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## Article

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# Greece and Beyond: The Debt Mechanics of the Euro

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In the wake of the financial crisis in Europe, much blame has been cast on the so called PIGS-states for their eager accumulation of national debt. But neither are the PIGS-states the sole culprits of their catastrophic situation, nor is their level of national debt the true source of misery. This paper provides evidence that debt accumulation by the poorer states in a currency union is to a certain extent predetermined, a concept we call the “debt mechanics”. Whether this effect leads into a “debt trap”, is determined not by the amount but by the use of the deficit financed government spending. Once a state is caught in the debt trap, rigorous austerity measures at home are needed to regain international competitiveness.

*JEL Codes:* F36, F34, E31

*Keywords:* Currency Union, Financial Crisis, Public Debt

## 1 Introduction

The Euro crisis gave rise to a lot of reasonable and legitimate criticism regarding the fiscal behaviour of the main deficit states. But are Greece and the others exclusively to blame for the current crisis, or is it the currency union itself that drove them into their catastrophic situation? This paper investigates how the process of integration into a monetary union produced a “debt mechanics“, which almost automatically led Greece and certain other European Monetary Union (EMU) members into swelling debt. Misjudgements of this mechanics and short-sighted pork-barrel politics have subsequently directed these states into a “debt trap”, which is characterised by continuously rising public debt and a deterioration of international competitiveness.

The debt mechanics is activated by differences in the starting conditions of states entering the currency union. These differences are reflected in certain key macroeconomic indicators, whose long term dynamics were apparently underestimated by the responsible policy actors. Part two of the paper illustrates how the debt mechanics unfolded after the introduction of the Euro, while part three describes the transition to the debt trap. Part four

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discusses how the debt trap could probably have been avoided and what lessons can be drawn for future Euro-zone members.

## 2 The debt mechanics

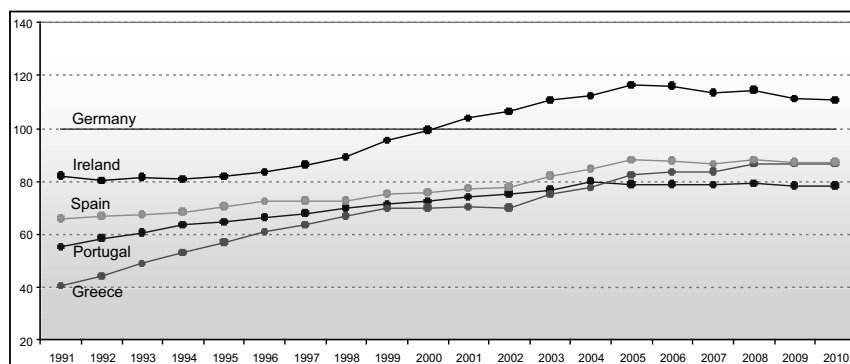
The debt mechanics unfolds in three different stages: in the run-up to the monetary union, policy makers aim at meeting the specified entry criteria. Despite these efforts, markedly different conditions prevail between rich and poor states upon their start into this union. These lead to an uneven catch-up process during the integration of capital and goods markets, which ultimately gives rise to the debt mechanics.

On the eve of the EMU in 1999, an intense debate was waged whether the states involved represented an optimum currency area or not (ARGE 1999, VON HAGEN 1999, OHR 1996, SIEBERT 2000). According to ROBERT MUNDELL, small differences in national inflation rates are one prerequisite (MUNDELL 1961). Following his argumentation, states with above-average inflation rates, which in turn lead to high nominal wage growth, would have to face an ongoing real appreciation in the currency union and would therefore lose international competitiveness. As a substitute for uniform inflation rates, MUNDELL's model proposes a high degree of international factor mobility. This would lead a state with deteriorating international competitiveness to export labour to more competitive regions within the monetary union, thus increasing the labour productivity of the remaining workforce. The process would continue until an equal level of marginal labour productivity is reached in the different regions.

