BOOM-BUST CYCLES, IMBALANCES AND DISCIPLINE IN EUROPE
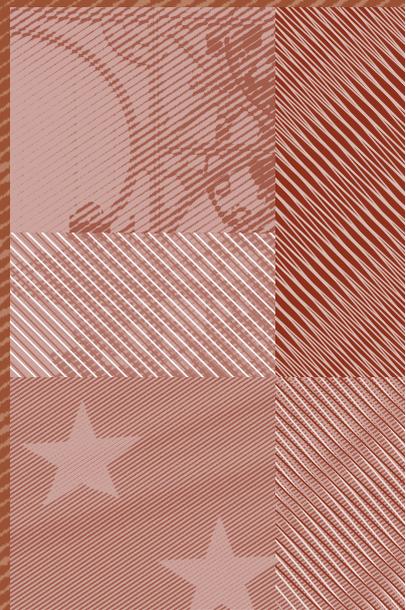
Enrique Alberola, Luis Molina and Pedro del Río

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BOOM-BUST CYCLES, IMBALANCES AND DISCIPLINE IN EUROPE [(*)]

Enrique Alberola, Luis Molina[(**)] and Pedro del Río

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Abstract

The fallout from the 2008 financial crisis has been particularly acute in the euro area Member States of the south-western rim and in the new EU Member States, due to their previously accumulated macroeconomic and financial imbalances. The perception that the euro environment provided a solid shield against economic instability shaped the incentives, expectations and actions of agents, markets and policymakers. This, in turn, eroded discipline at all levels: EU-wide surveillance, domestic policies and markets. The empirical analysis of this paper, focused on market discipline, shows that before the crisis credit risk premia neglected fiscal imbalances and hardly reflected external or financial imbalances, in particular in advanced economies. This result is partly explained by the masking effect of the expansionary phase on underlying imbalances. The crisis has shattered the perception of the euro as a safe haven for economic stability, where imbalances do not matter. Moreover, the severity of the crisis has uncovered the fragilities of the institutional framework underpinning the euro and is leading to its reinforcement by means of stronger economic governance and surveillance. Going forward, however, a further two factors may exert a greater impact on the future discipline and stability of the European economies: i) more stringent financing conditions by markets, contingent on fundamentals, although there are doubts on the persistence of this discipline in future expansionary phases; and, above all ii) domestic policymaking conduct that is consistent with the constraints that EMU entails. These three forces could settle the European integration process and EMU on a more solid footing, although the jury is still out.

Keywords: Financial crisis, fiscal discipline, credit risk, euro area, CDS.

JEL classification: G01, G15.

Resumen

Las secuelas de la crisis financiera que estalló en 2008 han sido especialmente severas en los países de la periferia sur y oeste del área del euro y en los nuevos miembros de la Unión Europea, a consecuencia de los desequilibrios macroeconómicos y financieros acumulados previamente. La percepción de que el entorno del euro proporcionaba un marco sólido que protegía de la inestabilidad económica modeló los incentivos, las expectativas y las actuaciones de los agentes, tanto los políticos como los mercados. Esta percepción errónea erosionó la disciplina a todos los niveles, tanto la derivada de la supervisión de la Unión Europea como la de las políticas nacionales y la de los propios inversores. El análisis empírico del artículo, que se centra en la disciplina que podría haber impuesto el mercado, muestra cómo antes de la crisis las primas de riesgo no reflejaban los desequilibrios fiscales y apenas lo hacían con los desequilibrios externos o los financieros, en particular en las economías desarrolladas. Este resultado se explica, en parte, porque la fase expansiva del ciclo enmascaraba los desequilibrios subyacentes. La crisis quebró el espejismo del euro como refugio seguro, donde los desequilibrios no eran tenidos en cuenta. Además, la gravedad de la crisis ha puesto al descubierto las fragilidades del marco institucional que apuntalaba el euro, lo que ha llevado a un refuerzo de los procesos de gobernanza económica y supervisión de la misma. De cara al futuro, otros dos factores pueden tener un impacto mayor sobre la disciplina y estabilidad de las economías europeas: unas condiciones de financiación más restrictivas por parte de los mercados, dependientes de la evolución de las variables fundamentales (aunque hay dudas de que esta disciplina se pueda mantener en las fases más expansivas del ciclo), y, sobre todo, un comportamiento de las políticas macro nacionales coherentes con las restricciones que implica la pertenencia al euro. Estas tres fuerzas podrían, conjuntamente, resolver la encrucijada de la integración europea y asentarla sobre unas bases más sólidas.

Palabras claves: crisis financiera, disciplina fiscal, riesgo de crédito, área del euro, *Credit Default Swaps.*

Códigos JEL: G01, G15.

1 Introduction

The global financial crisis has impacted Europe in three distinctive ways. First, the financial and economic collapse in September 2008 led to a widespread recession and shook the European financial institutions, in particular those more exposed to US toxic assets. Second, there has been a sudden stop of foreign capital flows (typical of emerging market crises in the past) which affected in particular those countries whose economic growth had largely been externally financed. Third, the crisis-induced economic and financial adjustment has led to sovereign debt concerns, mainly in those countries where the previous economic boom had masked structural economic and fiscal weaknesses and where future growth prospects are uncertain.

The two latter impacts have impinged on the new EU Member States (NMS) —in particular the Baltic countries with the most rigid exchange rates, and on the euro area south-western rim —Greece, Portugal, Ireland, Spain and Italy. The analogies of both 'European peripheries' in the run-up to and the fallout from the crisis are striking. In both cases – EU accession and the adoption of the euro, respectively – a strong and sustained economic expansion ensued, but at the cost of ever larger economic and financial imbalances. Also in both cases, the crisis hit strongly these same economies, with a certain lag in the case of the euro area periphery, and a painful and long adjustment is under way. Finally, in both groups, some countries required external financial support to avoid economic default. With hindsight, those imbalances were unsustainable, but —again in both cases— neither the markets, nor the authorities paid due attention to them. It was a mirage shattered by the global financial crisis.

In this paper, we analyze the inception of the crises in both peripheries, how the European policy framework (in a wide sense) contributed to the accumulation of imbalances, and what are the lessons to be drawn for reshaping it on a sounder basis.

The paper consists of two parts. The first part (sections 2 and 3) is a descriptive assessment of the European environment – both in the euro area and in the accession countries – which led to the crises. The European framework comprises two closely interlinked dimensions: the institutional setting (the EU, ERM II, EMU and their attendant surveillance and rules) and the economic setting, where the behavior of markets and policies played a key role. We argue that the perception that European institutions provided a solid shield against economic instability shaped the incentives, expectations and actions of agents, markets and policymakers. This, in turn, eroded discipline at all levels: markets, surveillance and policies. When the crisis hit, the large imbalances surfaced in full view of the markets, which dramatically changed their views and prompted the dire consequences some countries are still experiencing.

The second part (section 4) incorporates these ideas into the data, providing empirical backing, in general, to our hypothesis. We analyze the disciplinary behavior of markets through an econometric analysis of the fundamentals of the risk premium embodied in the CDS for a wide group of emerging market and advanced economies, with a special focus on Europe after the crisis. Two exercises are performed: the first is a panel of a large sample of advanced and emerging countries, and the second a cross-section of a more limited group, focusing on Europe, which allows us to introduce forward-looking variables.
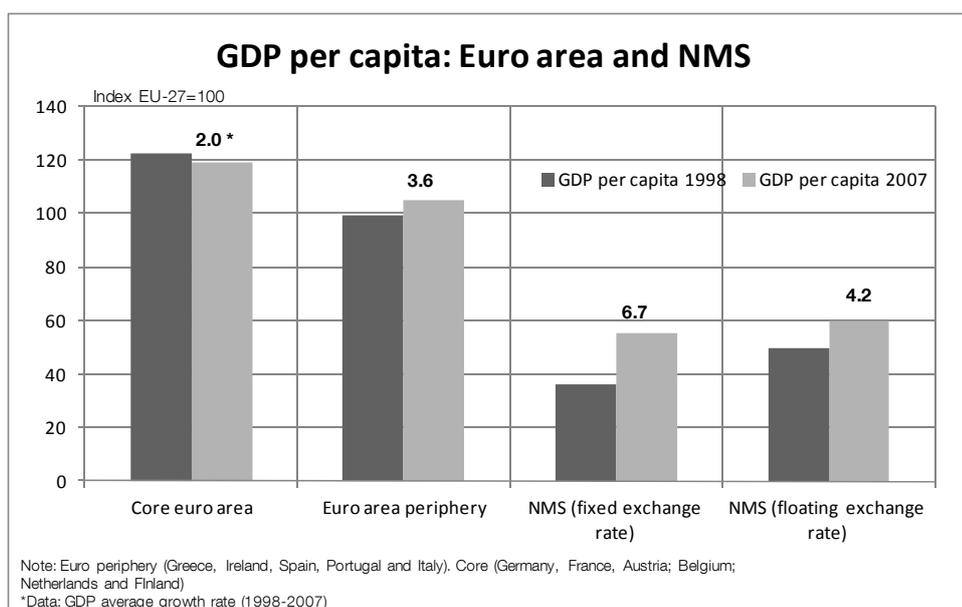
The results suggest that the disciplinary effect of markets is only felt when the situation turns sour: economic imbalances hardly explain the perception of risk in quiet periods, and only to come to the fore when financial turbulences appear. Moreover, the institutional setting (whether belonging to the euro or in the process of accession) tends to mask the imbalances.

The fallout from the crisis is prompting a reinforcement of the surveillance framework in the EU and within the euro area to improve economic governance. But it has also shattered the perceptions of the adoption of the euro as a safe haven for economic stability, where imbalances do not matter. And this may have even greater consequences for the discipline and stability of the European economies, through more stringent financing conditions by markets —contingent on fundamentals— and/or through more sensible conduct of policymakers. These forces should reinforce the EMU going forward, but the jury is still out.

2   Boom-bust cycles and imbalances within and in the way to EMU

In the years before the global financial crisis blown up the EU/euro area environment promoted a process of fast real convergence in the euro area periphery and, especially, in NMS. As graph 1 shows, between 1998 —the year before the launch of the euro— and 2007, when the global financial crisis erupted, both groups of countries —and particularly NMS— registered considerably higher real GDP growth rates than the core of the euro area, which translated into important GDP per capita gains, coming closer to the EU average.

Graph 1: GDP per capita and real GDP growth in the euro area and NMS (1998-2007)

GDP per capita: Euro area and NMS

Index EU-27=100

Legend: ■ GDP per capita 1998 ■ GDP per capita 2007

2.0 * (Core euro area)
3.6 (Euro area periphery)
6.7 (NMS (fixed exchange rate))
4.2 (NMS (floating exchange rate))

Note: Euro periphery (Greece, Ireland, Spain, Portugal and Italy). Core (Germany, France, Austria; Belgium; Netherlands and Finland)
*Data: GDP average growth rate (1998-2007)

Source: Eurostat.

