcing their elimination in upswings.

Technically, the GDB takes into account the expected output gap in percent of output in year t (actual GDP minus trend GDP divided by the latter) which then is being corrected by the so called budget sensitivities. The budget sensitivities **σ** gauge the change in the budget balance as a percent of GDP when the output gap changes by one percent.[2]

Accordingly, the cyclical component of the deficit in year t is

$$cc_t = \sigma OG_t$$

σ is calculated by aggregating the elasticities of three budgetary revenue items and one spending item. They capture the percentage change in the respective budgetary item associated with a percentage change in output. The revenue items are *personal income tax*, *corporate ta*x and *indirect taxes*. The spending item is expenditure on labor market policies (*unemployment*). All items are weighted according to their share of GDP.[3]

Ex-post discovered errors in estimation of indicators, e.g. discrepancies between projected and actual revenue collected are booked in a so called adjustment account and correction must take place.

Moreover, in case a shock has caused the actual deficit to deviate from the permitted one, the GDB requires a restoration of the balance by following a predetermined path.

Unemployment is a sensitive issue for another reason as well. In the large continental EU member states, unemployment rates have been for many years stubbornly high - between 2001 and 2010 on average in the vicinity of 8.5 percent in Germany and France, 11 percent in Spain and almost 8

[2] EU Commission, Public Finances in EMU 2006, Box II.3: Budgetary sensitivities: definition and construction, p. 116, http://ec.europa.eu/economy_finance/publications/publication423_en.pdf

[3] M. Meurers, Wirtschaftspolitische Aspekte der neuen Schuldenregel, in: Schlaglichter der Wirtschaftspolitik, Monatsbericht April 2011, Federal Ministry of Economics and Technoliogy, p. 7-12

percent in Italy. The overall rate is made up of two components: the structural component and the cyclical unemployment, which fluctuates around the NAIRU (non inflation accelerating unemployment, in short the natural rate of unemployment). The NAIRU is well explained by structural factors, and since the structural component is a matter of domestic (labor market) policies a fiscal tool like the German debt brake barely would affect the cyclical unemployment, let alone in the medium run. In contrast, a rigorous debt brake would certainly cause structural unemployment to increase - making politicians even more reluctant to implement the tool.

For this reason we calculate the economic cost of the brake using the concept of cyclical unemployment. Accordingly, the debt reduction sacrifice ratio is modeled in two steps.[4]

First, we consider the long-term condition of sustainable public finances:

$E_L = T.(Y^t/Y)$; $T = \tau.Y \rightarrow$

$E_L = \tau Y^t$ (1).

The symbols are:

E_L is the sustainable (long-term) expenditure limit; T is the revenue rate (taxes collected) of GDP; Y is the actual GDP (output), Y^t is the trend output, and τ is the tax ratio (size of government spending) as a share of output.

The budget deficit is the shortfall of expected revenues from planned expenditures: $d = E_L - T$; a rearrangement of the form

$d = \tau Y^t - \tau.Y = \tau.(Y^t - Y)$ produces a link between deficit and potential gap:

$d = \tau(Y^t-Y)$ (2) and

$(Y^t-Y) = d/\tau$ (3).

Second, based on the Phillips curve we can write the relationship between the shortfall of the actual output from its potential (which is the potential gap), and cyclical unemployment:

$1/\alpha.(Y^t-Y) = -\beta(u^n - u)$, where α indicates the responsiveness of output to sudden changes in the price level, and β is a parameter capturing the percentage change of output when cyclical unemployment $(u^n - u)$ rises/falls by one percent. The term

$1/\alpha.(Y^t-Y)$

is part of the short run aggregate supply equation: $P^e=P+1/\alpha.(Y^t-Y)$, with P, P^e the actual and the expected price level, respectively.

Therefore $(Y^t-Y) = d/\tau = -\alpha\beta(u^n - u)$ (4) ;

$\rightarrow$ $d = -\alpha\beta\tau(u^n - u)$ (5).

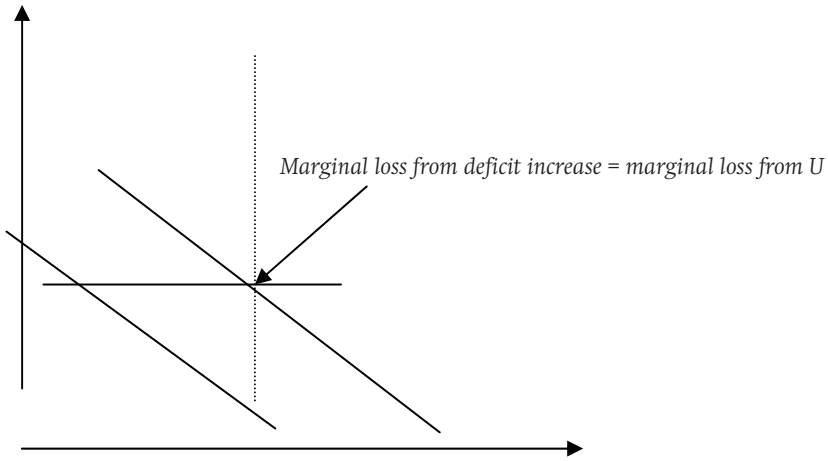
[4] For a good overview see Lawrence Ball, What Determines the Sacrifice Ratio? NBER Working Paper No. 4306, March 1993, p.155-194, http://www.nber.org/chapters/c8332.pdf

