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The experience of three crises: the Argentine default, American subprime meltdown and European debt mess

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Abstract
This paper aims to find out why vast masses of individuals and institutions risk their money in ventures that turn out to be a complete fiasco and to explore how to prevent this from happening again in the future. In the three cases analyzed – Argentina's 2001 crisis, the US subprime crisis and the Euro debt crisis – a common feature was the huge misjudgments by investors of the risks really involved. In at least two of these three cases, this misjudgment was induced by important actors in the financial world. In the case of Argentina, by the IMF backing of the Convertibility program; in the case of subprime mortgages, by the rating agencies' ratings.

In the case of the euro-zone, there was a general assumption that the common currency automatically meant an almost common level of risk. However, as the paper shows, in a monetary union the probability of a government default is *higher*, not smaller than for an isolated individual country government.

The fact that financial institutions have a perverse incentive to take excessive risks is emphasized. Financial activity as a whole is a public good: systemic risks to financial institutions are risks for the economy as a whole. Thus special attention should be placed on those risks capable of damaging the financial system as a whole.

The paper is divided into four chapters. The first one is devoted to the 2001 Argentine crisis; the second one, to the 2008 US financial crisis; the third one deals with the European debt crisis; the fourth one concludes.

Introduction

> "Never waste the opportunities offered by a good crisis." Niccolo Machiavelli

The American financial crisis, followed by the European debt crisis, has led to increasing interest on the subject, to which economists had paid almost no attention during the optimistic years of the so-called Great Moderation.[2] However, as Reinhart and Rogoff (2009) exhaustively show, financial crises and sovereign debt defaults are far from strange events in economic history, in both less developed as well as developed countries.

While in 2003, Desai could still assert that there is a big difference in the debt management between developed and emerging countries, events after 2007 show that this is no longer valid. In spite of being endowed with a sophisticated network of financial institutions and supervisory regulatory agencies, the US economy was hit by a financial crisis that has much in common with previous emerging countries' financial crises. The same has now happened in the European Union. Moreover, the policies being undertaken by crisis countries are similar to those Argentina tried in 2001 in its desperate effort to save the peso–dollar link.

[1] I am grateful to James Galbraith, Bernardo Kliksberg and Edward Fullbrook for helpful comments on an earlier draft. The usual caveats apply.
[2] Notable exceptions are Bordo et al. (2001), Bordo and Murshid (2001), Eichengreen and Lindert (1989), Feldstein (1991), Reinhart and Rogoff (2003) and Sturzenegger and Zettlemeyer (2006).

Reinhart and Rogoff (2008a) demonstrate that the antecedents and aftermath of banking crises in rich countries and emerging markets have a surprising amount in common. In another paper, these authors conclude that "serial default on external debt – that is, repeated sovereign default – is the norm throughout every region in the world, even including Asia and Europe" (Reinhart and Rogoff, 2008b, 5).

As an economist living in Argentina, I was a first-hand witness of the 2001 crisis in this country. At that time, I wondered why many people in the rest of the world had thought it could not happen and had trusted their savings to the Argentine government. The impact of the 1994/5 Tequila crisis revealed the inconsistencies in the Convertibility plan and the 2001 crisis was, paraphrasing García Márquez, just a chronicle of a death foretold (see chapter I).
The same question I ask now with reference to the American and European crises. The challenge is to find out why more or less sophisticated investors risk their money in ventures that turn out to be a complete fiasco and to explore how to prevent this from happening again in the future.

Lenders do not seem to be concerned or to have the tools to properly evaluate the risks involved in their lending operations. This shows a misalignment of incentives with the public interest on both sides of the counter. On one side, lenders seem to be incentivized to take excessive risks; on the other, borrowers are driven to overborrow.

The reason why governments tend to overborrow is relatively straightforward. A government's objective function is to maximize votes. Votes are positively correlated with expenditure – it always benefits some constituency – and negatively correlated with taxes. Debt is one way of transferring payments to future governments. Therefore, governments have every incentive to maximize debt subject to the restrictions that the market imposes on them. In the real world, governments are clearly "debt biased," as Alesina and Tabellini (1990) pointed out.

In the case of private agents, the tendency to overborrow has been modeled by Bianchi (2011), who shows how optimal borrowing decisions at the individual level can lead to overborrowing at the social level. Agents fail to internalize the general equilibrium effects of their borrowing decisions on prices. This is a pecuniary externality that arises due to the presence of financial frictions.

This paper focuses on the lenders' side. I conclude that in each of the three cases analyzed here some sort of veil obscured the real risks involved. Thus, the key issue is to remove these veils and make financial markets much more transparent and accountable. Financial activity as a whole is a public good: systemic risks to financial institutions are risks for the economy as a whole. However, financial institutions per se have a perverse incentive to take excessive risks; the most aggressive institutions place pressure on the rest, and just as bad money drives out good, bad financial institutions could drive out good ones. Financial regulation should place attention on those risks capable of damaging the financial system as a whole.
In the case of public debt, a key issue is transparency in public accounts. In this respect, an independent review agency responsible for conducting performance audits and studies of selected fiscal issues may be a useful instrument for ensuring that transparency.

The present paper is divided into four chapters. The first one is devoted to the 2001 Argentine crisis; the second one, to the 2008 US financial crisis; the third one deals with the European debt crisis; the fourth one concludes.

1. Argentina's debt crisis

At the end of 1975, Argentina's external debt was 4 billion dollars; at the end of 1982, 40 billion and at the end of 2001, 140 billion. On December 2001, Argentina announced the default of its external debt. It was one of the largest defaults in present value terms since the Russian repudiation of 1918.

1.1 Introduction

In August 1982, Mexico declared that it would no longer be able to service its debt. In the wake of Mexico's default, most commercial banks reduced significantly or halted new lending to Latin America. As much of Latin America's loans were short-term, a crisis ensued when their refinancing was refused. Thereafter, Mexico, Brazil and Argentina followed suit. Argentina's default lasted until 1992, when it reached an agreement with the creditor banks within the framework of the Brady Plan.

With this antecedent, nobody thought, in the early 1990s, that Argentina's public sector could easily recover access to capital markets. However, while at the end of 1991 Argentina's gross external debt amounted to $61 billion, by the end of 1999 it had soared to $145 billion, of which 85 billion was public sector debt (Lischinsky, 2003, Table 6). How was it possible that such a serial defaulter[3] could more than double its external debt in such a short time?

This seems to contradict the explanation given by Reinhart and Rogoff (2004, 13) related to the "paradox" of why so little capital flows to poor countries; they argue that countries that do not repay their debts have a relatively difficult time borrowing from the rest of the world. However, this does not seem to have been the case for Argentina, whose external debt largely increased in the 1990s despite just coming out from default.

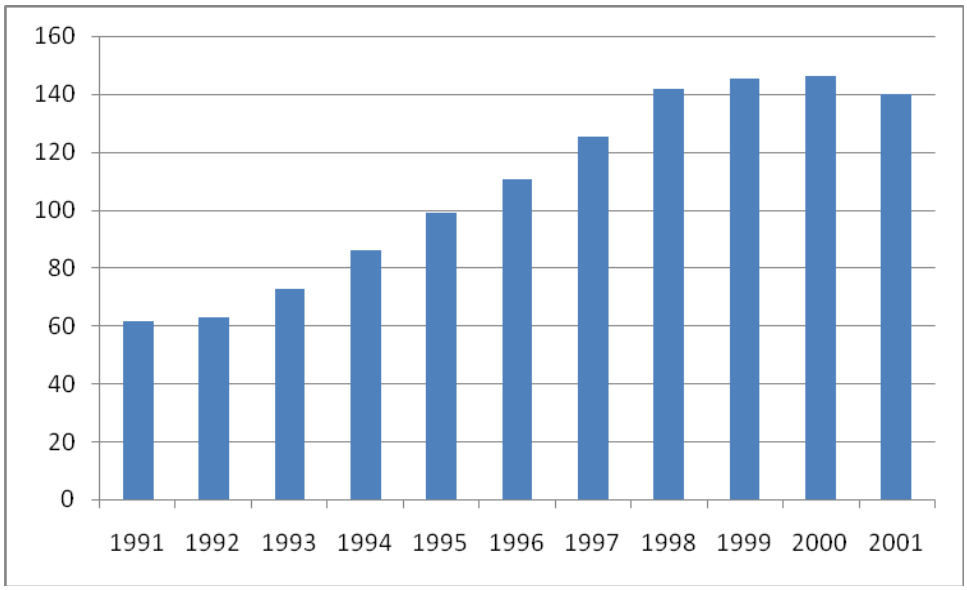
Of course, lenders could argue that they lent money to a country that was at that time blessed by the IMF. The IMF's point of view was clearly reflected in its former First Deputy Managing Director Anne Krueger's words during the conference on "The Argentina Crisis" in July 2002: "Between 1990 and 1997 its economy outperformed that of most other countries in Latin America, growing by more than 6 percent a year. Contagion from the tequila crisis in 1995 was severe, but short-lived with growth soon resuming. Argentina's performance was recognized internationally with President Menem's appearance alongside President Clinton at the 1999 annual meetings of the Fund and Bank." Of course, as Mrs. Krueger recognized on that occasion, there was mounting fiscal deficit but it was not then considered to be a problem; on the contrary, it was seen as an opportunity to lend money to the Argentine state, the same state that had been in default during most of the previous 10 years.

Figure 1.1 reflects the evolution of the national government public debt – external and domestic – from 1991 until 2001, when Argentina defaulted again. By that time, Argentina's total foreign currency debt was around five times the size of its annual foreign currency receipts from the exports of goods and services. Mrs. Krueger prefers to play down the role of the IMF and to put the blame on investors and lenders for "providing an apparent vote of confidence by pouring capital in." The fact is that in the 1990s Argentina was the best pupil of the IMF, the World Bank and the US government, as not only Mrs. Krueger but also the then

[3] Although Argentina is known as a serial defaulter, its record is surpassed by many countries in the New World and by almost as many in the Old World including France and Germany (Rogoff and Reinhart, 2004, 3).