These developments could be seen, to a large extent, as the result of a catching-up process, whereby countries with lower income levels would experience faster growth, once structural and institutional fundamentals had been improved. In the EU context, the structural transformation of these economies was facilitated by the accession process, the integration boost promoted by the completion of the Single Market and the common currency, and by very sizeable transfers from the EU structural funds. But these countries also benefited from large capital inflows (at a first stage, through FDI flows, but gradually in the form of banking loans from EU parent banks) and very loose financial conditions. This ample financial liquidity was pervasive during that period at the global level, as a result of the compression of risk premium in international financial markets, but "convergence play" phenomena[1] also took place in these countries: long term nominal interest rates converged rapidly to German levels for other euro area members and also for NMS, in particular for those with pegs to the euro, based on expectations of medium term euro accession, as graph 2 shows. Furthermore, for these two groups of countries local financial conditions were also too loose: the euro area members shared the policy interest rate of the ECB and the monetary autonomy of NMS with fixed exchange rates was constrained by the peg. This was reflected in negative real interest

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1. For a description of this phenomenon see, for instance, Goldstein et al. (1993). For the case of NMS, and a comparison with the experience of the euro area periphery, see Begg et al. (2003) and Schadler et al. (2005).

rates (both short-term and long-term and both in ex-post and ex-ante terms) in the years before the crisis (see graph 3), which exacerbated the expansionary cycle and contributed to overheating pressures. This marked another difference with countries in the core of the euro area —due to their lower rates of inflation— and also with NMS with flexible exchange rates, whose monetary policy stance was more consistent with their cyclical positions and the magnitude of inflationary pressures[2].

Graph 2: 10-year government bond spreads with the euro area core


Spread with core
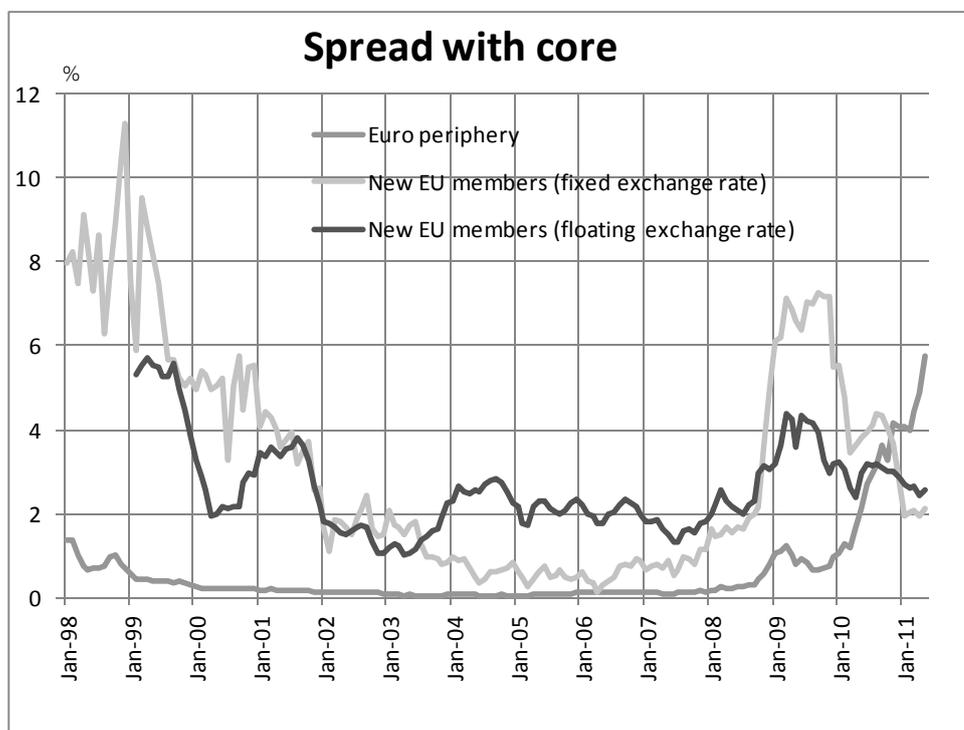
Source: Eurostat.

These loose financial conditions, the perception of the absence of exchange rate risk and the optimistic expectations of higher levels of income contributed to a "bad convergence" process –as labeled by Bini Smaghi (2011): the build-up of large macroeconomic and financial imbalances, which were not sufficiently addressed by supervisory policies in many countries. They encouraged excessive risk-taking behavior and fed into sharp credit and housing expansionary cycles (see graph 4), which increased domestic and external debt ratios —mainly of the private sector— to very high levels (see graph 5). This was accompanied by the appreciation of real exchange rates beyond what could be explained by equilibrium effects (e.g. Balassa-Samuelson) and, finally, it was reflected in large and increasing current account deficits (see graph 6). As an aggravating factor, a large part of these debt funds were directed to non-tradable sectors (such as housing) and consumption, which did not expand the supply capacity of the economy as could have been the case if they had been oriented towards production-enhancing investments.

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2. Even as close to the crisis as in 2006, some EU authorities tended to downplay the relevance of this "real interest rate" channel of divergences. See, for instance, European Commission (2006).

Graph 3: Ex-post short term real interest rates in the euro area and NMS

Real interest rate Euro area and New UE members
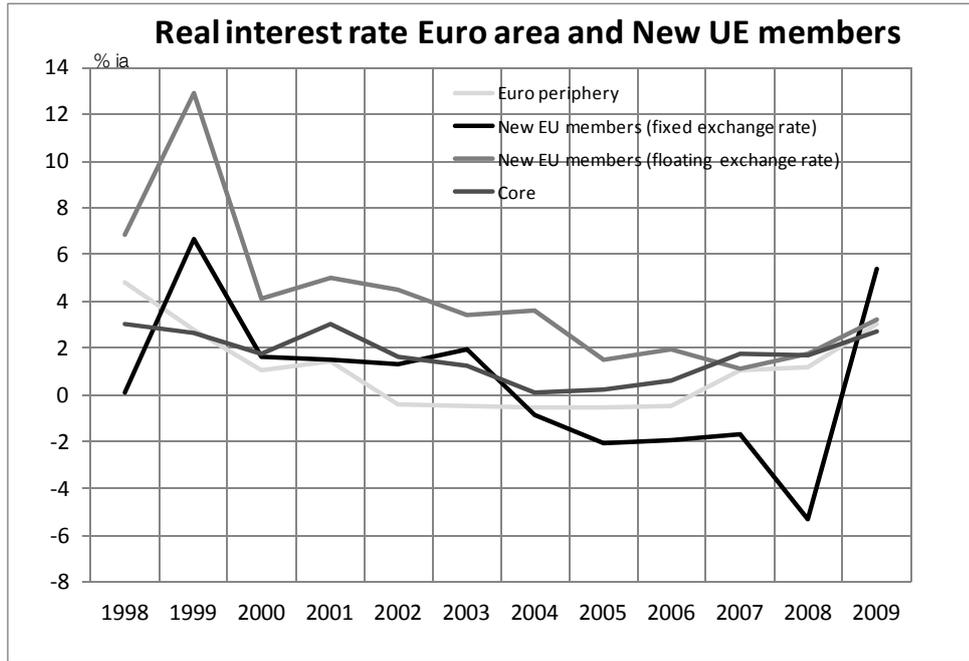
Source: Eurostat.

Graph 4: House prices and credit growth in the euro area and NMS
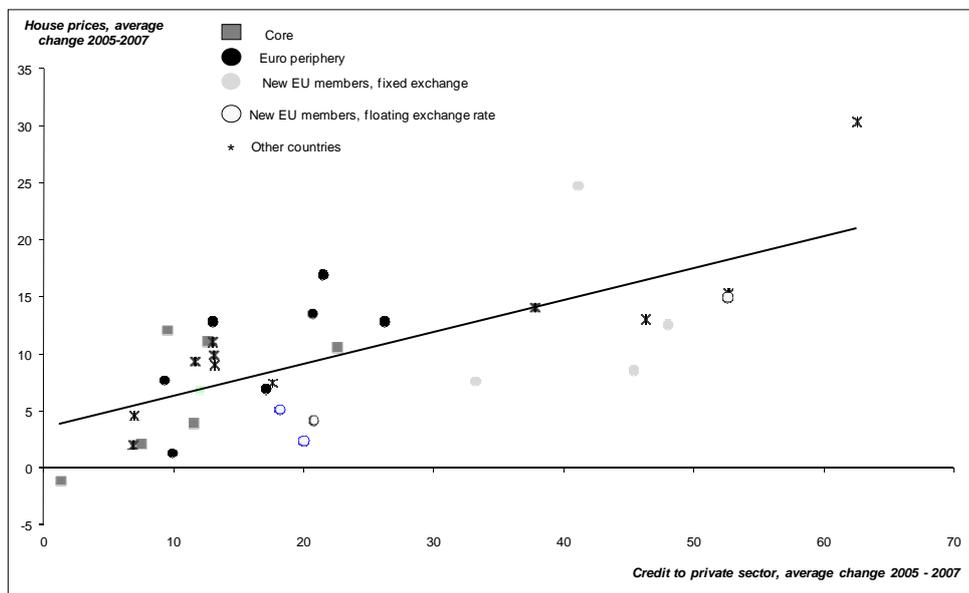
Source: ECB, Datastream.

Graph 5: Net International Investment position (2007)

NET INTERNATIONAL INVESTMENT POSITION AS A PERCENT OF GDP
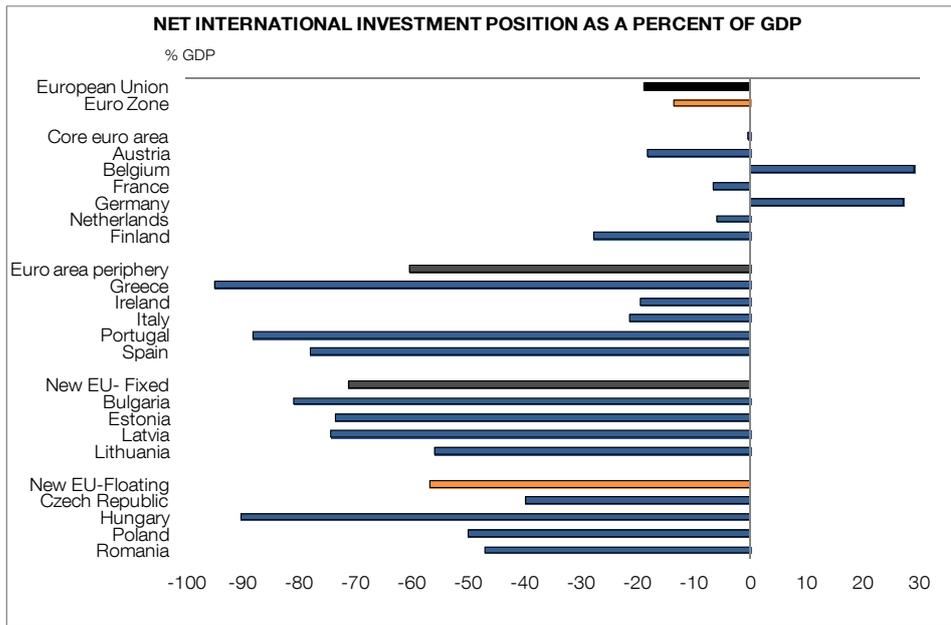
Source: IMF.