Equation (5) states that the budget deficit and the deviation of unemployment from NAIRU are inversely related. That is, when the deficit is reduced, unemployment is initially higher than the natural rate of unemployment. Reducing budget deficits would – other things equal – prompt an increase in cyclical unemployment. While β and τ are known, it is necessary to obtain α when gauging the cost of debt reduction. In general, we follow Robert Lucas as well as Ball/Mankiw/Romer in assuming that the short run aggregate supply curve in the EU is rather flat, making "alpha" relatively big. We consider it being around two. When estimating "alpha" we consider all EU member states low inflation economies. In this case real changes in output are closely related to nominal ones. That wouldn't be the case in high inflation economies, where real output barely responds to changes in nominal GDP.[5]

Graph 1 shows the deficit-unemployment link, i.e. the debt reduction sacrifice curve. Here αβτ serves as the sacrifice coefficient; it determines the position and slope of the curve. Over time the position of the schedule may shift: if the unemployment rate is below its natural rate there will be a downward shift. If the unemployment rate is above the natural rate, the curve will shift upward. Also, the slope may change, for instance if the size of government changed, or if labor market reforms made "beta" to change, and so on.

Graph 1: The debt reduction sacrifice curve

Budget deficit d



Cyclical unemployment U

Having established the link between deficit and unemployment we can calculate the macroeconomic cost of fighting indebtedness. The latter

[5] For theoretical and empirical discussion see Robert E. Lucas, Jr., Some International Evidence on Output-Inflation Tradeoffs. American Economic Review 63 (June 1973) pp. 326-334, and L. BALL, N. Gr. MANKIW, D. ROMER, The New Keynesian Economics and the Output-Inflation Tradeoff. Brookings Papers on Economic Activity, 1:1988, pp. 1-65.

implies fewer deficits, of course, which would, according to equation (5), translate into rising unemployment. Here we use Okun's law to estimate β around 2.3 as an average figure for the EU.[6] The tax rate is in the EU on average in the vicinity of 0.43. This puts -αβτ between -1.9 and -2.0. Therefore one percentage point of deficit cut would prompt unemployment to rise by approximately 2 percentage points. At the level of individual member states the employment loss may vary, however, given different size of government and different individual "betas" (see Table 1).

Table 1: Deficits and unemployment in the EU*: Sacrifice coefficient by country

	α	β	τ	**αβτ**
Austria	2	3.68	47.1	**3.5**
Belgium	2	1.09	48.2	**1.1**
Denmark	2	1.21	53	**1.3**
Finland	2	1.73	50.6	**1.8**
France	2	2.91	47.1	**2.7**
Germany	2	2.47	42.9	**2.1**
Italy	2	1.09	45.4	**1.0**
Netherlands	2	1.11	45.1	**1.0**
Sweden	2	1.87	52	**1.9**
UK	2	1.39	39.4	**1.1**
Euroarea	*2*	*2.3*	*43.1*	***2.0***
EU	*2*	*2.2*	*43.2*	***1.9***

*Because of limited availability of "betas" only selected member states are considered.
Source: Stock et al. (2010), op. cit. and European Commission, (2011), op. cit.

As a next step we can assess the least possible economic and social load a member state would bear if it wanted address its indebtedness. The least to do would be to just stabilize, yet not to reduce, the nation's debt ratio. To stabilize its debt ratio a nation must not allow its budget deficit to surpass a given limit. The limit is drawn at the nominal rate of output growth times the debt ratio of the economy. If the actual budget deficit is above the limit, the authorities will have to run primary surpluses, e.g. cut on spending, raise more taxes or use a combination of both. With this approach in mind one can roughly estimate the least possible sacrifice cost

[6] Estimates for the major European economies find their "betas" above the US value of 2. However, there are significant variations in the findings depending on the chosen analytical approach and given the changing labor market conditions in EU. Therefore a value of 2.5 appears to fit in. See a good research on the subject by Luisa Stock, Kurt Vogler-Ludwig, NAIRU and Okun's Law – The Macro-Economy in a Nutshell? Final report, Thematic Paper for the European Commission Directorate General for Employment, Social Affairs and Equal Opportunities. Exonomix Research and Consulting, Munich, 2010, @ http://www.economix.org/ERC%20-%20Nairu%20and%20Okun%20-%20Final%20Report.pdf

born by the respective economy. At the level of the Euroarea (old member states) the math for the year 2011 is shown in Table 2:

Table 2: Calculation of the required deficit cut given GDP growth, expected budget deficit and debt-to-GDP ratio, percent of GDP

Nominal output growth **g** (yoy, %)	General Government budget deficit **d** % GDP	General Government public debt **D** (% of GDP)	Required deficit cut **Δd**, % GDP
(1)	(2)	(3)	(2)-(3)x(1)
3.0	4.3	89.0	1.6

Source: European Commission (2011), own calculations.