It was evident from the start that the degree of factor mobility within the EMU was insufficient in order to compensate national inflation rate differences. This stressed the importance of adopting admission guidelines for the member states, which would set strict national inflation rate targets. The results are the four convergence criteria in the treaty of Maastricht, which have to be met by EU members prior to their admission to the EMU. One criterion states that the national inflation rate must not exceed the rate of the three most price stable member states by more than 1.5 percentage points.

Although the four convergence criteria were designed to guarantee a fairly homogeneous membership in the union, significant economic differences between wealthier and poorer states remained, with the latter categorized by lower price levels and higher interest rates on debt obligations.

**Figure 1:** Purchasing power parities based on consumer prices 1991–2010 (Germany = 100).



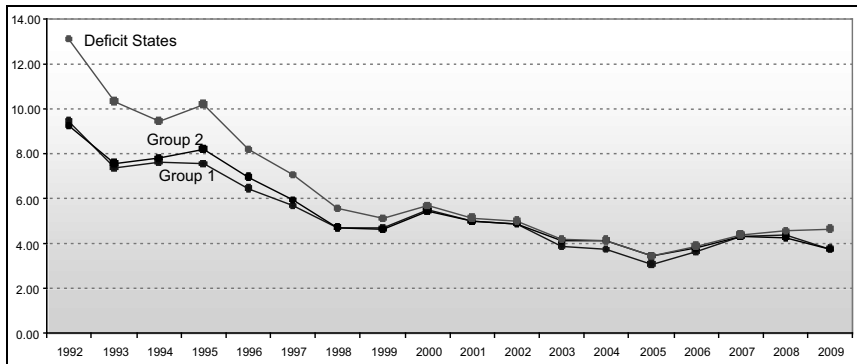
Source: OECD Economic Outlook 2010; own calculations.

Price levels make up the first key macroeconomic indicator. Their development can be deduced from Figure 1, which illustrates the purchasing power parities of the deficit states in relation to Germany. A convergence process can be traced from the entry into the EMU up to this date, indicating that price levels in the deficit states (with the exception of Ireland) were still well below the union's average in 1999.

An explanation for lower prices in poorer states is offered by the Balassa-Samuelson effect (see, e.g., SIEBERT and LORZ 2006). According to this approach, international trade tends to equalize the prices of tradable goods (industry), while the prices of non-tradable goods (services) may differ across states. As the poorer states lower level of productivity relates to tradables rather than non-tradables, the latter are cheaper than in wealthier states. The overall price level of the economy is therefore dependent on the states level of development. When a currency union between poor and rich states is formed, productivity differences will gradually be eliminated and aggregate price levels will rise faster in poor than in rich states. Depending on the gap in the union members' development, the integration of goods markets, which basically reflects the integration of the real economy, takes a considerable time to be completed.

The second key macroeconomic indicator is the interest rate level on long-term government bonds (Figure 2). In order to provide a better overview, states have been arranged in three groups according to similar interest rate development.

**Figure 2:** Interest rates for long-term government bonds 1992–2009 (in percent).



*Note:* Group 1: Belgium, Netherlands, Luxembourg, Finland. — Group 2: Germany, Austria, Italy, France. — Group Deficit States: Portugal, Ireland, Greece, Spain.

*Source:* OECD Economic Outlook 2010; own calculations.

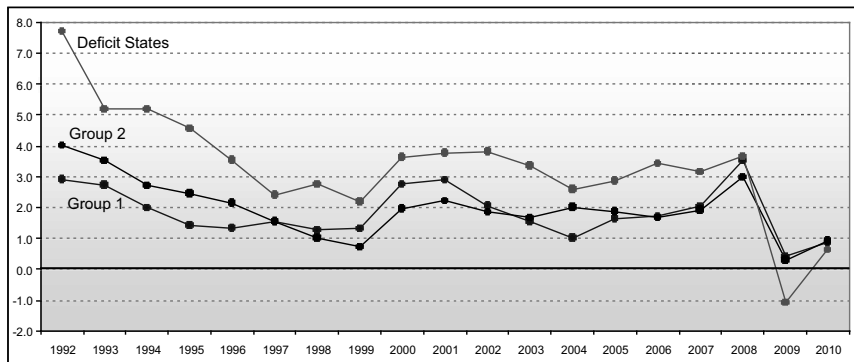
Considerable interest rate spreads between the EMU members are evident at the beginning of the 1990s. The poorer states, which form the group of today's deficit states, faced significantly higher refinancing costs than wealthier states, mainly due to a lack of investor confidence and a corresponding risk premium. But things were bound to change with the advent of the Euro and the ensuing integration dynamics.