Minister of Economy Domingo F. Cavallo recalls (Cavallo, 2004, 1). For international organizations, it was a "star" country that had followed most of the policies recommended by the so-called "Washington Consensus".

Figure 1.1 Public Indebtedness – National Government – 1991/2001 (Billions of dollars at the end of each year)



Source: Ministry of Economy

The IMF played a key role in restoring confidence in Argentina by capital markets. During the decade preceding the 2001 crisis, there were successive IMF financing arrangements for Argentina;[4] the IMF also provided extensive technical assistance during that period, dispatching some 50 missions between 1991 and 2002, mainly in the fiscal, monetary and banking areas. It widely praised Argentina for its achievements in stabilization, economic growth and market-oriented reforms under IMF-supported programs.

The misjudgment by the IMF of the sustainability of the Convertibility regime played a key role in reopening Argentina's access to capital markets. The successive bond issues that took place during the 1990s were carried out by a government whose economic policies were under the close scrutiny of the IMF, who had strongly praised them. Without its seal of approval to Argentina's economic policies, would investors and lenders have rushed to buy them? Therefore, in the case of Argentina, it seems to be clear that a primary responsibility in its 2001 public sector debt crisis was played by the IMF endorsement of an economic scheme that had been doomed to fail at least since 1995.[5]

The rest of the chapter is organized as follows. Section 1.2 is devoted to an analysis of Argentina's economic performance in the 1990s. Section 1.3 reviews the criteria for assessing the country's solvency and applies them to assess the Argentine case. Section 1.4 explains

[4] During the 1990s, there were four IMF arrangements: arrangement under the Extended Fund Facility (EFF) approved on 3/31/92; Stand-By Arrangement (SBA) approved on 4/12/96; arrangement under the EFF, approved on 2/4/98; and SBA, approved on 3/10/00.
[5] See Beker and Escudé (2008, 23/24).

the reasons for Argentina's growing public sector debt. Section 1.5 is devoted to analyzing the role of the IMF in the Argentine debt crisis. Section 1.6 summarizes.

1.2 Argentina's economic performance in the 1990s

The economic performance of Latin American countries in the 1980s was unsatisfactory. In what has been called the "lost decade," the region's economy was disrupted by the debt crisis and raging inflation. This experience shocked the region; as a result, Latin America embraced structural economic reforms during the 1990s. All countries liberalized international trade and external capital flows and privatized public utilities. Argentina was no exception. Actually, it was one of the countries where more aggressive economic reforms were implemented.

After the hyper-inflationary processes of 1989 and 1990, drastic economic reforms took place in Argentina. The key measures that shaped this economic program were the Convertibility Law, the liberalization of external trade and financial flows and the privatization of public enterprises.

The Convertibility Law established a fixed exchange rate of one peso to one dollar. The Central Bank was obliged to sell foreign currency at that rate as required by the market. In order to fulfill this obligation, it had to keep international reserves equivalent to at least 100% of the monetary base (except for up to 10% of the monetary base which could be backed by dollar-denominated government bonds). This meant, virtually, the transformation of the Central Bank into a Currency Board. As a result of this package, inflation was drastically abated from a level of 5% per year in 1989 to just 0.16% in 1996. Moreover, GDP grew by 40% between 1990 and 1994.

Trade liberalization was reflected in a huge increase in foreign trade. Imports soared, from $4.1 billion to $21.6 billion in 1994, while exports rose from $3.7 billion to $20.1 billion in the same period. The participation of imports in aggregate supply expanded from 5.6% in 1990 to 14.6% in 1994. This increase in international trade was accompanied by substantial expansion in the deficit in the current account.

Convertibility together with trade liberalization assured the stability of tradable goods prices. Their domestic prices would not increase if international prices did not because imports could easily replace local production. However, this did not mean the stability of prices for non-tradable goods. The result was a change in relative prices in favor of non-tradables.

Excess demand – fueled by foreign capital inflow – resulted, on one hand, in an increase in the volume of imports and, on the other hand, in the price of non-tradable goods. This price behavior resulted in the continuous erosion of the competitiveness of tradable sectors. The current account deficit thus increased from $5.4 billion in 1992 to $10.1 billion in 1997 – more than one-third of that year's exports.

Therefore, the current account deficit kept growing during the 1990s and more and more capital inflows were needed to make up for it. As can be seen in Table I.1, Argentina needed a surplus of around $10 billion per year in its capital account not to lose foreign exchange reserves. When there was a sharp reduction in global capital flows to emerging market economies, as happened in 1995 due to the Tequila effect, real GDP fell 4.6% and unemployment soared, reaching 17%.

Contrary to the conclusion by the IMF and mainstream analysts that Argentina's economic behavior in the presence of the Tequila effect proved to be the strength of its economy, it showed its Achilles' heel: its high sensitivity to external flows. As later events proved, 1995 was a general rehearsal for the 2001 crisis. The lack of access to funds on international capital markets would strangle the Argentine economy under the Convertibility regime. In the late 1990s, the Argentine economy suffered a series of external shocks: the East Asian crisis in 1997, the Russian one in 1998, the 1999 devaluation of the Brazilian real, which had a negative impact on the competitiveness of Argentina's significant exports to this country, and the appreciation of the US dollar against most other currencies, which increased Argentina's real effective exchange rate. In the presence of all these adverse shocks, the Convertibility regime prevented a flexible domestic policy response.

The twin deficits required continuous access to external financing. However, far from being considered a drawback or a weakness of the economic program, they were considered to be just a minor detail, assuming that foreign capital markets would always be available to finance both disequilibria. An increasing stock of external debt, rising country risk premiums and sluggish growth caused the ratio of debt to GDP to rise uncontrollably until the default came in 2001.

Sovereign debt has usually been assumed to be almost risk-free because it is supposed that governments can always resort to an increase in taxes to service it. However, in the real world there is always a political limit for that.

Table 1.1 Balance of Payments – Argentina 1992/97

	1992	1993	1994	1995	1996	1997
Current Account	**-5.462,0**	**-7.672,0**	**-10.117,0**	**-2.768,0**	**-3.787,0**	**-10.118,8**
Commodities	**-1.450,0**	**-2.426,0**	**-4.238,0**	**2.238,0**	**1.622,0**	**-3.194,6**
Exports	12.235,0	13.117,0	15.839,0	20.964,0	23.811,0	25.223,0
Imports	13.685,0	15.543,0	20.077,0	18.726,0	22.189,0	28.417,6
Services	**-2.257,0**	**-2.730,0**	**-2.941,0**	**-2.222,0**	**-2.495,0**	**-3.069,2**
Exports	2.454,0	2.454,0	2.599,0	2.860,0	3.226,0	3.271,0
Imports	4.711,0	5.184,0	5.540,0	5.082,0	5.721,0	6.340,2
Income	**-2.416,0**	**-2.927,0**	**-3.258,0**	**-3.216,0**	**-3.248,0**	**-4.205,0**
Interest	-1.289,0	-1.081,0	-1.136,0	-1.054,0	-1.326,0	-1.770,0
Earned	2.099,0	2.135,0	3.073,0	4.348,0	4.587,0	5.332,0
Paid	3.388,0	3.216,0	4.209,0	5.402,0	5.913,0	7.102,0
Profits & Dividends	-1.127,0	-1.846,0	-2.122,0	-2.162,0	-1.922,0	-2.435,0
Transfers	**661,0**	**411,0**	**320,0**	**432,0**	**334,0**	**350,0**
Capital Account	**8.567,3**	**12.152,0**	**10.678,0**	**2.699,0**	**7.569,0**	**13.180,8**
I. Banking Sector	**826,0**	**-1.528,0**	**1.895,0**	**4.360,0**	**-519,0**	**-1.794,0**
Central Bank	-177,0	-2.818,0	307,0	1.929,0	849,0	-800,0
Others	1.003,0	1.290,0	1.588,0	2.431,0	-1.368,0	-994,0
II. Public Sector	**1.285,0**	**7.121,0**	**4.097,0**	**5.945,0**	**8.731,0**	**7.331,0**
National Govt	1.853,0	6.473,0	4.471,0	6.435,0	8.583,0	6.495,0
Local Govt	31,0	889,0	189,0	374,0	612,0	1.231,0
Public Enterprises	-599,0	-241,0	-563,0	-864,0	-464,0	-395,0
III. Private Sector	**2.766,0**	**4.559,0**	**4.454,0**	**4.923,0**	**5.415,0**	**9.035,0**
IV. Other Movts	**3.690,3**	**2.000,0**	**232,0**	**-12.529,0**	**-6.058,0**	**-1.391,2**
Variation in Reserves	**3.105,3**	**4.480,0**	**561,0**	**-69,0**	**3.782,0**	**3.062,0**
MEMO ITEM						
Imports	14.873,0	16.783,0	21.590,0	20.122,0	23.761,0	30.323,6

Source: Ministry of Economy

1.3 Country's solvency and the Argentine case

Although no simple rule can help determine when foreign debt accumulation is sustainable or not, a number of criteria can be used in assessing the sustainability of the foreign debt of a country. The issue is summarized in Roubini (2001, 3–4).

The analytical literature on current account and foreign debt sustainability provides a theoretical criterion that is not particularly stringent. As long as the discounted value of trade balances is at least equal to its initial foreign debt, the country is solvent; this means only that the country cannot increase its foreign debt faster than the real interest rate on this debt. Therefore, any path of the current account such that the infinite sum of all current accounts is equal to the initial foreign debt of the country is consistent with solvency. This means, for instance, that if the real interest rate is greater than the rate of the growth of an economy, solvency is consistent even with a foreign debt to GDP ratio that grows continuously over time.