Graph 6: Current account balances in the euro area and NMS (2007)

CURRENT ACCOUNT BALANCE (% GDP)
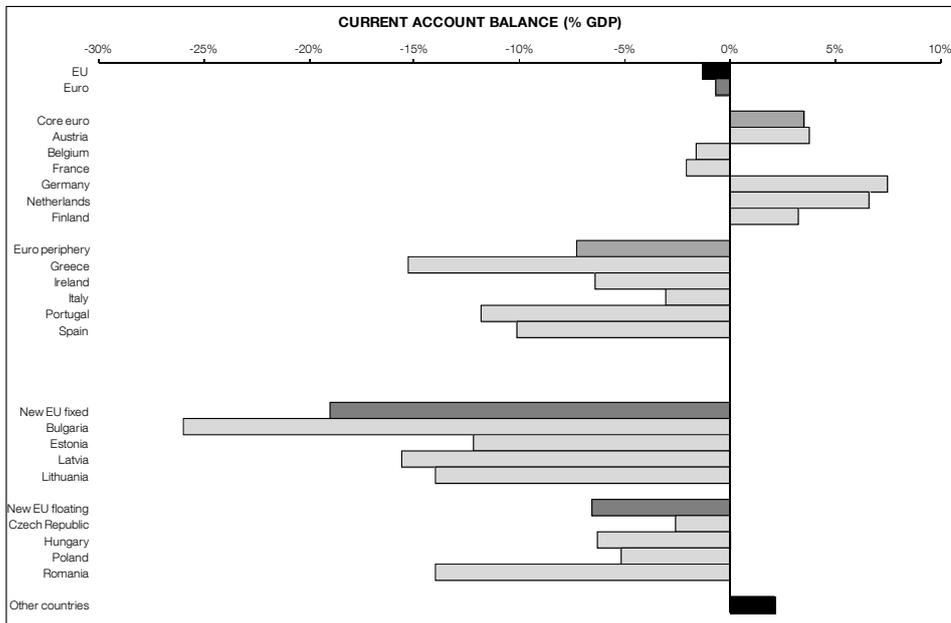
Source: Eurostat.

This growth profile also had important implications for public finances. Tax revenues were boosted as a consequence of the expansion of the housing and the financial sectors and these gains were often considered as structural rather than cyclical or exceptional by some countries, which did not pursue a fiscal policy prudent enough to rein in excessive

domestic demand growth and external imbalances[3]. Eventually, the economic recession and the financial crisis exposed and accentuated the underlying fiscal problems in some of these countries, with the repercussions we are still experiencing today.

All these close relationships between imbalances in those countries can be summed up by the pair wise correlations between some indicators of vulnerabilities in Europe in 2007[4]. Note the clusters of significant correlations (in red) between current account imbalances, credit growth, foreign currency credit (in non euro countries, in particular) and house prices.

Table 1: pair wise correlations (*)

	Net IIP domestic banks	Current account balance	Credit in foreign currency	GDP per capita	Primary public balance	Government revenues	Domestic credit growth	External financial openness	Public debt increase forecast	House prices
Net IIP domestic banks	1,00									
Current account balance	0,12	1,00								
Credit in foreign currency	0,02	*-0,55*	1,00							
GDP per capita	*0,44*	*0,44*	-0,04	1,00						
Primary public balance	0,23	*0,42*	-0,07	0,17	1,00					
Government revenues	0,22	0,34	-0,02	*0,46*	*0,50*	1,00				
Domestic credit growth	-0,30	*-0,46*	*0,50*	*-0,64*	-0,05	-0,37	1,00			
External financial openness	*0,44*	-0,22	*0,50*	*0,53*	-0,11	0,01	-0,10	1,00		
Public debt increase forecast	-0,02	-0,23	0,33	0,27	*-0,49*	-0,15	0,06	*0,64*	1,00	
House prices	-0,18	-0,31	0,23	-0,39	0,14	-0,24	*0,70*	-0,05	-0,06	1,00
CDS spread change	-0,37	*-0,51*	*0,64*	*-0,55*	-0,23	*-0,49*	*0,82*	0,03	0,20	*0,47*

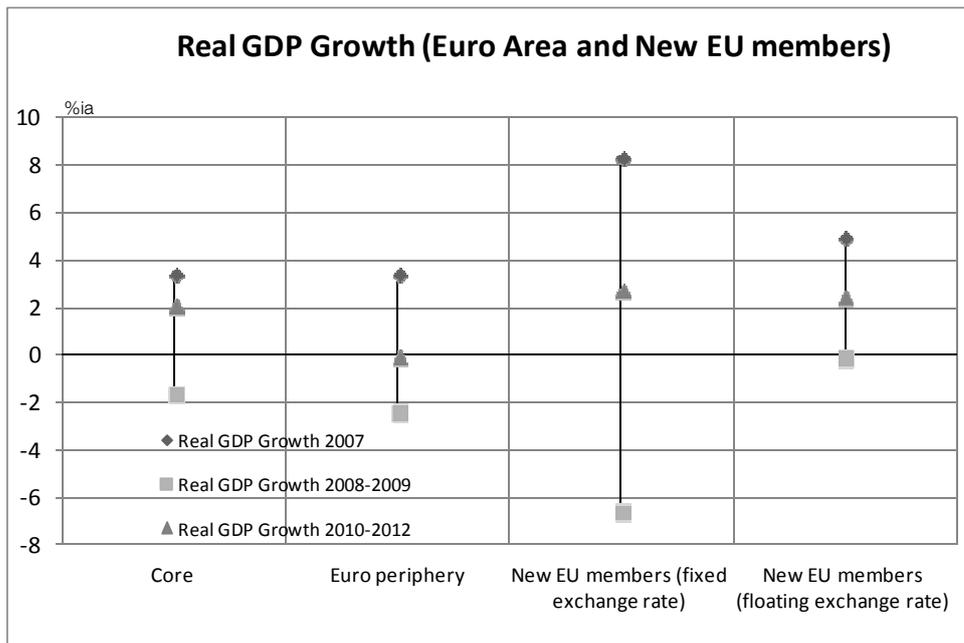(*) Significant correlations in italics red bold

Source: Own calculations.

In this context, and with the benefit of hindsight, it is not surprising that the most affected countries by the crisis were those with the fastest economic growth rates over the decade preceding the crisis. As these developments proved unsustainable, the subsequent adjustment was roughly proportional to the previous boom, both in terms of GDP and current account balances, as graphs 7 and 8 display. The legacy of the crisis will be long-lasting for these economies, as not only the decline in GDP growth rates was very abrupt, especially in NMS with fixed exchange rates, but they will stay far away from previous growth rates as the adjustment will be protracted and potential output growth will decrease in the next years. On the external side, some NMS with fixed exchange rates went from double-digit current account deficits to surpluses, as a consequence of the collapse in domestic demand and the reduced availability of external financing (graph 8).

The economic bust and abrupt adjustment also dragged down fiscal positions dramatically, as a consequence of the collapse of public revenues and the transfer of private debt into public debt (graph 9). The unsustainable path of public debt obliged some of these countries to seek for external financial assistance programs (mainly by the IMF and the EU), which impose severe adjustment requirements in terms of fiscal consolidations and structural reforms. The magnitude of fiscal adjustments in the aftermath of the crisis has been substantial in the euro area periphery but also in NMS. Although the adjustment seems to be larger in NMS with flexible exchange rates than in NMS with fixed exchange rates, this is due to the fact that the deterioration in economic performance in the latter countries had a negative effect on the headline fiscal balance. Once we control for the cycle (and exclude the case of Bulgaria), the adjustment in the Baltic countries has also been impressive.

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3. There is a recent interest in correcting fiscal balances for the effect of asset price cycles. See, for instance, Price, R, and T. Dang (2011) or Morris, R. et al. (2009). But even before the crisis there were some warnings about these effects, for example, Eschenbach, F. and L. Schuknecht (2002) or Jaeger, A. (2004).
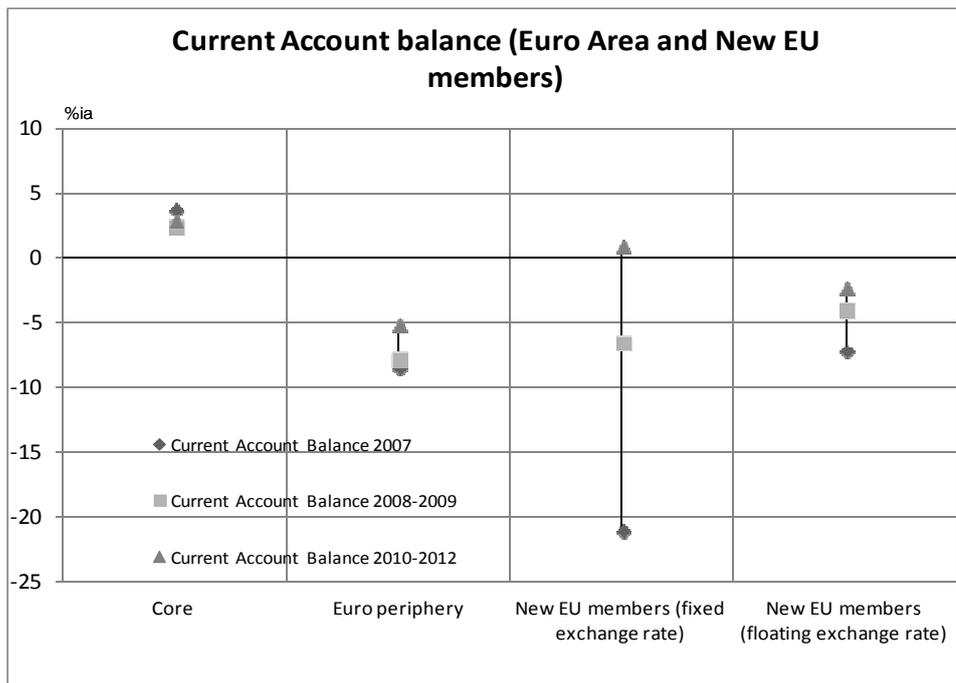**4.** These data will be used in the exercise in section 4.2

Graph 7: GDP growth adjustments in the euro area and NMS

Real GDP Growth (Euro Area and New EU members)

%ia

- ◆ Real GDP Growth 2007
- ■ Real GDP Growth 2008-2009
- ▲ Real GDP Growth 2010-2012

Core | Euro periphery | New EU members (fixed exchange rate) | New EU members (floating exchange rate)

Source: Eurostat and IMF forecasts.