The required future cuts that would bring the deficit in line with the output growth ought to be at least 1.6 percentage points: 4.3%-(89% times 3%)=1.6%. Accordingly, unemployment will - other things unchanged - rise by some 3.2 percentage points (1.6 times -αβτ). The result by country is calculated in Table 3:

Table 3: Estimated sacrifice burden if member states decided on stabilization of their debt ratios, increase (plus)/decrease (minus) in the unemployment rate, percent

	Debt ratio 2011	Nominal y-o-y growth	Budget deficit	Deficit limit	Required deficit reduction	**Change in unemployment**
Austria	74	4.1	-3.7	-3.0	-0.7	**2.3**
Belgium	97	4.3	-3.7	-4.2	0.5	-0.5
Denmark	35.2	3.5	-4.1	-1.2	-2.9	**3.7**
Finland	52.7	6.3	-1	-3.3	2.3	-4.1
France	84.7	3.6	-5.8	-3.0	-2.8	**7.5**
Germany	82.4	3.6	-2	-3.0	1.0	-2.0
Italy	120	2.6	-4	-3.1	-0.9	**0.9**
Netherlands	69.7	3.9	-3.7	-2.7	-1.0	**1.0**
Sweden	44.1	5.1	0.9	-2.2	3.1	-6.1
UK	84.2	3.6	-8.6	-3.0	-5.6	**6.1**
EA	87.7	3	-4.3	-2.6	-1.7	**3.2**
EU	82.3	3.4	-4.7	-2.8	-1.9	**3.6**

Own calculations. Source: European Commission, DG EcFin, European Economy, Statistical

Annex Autumn 2011, Tables 3, 7, 76, 78,
http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/2011-11-10-stat-annex_en.pdf

Obviously, even in the case of the least painful policy some member states – mostly France, UK and Denmark – were to face huge economic and political cost given the significant rise in their unemployment rate. In contrast, others - Sweden, Finland, Germany and Belgium - could enjoy a reduction in unemployment, if a stabilization of the debt ratio was the fiscal goal in the first place.

This would be only a small part of the effort, however. Bear in mind that the current debt ratio in the Union is on average some 28 percentage points above the allowed Maastricht limit of 60 percent of GDP. Worse, there are huge deviations within the sample with highly indebted Greece or Ireland on the one hand, and low-debt nations like Estonia, Luxembourg and Bulgaria on the other. Stabilizing the debt ratio is hence not an option. What is mostly expected is a significant cut. But from the viewpoint of policy makers the alarming assumption then would be that stabilizing the public debt ratio via deficit reduction might stir up protests.[7]

Probably accommodating the task of reducing the General Government deficit is likely to cause a GDP decline in the short run.[8] Depending on the nation-specific multiplier the output loss may lay between good two percentage points in countries with a large consumption share of their GDP and good one percent in the rest of the member states. Countries with bigger consumption shares are traditionally those with large current account deficits and heftier debt problems – Greece, Portugal, Spain (here, as well as in many new member states with worrisome current account deficits rather the private indebtedness is an issue of concern). In euro terms, one percent reduction of General Government debt would cost say, the Euro-area, some 80 to 100 billion euros in foregone output in the short run.

Against this backdrop one can rationally understand why policy makers often appear to detest spending discipline and fiscal prudence. They would dread the opportunity cost of fiscal discipline, most likely punishment by angry voters having lost their jobs in the wake of budget reforms. This is even more crucial once the real challenge ahead is considered – not just reducing the structural deficit, but in fact eliminating it.

[7] Kastrop et al give a good overview of the heated discussion on reducing deficits. For more detail see Kastrop/Meister-Scheufelen/Sudhof (Hg.), *Die neuen Schuldenregeln im Grundgesetz*, Berlin: Berliner Wissenschaftsverlag, 2010 (Schriften zur öffentlichen Verwaltung und öffentlichen Wirtschaft, Bd. 219).

[8] The danger of output contraction has been pointed at early after the debt brake idea was brought up. See a detailed discussion by G. Horn et al, *Die Schuldenbremse – eine Wachstumsbremse?* Dusseldorf: IMK, June 2008, p. 9 (IMK Report 29), www.boeckler.de/pdf/p_imk_report_29_2008.pdf

Debt brakes: barrier to debt or a straitjacket?

Eliminating the structural deficit almost in full and a subsequent almost total repayment of the accumulated public debt is what the German debt brake and other similar deficit control mechanisms aim at. How would that goal of the debt brake conflict with the desire of policy makers to keep the opportunity cost of rebalancing low?