The convergence in interest rates reflects the integration of financial markets. Compared to the integration of goods markets, the integration of financial markets happened remarkably swift. By the year 2000, the interest rate spreads had practically been eliminated, and until the dawn of the financial crisis in 2008 all member states had access to cheap refinancing of sovereign debt, formerly only available to Germany and a few other stability oriented states. By joining the union, the deficit states were able to participate in the trust financial investors put in the currency area as a whole. Only in the wake of the recent events has this trust been unsettled, as the financial world is no longer confident that the bonds of different EMU states bear more or less equal risks.

What are the reasons and implications behind the low convergence speed of goods markets compared to financial markets? As mentioned earlier, intensified economic links in the currency union cause a gradual productivity alignment in the sector of tradable goods. This in turn causes wage levels in

the poor states to rise. As the wage system links different economic sectors, a simultaneous wage increase in the non-tradable goods sector takes place. This increase is not backed by higher productivity, which causes prices for non-tradable goods to rise faster in poorer states than in wealthier ones. As a result, the poorer states experience comparatively high inflation rates throughout the protracted integration of goods markets. Figure 3 shows the national inflation rates of the current EMU member states.<sup>1</sup> The states efforts to lower inflation rates toward the beginning of the EMU in 1999 in order to qualify for admission are evident.<sup>2</sup> After monetary policy had been handed over to the European Central Bank (ECB), this progress was discontinued. Although the major inflation differences of the early 1990s did not return, there were no further improvements in the convergence process either (GLOEDE and MENKHOFF 2010). Until the disarray of the crisis in 2008, inflation rates in the deficit states have considerably surpassed the EMU average, indicating the inflationary effects of goods markets integration.

**Figure 3:** National inflation rates 1992–2010 (in percent).



Note: Group 1: Belgium, Netherlands, Luxembourg, Finland. — Group 2: Germany, Austria, Italy, France. — Group Deficit States: Portugal, Ireland, Greece, Spain.

Source: OECD Economic Outlook 2010; own calculations.

The deficit states comparatively high inflation rates are reflected ceteris paribus in high nominal growth rates of the gross national product. As long as low interest rates and high nominal growth rates prevail, states may increase their debt without running into insolvency. A formal description of the re-

1 Due to a lack of data, Malta, Cyprus, Slovakia and Slovenia were excluded from the analysis. This omission will not generate any significant distortions.

2 Greece did not join the EMU until 2001.

relationship between interest rates, nominal growth and debt is provided by Buiter and Kletzer (BUITER and KLETZER 1992). According to their concept, the states solvency is secured as long as the debt ratio (national debt to gross national product) does not permanently increase. The primary surplus, defined as the difference between the states revenues and expenditures minus interest payments, is the crucial element in this context. The higher the interest rates on capital markets, and the higher the national debt, the higher the primary surplus needs to be in order to balance the debt ratio. Conversely, the higher the states revenues, resulting from nominal economic growth, the lower the required primary surplus. Formally expressed:

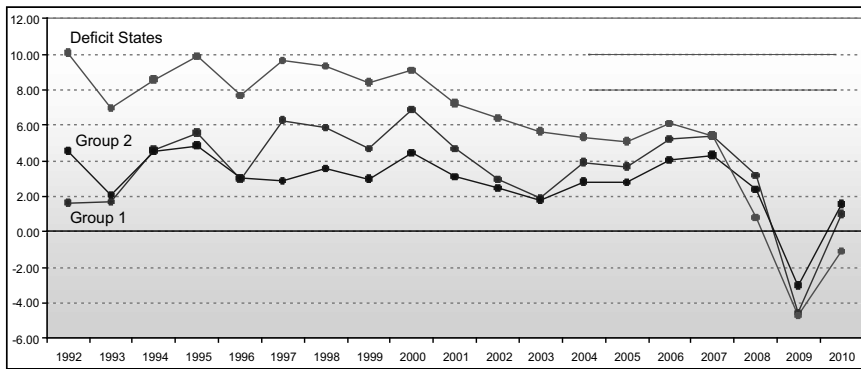
$$PS^* = (i - g) \cdot S$$

with  $PS^*$  being the relation between the necessary primary surplus and GDP,  $i$  representing the interest rate for long-term government bonds,  $g$  the growth rate of nominal GDP and  $S$  the debt ratio in relation to GDP. Thus, with an interest level of ten percent and a nominal growth rate of eight percent – assuming the debt ratio equals the Maastricht criterion of sixty percent – the primary surplus has to amount to 1.2 percent of GNP. If the interest rate drops to four percent, while nominal growth only drops to six percent, the state is able to afford a negative primary surplus (better: a primary deficit) of 1.2 percent, without jeopardising the stability of its debt ratio.

Upon joining the EMU, the deficit states found themselves in this exact situation, as Figure 4 in connection with Figure 2 indicates. Although their nominal growth rate declined, the decrease in interest rates was far more pronounced (SNOWER 2010). Had this constellation prevailed, then no debt crisis would ever have hit the deficit states. Yet, as we know today, the reality was different. The trust investors put into the deficit states economic health proved less resilient than initially thought, and these states faced increasing interest rates. Although Greece is still able to refinance its debt at more favourable rates than in the early 1990s, the excellent conditions in the beginning after the Euro implementation are clearly over. The current interest rate considerably overtops the nominal economic growth rate, the state no longer being able to afford a primary deficit. On the contrary, in order to stabilise the debt ratio now a primary surplus is required.<sup>3</sup>

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3 A deeper analysis of the financing demand of Greece is offered by SMEETS (SMEETS 2010).

**Figure 4:** Growth rate of nominal GDP 1992–2010 (in percent).

Note: Group 1: Belgium, Netherlands, Finland. (Luxembourg has been omitted due to country-specific distortions) — Group 2: Germany, Austria, Italy, France. — Group Deficit States: Portugal, Ireland, Greece, Spain.

Source: OECD Economic Outlook 2010; own calculations.

As mentioned earlier, the ultimate cause behind this development is the different integration speed of financial and goods markets. The comparatively fast integration of financial markets is reflected by converging interest rates in the states involved. In contrast, goods markets integrate at a slower pace, provoking a slower convergence in the prices of goods. States with a relatively low price level at the beginning of the integration process thus experienced a longer period with higher inflation rates than the other states.

The states with a comparatively low per capita income when joining the EMU were thus confronted with strong incentives to increase their national debt. Bearing this in mind, the increase in debt levels in those states was to a certain degree predetermined, which makes it sensible to refer to this context as the debt mechanics of the currency union.

### 3 The debt trap

In contrast to the debt mechanics, the debt trap represents an avoidable development path. Whether a state makes the transition from debt mechanics to debt trap depends decisively on the use it makes of deficit financed government spending:

- A predominance of investment (e.g. in public infrastructure or education and training) can lead to an increase in productivity, thus preserv-



ing international competitiveness despite rising prices and wages. Furthermore, when real economic integration nears completion and declining inflation rates reduce nominal growth, a cut in government spending is relatively easy to accomplish. These favourable conditions help maintain investors trust in the economy, keeping interest rates on a low level.