Graph 8: Current account adjustments in the euro area and NMS

Current Account balance (Euro Area and New EU members)

%ia

- ◆ Current Account Balance 2007
- ■ Current Account Balance 2008-2009
- ▲ Current Account Balance 2010-2012

Core | Euro periphery | New EU members (fixed exchange rate) | New EU members (floating exchange rate)
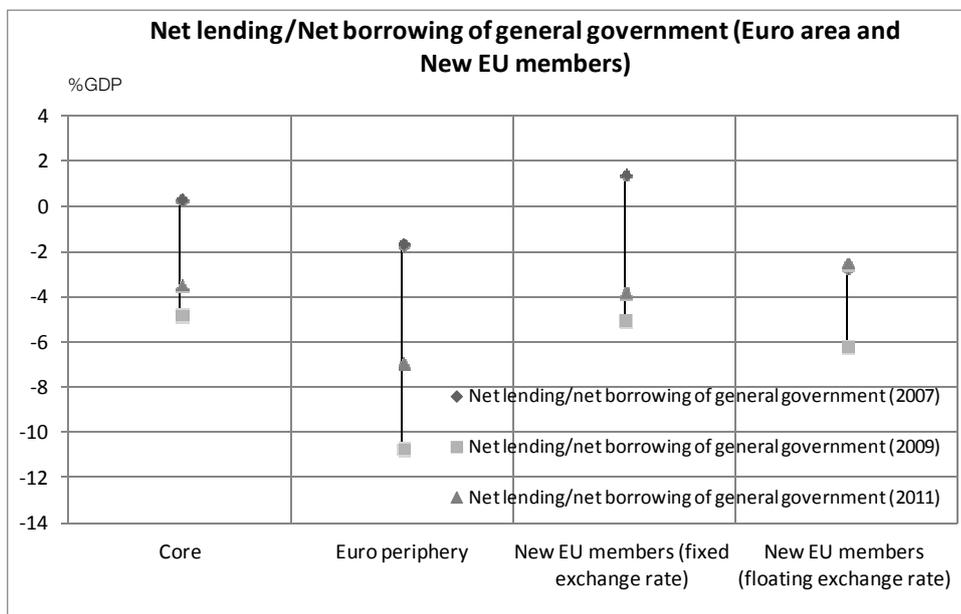
Source: Eurostat and IMF forecasts.

As in previous crises in emerging market economies over the past decades (the Latin American crises of the 80s and the Asian crisis in the late 90s), the recent European episodes contain some common features, such as the accumulation of macroeconomic and financial imbalances and vulnerabilities in those countries, which were compounded by errors in economic policies and insufficient discipline imposed by markets prior to the crises, though subsequently the same markets penalized those economies and

exacerbated their problems. In the empirical section of the paper, we will try to assess the role of the market discipline before and after the most recent global financial crisis, but before that we will turn our attention to the role played in this crisis by the institutional framework of the EU and the euro area.

Graph 9: Fiscal balances in the euro area and NMS

Net lending/Net borrowing of general government (Euro area and New EU members)

%GDP

◆ Net lending/net borrowing of general government (2007)

■ Net lending/net borrowing of general government (2009)

▲ Net lending/net borrowing of general government (2011)

Core | Euro periphery | New EU members (fixed exchange rate) | New EU members (floating exchange rate)
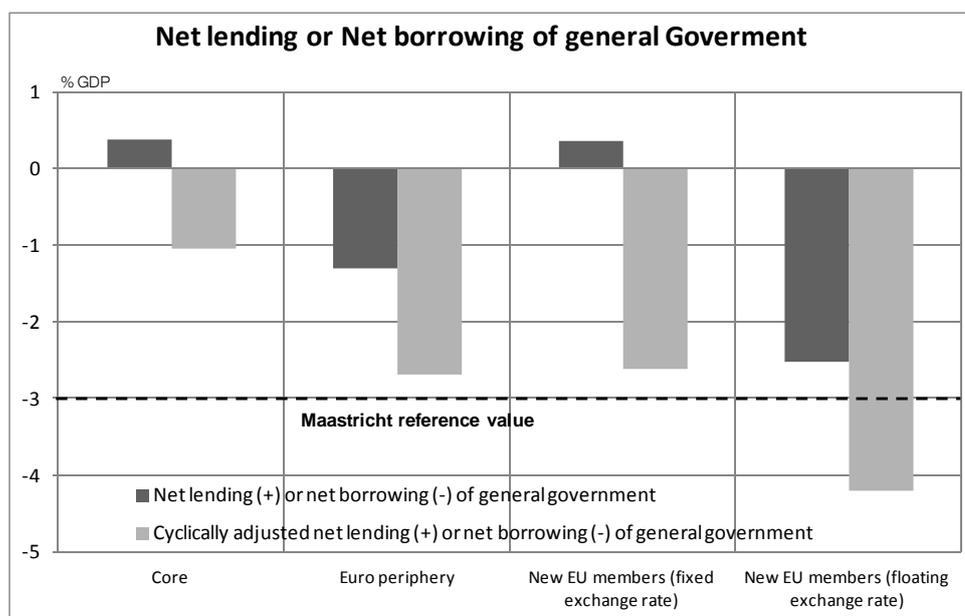
Source: Eurostat.

3 The (in) disciplinary effect of the European institutional framework

The whole institutional framework and the political economy of the process of monetary integration in the EU aimed at a number of goals, at least in theory a smooth transition to the euro area through the participation in the ERM II, fostering economic convergence, the adoption of the euro when convergence is sufficiently advanced and, once in EMU, a sustainable and successful participation in the euro area, with the help of a institutional framework for economic coordination, surveillance and enforcement of economic and fiscal discipline.

However, the crisis has shown the flaws of this framework. There is a broad consensus —even among EU institutions[5]— that the fiscal framework embodied in the Stability and Growth Pact (SGP) was unsatisfactory. First, it did not flag underlying problems, as headline fiscal balances masked structural weaknesses (graph 10). Note that for all groups headline balances did not break the 3% deficit limit, but the structural balances were all well in deficit territory, contrary to the implicit structural balanced budget provision of the SGP. Additionally, its system of peer review and the preventive and corrective arms lacked credibility and it was weakened even further by the relaxation of the Pact in 2005, which aggravated the non-compliance of some countries (graph 11). And finally, the effectiveness of the rest of surveillance instruments for other macroeconomic and financial imbalances — those which precisely were behind the problems in these groups of countries—, such as the convergence programs, the broad economic policy guidelines or the Lisbon strategy, was even more insufficient. The consequence of these institutional failures was that in practice the surveillance mechanisms did not identify the warning signals, implying that no action was decisively taken to forestall the incoming crisis.
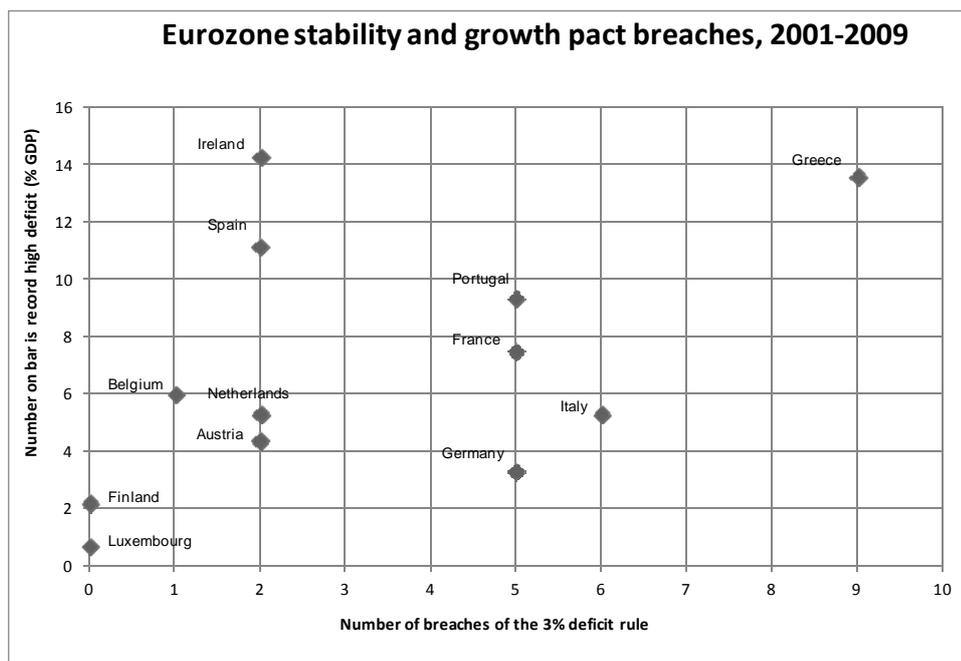
Graph 10: Fiscal balances in the euro area (1998) and NMS (2007)

Source: Eurostat.

5. See, for instance, Larch, M. et al. (2010), Ioannou, D. and L. Stracca (2011) or ECB (2011)

Graph 11: SGP breaches in 2001-2009

Eurozone stability and growth pact breaches, 2001-2009

Source: Eurostat.

Similar problems applied also to the surveillance of the convergence process of NMS in the transition to the euro. As a matter of fact, the political strategies of NMS were shaped by perverse incentives[6], as they tried to optimize the convergence play rushing into the euro (in particular, the smaller countries with fixed exchange rates, for historical and institutional reasons). The perception of the euro as 'safe haven' and of the ERM II as a 'waiting room' not free from risks led some of these countries to accelerate the transition to the euro and minimize ERM II participation, while keeping their exchange rate regimes. These incentives derived in part from their financial vulnerabilities, aggravated by their own euro adoption plans and exchange rate strategies, and in some cases also from the political and economic difficulties of changing their currency regimes. This raised macroeconomic and financial instability risks and led to the accumulation of imbalances[7]. On the other hand, the legal and institutional framework did not ensure that the each step in the transition process was accompanied by sufficient progress in economic convergence. The institutional framework governing the participation in the ERM II and, later on, the adoption of the euro, has also been too lax: there are no pre-established criteria for entering the ERM II, the surveillance mechanisms in the ERM II are not enforceable and, finally, the somewhat automatic, quantitative and legalistic approach of the process of monetary integration, along with procedural and even political reasons, limit the ability of the European authorities to minimize the risk of premature entries into the euro area.

Note that the weaknesses of the institutional surveillance, which did not properly identify the imbalances and prevented them from being addressed, also reinforced the complacency of European and domestic economic authorities and biased the assessment of their respective economies towards an optimistic interpretation of the expansionary cycle.

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6. See Darvas, Z. and G. Szapáry (2008).

7. A very similar process to get advantage of fixing the exchange rate and avoid the consolidation of fundamentals is analysed for Latin America countries in Alberola, E., Luis Molina and Daniel Navia (2005), "Say you fix, enjoy and relax: the deleterious effect of peg announcements on fiscal discipline"

Given these institutional weaknesses in the EU framework, and the political economy difficulties inherent in the coordination and surveillance of national economic policies, is it feasible an effective revamping of the EU institutional framework? If it is not enough, can we trust on the self-discipline of domestic authorities in the future or, perhaps, on a stronger market discipline alone? In order to answer these questions, it is convenient to analyze to what extent markets act as a disciplinary device in the run-up to the crisis.