First of all, the German debt brake is complicated by design and it is heavily dependent on getting the statistics right.[9] The mechanism considers the cyclical position of the economy and corrects it by a few more indicators, the budget sensitivities, which are obtained from specific macroeconomic numbers.[10] That makes it necessary to regularly correct for possible errors.

Secondly, if introduced soon by central decision making (at the EU level), the debt brake might only partly be useful. One can say in good times it would. Simulations show that if such a debt brake had been in place as of the late nineties, no loans would have been taken by most member states in the upswing years 2004 to 2007. That would have allowed for keeping their overall public debt in check. Bear in mind that Europeans have become addicted to debt, borrowing even as the economy was booming. The then justification was more citizens should participate in the boom; therefore excessive spending was downplayed as socially just. The shocking truth was that Greece allowed itself at the height of the business cycle - in 2007 - a budget *deficit* by amazing 7 percentage points (pp) of GDP above the cyclically adjusted limit. Hungary followed closely with some 6 pp, and the entire Union ended up with an economically unjustified budget deficit as well, see Table 4. The truth is though, the Union as a whole and almost all member stated should have had budget surpluses, say in 2007, because of high nominal growth in that year. In fact, only few member states, especially the Nordic countries, Cyprus, and to a lesser extend Estonia, have finished the year with surpluses as required, some of them well above the permitted limit. (Spain, as well as Germany, which were allowed to run a small deficit, finished with some surpluses too).

[9] Other mechanisms seem to be more straightforward, e.g. the Swiss debt brake. It served as a blue print to the German design. See a description by Frank Bodmer, The Swiss Debt Brake: How it Works and What Can Go Wrong, in: *Swiss Journal of Economics and Statistics*, 142 (2006) 3, p. 307–330, www.sjes.ch/papers/2006-III-1.pdf

[10] On separate derivation of the cyclical and structural component of the budget deficit see particularly European Commission, Directorate-General for Economic and Financial Affairs, *Public Finances in EMU – 2008* (European Economy Series 4/2008, Box II.2.1: How the budget balance is adjusted for cyclical factors in the EU fiscal surveillance framework), p. 96-97, <http://ec.europa.eu/economy_finance/publications/publication12832_en.pdf>.

Table 4: By the German brake allowed and reported budget balance in an upswing by member state, % of GDP

Country	Permitted balance	Reported balance	Country	Permitted balance	Reported balance
Ger	-0,10	0,3	LU	1,46	3.7
Bel	0.01	-0.3	HU	1.21	-5.0
Spa	-0.15	1.9	MT	0.46	-2.4
AT	0.07	-0.9	NL	1.52	0.2
CZ	1.94	-0.7	PL	0.65	-1.9
DK	1.73	4.8	PT	-0.04	-3.1
EE	3.19	2.5	SL	2.29	-0.1
EL	0.73	-6.4	SK	1.59	-1.8
FR	0.63	-2.7	SF	2.20	5.2
IE	1.53	0.1	SE	1.91	3.6
IT	1.10	-1.5	UK	0.70	-2.7
CY	0.66	3.4			
LV	3.77	-0.3	***EA***	***0.66***	***-0.7***
LT	2.24	-1.0	***EU25****	***0.71***	***-0.9***

*Due to lack of data on Romania and Bulgaria, only a 25 country sample has been analyzed. Own calculations. Own calculations. Source: European Commission, DG EcFin, European Economy, Statistical Annex Autumn 2011, Tables 3, 7, 76, 78, http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/2011-11-10-stat-annex_en.pdf

The conclusion is, in phases of high growth a debt brake would have been helpful to prevent most of the member states from indulging in more spending. Because the GDP growth was picking-up across the entire Union, surpluses would have been the result with no harm to the economic activity.

The debt brake might have turned a problem in bad times, though. Yet debt brakes are - no matter how designed - expected to work properly, especially in bad times. Even if the GDP growth is sluggish the tool must help avoiding overspending. That is of course always the case if there wasn't a discretionary meddling in the budget process by the authorities. But what if the authorities do not care about meddling in? Employing real ex-post data on the member states we can visualize this. As shown in Table 4, in the recession year 2009 except Estonia, Denmark, Finland and Sweden all other member states had afforded larger budget deficits than a debt brake in place would have permitted. The simulations indicate that in the years of crisis, here in 2009 as an example year, Greece, Ireland, Spain and Portugal would have been prompted to cut on their public spending by some 12, 12, 10 and 9 pp of GDP, respectively (Table 5, Permitted minus Reported balance). Across the EU, the deficit reduction demanded by a

German-style debt brake would have been more than 4 percentage points of GDP.