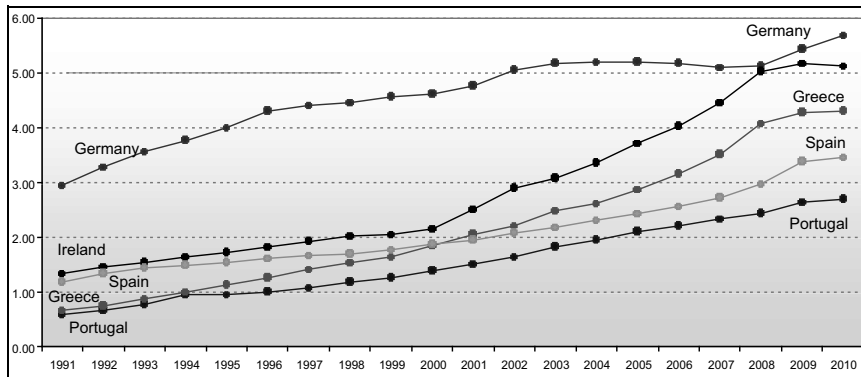
- A predominance of consumption fuels the transition from debt mechanics to debt trap, keeping productivity low while prices and wages increase. The monetary union makes a depreciation of the local currency impossible, leading to deteriorating international competitiveness. With the decrease of nominal growth in the next phase, a primary deficit can no longer be afforded. Instead, public spending needs to be cut in order to provide for the required primary surplus. The necessary reduction of deficit financed social benefits is sure to produce considerable political resistance. The worsening conditions reduce investors trust in the fiscal stability of the affected states, giving rise to a considerable risk premium and high interest rates.

A state choosing the first of these two options can deal relatively well with the debt mechanics of the currency union. It would use low interest levels and high growth rates in the initial phase to boost public investment via increased national debt. In the next phase, when the integration of goods markets followed the integration of capital markets, it would profit from the positive impact public spending had on productivity. The state thereby gained sufficient economic power to keep the temporary increase in national debt under control.

A state choosing the second option will face severe difficulties in serving its debt obligations once nominal growth rates recede. While economic capabilities remain low, the necessary primary surplus increases. If no radical austerity measures are put into effect, the state faces an unimpeded debt inflation (GLOMB 2010, BOYSEN-HOGREFE 2010).

After joining the currency union, the four deficit states effectively made use of the advantageous conditions, raising debt on capital markets to feed their social welfare systems (Figure 5). In Greece, per capita spending rose from 35 percent to 73 percent of German levels between 1999 and 2010, while at the same time growing from 39 percent to 60 percent in Spain and from 27 percent to 48 percent in Portugal.

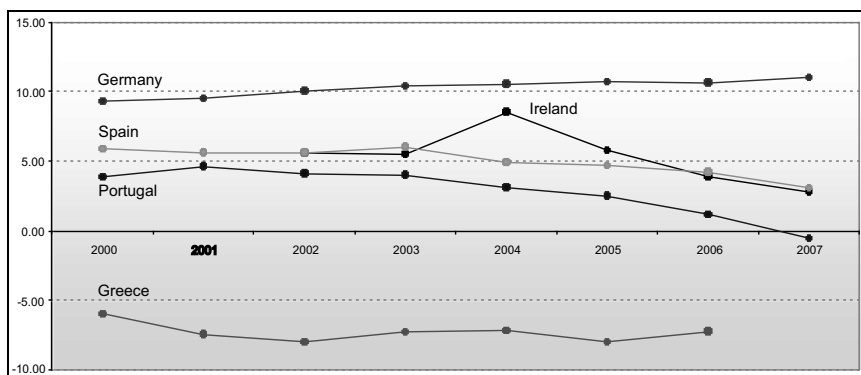
**Figure 5:** Government expenditures on social security per capita 1991–2010 (in 1 000 €).



Source: OECD Economic Outlook 2010; own calculations.

However, the debt mechanics did not only govern the behaviour of fiscal authorities, but also of private households. They, too, became addicted to low interest rates and high nominal income growth and consequently ran up private debt (Figure 6). In this respect, Greece tops the list with a savings ratio under  $-5$  percent, while in Portugal saving ratios decrease constantly since 2001.