4   Empirical evidence. The role of market discipline

There is an inconsistency between the negative assessment of the underlying economic situation prior to the crisis, as exposed in section 2, and the optimistic judgment of markets during that period. Looking back at graph 2 we can observe how interest rate spreads with the core countries converged to negligible levels for the euro area periphery shortly after the beginning of EMU and to less than 1 percentage point for NMS in 2006, just in the period where imbalances were accumulating.

This would be 'prima facie' evidence that markets did not price in substantial credit risk premia from the imbalances, and therefore they did not provide discipline. On the contrary, to the extent that the compression of spreads induced extremely loose financial conditions, market forces may have even fostered the economic and financial imbalances.

However, the rather ample literature which has looked at this issue before the crisis, focusing on fiscal fundamentals tends to support the market discipline hypothesis. Lane (1993), Bayoumi et al. (1995) or Ardagna et al. (2007) show that bond yields in advanced economies increase with the deterioration of the fiscal situation (deficit or debt), and Bernoth et al. (2007) or Manganelli and Wolswijk (2007) reach similar results for European countries. However, these results are not always robust, the elasticity of credit risk premia to fiscal variables is low and, more importantly, highly non-linear (yields jump up when the fiscal deterioration is pronounced).

Graph 12: Relation between sovereign bonds spreads relative to Germany and debt levels
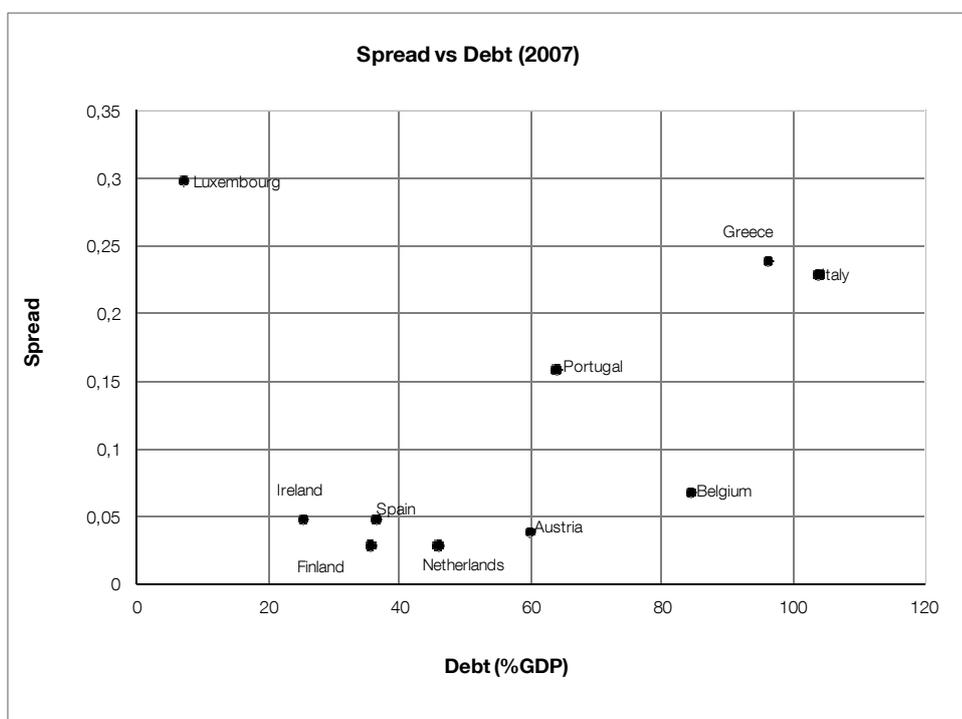
Source: Eurostat.

Some of the previous literature justifies the small spreads due to the reduction in liquidity risks (Bernoth et al. (2007)) or to the expectation of future bailouts in case of problems (Lane (1993) or Bernoth et al. again) —in spite of the no bailout clause enshrined in the Treaty. The European references use this evidence to justify more stringent fiscal policy rules. In any case, the spreads moved up briskly in the aftermath of the crisis, implying that markets woke up to the financial and fiscal problems of the periphery quite suddenly, as graph 12 illustrates, although the underlying imbalances were there for a long time[8]. To be fair, the expansionary phase masked some of the vulnerabilities and the magnitude of the Lehman shock surpassed any forecast and brought a swift and lasting deterioration of the economic and fiscal situation. Both factors can partially explain part of the wild swing by the markets.

In order to gain further insights on the disciplinary role of markets we analyze the fundamentals driving credit risk premia. This type of analysis has proliferated in the wake of the financial crisis so that we can compare our results with a mushrooming literature[9]. We would like to focus on several points, only partially explicitly pointed in the literature: the changing response of credit risk to the underlying fundamentals or imbalances —beyond fiscal imbalances—, the favorable effect of euro adoption (or prospects thereof) on credit risk premia —the so called halo effect[10]—, the consideration of backward looking (acumulated imbalances) against forward looking variables (perspectives on the evolution of fundamentals) as the main determinants of risk premia, and the persistence of market discipline after crisis.

We present two exercises that use 5-year sovereign Credit Default Swaps (CDS) premia as our proxy for credit risk[11]. The first exercise analyses the evolution of the CDS, in levels, against a broad set of fundamentals, for a wide panel of emerging and developed economies. The second exercise is restricted to a cross-section of European countries, our main interest in this article, and analyses the changes in CDS after the crisis considerations (the protection of the euro area umbrella) and emphasizing the differences between current and future fundamentals.

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8. In a revision of Bernoth et al (2007), Sckuchnecht et al. (2010) find that after the crisis the elasticity of spreads to fiscal imbalances has doubled.

9. See, for instance, Broto, C. and Pérez-Quirós, G. (2012), Gros, D. and Cintia Alzidi (2011), Gros, D. (2011), Pagano, M. (2010), Sckuchnecht et al. (2010), Manganelli, S. and Wolswijk G., (2007, 2009), , Attinasi et al. (2009) or Alexopolou et al. (2009), Sgherri, S. and Edda Zoli (2009), Mody, A. (2009), Barrios, S. Per Iversen, Magdalena Lewandowska, Ralph Setzer (2009), Haugh, D. Patrice Ollivaud and David Turner (2009), Kisgergely, K. (2009), Caceres, C, Vincenzo Guzzo and Miguel Segoviano (2010), Criado, S., Laurent Degabriel, Magdalena Lewandowska, Staffan Lindén, Peer Ritter.(2010), Deutsche Bank (2010), This topic has also been intensively analyzed for emerging markets, see for instance Colling-Durfresne et al. (2001), Abid and Naifar (2003), Ericsson et al. (2004), Blanco et al.(2005), BIS Quarterly Review (2007), Baldacci, E., Sanjeev Gupta and Amine Mati (2008), Powell, A., Juan Francisco Martínez (2008), Bellas, D. Michael G. Papaioannou, and Iva Petrova (2010), Jaramillo, L. and Catalina Michelle Tejada,(2011), Chan-Lau, Jorge A. and Yoon Sook Kim (2004), Ferrucci, G.L.(2003) and Plank, T.J. (2010), Aizenman et al (2011) and Jaramillo and Weber (2011).

10. See Luengnaruemitchai and. Schadler (2007).

11. The use of CDS premia as gauges of credit risk has been widely discussed issue in the literature, since they may also convey other factors, as liquidity or counterparty risks. Despite all the caveats, it can be considered a convenient variable which is readily available. First of all, it is the more comparable measure of credit risk, as we include emerging economies, whose usual reference for sovereign spreads is the EMBI, that include, for example, liabilities of quasi fiscal entities or public enterprises. Also they do not depend on coupon payments, and the price discovery is faster than in bond markets. The role of CDS in the propagation and monitoring of the crisis is described in Criado, S. and Van Rixtel (2008), and some aguments in favour of using CDS premia as a proxy for default risk are described in Emre Alper C. et al (2012)

4.1 Determinants of the CDS levels for a large sample of countries

In the first exercise the sample covers 77 countries spanning from 1998 to 2011, with annual frequency[12]. The dependent variable, the CDS level, is regressed on a set of fundamentals: fiscal imbalances (public debt ratio to GDP), external imbalances (current account balances, reserves, short term liabilities with foreign banks and net foreign asset position over GDP), domestic financial imbalances (growth rate of credit, net foreign position of domestic banks over GDP) and cyclical factors (GDP growth) and a global common factor (US high yield), conveying global financial conditions. In order to identify the halo effect (potential benefits from the euro umbrella) we include a dummy for countries in the euro area periphery (Spain, Portugal, Greece, Italy, Ireland) and for those NMS with fixed exchange rates (Latvia, Lithuania, Estonia and Bulgaria), which were expected to join the euro as soon as feasible. We also include GDP per capita to control for income level effects (developed versus emerging countries). Regressors are included with a lag so as to correct for possible endogeneity biases[13].

Graph 13: Average CDS level (in bps) and fundamentals in different groups of countries
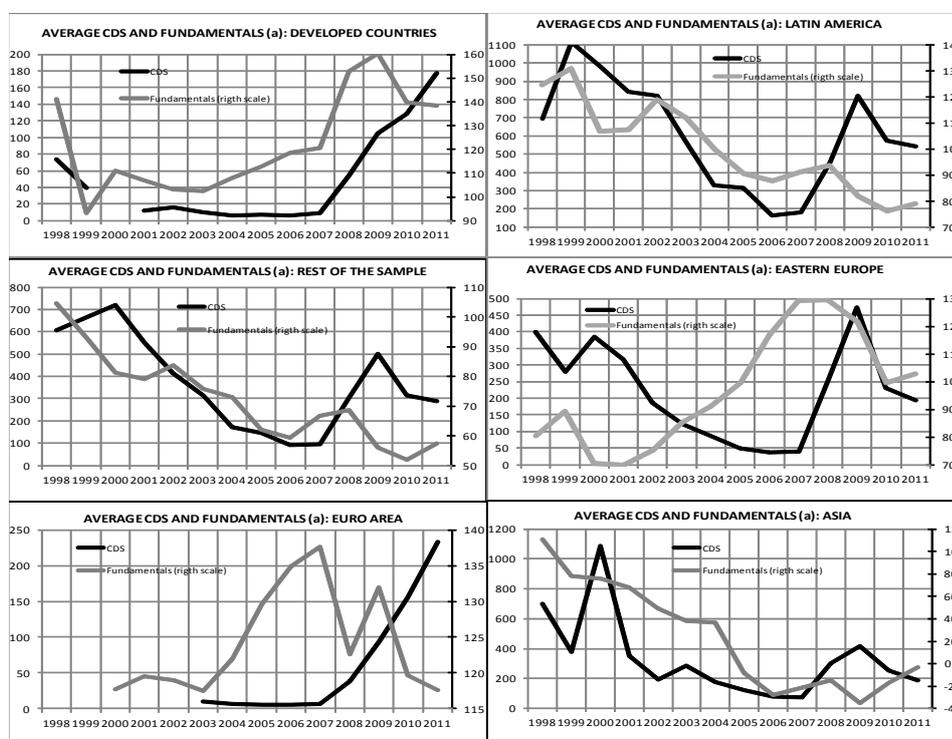
(a) Average of current account balance, GDP growth, credit growth, public debt, net foreign position, reserves, net foreign position of domestic banks and shor term external liabilities
An increase means a deterioration of fundamentals.