A similar criterion applies in determining whether the public debt of a government is sustainable or not. Specifically, as long as the discounted value of primary balances is at least equal to the initial public debt, the public sector is solvent. However, the dynamics of the current account that lead to an increase without bounds of the foreign debt to GDP ratio can be seen as effectively unsustainable: financial markets will eventually become concerned about the country's ability and willingness to repay its debt and will limit its borrowing, leading to a foreign debt crisis. The same things apply for the case of domestic debt.

That is why a non-increasing foreign debt to GDP ratio has been seen as a practical sufficient condition for sustainability: a country is likely to remain solvent as long as the ratio is not growing. Similarly, public debt can be viewed as sustainable as long as the public debt to GDP ratio is non-increasing. The "resource balance gap" is thus the difference between the current trade balance and the trade surplus required to stabilize the debt to GDP ratio. In the same way, the fiscal "primary gap" is the difference between the fiscal primary balance and the primary balance required to stabilize the debt to GDP ratio. This criterion provides a normative rule: how much a trade surplus or primary surplus is required to close the resource or primary gap. However, it does not directly provide a tool to assess whether a certain stock of debt is sustainable or not.

Several alternative indicators of fiscal and external debt sustainability can be used to assess insolvency. Three of the most commonly used are the debt to GDP ratio, the debt to export ratio and the debt to government revenue ratio. The relevant denominator depends on the constraints that are most binding in an individual country, with GDP capturing overall resource constraints, exports those on foreign exchange and revenues those on the government's ability to generate fiscal resources. In general, it is useful to monitor external debt in relation to GDP and export earnings and public debt in relation to GDP and fiscal revenues.

In this respect, the analysis by IMF staff for low-income countries yields a threshold value for the debt to GDP ratio of around 43%, 192% for the debt to exports ratio and 288% for the debt-to-revenue ratio (IMF and IDA, 2004, 57).

Based on the criterion of the external debt to GDP ratio, Argentina crossed the threshold in 1998 (Table 1.2). However, the GDP calculation was biased upwards by the overvaluation of the peso, so entrance into the "danger area" might have happened a couple of years before.

Concerning the debt to export ratio, Argentina had in 2001 a ratio of 561%, well above the threshold value, although the same happened with all the values of this series in the 1990s (see Table 1.3). Finally, the debt to government revenue ratio was 220% in 2001, below the threshold value for this coefficient.

Therefore, the coefficients themselves do not explain why Argentina defaulted in 2001. If the relevant coefficient were the debt to exports ratio, Argentina was already a potential defaulter in 1991. However, it managed to borrow almost $80 billion during the following 10 years, more than doubling its external debt. Perhaps the most important issue at the time of default was the high share of short-term external debt. In fact, for both 2002 and 2003, the repayment of principal exceeded 80% of the exports. Adding interest payments of about $12 billion, total debt servicing largely exceeded annual exports. Argentina depended on creditors' willingness to roll over its external debt. This became increasingly difficult since capital flows to Argentina quickly decelerated after the 1998 Russian crisis. By mid-2001, the economic authorities initiated a process to improve the maturities by extending them. A $30 billion government debt swap took place in June. The government thought this transaction would offer financial relief in terms of the repayment of principal and interest payments of around $4.5 billion annually. However, this was carried out at the price of accepting an implicit interest rate of 15%,[6] which was interpreted by creditors as announcing a high probability of default. After that, the failure of a Treasury bill auction confirmed that the Argentine government had lost access to credit. Default was then inevitable.

Argentina had been continuously issuing new bonds to cancel most of the principal and interests of the debt that were becoming due. Only when default was imminent did creditors refuse to go on playing this game. Even then – in September 2001 – the IMF approved one last significant tranche of financing for Argentina.

In the analysis of its role in the Argentine crisis, the IMF (2003, 72) poses the dilemma its authorities faced at that time: even after realizing the high probabilities of failure, it went on supporting the Argentine economic program in light of the high and immediate costs of withdrawing support. This reflects the path dependency existing in decision making: once you make a considerable wrong bet, you are doomed to increase it in order to try to save your initial investment.

In the context of political instability – the governing coalition was undergoing a political crisis since the resignation by the vice-president in October 2000 – Argentina finally defaulted at the end of 2001 after the then president resigned from his job.

1.4 The reasons for Argentina's growing public sector debt

When the Convertibility plan started in 1991, a restriction was placed on the Central Bank. It could not make loans to the government (except for short-term limited amounts). Given the reluctance by foreign lenders at that time to become involved in Argentina, it was taken for granted that that constraint was practically equivalent to excluding the possibility of running a fiscal deficit. During the transition, the government would resort to the proceedings from privatizations while leveling expenses with revenues. In fact, in 1993 – for the first time in decades – the nonfinancial public sector had no deficit. However, exactly at that time it was decided to reform the social security system. The main effect of this reform was to transfer most of the system revenues to the private sector, while keeping most of the expenses within

[6] At that time, the one-year US Treasury interest rate fluctuated around 3.6%.

the public sector. This meant that since 1994 the federal budget was again continuously in deficit, even in years of good economic growth. New debt was added to old debt year after year, and debt plus interest grew much faster than the economy. At the end of 1994, the federal government's gross debt was $75 billion, while GDP in 1994 was $257 billion. By the end of 2001, debt was almost twice as large, $140 billion, while GDP was only $271 billion, just 5% higher than in 1994.

Thus, what in 1991 was unthinkable did happen: since 1994, Argentina had recovered access to international capital markets. Therefore, the constraint placed on the Central Bank became non-binding. Capital markets were willingly available to finance Argentina's public sector debt. How did this Copernican change happen? First, since 1992 Argentina was under the umbrella of an IMF-supported program; second, it enthusiastically adhered to the Washington Consensus and its principles; third, the Currency Board was a guarantee of no devaluation; finally, high interest rates were a significant attraction. From 1994 on, what has been called a "bond festival" took place until the 2001 default put an abrupt end to it.[7]

Table 1.2 – External debt to GDP ratio

Year	%
1991	32,35
1992	27,36
1993	30,53
1994	33,28
1995	38,20
1996	40,32
1997	42,61
1998	47,11
1999	51,54
2000	51,91
2001	51,95

Source: Ministry of Economy and IMF

Table I.3 – External debt to export ratio

Year	%
1991	503,54
1992	512,06
1993	511,53
1994	550,47
1995	540,78
1996	470,10
1997	460,95
1998	472,30
1999	532,97
2000	627,32
2001	560,60

Source: Ministry of Economy and IMF

The continuous support by the IMF to the Argentine program, even after the Tequila crisis showed its high sensitivity to external flows, allowed the government to pile up a huge debt, long after it was evident that the Currency Board was unsustainable. Therefore, it is worthwhile analyzing the role of the IMF in the Argentine crisis.

1.5 The role of the IMF

After the 2001 crisis, the IMF produced two documents. One was aimed at examining the origins of the Argentine crisis and its evolution until early 2002 (IMF, 2003). The second one was produced by the IMF's Independent Evaluation Office (IEO); this evaluated the role of the IMF in Argentina during 1991–2001 (IMF, 2004).

[7] Those interested in Argentina´s development after the 2001 devaluation and default may have a look at Frenkel (2012).

In its report, the IEO recognizes that "the catastrophic collapse of the Argentine economy in 2001–02 represents the failure of Argentine policymakers to take necessary corrective measures at a sufficiently early stage. The IMF on its part, supported by its major shareholders, also erred in failing to call an earlier halt to support for a strategy that, as implemented, was not sustainable" (IMF 2004, 64). The IEO argues that favorable factors allowed the exchange rate regime to survive for a number of years without being severely tested but the situation changed in 1998–99 when Argentina was hit by a series of adverse shocks. However, it admits that "these shocks would have been difficult enough to handle at any time, given the rigidity of the fixed exchange rate and the lack of downward flexibility in domestic wages and prices" (Ibid.). Therefore, it recognizes that the Convertibility regime, because of its rigidity, was incapable of dealing with any adverse shock of a certain volume. In fact, it did not pass the Tequila test: in order to keep a fixed exchange rate, the country's economy experienced a jump in its unemployment rate from 10.7% to 18.4% between May 1994 and May 1995 (see Table 1.4). Therefore, if a test was needed, the Mexican crisis provided it. However, the IMF interpretation *even in 2003* was that "the economy had successfully weathered the Tequila crisis of the mid-1990s" IMF (2003, 3). Calling a success the management of a crisis that meant an 80% increase in the unemployment rate is evidence that the IMF underweights unemployment in its assessment scheme.

The IEO report goes onto admit that the IMF's "support gave credibility to Argentina's stabilization and structural reform efforts" (IMF, 2004, 65), although the IMF was initially skeptical as to whether the Convertibility plan would work. This suggests that political considerations prevailed over the technical opinions of IMF staff.[8]

Table I.4 Unemployment rates – May and October 1991/95

Year	May	Oct
1991	6,9	6,0
1992	6,9	7,0
1993	9,9	9,3
1994	10,7	12,2
1995	18,4	16,6

Source: INDEC

Although the report underlines that the IMF correctly identified the potential vulnerabilities inherent in the Convertibility regime, the fact is that in spite of that the IMF went on supporting that regime even after it was clear that this support allowed Argentine authorities to swiftly increase Argentine public debt to unsustainable levels. "Moreover, the IMF ... began to endorse the exchange rate regime itself. Indeed, the IMF publicly lauded convertibility as an example of a Currency Board, the only type of fixed exchange rate regime that is fundamentally sustainable in a world of high capital mobility" (IMF, 2004, 65). In summary, the IMF's support was a necessary element without which it would have been difficult to increase Argentina's indebtedness as occurred during the 1990s.

[8] "…dissenting views were overruled by such considerations as the need to maintain influence with a member country or a desire to preserve the catalytic effect of the IMF's seal of approval" (IMF, 2004, 66).