**Figure 6:** Net savings ratios of private households 2000–2008 (in percent).

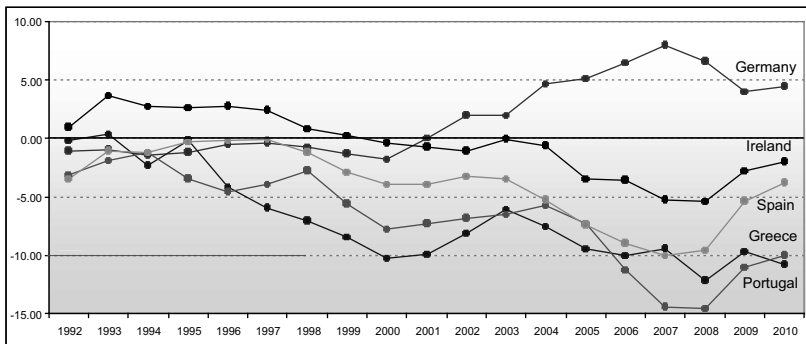


Source: OECD Factbook 2010; own calculations.

The current accounts balance indicates whether the whole state followed government and private households into living beyond their means. After the introduction of the Euro, Germany amongst others built up a vast current account surplus, while Greece and Portugal in particular fell into ever growing current account deficits (Figure 7). The driving forces behind these imbalances were the differences in wage increases, which could not be compensated by exchange rate adjustments due to common membership in the currency union. Between 1999 and 2008 nominal wages increased by 10.9 percent in Germany, at the same time rising by 36.1 percent in Portugal and by a staggering 76.5 percent in Greece (OECD 2010a). As these differences in wages were not backed by corresponding differences in productivity, unit labour costs and simultaneously international competitiveness substantially diverged (DE GRAUWE 2009, OHR 2009).

Under a regime of flexible labour markets, a loss in international competitiveness would have triggered an increase in unemployment, which in turn would have limited or even averted wage growth. But the misuse of government debt eliminated this control mechanism. At least in Greece public debt was used not only to provide generous social benefits, but also to inflate public sector employment.

**Figure 7:** Current account balances, deficit states and Germany 1992–2010 (in percent of GDP).



Source: OECD Economic Outlook 2010.

The number of public sector employees rose 21 percent between 2000 and 2007, at the same time falling 7 percent in Germany (OECD 2010b). Greek unemployment stood at 7.6 percent in 2008, a figure which gave unions and employer organisations no signal that their wage agreements were out of proportion (OECD 2010a).

## 4 A way out and a look ahead

While public debates elsewhere generally focus on the states high level of national debt as main reason for the problems resulting from the debt mechanics, those responsible for budgetary policies in the deficit states like to see themselves as victims of hard-nosed financial speculators. According to the analyses presented in this paper, both views miss the point. The true problems are excessive claims in the deficit states, which constantly overstrain the national budget as well as the labour market. A sustained increase in public and private savings and a significant decrease in real wages will be inevitable in order to regain economic strength and investors' confidence (WINKLER 2010). Experience shows that such corrective measures can only be enforced against massive political resistance and a drastic surge in unemployment.

Ultimately, internal efforts are the only remedy for states that slipped through the debt mechanics of the currency union into the debt trap. Once the initial phase of the currency union with its low interest levels and high growth rates expires, there is no alternative to budget consolidation and restrained wage policies (BELKE 2010). Help for those facing an increased necessary primary surplus does neither lie in international coordinated macroeconomic politics nor in capital market regulations nor in standby credits from other states – the only effective help comes from determined corrective measures in the deficit states themselves. Whether these will be able to muster the necessary strength for this task has to be seen.

While the current deficit states are looking for a way out of the debt trap, it is worth taking a look ahead at potential future members. If our reasoning proves to be correct, the new member states will experience similar effects. In 2010, the Euro candidates Estonia (6.8 percent), Bulgaria (5.9 percent) and Poland (5.6 percent) all face refinancing rates well above the Euro-zone average (4.0 percent), which, in case of admission into the currency union, are likely to fall. If the current growth rates of 2.5 percent (Estonia), 3.0 percent (Bulgaria) und 5.8 percent (Poland) are further bolstered by integration and inflation effects, all prerequisites for the debt mechanics are at hand.<sup>4</sup> Hope remains that policy makers in these states will understand the deficit states' problems as an instructive example and favour sustainable investment over short-term social welfare. Or, as WARREN BUFFET put it: "Profit from folly, don't participate in it."

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4 Figures for April 2010 (EUROSTAT 2010).

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