Source: own calculations.

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13. Most of the previous references in footnote 9 do not use lags of the regression. Notwithstanding this, a version of the model has been run with a lag of the CDS but it shows very high persistence, even at annual frequency. Most of the fundamentals keep the sign, although the halo effect disappears. However, high collineallity with the other regressors advises for dropping this lag, since our objective is to account for the impact of fundamental variables in the risk perception.

As a first step, graph 13 conveys a rough attempt to illustrate the existence of market discipline in our sample and in the different regions. We plot, for different regions, the average CDS against a synthetic fundamental, made up of a simple average of fundamentals, added up with the adequate signs, so that an increase signals a deterioration of fundamentals[14]. CDS levels for developed countries (including the euro area) and Eastern European countries did not register significant changes between 1998 and 2007 although their fundamentals deteriorated rapidly[15]. On the contrary, for other emerging market economies CDS and fundamentals show a closer comovement in opposite directions, that is, CDS decreased as fundamentals improved. The correlation seems to be very clear for Latin American and Asian regions after their respective crisis.

To obtain more rigorous evidence we turn to the regression analysis to check the presence of market discipline, and to test for a possible different behavior before and after the 2008 crisis for the whole sample of countries (Table 2)[16]. The columns under each heading represents represent different specifications of the model. The first uses the synthetic fundamental plotted in figure 13, for each country; the second uses the set of fundamentals separately and the third is a parsimonious specification of the later. We find that the compounded fundamental and some individual fundamentals do indeed play a role in disciplining countries included in our sample (columns 1 to 3), as a deterioration of them leads to significantly higher CDS spreads. The statistically significant variables are those related to external balances (current account balance—with the negative sign, as expected—), fiscal strains (public debt with the expected sign) and the cycle (also with the expected sign). Global factors represented by the US high yield are also significant determinants of risk premia, but indicators reflecting imbalances in the domestic banking sector are found to be not significant.

Table 2: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

| | Whole sample | | | | | | | | |
	1998-2011			1998-2007			2008-2011		
Halo effect	-116.42 (**)	-128.84 (*)	-114.51	-234.09 (*)	-104.86	-73.19 (**)	-35,66	-81,37	-72,49
P > |z|	0,014	0,075	0,110	0,06	0,266	0,034	0,579	0,333	0,393
GDP per cápita	-0.007 (***)	-0,005	-0,005	-0.006 (***)	-0,003	-0.008 (***)	-0.009 (**)	-0.008 (**)	-0.008 (**)
P > |z|	0,008	0,139	0,137	0,003	0,440	0,002	0,016	0,033	0,021
Global turmoil (a)	32.28 (***)	36.16 (***)	34.56 (***)	71.73 (***)	63.25 (***)	59.61 (***)	8,77	0,76	0,17
P > |z|	0,000	0,000	0,000	0,000	0,000	0,000	0,134	0,925	0,981
Fundamentals (lagged) (b)	0.824 (***)			1,83			0,280		
P > |z|	0,007			0,198			0,119		
Curr. Acc. balance (% GDP)		-7.94 (**)	-8.24 (**)		0,75			-2,96	-3,25
P > |z|		0,037	0,015		0,828			0,282	0,236
Public debt (% GDP)		2,95 (**)	3.29 (**)		5,39			1,16	
P > |z|		0,028	0,017		0,143			0,489	
GDP growth (%)		-13.91 (***)	-16.64 (***)		-12.89 (***)	-23.20 (**)		-4,23	-4,40
P > |z|		0,000	0,000		0,004	0,016		0,110	0,132
Domestic credit growth (%)		-1,61			-1,05			3.72 (**)	3.34 (**)
P > |z|		0,172			0,308			0,029	0,040
Foreign reserves (% GDP)		-0,69			4,54			-3.03 (*)	-3.14 (**)
P > |z|		0,468			0,327			0,062	0,018
Net IIP (% GDP)		-0,24			-3,98			-0,18	
P > |z|		0,451			0,105			0,461	
Net IIP domestic banks (% GDP)		-0,03			2,91			0,25	
P > |z|		0,960			0,253			0,718	
Constant	9,11	-74,52	-99,08	-484.49 (**)	-679,10	-86,99	354.81 (**)	403,54	478.53 (***)
P > |z|	0,872	0,323	0,205	0,020	0,113	0,365	0,015	0,112	0,005
Obs	659	659	667	359	359	364	300	300	306
R2	0,1122	0,0843	0,0845	0,2275	0,2212	0,2450	0,0724	0,0930	0,0997

Significance: (*) 10%; (**) 5%; (***) 1%
(a) High yield USA
(b) Simple average of current account balance, public debt, GDP growth, domestic credit growth, foreign exchange reserves, net IIP, net IIP of domestic banks and external short term liabilites. An increase means a deterioration of fundamentals.

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14. Sample average of current account deficit, GDP growth, credit growth, banks and short term liabilities, and, with a minus sign, foreign external and banking position and reserves
15. CDS data for developed countries from 1998 to 2000 include only Greece. The jump in fundamentals for developed countries is due to an increase of negative net external position of Iceland
16. We use a random effects model with robust standard error as it has the distinct advantage of allowing for time-invariant variables, like the halo dummies, to be included among the regressors

However, when the sample is divided into the two considered periods, some interesting contrasts arise. Prior to the crisis (1998-2007, columns 4 to 6) only the global turmoil indicator, the level of GDP per capita and the rate of growth of GDP (countries with higher growth rates had lower risks premium) are statistically significant. In other words, markets were not penalizing the deterioration of the fiscal or external positions in the run-up to the crisis. Thereafter (2008-2011, columns 7 to 9), markets penalize those countries with higher domestic imbalances (credit growth becomes significant), but not, in the sample for all countries, external or fiscal positions. The variable on foreign reserves over GDP is also significant now with the expected sign, meaning that those countries with higher cushions to compensate for other imbalances (mainly emerging market economies) registered lower risk premia in the aftermath of the crisis. Income levels (GDP per capita) are also strongly significant with the expected sign, and on the contrary global strains are now a negligible determinant of individual CDS premia. The synthetic fundamental is not significant in either of the two subsamples. In a specification with non linear effects (a quadratic model for the current account balance, public debt and GDP growth) the main results hold, and only the rate of growth of GDP presents a quadratic significant coefficient.

Regarding the halo effect, the results show that a strong and significant halo effect in most of the specifications surges before the crisis, of an important order of magnitude (an average reduction of 120 bp). Moreover, this halo effect disappears after the crisis, once investors penalize the previous deterioration of fundamentals[17]. In order to gain further insights on the channels through which the halo effect operates, we have interacted the halo dummy with the three significant fundamental variables in our previous regression, using in this case fixed effects (see table 2.A). A deterioration of the current account balance, public debt situation or GDP growth do influence CDS levels, but the coefficient for the halo countries[18] become non significant in the case of the current account –implying that for halo countries it did not matter-, is reduced in the case of growth, but it is boosted in the case of public debt. The decomposition in subsamples gives us the key. During tranquil times coefficients for the halo countries are non-significant, but the coefficient is highly significant for halo countries in the case of public debt, implying that after the crisis the weak fiscal position in these countries was punished most by markets:

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17. We have also run the regressions introducing an overall halo effect for all euro area countries and it has a significant negative coefficient in both sub-periods, which likely masks the differences between core and periphery euro area countries after the crisis. These divergences among groups of countries within the euro area are tested in the next section of this paper.

18. The coefficients for the halo countries and its significance are obtained as follows. An interaction of the halo dummy and the regressor of interest is added to the basic regression along with the simple regressors (which appears in the middle panel of table 2.A). The sum of both regressors is the implied coefficient for the halo countries, which appears in the lower panel. The significance is obtained with a test of the significance of the sum of coefficients

Table 2.A: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

	Whole sample		
	1998-2011	1998-2007	2008-2011
	Fixed effects	Fixed effects	Fixed effects
GDP per cápita	0,004	0,021	-0,010
P > |z|	0,259	0,354	0,202
Global turmoil (a)	36.89 (***)	58.81 (***)	10,79
P > |z|	0,000	0,000	0,277
Constant	-440.27 (***)	-1176,77	294,10
P > |z|	0,005	0,115	0,425
Curr. Acc. balance (lag) (% GDP)	-13.63 (**)	-22.00 (*)	-9.55 (*)
P > |z|	0,014	0,056	0,061
Public debt (lag) (% GDP)	5.48 (***)	12.21 (*)	0,05
P > |z|	0,008	0,087	0,990
GDP growth (lag) (%)	-16.87 (***)	-24.04 (***)	-0,34
P > |z|	0,000	0,005	0,885
Curr.Acc. balance in HALO countries (lagged) (b)	-4,15	9,66	-12,66
P > |z|	0,346	0,404	0,102
Public debt in HALO countries (lagged) (b)	12.33 (***)	3,48	11.57 (***)
P > |z|	0,000	0,334	0,007
GDP growth in HALO countries (lagged) (b)	-7.73 (**)	10,71	-7,99
P > |z|	0,0041	0,534	0,1214
Obs	667	361	306
R2	0,0060	0,0194	0,0279

Significance: (*) 10%; (**) 5%; (***) 1%
(a) High yield USA

Tables 3 and 4 explore the differences between developed and emerging economies. The synthetic fundamental (which could proxy the market discipline on each group of countries) is statistically significant for both groups, but substantially higher for emerging market economies. In developed economies, fiscal imbalances, cyclical factors and external imbalances (net external position and short term external liabilities) are significant[19]. In emerging markets, the current account balance and foreign reserves are statistically significant, with the right sign as well as the cycle and the level of public debt. The proxy for global turmoil are significant for emerging but not for developed economies. The halo effect has the opposite sign for developed countries, although it is not significant in the preferred specification, while for emerging economies it shows the expected sign[20].