1.6 Summary

After the hyper-inflationary processes of 1989 and 1990, drastic economic reforms took place in Argentina. The central piece of this program was the Convertibility Law, which established a fixed exchange rate of one peso to one dollar. The Central Bank could issue domestic currency only against foreign currency and could not make loans to the government except for a very tiny sum. It was taken for granted that this constraint was practically equivalent to excluding the possibility of running a fiscal deficit. However, soon this proved not to be true: from 1994, Argentina recovered access to international capital markets and since then increased its public debt at a very fast rate. How were lenders convinced to lend huge amounts of money to a serial defaulter such as Argentina? There is no explanation but endorsement by the IMF of Argentina's economic program. It is hard to believe that lenders would have rushed to buy Argentine bonds without the IMF's seal of approval.

The misjudgment by the IMF about the sustainability of the Convertibility regime played a key role in reopening Argentina's access to capital markets. Continuous support by the IMF to the Argentine program, even after the Tequila crisis showed its economy's high sensitivity to external flows, allowed the government to pile up a huge debt, long after it was evident that the Currency Board regime was unsustainable. The IMF played in the Argentine case the same role as credit rating agencies played in the 2008 American crisis: to induce lenders to put their money into buying securities of doubtful collectability.

2. The American financial crisis

2.1 Introduction

The core of the 2007/08 financial market crisis has been the discovery that many securities were actually far riskier than people originally thought they were. The process of securitization allowed trillions of dollars of risky assets – subprime mortgages in the first place – to be transformed into securities that were widely considered to be safe.

I have defined elsewhere (Beker, 2010, 5) the American financial crisis as a typical case of professional malpractice, an extended malpractice by hundreds of professionals in banks and rating agencies who created and certified as almost risk-free securities assets that were actually highly risky as the events after 2007 overwhelmingly showed.

Subprime mortgage securitization models relied on assumptions and historical data that turned out to be incorrect and therefore made incorrect valuations. Substantial lending to subprime borrowers was a recent phenomenon and historical data on the defaults and delinquencies of this sector of the mortgage market was scarce (see Coval et al., 2009, 15). Some models were not even based on historical data because they referred to transactions for which there was no active trading market. "The mathematical rigor, elegance and the numerical precision of the various risk-management and asset-pricing tools have a tendency to 'hide' the weaknesses of these models and their underlying assumptions, which are necessary to guarantee the models' values to those who have not developed them" (Schneider and Kirchgässner, 2009, 6).

Securitization enabled mortgage lenders to sell off loans as they were made, thus creating moral hazard since this meant that lenders could pass along the risk of default to investors.

Mortgage underwriting standards fell once lenders did not have to live with the credit consequences of their loans. Gorton (2008, 2009) disagrees with this interpretation, arguing that many lenders went under after the crisis. However, one may use just the opposite argument: they went under precisely because the crisis burst out before they were able to distribute all the securitized debt they had created. On the other hand, lenders who did not sell all the loans they originated were able to buy relatively inexpensive protection against credit risks through credit default swaps, which was another way of transferring risk to a third party.

Securitization, which was supposedly aimed at reducing informational asymmetry,[9] became a tool to take advantage of that asymmetry. Because of the asymmetric information between the lender and the investor, rating agencies came on scene to provide the latter with accurate risk evaluation. However, the problem was that rating agencies are paid by the issuer not by the investor. This raised a conflict of interest, as was clearly exposed by the high credit ratings given to actually highly risky assets.

Behind this extended malpractice was the pressure caused by a liquidity glut, which forced lenders to compete aggressively for business. That is why monetarists blame exclusively the money glut for the crisis. However, the existence of a money glut is a necessary but not sufficient condition for developing a bubble like the one that culminated in the crisis. It was the combination of this money glut with financial deregulation that was lethal for the American economy.

2.2 The money glut

Global current account imbalances have been singled out as a key factor contributing to the global financial crisis. Current account surpluses in several emerging market economies (China and other Asian countries plus oil-exporting countries) are said to have helped fuel the credit booms and risk taking in the major advanced deficit countries at the core of the crisis, by putting significant downward pressure on world interest rates and/or by simply financing the booms in those countries.

Bracke and Fidora (2012) test the global liquidity glut hypothesis versus the global savings glut one. They find that US monetary policy shocks explain the largest part of the variation in imbalances and financial market prices. Savings shocks and investment shocks explain less of the variation. Hence, according to them, a "liquidity glut" may have been a more important driver of the real and financial imbalances in the US and emerging Asia that ultimately triggered the 2007–08 global financial crisis.

Borio and Disyatat (2011, 20) reject the dominant "excess saving" view, arguing that "the saving-investment framework describes the real side of the economy. The equality between ex ante saving and investment is an equilibrium condition for the goods market." For them, the focus of the analysis should be placed on monetary policy: "It is monetary policy that underpins the term structure of market interest rates" (Ibid., 24).

They argue that "the geographical breakdown of capital inflows into the US in the run-up to the crisis is hardly consistent with the excess savings view. By far the most important source of capital flows was Europe, not emerging markets. Of this, more than half came from the United Kingdom, a country running a current account deficit, and roughly one-third from the

[9] See, for example, Schwarcz (2011, 4).

euro-area, a region roughly in balance. This amount alone exceeded that from China and by an even larger margin that from Japan, two large surplus economies." (Ibid., 15). They refer to Milesi-Ferretti (2009), according to whom on the eve of the crisis (June 2007) the holdings of privately issued mortgage-backed securities were concentrated in advanced economies and offshore centres. Contrary to the excess savings hypothesis, they maintain that "the focus on global current account imbalances misses the role of European banks in supporting the boom in US housing credit and the subsequent collapse of such financing" (Ibid., 20). They conclude that the main contributing factor to the financial crisis was the "excess elasticity" of the international monetary and financial system. They argue that "the financial system can endogenously generate financing means, regardless of the underlying real resources backing them. In other words, the system is highly elastic. And this elasticity can also result in the volume of financing expanding in ways that are disconnected from the underlying productive capacity of the economy" (Ibid., 28).

However, it does not seem that one approach necessarily excludes the other. The "excess saving" view may explain the huge increase in the official holdings of US Treasury securities by the countries that accumulated foreign exchange reserves during the past decade. This allowed the American economy to run twin deficits during these years and keep interest rates low. These low interest rates were validated by an expansionary monetary policy (the "liquidity glut").

The real issue is not the ultimate cause of cheap money but why low interest rates did not stimulate investment in real productive capacity instead of feeding a colossal speculative bubble in the real estate market. The answer is that speculation promised greater benefits with almost no risk. Here comes the key role played by rating agencies. Trillions of dollars of risky assets were transformed into mostly AAA-rated securities. This was the key element in feeding the subprime mortgage bubble: "The three credit rating agencies were key enablers of the financial meltdown. The mortgage-related securities at the heart of the crisis could not have been marketed and sold without their seal of approval" (FCIC, 2011, XXV).

2.3 The role of credit rating agencies

Credit rating agencies were an essential input into the process of manufacturing vast quantities of triple-rated securities with attractive yields. In a period of low interest rates, they were eagerly bought up by investors unaware of the real risks they entailed.

Risks were strongly mispriced. Investors thought they had bought a Mercedes Benz; it took a certain time for them to find out they were just "lemons." Coval et al. (2009) explain thoroughly the roots of rating agencies' errors and why they were unable to accurately assess securities risks, in particular systematic risks.

While house prices kept rising, risks stayed hidden. If an owner could not meet the monthly payments, the bank renegotiated the mortgage. The renegotiation would raise the principal to the new higher house value in exchange for lowering the monthly payment. Therefore, the delinquency rate was low.

The situation changed abruptly when house prices started falling. Most borrowers who could not afford the monthly payments had no alternative but to default their subprime mortgages, as many of them found themselves holding mortgages in excess of the market values of their

homes. Subprime-related securities experienced large losses; investors learned the hard way how risky these assets were.

Few investors had been worried that the underlying assets might be overvalued. This is not surprising taking into consideration that credit rating agencies evaluated and deemed them to be “safe.” Therefore, there is no mystery why investors massively rushed to buy these “toxic” assets. The originating banks, which were presumably able to charge a higher interest rate, and many US institutional investors, who needed high ratings to buy the securities at all, both had a vested interest in rating agencies awarding high ratings.

A theoretical argument advanced by Kartik et al. (2005) may help explain rating agencies’ behavior. In the context of an analytical model of communication games, the authors assume a setting in which the sender of a message is interested in the *average* response of a population of receivers characterized by heterogeneous strategic sophistication. They demonstrate that in such cases there is a unique non-decreasing, differentiable separating equilibrium. This equilibrium has the important property that in every state of the world, the sender induces a belief in naive receivers such that the average population response is in fact his or her bliss point. That is, the sender can achieve his or her first-best outcome in such a setting, even though sophisticated receivers correctly infer the state of the world in equilibrium. In the equilibria they identify, the message sent by the sender has a literal meaning that is inflated, a literal meaning higher than the true state of the world. Nevertheless, a sophisticated receiver correctly infers the true state by inverting the observed message according to the equilibrium language. A credulous receiver instead interprets the equilibrium messages with some non-equilibrium-based rule and is accordingly deceived, taking biased actions. If naive receivers are on one side of the playing field and sophisticated ones are on the other one, we get something like the subprime meltdown.

2.4 The role of banks

Banks pursued an aggressive lending policy in order to get rid of the excess money in their vaults. As stated before, securitization created moral hazard since it meant that lenders could pass along the risk of default to investors or insurance companies. This encouraged excessive risk taking. The problem was magnified because the most aggressive institutions put pressure on the rest of them: safe institutions that desired to be more careful and scrutinize more deeply the repayment capacities of their potential customers would lose market share and make fewer loans. Just as bad money drives out good, bad financial institutions could drive out good ones.

The rapid increase in market share by unregulated brokers and originators put pressure on regulated banks to lower their underwriting standards. Securities backed by subprime mortgages lent to borrowers whose abilities to repay were doubtful became prominent in the banking business.