Table 5: By the German brake allowed and reported budget balance in a downswing by member state, % of GDP

Country	Permitted balance	Reported balance	Country	Permitted balance	Reported balance
Ger	-1.06	-3.0	LU	-2.75	-1.7
Bel	-0.88	-5.9	HU	-2.88	-4.5
Spa	-1.08	-11.1	MT	-1.28	-3.7
AT	-0.78	-4.1	NL	-2.22	-5.5
CZ	-1.13	-5.9	PL	-0.91	-7.3
DK	-3.99	-2.7	PT	-1.79	-10.1
EE	-3.68	-1.7	SL	-2.81	-6.0
GR	-3.66	-15.4	SK	-0.96	-8.0
FR	-2.26	-7.5	SF	-3.60	-2.6
IE	-2.63	-14.3	SE	-3.71	-0.7
IT	-2.50	-5.4	UK	-2.53	-11.4
CY	-1.01	-6.0			
LV	-3.40	-9.7	***EA***	***-2.32***	***-6.3***
LIT	-2.75	-9.5	***EU25****	***-2.24***	***-6.8***

*Due to lack of data on Romania and Bulgaria, only a 25 country sample has been analyzed. Own calculations. Observed year: 2009. Source: European Commission (2011), op. cit.

Therefore, if GDP is stagnating or contracting, the picture might be in reality rather bleak. While governments tend to afford rather large structural deficits to keep the economy on track, the German debt brake will call for their reduction in due course and due time. The deeper the spending cut, the bigger the adjustment cost, i.e. the economic bill of the profligacy in the past. In general, the stumbling stone is the structural component of the deficit.[11]

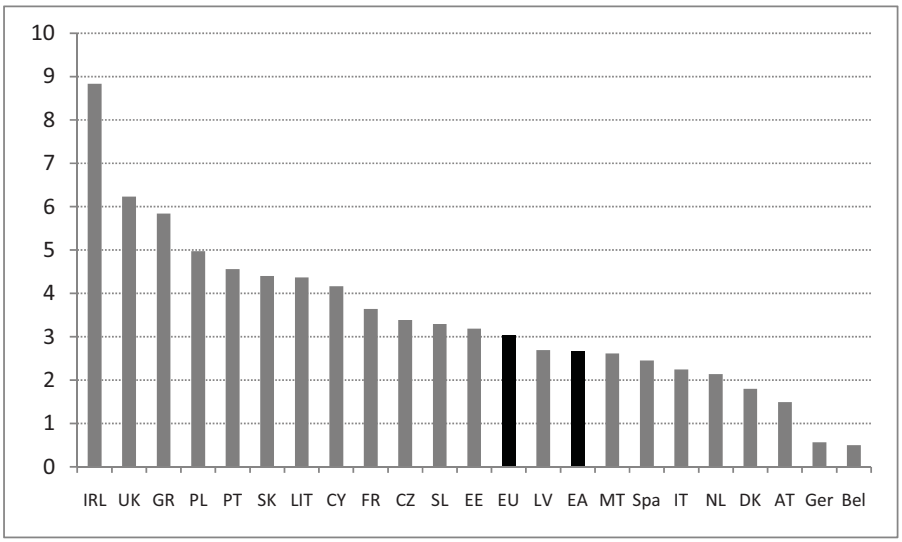
Thirdly, the German debt brake does not anticipate the possibility of a prolonged recession, since it allows for only small structural deficits to accrue over the recession period, just up to 1.5 percent of GDP. Breaching that limit would suppose a country to undertake deep spending cuts/taxation increase to restore the balance. As shown by the example on the year 2009, that would have been mission impossible: specifically Greece would have experienced an immediate output loss of possibly 20

[11] This is the case since the German debt brake does allow only for small – 0.35 Percent of GDP -structural deficits at the Central Government level over the business cycle. In contrast, other mechanisms like the Swiss debt brake do not explicitly consider a structural component of the Federal government budget deficit. See for more detail Frank Bodmer, The Swiss Debt Brake: How it Works and What Can Go Wrong, in: *Swiss Journal of Economics and Statistics*, 142 (2006) 3, p. 307–330, <www.sjes.ch/papers/2006-III-1.pdf>.

percent of GDP given a multiplier of 2 or above. Most of the other member states would have suffered either a similar output crash or they would have experienced a massive growth slow-down with employment collapsing and therefore hard-to-predict social and political effects.

In this line of thinking and looking at the member states' budget balance over the whole business cycle 2001 – 2011 we can conclude that growth across the majority of member states has been most likely powered by reckless public spending and had not been sustainable. During the last business cycle, the highly indebted member states Greece, Portugal, UK, Hungary, Ireland, and others have persistently finished the fiscal year with budget deficits far above the ones that would have been permitted by an imaginary German debt brake. Hence, the brake would have demanded massive budget realignments, as seen in Graph 2:

Graph 2: Supposed budget deficit reduction in the individual member states, the Euroarea and the European Union, percent of GDP*



*Based on the average budget deficit by country 2001-2010. Own calculations. Source: European Commission (2011), op. cit.

Therefore, had a German debt brake been in place, the economic fallout in the form of big sacrifice cost would have been enormous. In case the member states complied with the requirement to quickly rebalance their budgets, the subsequent one-off cost would have been huge as they would most likely imply a breakdown of the economy. Here, on cursory examination, is why:

The employment loss would have been between 5-6 percentage points (pp) across the EU and up to 12 pp (Greece) or 8-9 pp (Portugal) if there have been a bold move to bring the budget back to balance as required by the rules of the debt brake. No politician would have survived the lay-offs and the accompanying economic depression, and the whole system of social market economy in Europe would have been in jeopardy.