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19. The IMF's September 2011 Global Financial Stability Report analyzes this relationship
20. Note that the halo effect refers to the euro periphery in the advanced economies and to NMS with fixed rates in the emerging market sample

Table 3: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

	Developed countries			Emerging markets countries		
	1998-2011			1998-2011		
Halo effect	29,62	52,00 (**)	34,03	-159,49 (***)	-107,18	-38,88
P > |z|	0,152	0,033	0,107	0,008	0,172	0,573
GDP per cápita	-0,001	0,002	0,002	-0.004 (*)	0,002	0,001
P > |z|	0,412	0,388	0,408	0,056	0,336	0,770
Global turmoil (a)	0,22	-0,51	0,37	41.55 (***)	47.60 (***)	44.51 (***)
P > |z|	0,961	0,887	0,917	0,000	0,000	0,000
Fundamentals (lagged) (b)	0.53 (***)			1,47 (**)		
P > |z|	0,000			0,012		
Curr. Acc. balance (% GDP)		-4.92 (*)	-3,60		-8.91 (**)	-8.91 (**)
P > |z|		0,083	0,169		0,048	0,031
Public debt (% GDP)		0,333	0.65 (**)		3,99 (**)	4.32 (**)
P > |z|		0,296	0,036		0,025	0,025
GDP growth (%)		-10,90	-12,42 (*)		-14,84 (***)	-18.52 (***)
P > |z|		0,139	0,065		0,000	0,000
Domestic credit growth (%)		-2,303			-1,96 (*)	
P > |z|		0,124			0,099	
Foreign reserves (% GDP)		-0,60			-0,99	-2.02 (*)
P > |z|		0,523			0,534	0,076
Net IIP (% GDP)		-0.36 (**)	-0.39 (***)		-0,95	
P > |z|		0,011	0,001		0,252	
Net IIP domestic banks (% GDP)		1,08 (***)			-1,10	
P > |z|		0,000			0,498	
Short term ext.liab. (% GDP)		0,18	0.62 (**)		-1,02	
P > |z|		0,551	0,023		0,327	
Constant	25,50	-22,33	-61,27	-136.71 (***)	-238.11 (***)	-209.92 (***)
P > |z|	0,751	0,773	0,348	0,01	0,006	0,009
Obs	166	166	171	493	493	496
R2	0,2495	0,4344	0,3760	0,0844	0,0999	0,1100

Significance: (*) 10%; (**) 5%; (***) 1%
(a) High yield USA
(b) Simple average of current account balance, public debt, GDP growth, domestic credit growth,
foreign exchange reserves, net IIP, net IIP of domestic banks and external short term liabilites.
An increase means a deterioration of fundamentals.

Finally, we redo our exercise dividing the time span into tranquil and crisis periods for the two groups of countries (Table 4). Some remarkable results are the following. Regarding developed countries, prior to the crisis no variable is significant except the global turmoil; in 2008-2011 those countries with higher public debt and short term external liabilities registered higher CDS spreads in a statistically significant way; in the case of emerging economies only the global turmoil and GDP growth impose market discipline before the crisis, although other fundamentals (public debt, foreign reserves) present the expected sign and are on the brink of significance; after the crisis GDP growth, domestic credit growth as well and foreign reserves over GDP are significant with the expected sign. Finally, it is also remarkable that the halo effect -for developing economies with fixed exchange rates (Latvia, Lithuania, Estonia and Bulgaria)- is strongly significant with the expected sign before the crisis, and turns not significant when the crisis breaks out, while for developed economies, the halo effect is non-significant before the crisis but significant, though with the opposite sign, after the crisis, hinting at an 'overdose' of discipline on the euro area periphery[21].

All in all, these results do not provide clear insights on the ability of markets to identify vulnerabilities through credit risk premia. So, we pursue further the analysis, in a

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21. See Aizenman et al. (2011)

graphical way, in Table 5. There, we show for the two sub periods of time and for different groups of countries a number of anomalies in the empirical estimates. First, there is a (non-significant) negative correlation between credit growth and risk premia before the crisis, when the evidence of excessive credit growth in the run-up of the crisis was mounting except in Latin America. This is probably due to the procyclicality of credit and the negative correlation of growth expansions with risk premia[22]. However, it changes the sign in emerging markets —except for accession countries— after the crisis breaks out. The non-significance of external imbalances before the crisis shows a similar pattern, but it is one of the key determinants in advanced economies after the crisis[23]. Both results suggest a shift in market views after the crisis. The significance of fiscal balances is not very robust, but at least its sign is consistent with findings in the literature. This preliminary evidence suggests that some important accumulated imbalances —in particular, on the external and financial front— were not well conveyed in credit risk premia before the crisis, but most of them did afterwards. In fact, before the crisis we have observed a strong halo effect, which benefits specially those countries with fixed exchange rates, for which prospects of a quick adoption of the euro were higher, reducing their CDS spreads irrespective of the evolution of their fundamentals.

Table 4: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

	Developed countries				Emerging markets countries			
	1998-2007		2008-2011		1998-2007		2008-2011	
Halo effect	0,98	2,47	117,60 (**)	94,37 (*)	-287,18 (**)	-108,72 (*)	-135,28	-138,21
P > |z|	0,631	0,397	0,021	0,056	0,050	0,089	0,129	0,372
GDP per cápita	0,000	0,000	-0,004	0,000	0,000	-0,004	-0,005 (*)	-0,004
P > |z|	0,649	0,672	0,230	0,965	0,955	0,219	0,097	0,157
Global turmoil (a)	1.93 (**)	2,40 (**)	-13,47		77.56 (***)	62.78 (***)	16.77 (**)	9,49
P > |z|	0,050	0,017	0,116		0,000	0,000	0,011	0,320
Fundamentals (lagged) (b)	0,00		0.42 (***)		2,47		0,71	
P > |z|	0,953		0,000		0,181		0,137	
Curr. Acc. balance (% GDP)		-0,29		-6,15		-4,01		-3,99
P > |z|		0,358		0,272		0,411		0,194
Public debt (% GDP)		-0,03		0,85 (*)				-0,05
P > |z|		0,296		0,098				0,986
GDP growth (%)		-0,22		-2,05		-25.17 (**)		-5.71 (*)
P > |z|		0,685		0,638		0,015		0,054
Domestic credit growth (%)								2.88 (*)
P > |z|								0,079
Foreign reserves (% GDP)						-1,77		-3.88 (**)
P > |z|						0,409		0,027
Net IIP (% GDP)		0,07		-0,27				
P > |z|		0,205		0,133				
Net IIP domestic banks (% GDP)								
P > |z|								
Short term ext.liab. (% GDP)		-0,01		0,65 (*)				
P > |z|		0,749		0,096				
Constant	-6,09	-5,304	295.43 (*)	136,02	-623.19 (**)	-99,25	228,77	398,11
P > |z|	0,513	0,582	0,098	0,277	0,022	0,301	0,166	0,224
Obs	83	84	83	87	276	280	217	219
R2	0,1217	0,1744	0,4077	0,4880	0,1917	0,2148	0,0440	0,0824

Significance: (*) 10%; (**) 5%; (***) 1%
(a) High yield USA
(b) Simple average of current account balance, public debt, GDP growth, domestic credit growth, foreign exchange reserves, net IIP, net IIP of domestic banks and external short term liabilites.
An increase means a deterioration of fundamentals.

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22. Notwithstanding that credit growth maintains the significance after controlling for GDP growth in the whole sample
23. Again, the correlation with GDP growth may explain this result. The rapid adjustment of current account deficits after the crisis in some emerging countries may introduce some noise in the crisis estimation period and explain the lack of significance.

Table 5: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

Color legend: Green = Significant, expected sign; Red = Significant, unexpected sign; Yellow = Not significant, unexpected sign; Gray = Not significant, expected sign.

1.- LA countries:

Variable	1998-2007	2008-2011
GDP per capita	Green	Gray
Global turmoil (a)	Green	Gray
Lagged fundamentals (b), of which	Gray	Gray
Curr. Acc. balance (% GDP)	Gray	Gray
Public debt (% GDP)	Green	Yellow
GDP growth (%)	Green	Yellow
Domestic credit growth (%)	Gray	Gray
Foreign reserves (% GDP)	Gray	Gray
Observations	79	60

2.- Accesion countries

Variable	1998-2007	2008-2011
GDP per capita	Green	Green
Global turmoil (a)	Green	Green
Lagged fundamentals (b), of which	Yellow	Green
Curr. Acc. balance (% GDP)	Yellow	Gray
Public debt (% GDP)	Green	Gray
GDP growth (%)	Red	Green
Domestic credit growth (%)	Yellow	Yellow
Foreign reserves (% GDP)	Gray	Green
Net IIP (% GDP)	Red	Green
Net IIP domestic banks (% GDP)	Red	Green
Short term ext.liab. (% GDP)	Green	Yellow
Observations	57	33

3.- Emerging ex accesion countries

Variable	1998-2007	2008-2011
GDP per capita	Gray	Gray
Global turmoil (a)	Green	Green
Lagged fundamentals (b), of which	Gray	Gray
Curr. Acc. balance (% GDP)	Gray	Green
Public debt (% GDP)	Green	Gray
GDP growth (%)	Green	Gray
Domestic credit growth (%)	Yellow	Green
Foreign reserves (% GDP)	Yellow	Green
Net IIP (% GDP)	Green	Yellow
Net IIP domestic banks (% GDP)	Red	Gray
Observations	219	184

4.- Euro area countries

Variable	1998-2007	2008-2011
GDP per capita	Green	Green
Global turmoil (a)	Green	Red
Lagged fundamentals (b), of which	Red	Green
Curr. Acc. balance (% GDP)	Yellow	Yellow
Public debt (% GDP)	Gray	Green
GDP growth (%)	Gray	Gray
Domestic credit growth (%)	Yellow	Gray
Foreign reserves (% GDP)	Yellow	Gray
Net IIP (% GDP)	Gray	Green
Short term ext.liab. (% GDP)	Gray	Green
Observations	47	184

Legend:

Color	Meaning
Green	Significant, expected sign
Red	Significant, unexpected sign
Yellow	Not significant, unexpected sign
Gray	Not significant, expected sign

(a) High yield USA
(b) Simple average of current account, public debt, GDP growth, domestic credit growth
foreign reserves, net IIP, net IIP of domestic banks and external short term liabilities
An increase means a deterioration of fundamentals.

All in all, these results do not provide clear insights on the ability of markets to identify vulnerabilities through credit risk premia. So, we pursue further the analysis, in a graphical way, in Table 5. There, we show for the two sub periods of time and for different groups of countries a number of anomalies in the empirical estimates. First, except in Latin America there is a (non-significant) negative correlation between credit growth and risk premia before the crisis, when the evidence of excessive credit growth in the run-up of the crisis was mounting. This is probably due to the procyclicality of credit and the negative correlation of growth expansions with risk premia[24]. However, it changes the sign in emerging markets — except for accession countries— after the crisis breaks out. The non-significance of external imbalances before the crisis shows a similar pattern, but it is one of the key determinants in advanced economies after the crisis[25]. Both results suggest a shift in market views after the crisis. The significance of fiscal balances is not very robust, but at least its sign is consistent with findings in the literature. This preliminary evidence suggests that some important accumulated imbalances —in particular, on the external and financial front— were not well conveyed in credit risk premia before the crisis, but most of them did afterwards. In fact, before the crisis we have observed a strong halo effect, which benefits specially those countries with fixed exchange rates, for which prospects of a quick adoption of the euro were higher, reducing their CDS spreads irrespective of the evolution of their fundamentals.

4.2   Changes in CDS in Europe in the aftermath of the crisis

The second exercise complements the previous analysis. It focuses on 31 European countries and the change in sovereign risk premia between the first quarter of 2007 and two relevant moments in time: the first quarter of 2009 and the first semester of 2010. The first period captures the moment of highest stress in the NMS and the second when the pressures within the euro area periphery started to be evident (see graph 2). The analysis is now based on cross-country regressions. The sample of countries has also very different characteristics, including all euro area countries, non-euro EU countries —with advanced economies like the UK and NMS— and other developing European economies.