As documented in Fratianni and Marchionne (2009), large US banks were dominant in securitization. The ratio value of securitization activities – covering real estate loans, credit cards receivables, automobile loans, other consumer loans and commercial and industrial loans – of total bank assets for large US banks started at 14.5% at the end of 2002 and reached a peak of 18.6% in the first quarter of 2007. By contrast, the securitization/asset ratio for intermediate-sized banks was below 1%, while small US banks were not materially involved in securitization. A similar pattern holds for derivatives.

Securitization gave birth to a complex shadow banking system to intermediate credit through a wide range of securitization and secured funding techniques such as asset-backed commercial papers, asset-backed securities, collateralized debt obligations (CDOs) and repurchase agreements (repos). The shadow banking system – developed out of the regulated banking system – comprises securitization vehicles, asset-backed commercial paper vehicles, money market funds, investment banks, mortgage companies and a variety of other entities. It provided sources of funding for credit by converting opaque, risky, long-term assets into money-like, short-term liabilities (Pozsar et al., 2012, 1). Therefore, credit intermediaries relied on short-term liabilities to fund illiquid long-term assets. In the shadow banking system, loans, leases and mortgages were securitized and thus they became tradable instruments. Funding was also in the form of tradable instruments, such as commercial papers and repos. However, the shadow banking system was presumed to be safe due to the liquidity and credit puts provided by the private sector. These puts **underpinn**ed the perceived risk-free, highly liquid nature of most AAA-rated assets that collateralized credit repos and shadow banks' liabilities more broadly (Ibid., 2).

The shadow banking system emerged from the transformation of the largest banks from low return-on-equity institutions that originate loans and hold and fund them until maturity with deposits to high return-on-equity entities that originate loans in order to warehouse and later securitize and distribute them, or retain securitized loans through off-balance sheet asset management vehicles (Ibid., 15). This allowed banks to conduct lending with less capital than if they had retained loans on their balance sheets. This process enhanced the return on equity of banks, or more precisely, of their holding companies. Moreover, it enabled them to bypass existing regulations regarding minimum capital ratios. The funding and maturity transformation of structured credit assets was not only conducted from the US, but also from Europe and offshore financial centers.

The gross measure of shadow bank liabilities grew to nearly $22 trillion in June 2007, while traditional banking liabilities were around $14 trillion in 2007 (Ibid., 9).[10] At the beginning of the 1990s, both types of liabilities totaled practically the same.

When the housing bubble exploded in 2007, real estate markets went down together and mortgage defaults soared in Florida as well as in California. Mortgage-backed securities carried the dual risk of high rates of default due to the low credit quality of borrowers and the high level of default correlation as a result of pooling mortgages from similar geographical areas and vintages. When prices fell in the home market, subprime-related assets deteriorated. Repo depositors became concerned about the solvency of their counterparties.
In the summer of 2007, panic started in the repo market, which suffered a run when depositors required increasing haircuts. In the repo market, depositors and borrowers are individually matched; each depositor gets his or her own collateral. Firms – often money market funds and corporations – deposit short-term cash; all types of securitized products are used as collateral. The haircut is the percentage difference between the market value of the pledged collateral and the amount of funds lent. The size of the haircut reflects the credit risk of the borrower and the riskiness of the pledged collateral. Depositors can "withdraw" their funds by not rolling over their repo agreements and returning the collateral, or they can withdraw by increasing the haircut on the collateral. Haircuts were zero until August 2007.

[10] This led Krugman (2009, 170) to call it ¨the non-bank banking crisis¨.

After that, haircuts rose and continued to rise; some asset classes became simply unacceptable in repo (Gorton, 2009, 30/33).

There was a flight to quality. It was not known which counterparties were really at risk and consequently there was a run on all banks. Defaults and losses on other loan types also increased significantly as the crisis expanded from the housing market to other parts of the economy. The rest is a well-known story.

It is clear that the roots of the problem were the subprime mortgages recklessly provided to doubtful borrowers. This behavior was stimulated by the "originate-to-distribute" model implemented through the shadow banking system. As stated above, Gorton rejects this hypothesis; in support of his argument, he exemplifies that in 2006 and early 2007 some banks kept the most senior proportions of CDOs on their balance sheets.[11] In the same vein, he argues that when loans are sold in the secondary market, the mortgage servicing rights created are typically not sold. Although he admits that underwriting standards were lowered, he contends that it seems difficult to define a decline in lending standards. Gorton (2008, 67) argues that the design of subprime mortgages and subprime securitizations are unique in that they are particularly sensitive to declines in house prices: "The key security design feature of subprime mortgages was the ability of borrowers to finance and refinance their homes based on the capital gains due to house price appreciation over short horizons and then turning this into collateral for a new mortgage" (Gorton, 2008, 3). However, when house prices began to slow their growth and ultimately fell, the value of the chain of securities began to decrease. Gorton seems to argue that banks were not recklessly selling loans to doubtful debtors but that they were confident that house prices would never significantly decline. If so, they were justified in not taking care with underwriting standards and even keeping part of the risky assets in their portfolio without taking full advantage of the risk-minimizing originate-to-distribute system.

It is difficult to identify which of these hypotheses is right. Perhaps it was a combination of both. Anyway, it is clear that for one reason or the other – or both – banks had no incentives to carefully monitor the loans they were selling. Gorton (2008, 73) includes a table showing that mortgages with less than full documentation soared from 28.5% in 2001 to 50.8% in 2006.

On top of this, a gigantic interlinked structure of securities was created with the help of the mostly unregulated shadow banking system. This structure was ready to amplify and spread to the whole financial system following the failure of any mortgage loan. The conditions were right for a perfect storm. When house prices finally stopped rising, borrowers could not refinance their way out of financial difficulty, mortgage defaults soared and the whole securitization building collapsed.

Every sector of the financial services industry was vulnerable to the effects of the toxic mortgage contagion. Then, the next question is why regulators did not foresee the likely storm or if they did why did not act to prevent it.

[11] In fact, after manufacturing some security, some banks used to sell the highest risk tranches and retain some of the super senior position. This only proves that they thought that only the junior tranches were highly risky.

2.5 The role of regulators

When asked how such huge mismanagement in the mortgage market could have happened, the first line of defense by regulators has been to argue that most of the problems originated in someone else's jurisdiction. In fact, financial activity regulation is deeply fragmented in the US. There are at least 10 different types of institutions in charge of regulating the activities involved in the subprime meltdown. This is just an invitation to take advantage of the gaps such a partitioned system provides.

In spite of this plethora of regulating institutions, there was no statutory regulator for investment bank holding companies and the shadow financial system was mostly unregulated. A mortgage lent by a holding company affiliate was subject to very light regulation; a mortgage lender or a broker unaffiliated with a bank was virtually unregulated.
The 2000 Commodity Futures Modernization Act specifically prohibited swaps regulation. However, several subprime participants that performed poorly were in fact regulated by one of the banking agencies but the relevant banking agency failed to compel the institution to adequately comply with guidance (Robertson 2011, 17).

Obviously, with over 10 million mortgage applications for home purchases in 2006 and millions of mortgages making their way into mortgage-backed securities every year, it was not even remotely feasible to inspect every mortgage (Ibid., 20). However, in such a case, any auditor could have taken a test sample from any portfolio and, through the re-verification of several loan items, estimate the credit quality of the portfolio relative to its advertised quality.[12] Even more, precisely the huge number of mortgages lent by each institution every month should have made regulators suspect that the loans were not subject to due assessment. Unless they thought that due assessment was a waste of time because they believed that housing prices were going to rise forever.

The US Securities and Exchange Commission (SEC) was in charge of regulating or overseeing almost 35,000 financial firms and public companies. Each entity issuing an asset-backed security had to file a prospectus with the SEC, "a prospectus, which typically can be as long as 300 pages for a single security, contains an impressive amount of data regarding the asset pool. Regrettably, all of this prospectus information is unverified" (Ibid., 22).

Insurance companies such as AIG were subject to state insurance regulators. However, it seems that nobody noticed that AIG wrote $656 billion in credit insurance on structured finance products with only $54 billion in resources to pay those claims (Ibid., 35/36).

National banks and their operating subsidiaries as well as the federal thrifts and their operating subsidiaries were subject to exclusive federal supervision by the Office of the Comptroller of the Currency (OCC) and the Office of Thrift Supervision, respectively.

State-chartered banks and thrifts and non-bank affiliates of bank and thrift holding companies were subject to both federal and state supervision, while mortgage lenders not affiliated with banks or thrifts were subject only to state supervision.

However, there is no substantial difference in the results achieved by these different regulators: 22% of the non-prime loans originated by national banks and their subsidiaries subsequently entered the foreclosure process at some time after origination, while the market

[12] In fact, this is what Robertson (2011) proposes to do in the future.

average was 25.7% for those types of loans (Dugan, 2010, 9). The slightly lower percentage of failures in the case of national banks does not include the defaulted subprime loans made through nonbank institutions. In fact, a number of large bank holding companies owning national banks often used nonbanks for their subprime lending (Ibid., 7).

In his testimony before the Financial Crisis Inquiry Commission (FCIC), the then Comptroller of the Currency argued that "most securitizations and structured credit activities have been conducted outside of banking subsidiaries in holding company affiliates registered as broker-dealers and regulated by the SEC and the Federal Reserve" (Ibid., 13).

Although the Federal Reserve's supervisory capital assessment program, popularly known as the "stress tests," demonstrated that many institutions' information systems could not provide timely, accurate information about bank exposures to counterparties nor complete information about the risks posed by different positions and portfolios, regulators did not press firms vigorously enough to fix them (Bernanke, 2010). The Fed, in charge of regulating financial holding companies and state banks, did not identify and address abuses in subprime lending either.