Perhaps it was the above discussed opportunity cost of fiscal prudence policy makers prefer to look at which translated into moves on the side of the government in many member states to keep voters and society content with the status quo. But at the end of the day all that has produced more debt. Moreover, had a German-style debt brake been at work, the entire economic performance by individual country and of the EU as a group as well would have been different. Most likely there would have been less growth, because the brake would have prevented governments from overspending, especially in good times. But because growth and budget performance are linked together, in "bad" times – of slow growth or in a phase of recession - the debt brake might have been even more detrimental.

It turns out debt brakes are notwithstanding their straightforward philosophy a knife with two edges. After all, the German debt brake controls almost only for the cyclical budget balance. In bad times that balance is deficit and in good times it is surplus. Over the business cycle surpluses and deficits are supposed to cancel each other out. Accordingly, unemployment wouldn't deviate from the NAIRU and the sacrifice ratio of the brake would be, if ever, negligible. The situation would be entirely different if there were structural deficits beyond a given upper limit, in the case of the German debt brake just 0.35 percent of GDP. Once a debt brake has been implemented by law, it would call for honoring the limit. But as show in Graph 2, most member states indulged in significant structural deficits during the last business cycle. Getting rid of them in good times is mostly unproblematic – the budget runs because of the positive potential gap surpluses at all.

But what if it comes to recession periods, or in a situation of sluggish growth? As seen in Graph 2, Europeans were used to run unjustified structural deficits no matter good or bad times. Faced with a policy objective to reverse the current trend of increasing debt ratios policy makers will have do chose between gradualist and "big bang", or cold turkey policies. According to the analysis sketched before, cold turkey would inflict damage in the form of a sudden recession or even depression. Hence a debt brake only might pay-off if implemented by a sensible approach. The latter means that to make sure there wouldn't be pro-cyclicality its implementation will call for a transition period. Germany allowed itself such a period of five years; Greece, Portugal, Ireland and others will need even more transition years. Because of its design, the German debt brake would reduce public demand almost at once while there is no guarantee the demand cut would be quickly made-up for by other demand components. Then it would be wise to envisage the medium-run effects of a possible debt brake in place. By intuition, in the medium run the estimated cost associated with this fiscal tool might decline. The underlying assumption is the economy will have time to adjust, especially to manage a demand shift away from public demand and towards more private and export demand.

Whether the result would be satisfactory is an open question. (A benefi-

cial supply shock would be helpful as well, for instance declining commodity prices). The truth is that most of the heavily indebted member states do not have much time to adjust; perhaps they will have to accept the cold turkey solution and go through a recession to bring their budges back to balance. Specifically, in the EU's euro-area nominal currency depreciation is ruled out, so export demand cannot expand fast enough to replace the dwindling demand of the state. The private sector may hold back with demand expansion if there is overall uncertainty about the economic future. All this makes it hard to model possible shifts within the aggregate demand and hence modeling the output growth – at least in the short run.

Yet there might be an alternative debt brake, e.g. one that wouldn't cause a recession, but would indeed reverse the debt ratio growth.

Softening the hard: an alternative rule

Introducing the German debt brake - a legally build-in tool to keep governments away from excessive borrowing - in all member states appears to be problematic.[12] To start with, a long transition period of time should be given the highly indebted countries. But they do not have much time left. A more sensible approach, as mentioned above, would do better. At the core of it is the assumption that budget deficits don't need to be banned at any cost. An economy may afford alongside cyclical some structural deficits while at the same time its debt ratio, i.e. its public debt as a share of GDP, may decline. A simple rule making sure a certain deficit limit is not breached would gradually reduce the debt ratio and the associated debt service burden. According to the rule,

i) the current General Government budget deficit = debt ratio as a % of GDP times nominal GDP growth rate less 2-3 percentage points, i.e.

$$d=D.(g-3) \text{ or } d=D.(g-2).$$

In this case the debt amount may grow further. However, the debt ratio will decline over time.

ii) In phases of sluggish nominal growth, i.e. 2% p.a. and below, the rule is simplified to

$$d=D.g\ .$$

[12] This explains why policy makers have been slow to decide upon introduction of whatever sort of debt brake even though academics have been in favor of it. See for instance a proposal for Austria to adopt the Swiss model by P. Brandner, H. Frisch, B. Grossmann, E. Hauth: The Swiss Debt Brake: An Implementation Proposal for Austria. *WKÖ Wirtschaftspolitische Blätter*, (2006) 1, Vienna 2006, www.staatsschuldenausschuss.at/en/img/debt_brake_tcm164-43446.pdf

In this case the debt ratio will stabilize. In contrast, the debt amount will expand at the rate of GDP growth.

iii) In phases of negative nominal growth, e.g. minus 1%, minus 2% etc., the rule would be

$$d=D.(g+2) \text{ or } d=D.(g+4), \quad \text{or the like.}$$

In this case both, the debt ratio and the debt amount will increase providing the economy with a stimulus.