The group of regressors is now wider. Financial exposure coverage is extended through data on bank foreign exposures to NMS and domestic credit denominated in foreign currency. All these variables are backward-looking, in the sense we use the increases and stocks until the crisis blown up (end 2007) to account for the effect of accumulated past imbalances. Another novelty is that forward-looking variables are also considered: changes in GDP growth and the ratio of public debt to GDP prospects between 2007q1 and the reference period. This allows us to focus on how changes in fiscal and economic prospects impacted on risk premia. The relevance of the halo effect after the crisis is also assessed through dummies for the euro area core, the euro periphery and NMS with fixed exchange rates and other euro area countries. Finally, we also introduce a proxy for CDS market liquidity (number of outstanding contacts)[26], and maintain a constant term in all regressions as a sort of a global common factor (like USA high yield in the previous exercise).

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24. Notwithstanding that credit growth maintains the significance after controlling for GDP growth in the whole sample
25. Again, the correlation with GDP growth may explain this result. The rapid adjustment of current account deficits after the crisis in some emerging countries may introduce some noise in the crisis estimation period and explain the lack of significance.
26. Mongars, P. (2009), "Developed sovereign CDS: key issues and recent trends", Financial Stability Directorate, BIS, analyze the effect of market liquidity on risk premia

The main results are presented in Table 6[27]. There exists a significant halo effect for the euro area member countries of around 100-150 basis points in the first period considered —that is, before the emergence of Greek troubles—, a halo effect that does not appear for EU members out of the euro area. The halo effect is evident in core euro area countries but especially in recently incorporated members (Slovakia, Slovenia and Cyprus), and does not appear for the traditional periphery countries which in this exercise are lumped together with the NMS group. This halo effect diminishes substantially in the second period examined, after the worsening of the euro area periphery in first semester of 2010. Nevertheless, some protection is maintained for core euro area countries and for Slovakia, Slovenia and Cyprus. Financial imbalances[28] accumulated before the crisis are found significant in explaining the increase of risk premia until 1q09 (maybe as the countries which suffered the higher increases were the NMS), as well as forward looking variables (the change in GDP growth forecasts and public debt prospects). When the crisis hit the euro area periphery, only the external imbalances (current account balance) and the forecasted increase of public debt are

Table 6: determinants of CDS
Dependent variable: 5 year sovereign CDS premia

	2009q1				2010s1	
Euro dummy	-108.30 (*)	-115.97 (**)	-142.94 (*)	-146.10 (**)	-140.32	-50.26
P>|t|	0,07	0,03	0,09	0,04	0,11	0,12
- Of which:						
(i) Core countries	-70.82 (*)	-64,89(*)	-102,49	-85,04	-139,80 (*)	-84,38 (**)
P>|t|	0,07	0,07	0,11	0,10	0,06	0,04
(ii) Periphery and fixed NMS	5,77	-31,47	-9,41	-50,68	-52,81	1,42
P>|t|	0,93	0,37	0,90	0,23	0,43	0,96
(iii) Slovakia, Slovenia and Cyprus	-206.60 (***)	-219,77 (***)	-281,89 (***)	-280,41 (***)	-203,79 (**)	-118,81 (***)
P>|t|	0,00	0,00	0,00	0,00	0,03	0,00
EU no euro dummy	-48,78	-50,04	-59,31	-54,59	-102,11	-40,59
P>|t|	0,28	0,28	0,40	0,32	0,16	0,16
GDP pc	-6.49 (**)	-6.05 (**)	-8.01 (*)	-7.55 (***)	3,10	
P>|t|	0,03	0,00	0,06	0,00	0,39	
Financial openness	-0,25		-3,56		-15,30	
P>|t|	0,97		0,64		0,23	
c/a balance	129,74		167,19		-1006.80 (*)	-748.88 (***)
P>|t|	0,69		0,72		0,06	0,00
Net IIP domestic banks	-107,18		-104,98		-49,35	
P>|t|	0,27		0,27		0,53	
Domestic banks assets on NMS	278.83 (***)	216.85 (***)	296.38 (***)	229.60 (***)	164,36	105,05
P>|t|	0,01	0,00	0,01	0,01	0,12	0,20
Foreign currency credit	125.20 (***)	96.14 (***)	183.61 (***)	143.13 (***)	5,23	
P>|t|	0,01	0,00	0,00	0,00	0,93	
Domestic credit change	6.22 (***)	6.32 (***)			-1,17	
P>|t|	0,00	0,00			0,32	
House prices increase			6.30 (**)	6.26 (**)		
P>|t|			0,05	0,04		
Change in growth forecasts	-23.58 (***)	-27.08 (***)	-40.71 (***)	-45.92 (***)	2,67	
P>|t|	0,00	0,00	0,00	0,00	0,72	
Forecasted public debt increase	215.30 (*)	172.26 (*)	289.07 (*)	177,18	401.20 (**)	207.13 (**)
P>|t|	0,07	0,09	0,11	0,18	0,03	0,01
Outstanding contracts	-0,02	-0,02	-0,01	-0,01	-0,01	-0,01
P>|t|	0,28	0,20	0,46	0,39	0,57	0,37
Constant	200.93 (**)	190.02 (***)	238.65 (*)	216.58 (**)	96,38	79.14 (**)
P>|t|	0,01	0,01	0,05	0,05	0,14	0,01
Observations	31	31	31	31	31	31
F- tes (p-val)	0,000	0,000	0,000	0,000	0,000	0,000
R2	0,9331	0,9331	0,9003	0,8936	0,7144	0,6494
VIF	4,13	2,55	3,86	2,21	4,04	1,68

Significance: (*) 10%; (**) 5%; (***) 1%

27. To avoid collinearity we run the regressions sequentially using first regressors representing club effects, then regressors of external imbalances, and so on. Nevertheless results have to be taken extremely carefully as we have only 21 degrees of freedom in the best case. We maintained the exercise as it allows us to introduce forward looking variables and market liquidity variables which enriched the analysis

28. We also included house prices as another indicator of vulnerability ant its coefficient is significant and shows the expected sign

significant. The coefficient for the latter is higher than in 1q09. In all cases the common factor (constant) representing global financial turmoil is significant, although its coefficient is substantially higher in 1q09. The Variance Inflation Factor (VIF), a proxy to detect the presence of multicollinearity in the regressions, diminishes when only the significant variables are included.

Overall, the results of this second exercise – confined to European economies – underscore the importance of financial and banking vulnerabilities in the run-up to the crisis and that initial current account imbalances have become relevant as the crisis has advanced. It is also remarkable the diminishing protection given by the euro umbrella, as risk premium deteriorated strongly in the periphery, while the role of fiscal sustainability perspectives has also been increasingly significant.

5   Towards a new setting: Key elements for strengthening the Monetary Union

The empirical analysis of this paper underscores some of the points made in the descriptive section and allows others to be qualified. It is hard to find evidence that markets had a disciplinary effect on agents and policymakers before the crisis, especially in certain regions. On one hand, corroborating previous evidence, fiscal vulnerabilities tended to be captured in the credit risk premium, but only sparsely and marginally; moreover, in the expansionary phase prior to the crisis, headline fiscal balances looked rather healthy in many cases, masking more fundamental weaknesses. On the other, other key vulnerabilities —such as large external financing needs, excessive credit growth or foreign currency exposure— were overlooked in the pricing of risk. Finally, in the aftermath of the crisis the CDS jumped briskly, reflecting to some extent the previous imbalances and the worsening economic and financial perspectives.

Another relevant finding is the halo effect of the euro area club before the crisis, both in the euro periphery and in the NMS with fixed rates. This result and the expansionary forces (low or negative real rates, ample financing availability, procyclical fiscal bias, etc.) suggest that the euro environment was not a driver of discipline; the contrary was rather the case. The mirage of a smooth convergence (NMS) or landing (euro-periphery) on the monetary union was widespread in markets, among domestic policymakers and at most European institutions. Each element reinforced the others, leading to the accumulation of imbalances.

Accordingly, there is broad consensus that economic and financial stability in Europe has to be reinforced, based on the perception that a much stronger discipline framework is key for the future of the Monetary Union. As intimated throughout the paper, there are three sources of discipline: the EU institutional framework, market discipline and domestic or self-discipline.

Major steps have been taken in Europe to reinforce the institutional setup and improve governance[29]. First, the SGP has been reformed and a fiscal compact has been approved, making fiscal discipline more binding and biting, with more automaticity and less room for discretion, and with an early and gradual application of financial sanctions. Second, a wider scope for surveillance, including a scoreboard for external and internal imbalances, has been developed. The creation of new institutions to assess financial stability at the European level, such as the European Systemic Risk Board to address systemic risks or the new European Supervisory Authorities, can be included in this drive to reinforce the European institutional framework. Yet it may not be enough. The experience of the SGP has shown how difficult it is for disciplinary mechanisms ultimately to be binding, and that they can become victims of political bargaining. The revamped fiscal institutional arrangements have been framed taking into account the previous weaknesses, and they entail more automaticity. However, it is to be feared that once the crisis diminishes, these harmful dynamics may gain momentum again.

Regarding markets, the skepticism about their disciplinary role has been substantiated by the empirical analysis. Admittedly, markets are also taking a big hit from their inadequate assessments, whereby it might be expected that European risk premia will reflect

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[29]. See ECB (2011) for a review of economic governance in the euro area.

much better fundamentals and serve as a market-based mechanism for discipline in the future: a sizable spread in sovereign bonds can act, as countries are painfully experiencing now, as a strong incentive for discipline. Under this light a higher diversification of spreads — based on a sharper identification of vulnerabilities— could be positive in bolstering discipline. Yet how persistent is the disciplinary drive in the markets? The empirical analysis has marginally attempted to address this issue in the first exercise. The non-significance of the vulnerability fundamentals at the height of the expansion prior to the crisis provides some preliminary evidence that market disciplining may not be long-lasting. This result is especially strong and relevant for the euro area countries and the NMS, as stated before.

Hence, domestic or self-discipline remains the last resort for discipline and stability. The fiscal compact takes a step in this direction by forcing strict fiscal rules on national constitutions. But, more importantly, sometimes, countries learn from their crises. With all the caveats, the Latin American or Asian experiences after their last financial crises show that they can catalyze deep structural changes which reduce vulnerabilities.[30] Hopefully, this crisis is proving severe enough and has so starkly highlighted the economic constraints within a monetary union that it may foster a change of attitude in domestic agents and policymakers.

Thus, the combination of stronger European economic governance, higher awareness of markets regarding imbalances and, above all, improvements in domestic discipline might be pervasive enough to set the basis for a more stable monetary union, which is an essential ingredient of its future success.

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30. See Gallego et al (2010) for a detailed analysis on Latin American countries' self-discipline after their crises in the opening years of the 21st Century and for a comparison with Eastern European Countries

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