None of this happened by chance. As Alan Greenspan, former Chairman of the Fed, recognized, "those of us who have looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief" (*New York Times*, 10/23/2008). The blind confidence in self-regulation through market forces was the belief behind the huge deregulating process that took place in the 1980s and 1990s in the US. The Gramm-Leach-Bliley Act removed barriers in the market among banking companies, securities companies and insurance companies, expressly recognized national banks' authority to engage directly in asset-backed securitization activities and repealed key provisions of the Glass-Steagall Act in order to allow banks to affiliate with full service investment banks that engage extensively in, among other securities activities, asset securitizations. This allowed national banks and companies affiliated with such banks to be fully involved in securitization activities.

However, not only the regulatory framework was weakened; the regulators' power was too. The tenor of the times was to keep regulation as low as possible. The FCIC quotes Richard Spillenkothen, the Fed's director of Banking Supervision and Regulation from 1991 to 2006, who discussed banking supervision in a memorandum submitted to the FCIC: "Supervisors understood that forceful and proactive supervision, especially early intervention before management weaknesses were reflected in poor financial performance, might be viewed as i) overly-intrusive, burdensome, and heavy-handed, ii) an undesirable constraint on credit availability, or iii) inconsistent with the Fed's public posture" (FCIC, 2011, 54).

The main concern was to create checks and balances and keep any agency from becoming arbitrary or inflexible. Hence the opposition to any initiative to consolidate bank regulation. The FCIC report quotes Alan Greenspan's 1994 testimony on this matter: "The current structure provides banks with a method … of shifting their regulator, an effective test that provides a limit on the arbitrary position or excessively rigid posture of any one regulator. The pressure of a potential loss of institutions has inhibited excessive regulation and acted as a countervailing force to the bias of a regulatory agency to overregulate" (Ibid.).

Under the Gramm-Leach-Bliley Act, the Fed supervised financial holding companies as a whole, looking only for risks that cut across the various subsidiaries owned by the holding

company. To avoid duplicating other regulators' work, the Fed was required to rely "to the fullest extent possible" on the examinations and reports of those agencies regarding subsidiaries of the holding company. According to the Fed's Chairman Ben Bernanke, this "made it difficult for any single regulator to reliably see the whole picture of activities and risks of large, complex banking institutions" (Ibid., 55).

Therefore, the financial regulatory system was deeply fragmented and weakened to avoid interference with the market wise behavior. However, some people and institutions warned about the risks at stake. For example, in 2002 the state of Georgia passed a law by which investment banks that created mortgage-backed securities would be liable for financial damage if mortgages turned out to be fraudulent. However, the OCC ruled that the Georgia law did not apply to national banks or their subsidiaries. Finally, the law was amended in 2003: the liability provision was curtailed and other elements of the law were eliminated (*Newsweek*, October 20, 2008).

When in 2004 the state of Michigan tried to examine the books of the mortgage unit of Wachovia Bank that operated in that state, the OCC denied authority to the states to intervene in the operations of national banks. Michigan claimed that the Constitution preserved the right of the states to protect their residents, but the Supreme Court ruled in April 2007 establishing that the OCC had exclusive powers over the bank. A year later, the Wachovia Bank had to be saved from bankruptcy through its acquisition by Wells Fargo.

Rajan's (2005) prescient analysis of how the developments observed in financial markets could degenerate into a crisis was not much listened to. No economic journal published his paper and on the SSRN site only collected 93 downloads, which made it rank **96,914th** on the SSRN download ranking.

Nouriel Roubini, Professor at New York University, in a presentation at the IMF in September 2006, predicted the outbreak of a crisis from a massive default in mortgages and the securities backed by them.[13] Nobody paid too much attention to his words, especially when they included the prognosis of massive bankruptcies of hedge funds, investment banks and other financial institutions such as Fannie Mae and Freddie Mac. A year and a half later, his predictions were fulfilled and Professor Roubini now travels the world giving talks explaining what happened and what is expected to happen.

However, these were isolated voices. A very typical argument in those Great Moderation days was the one reflected in the following quotation: "The passage of the Glass-Steagall Act was prompted by concerns about various kinds of abuses by commercial banks' investment banking affiliates, including overstating the quality of the underwritten securities issued by the commercial banks' clients, packaging bad commercial loans into securities, and misusing responsibility for trust accounts. Recent research, however, suggests that those concerns were invalid" (Kwan and Laderman, 1999, 18). Unfortunately, the 2007–08 events showed that the concerns that had prompted the 1933 Act were very well founded.

Even at the beginning of 2007, Wharton real estate professor Todd Sinai argued that three things had to happen for the subprime market to tank: borrowers' incomes had to drop,

[13] See http://www.economonitor.com/nouriel/2010/09/02/economonitor-flashback-roubinis-imf-speech-september-7-2006/.

interest rates had to rise and housing prices had to fall. “It is extremely rare that all three things happen,” he said.[14]

The conclusion is that after the deregulation movement that took place during the 1980s and 1990s, the US financial regulatory system was unable to foresee, let alone prevent, the financial crisis.

2.6 Summary

Credit rating agencies played a decisive role in the development of the subprime mortgage meltdown. They were an essential input into the process of manufacturing vast quantities of triple-rated securities with attractive yields.

Banks pursued an aggressive lending policy in order to get rid of the excess money in their vaults. The rapid increase in market share by unregulated brokers and originators put pressure on regulated banks to lower their underwriting standards. Securities backed by subprime mortgages lent to borrowers whose abilities to repay were doubtful became prominent in banking businesses. Safe institutions that desired to be more careful and scrutinize more deeply the repayment capacities of their potential customers were afraid of losing market share and making fewer loans. Just as bad money drives out good, bad financial institutions could drive out good ones.

On top of this, a gigantic interlinked structure of securities was created with the help of the mostly unregulated shadow banking system. This structure was ready to amplify and spread to the whole financial system following the failure of any mortgage loan. The conditions were right for a perfect storm. When house prices finally stopped rising, borrowers could not refinance their way out of financial difficulty, mortgage defaults soared and the whole securitization building collapsed.

3 The European debt crisis

3.1 Introduction

In late 2009, the then recently appointed Greek Prime Minister George Papandreou announced that previous governments had failed to reveal the true size of the nation’s deficits. Greece’s debts were larger than had been reported.[15] After that, the Portuguese, Spanish and Italian public debts also became a matter of concern because their government debt/GDP ratios were near to the Greek one. The European sovereign debt crisis had started. This chapter is organized as follows. Section 3.2 analyzes the origin of the crisis in these European countries. In Section 3.3, the specificities of euro debt are discussed. Section 3.4 analyzes the case of Ireland whose debt crisis preceded the Greek one. Section 3.5 is devoted to the latter. The role of a single currency on regional imbalances is underlined in Section 3.6. The case of Spain is analyzed in Sections 3.7 and 3.8. Section 3.9 is devoted to the analysis of the Italian case. Section 3.10 summarizes the findings of the chapter.

[14] See http://knowledge.wharton.upenn.edu/article.cfm?articleid=1691.
[15] In fact, in 2004, Eurostat had already revealed that the statistics for the budget deficit had been under-reported at the time Greece was accepted into the European Monetary Union in 2000. According to Eurostat, the 1999 deficit was 3.4% of GDP instead of the originally reported 1.8%.

3.2 Evolution of countries' indebtedness

A first question has to do with the origin of the European debt crisis. Some people have pointed their fingers at the American financial crisis. "This crisis was not originated in Europe," claimed the EU Commission President Jose M. Barroso, who added: "This crisis originated in North America and much of our financial sector was contaminated by… unorthodox practices from some sectors of the financial market."[16]

However, as we shall see, Greece and Italy were already heavily indebted as early as 1996, long before the US financial crisis blew up. However, this does not exclude the possibility of some connection between both crises, which is explored below by comparing the debt situation before and after 2007.

A second question is how the debtor country governments as the Greek one became so highly indebted. A common explanation for this has been the following.[17]

Banks in Germany, France and elsewhere had bought and exposed themselves massively to Greek debt because they assumed that Greek debt, like other euro-area public debt, was essentially risk-free.

Because the monetary union made the commitment to low inflation more credible, the introduction of the euro in 2001 caused interest rates to fall in those countries where expectations of high inflation previously kept interest rates high.

Bond buyers assumed that a bond issued by any government in the European Monetary Union was equally safe. As a result, the interest rates on Greek and Italian government bonds were not significantly different from the interest rate on German government bonds. Governments responded to these low interest rates by increasing their borrowing.

However, the data do not endorse the former explanation. Table 3.1 shows the general government debt/GDP ratio in 2010 for those countries whose public debt ratio exceeded the average for the 27 EU countries as a whole. France and Germany are among the more than average indebted countries, which shows that high indebtedness is not solely a southern country phenomenon.

[16] *The Week*. June 20, 2012. http://theweek.com/article/index/229570/did-the-us-cause-the-european-debt-crisis.
[17] See, for example, Feldstein (2012).

Table 3.1 General government gross debt (percentage of GDP) - 2010

Country	2010
EU (27 countries)	80.1
Greece	144.9
Italy	118.4
Belgium	96.2
Portugal	93.3
Iceland	92.9
Ireland	92.5
Germany	83.2
France	82.3
Hungary	81.3

Source: Eurostat

Table 3.2 shows the evolution of government debt between 1996 and 2010 for a selected group of countries. First, it can be noted that some of the now highly indebted countries did not exceed the Maastricht limit of 60% of GDP until as recently as 2007.

Table 3.2 Evolution of general government gross debt (percentage of GDP) **-** 1996**/**2010

Country	2007	2008	2009	2010	2010/07
EU (27 countries)	59.00	62.5	74.7	80.1	35.76
Ireland	24.8	44.2	65.2	92.5	272.98
Iceland	28.5	70.3	87.9	92.9	225.96
Romania	12.8	13.4	23.6	31.0	142.19
UK	44.4	54.8	69.6	79.9	79.95
Spain	36.2	40.1	53.8	61.0	68.51
Portugal	68.3	71.6	83.0	93.3	36.60
Greece	107.4	113.0	129.3	144.9	34.92
Hungary	67.0	72.9	79.7	81.3	21.34
Italy	103.1	105.8	115.5	118.4	14.84
Belgium	84.1	89.3	95.9	96.2	14.39

Source: Eurostat

Second, the public debt to GDP ratios of Greece, Ireland, Belgium, Spain and Italy were almost the same in 2007 as they were in 2001 (in some cases, they were even lower). This contradicts the idea that it was the introduction of the euro and the consequent fall in interest rates that stimulated governments to substantially increase their borrowing.