Under such a rule full repayment of the gross/net public debt is not a political option and it is not being suggested. Under the above flexible rule, the debt ratio will decrease when output is higher than the potential output. If nominal growth is slow, i.e. real growth rate is zero or negative, the debt ratio will stabilize or it will slightly increase. In times of a deep crisis, when nominal output growth is negative, the debt ratio will rise. Statistically, the latter case is rather rare: in EU15 it has occurred only once since 1980 – in 2009.

Whether to subtract three or two points from the nominal rate of growth will depend on the natural rate of growth. In slow-growth economies with a potential rate of some 4 percent, as expected in most of the old member states, 2 percentage points would be subtracted. In faster growing economies 3 percentage points would do. The advantage of such a rule is the greater flexibility of the member states' budgets; on the down side is a longer period of time to significantly cut the debt ratio. But in the long run that shouldn't be a problem as the process will go more smoothly with barely abrupt changes in the reduction path. This will help to keep output volatility down.

The effect of the rule was tested using real data on two highly indebted member states. Either of them represents a different group of economies: one with higher rates of growth - as usual in catch-up countries. The other one is the group of mature European economies with lower growth rates. The former group is represented by Portugal, the latter by Italy. Both countries are at the core of the current debt crisis in the Union. A specific assumption has been made: Given that the flexibility rule does not put much pressure on the budget it is assumed that the shift from the public towards the private and export demand will be neutral with aggregate demand unchanged.

Test case flexibility rule in catching-up economies: Portugal

Portugal is insofar a convenient "guinea pig" as its indebtedness history coincides with its membership of the Euroarea. Twelve years ago, in 1999, the Portuguese public debt ratio of then 51 percent of GDP was seen as sustainable. Lisbon was successful in reducing that ratio in the late 1990s and the country appeared to be on track in further doing so. Unfortunately, after adopting the common currency, Portugal reversed the trend and

the debt ratio started to rise again. The reason was that it afforded itself too large budget deficits. "Too large" stands for deficits that aren't economically justified whereas a debt brake would have allowed for tailored deficits, i.e. cyclical and structural budget balances not increasing the debt ratio. At the verge of the financial crisis Lisbon would have accumulated less public debt and wouldn't have been finally rejected by the financial markets. The economically unjustified budget balance by year is summarized in Table 6, see right column.

Table 6: Portugal – allowed and reported budget balance and structural deficit, percent of nominal GDP

Year	Allowed balance (- deficit; + surplus)	Reported balance	**Of it: structural deficit**
2000	1.2	-2.9	-4.1
01	1.0	-4.3	-5.3
02	0.5	-2.9	-3.4
03	-0.5	-2.9	-2.4
04	-0.6	-3.3	-2.7
05	-0.9	-6.1	-5.2
06	-0.9	-3.9	-3.0
07	-0.7	-3.5	-2.8
08	-0.5	-3.2	-2.7

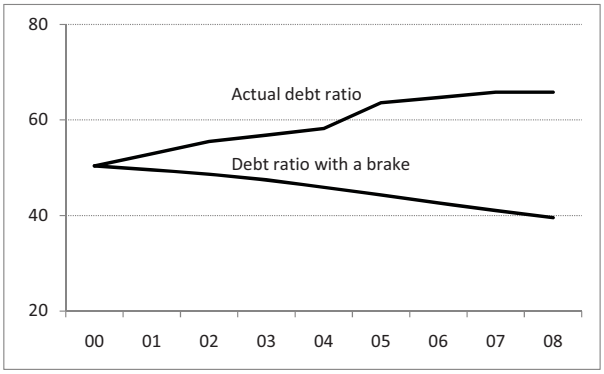
Own calculations. Source: European Commission, European Economy Series, Statistical Annex Spring 2011, Table 92, http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/2011-05-13-stat-annex_en.pdf>

The authorities in Lisbon failed in maintaining a sufficient growth in the good phase from 2002 and after. If a debt brake in the form of the above described flexibility rule was in place, the debt amount would have grown further; the debt ratio would have fallen, though. Only minor endeavor would have sufficed, as our simulation makes clear. To ensure the application of the debt brake wouldn't work pro-cyclically, the simulation considers relatively generous structural deficits. The only condition is the growth rate of the total public debt falls short by three percentage points of the nominal GDP growth rate. Notice that the cyclical deficit component is not affected, which is important especially in "bad times".

Accordingly, even such a "debt brake-light" would have caused the debt ratio to decline between the common currency adoption by Portugal and the commence of the financial crisis. The improvement would have been some 12 percentage points of GDP. In reality there has been deterioration – increase – of the debt ratio by 15 percentage points within the same period, see Graph 3. That increase turned fatal to the country, as the

financial markets decided to cut Lisbon off fresh capital in early 2011. The reverse would have been the case if there was a mechanism reducing the debt, not mentioning that its shier existence would have created trust.