On the other hand, Greece, Italy, Portugal, Belgium and Hungary had already exceeded the 60% Maastricht limit in 2007,[18] when the American subprime crisis started. However, they shared the slowest increasing government debt/GDP ratios between 2007 and 2010. Even more, by 1996 – before the introduction of the euro– Italy, Greece and Belgium were already highly indebted countries.

[18] As Hungary is not a member of the euro-zone, the Maastricht criteria was not mandatory for it.

Therefore, we can distinguish a first group of countries whose debt problems have roots before 2007 and did not worsen significantly after that year: Greece, Italy, Portugal, Belgium and Hungary. Moreover, by 2001 Greece's public debt/GDP ratio was already 103.7 compared with 108.2 for Italy and 106.5 for Belgium. This last country is a special case because it is the only one in the group that reduced its debt between 2001 and 2007.

A second group is formed by those "new" highly indebted countries: Ireland and Iceland. They showed the highest rates of increase in their public debt to GDP ratios between 2007 and 2010 and their 2010 ratios were above the average for the EU. Romania also had a fast growing ratio but the level of public debt attained in 2010 as a percentage of GDP was still far below the average for the EU.

The United Kingdom comes immediately below these countries with a debt to GDP ratio practically equivalent to the EU average. Finally, we have Spain, whose government debt to GDP ratio was in 2010 only a bit above the Maastricht limit and had increased at a lower rate than the UK's ratio between 2007 and 2010. However, while the UK's debt was considered to be safe, Spain's debt was no better rated than those of Portugal or Italy.

Thus, there are different cases to consider rather than a single story for European countries' indebtedness process. The idea that we may have a unique explanation for the debt crisis is also presented in Perez-Caldentey and Vernengo (2012, 3), who argue that "the crisis in Europe is the result of an imbalance between core and noncore countries that is inherent in the euro economic model." They also maintain that it was the euro, and its effects on external competitiveness, that triggered mounting disequilibria and debt accumulation in noncore countries or peripheries. As we will see, this argument seems to be valid to a certain extent just in the cases of Greece and Portugal, but not for the rest of the countries involved in the crisis where other factors seem to have played a major role.

In what follows, we concentrate our analysis on the five euro-area countries in the eye of the debt crisis storm with a casual reference to the case of Iceland.[19]

3.3 Specificities of the euro-area public debt

A first peculiarity of the euro-area public debt is that, strictly speaking, it is neither purely domestic nor purely external. Most of the public debt issued by euro-area countries is denominated in euro and is mostly held by euro-area residents. Yet, it is different from the domestic debt of countries owning their own currencies because more of it is held outside the issuing country and because the issuing country does not have full control over the currency in which the debt is denominated. Therefore, debt in the euro-area can be considered to be both 'foreign' and 'domestic' (Gianviti et al., 2010, 18).

This means that euro-area public debt is not subject to the currency mismatch associated with external debt: governments have to pay their debts in the same currency they collect their revenues. However, it also means that a national government cannot revert to high inflation to rid itself of an excessive debt burden, as might be the case if the debt were strictly domestic.
The European Monetary Union seems to assume that sovereign debt crises cannot happen. At least, it has no provision for them. Moreover, the common reading of Article 125 of the Lisbon Treaty has been that it rules out the possibility of a bailout of an EU member state by

[19] The Cyprus banking crisis is an especial case, mainly the result of the Greek sovereign debt haircut, although it has something in common with Iceland´s case.

other member states or by the EU. Therefore, without these inflation and bailout channels, a country with a situation of excessive debt has only two ways out of it: severe and harmful fiscal retrenchment or default.

3.4 The new highly indebted countries: the case of Ireland

Ireland's economy had by 2007 already become dangerously dependent on construction and housing as a source of economic growth and tax revenue. A lightly regulated financial system fed on this process. In fact, the growing construction boom was fuelled by the increasing reliance of Irish banks on wholesale external borrowing at a time when international financial markets were awash with cheap investable funds. The fact that Ireland was a founder member of the euro-zone brought a dramatic and sustained fall in nominal and real interest rates that stimulated the protracted building boom. Specific tax incentives boosted the overheated construction sector. From late 2003 onwards, banks stimulated demand with financial innovations such as 100% loan-to-value mortgages.

When the global economic environment changed at the beginning of 2007, Irish residential property prices started falling and kept falling during the rest of 2007 and 2008. Heavy loan losses on the development property portfolios acquired at the peak of the market became inevitable. The decline in property prices and the collapse in construction activity resulted in severe losses in the Irish banking system. The story is not very different from the one that led to the US subprime crisis. "In their anxiety to protect market share against the competitive inroads of Anglo Irish Bank and UK-based retail lenders, their (Irish) banks' management tolerated a gradual lowering of lending standards, including decisions to authorize numerous exceptions to stated policies." (Governor of the Central Bank of Ireland, 2010, 8). This was tolerated by an unduly deferential approach to the banking industry by regulators. Outside bodies such as the IMF and OECD never drew attention to the threats that lay ahead.

Although banks carried out a quantification of risks in the context of the stress test exercises reported annually to the regulatory authority, "the capacity of the banks to undertake the exercise differed greatly; indeed none of them had reliable models, tested and calibrated on Irish data, which could credibly predict loan losses under varying scenarios" (Ibid., 11).

While at the end of 2003, the net indebtedness of Irish banks to the rest of the world was just 10% of GDP, by early 2008 borrowing, mainly for property, had jumped to over 60% of GDP. By early 2008, Irish banks found it more difficult to maintain funding in the international wholesale markets and, at the same time, there was a more rapid pull back by domestic investors from the property market.

Two weeks after Lehman Brothers announced it would file for Chapter 11 bankruptcy protection, the provision of a blanket system-wide state guarantee for Irish banks was announced. This measure was taken because of the drain of liquidity that had been affecting all Irish banks and that had brought one important bank to the point of failure.

Government spending doubled in real terms between 1995 and 2007, rising at an annual average rate of 6%. With the economy growing at an even faster rate, this implied a generally falling or stable expenditure ratio of expenditure to GDP until 2003. However, thereafter the ratio rose, especially after output growth began to slow in 2007 and the collapse in tax revenues in 2008–09. Much of the reason for the revenue collapse lies in the systematic shift over the previous two decades away from stable and reliable sources such as personal

income tax, VAT and excises towards cyclically sensitive taxes as corporation tax, stamp duties and capital gains tax.

In April 2009, the Irish government established the National Asset Management Agency (NAMA), with the mandate to purchase the universe of development-related loans (above a certain value) from banks. This category of loans was the main source of uncertainty concerning total loan losses. During 2009–10, NAMA purchased most of these loans at a steep average discount, but this meant that banks required substantial upfront recapitalization programs, which could only be provided by the state. These higher capitalization costs led to a sharp increase in gross government debt. Extra capital requirements by the banking system in 2009 and 2010 contributed to increased market concerns about the sustainability of the fiscal position. In fact, the deficit, as measured by the general government balance, widened from balance in 2007 to 7.3% of GDP in 2008 and to 14.1% in 2009, before it increased to 31.2% of GDP in 2010 due to the substantial government support to Irish banks. Excluding support to the banking system, the deficit was 11.5% of GDP in 2009 and 10.9% of GDP in 2010. The public funds aimed at rescuing the Irish banking sector represented 12.5% of Ireland's GDP. As shown in Table 3.2, Irish public debt soared from 24.8% of GDP in 2007 to 92.5% in 2010. Finally, the Irish government had to request assistance from the EU and IMF in November 2010 to avoid default on its public debt.

The case of Iceland

Although it has many features in common with the Irish one, Iceland's case has some particularities. The first one is that Iceland does not belong to the euro-zone. Property lending was neither as central to the Icelandic case. Access to international financial markets was, for banks, the principal premise for their large growth. Because of their – at that time – good credit rating, they had access to European markets; when funding in European debt securities markets became more difficult, the debt securities market in the US opened up. That opening was largely due to CDOs. Icelandic bank securities were packaged into these CDOs because of the high credit rating of the Icelandic financial undertakings, according to rating agencies. Further, Icelandic banks paid high interest rates considering that credit rating.

Thanks to the injection of foreign funds, the Icelandic financial system became far too large relative to the size of the Icelandic economy. On the other hand, the largest owners of all the large banks had abnormally easy access to credit at the banks they owned. The examination conducted by the Icelandic Special Investigation Commission showed that in the three largest banks, their principal owners were among the largest borrowers. The money market funds under the aegis of the management companies of these banks invested a great deal in securities connected to the owners of the banks.

Bank risk was highly concentrated. This applied both to lending to certain groups within each bank as well as to how the same groups also constituted high-risk exposures in more than one bank. Moreover, the banks had invested funds equivalent to more than 25% of their capital bases in their own shares. In addition, each of them invested in other banks' shares. It seems that the financing of owners' equity in the Icelandic banking system had been based, to such a great extent, on borrowing from the system itself. The shares owned by the largest shareholders of the banks were especially leveraged.

The onset of the international financial crisis in 2007 found Icelandic banks increasingly dependent on funding through international financial markets. Total deposits in the banks kept

shrinking from the autumn of 2007 until their collapse. Collateralized loans, mostly from the Central Bank of Ireland and the European Central Bank (ECB), increased substantially in all three banks as the liquidity crisis became more widespread.

When the prices of shares started dropping, all banks purchased their own shares on a large scale. As stated before, the banks held a lot of their own shares as collateral for their lending. With share prices declining, the quality of their loan portfolios would decline. Finally, the Financial Supervisory Authority of Iceland took over the domestic operations of the three largest banks in October 2008.