Graph 3: Portugal – reported debt ratio and debt ratio with a brake*, percent of GDP



*Debt growth rate trailing GDP by 3 percentage points. Own calculations.
Source: European Commission, European Economy Series, Statistical Annex Spring 2011, Table 92, http://ec.europa.eu/economy_finance/publications/publication10898_en.pdf

Test case flexibility rule in slow-growth economies: Italy

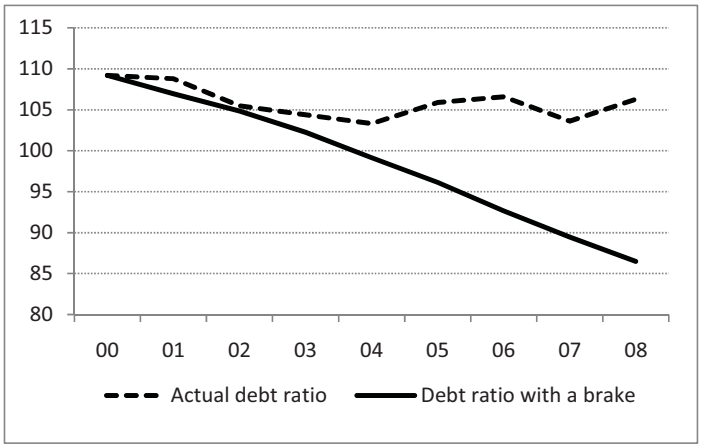
Italy, which entered alongside Greece and Belgium the common currency area with a public debt ratio much higher than the permitted Maastricht level is currently once again in a precarious fiscal situation. In the early 2000s it looked like if Rome is about to fulfill the promise to reduce its budget deficits and overall debt, see Graph 4. But with the financial crisis developing the trend reversed and Italy is currently one of the heaviest indebted member states – second only to Greece. It does not come as a surprise rating agencies started questioning the sustainability of Italy's finances reckoning the critical line is being crossed.[13]

What, if there was a flexibility rule at work already in, say, 2000-2001? In short, in that case Italy's debt ratio would have declined markedly in the period preceding the crisis. The country would have entered the crisis with a smaller public debt and the large budget deficits prompted by the crisis would have not lifted the debt to its actual stratospheric level. An autonomous working debt brake in the form of the described flexibility rule would have enabled the state to live within its means without barring the budget from cyclical fluctuations. A simulation based on the same assumptions as in the case of Portugal delivered convincing results - even under the quite loose conditions of the flexibility rule. Here is why: between 2000 and 2008 the budget is allowed to run full cyclical balance

[13] The critical limit is calculated to the formula „Interest service=GDP growth rate + primary budget surplus". Rome's fiscal position was in mid 2011 just short of it.

and some structural deficit. The latter is trailing the actual growth rate at a distance of two percentage points, i.e. the debt growth rate is always short of the GDP growth rate by 2%. According to Eurostat the nominal trend growth of Italy is some 4 percent per year, so there is enough distance to it to have the debt ratio declining, Graph 4.

Graph 4: Italy - reported debt ratio and debt ratio with a brake*, percent of GDP



*Debt growth rate trailing GDP by 3 percentage points. Own calculations.
Source: European Commission, European Economy Series, Statistical Annex Spring 2011, Table 86, http://ec.europa.eu/economy_finance/publications/publication10898_en.pdf

One lesson would then be, Italy would have been encouraged to get rid of its addiction to debt more radically. The second wisdom is that only a well balanced mechanism can help to reduce the debt load without hurting the economy. Yet the mechanism ought to be institutionalized to protect it from manipulations, or from discarding it in bad times.

Conclusions

Getting back to the initial question - would such a (non-German) debt brake do, the answer is obvious. Simulations based upon ex-post statistical data on two EU member states, Portugal and Italy, have produced convincing and positive results. The debt ratio of both countries might have declined if the rule had been in place by the early 2000s. In fact, it has not declined in Italy and has been growing in Portugal up to 2008, the last "good" year before the crisis came. In both countries, the public debt ratio would have been some 20-25 percentage points smaller on the eve of the financial crisis. With a debt burden much lighter, both nations would have not lost the confidence of the financial markets. Possibly, there would have not been a debt crisis at all in the EU.

The conclusion is that a hard debt brake as the German one is not suitable to every member state of the EU. Only nations with small structural deficits and a history of rather stable finances should implement it. Even

to them a more gradualist approach appears recommendable in order to rule out a recession. Nevertheless, governments would have to deal with costs that will accrue over a certain period of time until a budget balance is achieved. The respective heavy economic and political burden might turn a political challenge.

The rest of the Community should think of introducing the above sketched alternative, "debt brake – light", fiscal tool. It will take the countries in question longer time to get down from their stratospheric debt mountains, yet the road wouldn't be too bumpy. Only in the rather unlikely case that the "debt brake – light" wouldn't stop the debt ratio growth, more - painful - endeavors to reduce structural expenditure would be required.

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