Outside Iceland, more than half a million depositors (far more than the entire population of Iceland) found their bank accounts frozen when the banks finally collapsed. In August 2009, a bill was passed to pay the United Kingdom and the Netherlands more than $5 billion lost in Icelandic deposit accounts. The Icelandic government debt increased from 28.5% of GDP in 2007 to 70.3% in 2008 after the takeover of the three largest Icelandic banks.

3.5 The "old" indebted countries: the case of Greece

As stated before, Greece did not comply with the Maastricht criterion with respect to the budget deficit at the time it joined the euro-zone in 2001. "Creative" statistics allowed it to be admitted into what has been conceived as a very exclusive club. Its debt/GDP ratio was already 103.7 in 2001, far above the 60% Maastricht criterion.[20] However, it declined to 97.4 in 2003. From then on, it kept increasing until reaching 144.9 in 2010. This reflected the increasing budget deficit Greece's public accounts had shown since 2000 (Table III.3).

Table 3.3 General government expenditure, revenue and deficit 2000/11 (percentage of GDP)

Year	Expenditure	Revenue	Balance
2000	46.7	43.0	-3.7
2001	45.3	40.9	-4.4
2002	45.1	40.3	-4.8
2003	44.7	39.0	-5.7
2004	45.5	38.1	-7.4
2005	44.6	39.0	-5.6
2006	45.2	39.2	-6.0
2007	47.6	40.8	-6.8
2008	50.6	40.7	-9.9
2009	53.8	38.2	-15.6
2010	50.2	39.7	-10.5
2011	50.1	40.9	-9.2

Source: Eurostat

[20] Notwithstanding its noncompliance with the Maastricht debt standard, Greece was admitted with the argument that it was expected to be making progress over time towards that goal.

Entrance into the euro-zone meant that Greece –as the other members of the euro-zone- gave up one of the tools a country has to reduce its budget deficit: devaluation. In fact, in equilibrium:

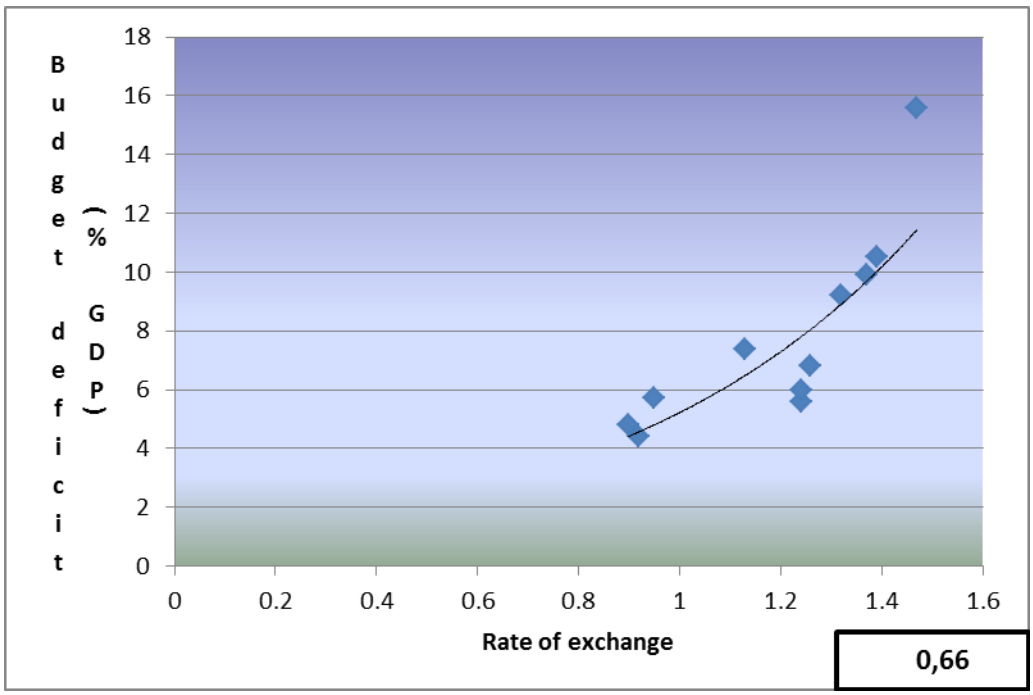
$(I_d - S) + (G - T) = M - X$

where I_d is domestic investment, S is national saving, G is government expenditure, T is government revenue and (M – X) stands for current account balance. A devaluation will reduce the value of (M – X); if the domestic private balance does not change, the government balance will be reduced.[21] The most direct way to do this is by taxing exports, as Argentina did in 2002, where export taxes absorbed a good part of the devaluation effect on exportable domestic prices.

As a matter of fact, Georgantopoulos and Tsamis (2011, 161) find for Greece, during the period 1980–2009, a significant unidirectional causal relationship between exchange rates and budget deficit running from the nominal effective exchange rate to the budget deficit. Moreover, they concluded that "a significant part of budget deficits' variance is caused by exchange rates since with a seven period lag 61.89% of [the budget deficit] is explained by [the nominal effective exchange rate] and by the end of the ten-year lag 83.97% of budget deficits' variance is caused by nominal effective exchange rates."

The continuous revaluation of the euro worsened Greece's budget imbalance after 2000. Figure 3.1 illustrates the relationship between the euro/dollar rate of exchange and the one-year lagged budget deficit/GDP ratio between 2000 and 2011. This runs in the same direction as the relationship found by Georgantopoulos and Tsamis.

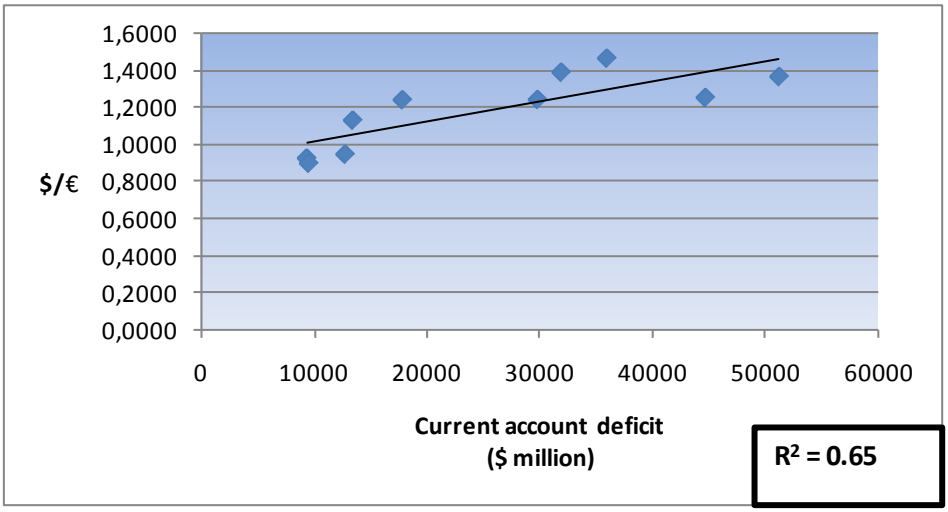
Figure 3.1 Budget deficit and euro rate of exchange 2000–2011



[21] The opposite happens, of course, in the case of a revaluation of the local currency.

What is the explanation for this positive association between the rate of exchange and budget imbalance? The appreciation of the euro[22] resulted in a loss of external competitiveness in the Greek economy, which led to a persistent deficit in the current account (Figure 3.2). An appreciation of the real exchange rate increases the purchasing power of domestic incomes in terms of imported goods. More imports and fewer exports result in a slowdown in economic activity. Tax revenues decline, while the government feels compelled to keep or increase public expenditure to make up for the decline in private demand. The budget deficit increases and so does public debt. Increasing demand for funds by the public sector leads to an increase in interest rates, which depresses again economic activity. According to the figures in Table III.3, public revenues have declined since Greece joined the euro-zone; since 2007, public expenditure increased, accelerating the rise in the budget deficit.

Figure 3.2 Current account deficit and the euro rate of exchange 2001/11



However, in the literature related to the "twin deficits hypothesis," it has usually being argued that causality runs from the government budget deficit to the current account, not the other way around. However, empirical studies are far from conclusive: in some cases, they support the conventional hypothesis;[23] others support the reverse causality running from the current account deficit to the fiscal deficit;[24] some support the Ricardian equivalence that budget and trade deficits are not correlated.[25] And, finally, some find both types of evidence or a bilateral relationship.[26]

In the case of Greece, it is clear that, since the introduction of the euro, causality cannot run from the budget deficit to the nominal rate of exchange. Moreover, when the budget deficit variable is introduced with a one-year lag.

[22] The exchange rate between dollar and euro was, in October 2000, 0.85 $/€ and reached in April 2008, 1.60 $/€; an appreciation of 88%.
[23] Abell (1990), Bachman (1992), Piersanti (2000), Leachman and Francis (2002), Cavallo (2005) and Erceg et al. (2005).
[24] Anoruo and Ramchander (1998), Khalid and Teo (1999) and Alkswani (2000).
[25] Miller and Russek (1989), Dewald and Ulan (1990), Enders and Lee (1990) and Kim (1995).
[26] Mukhtar et al. (2007) and Islam (1998).

The increasing Greek debt was primarily the result of growing budget deficits triggered by the appreciation of the euro and the consequent loss of competitiveness experienced by the Greek economy. This brings us to the issue of regional imbalances raised by Perez-Caldentey and Vernengo (2012).

3.6 The exchange rate and regional imbalances

The euro-area aggregate trade and current account position have always been close to balance but this only means that the euro rate of exchange is in line with the competitiveness of the core countries of the euro-zone. Many industries in Greece and other peripheral countries are not competitive at that rate of exchange; that is why these countries run increasing current account deficits (see Table III.4). In fact, external imbalances diverge sharply in the euro-area: while Germany, the Netherlands and Finland run significant surpluses, countries in southern Europe run huge deficits. By the way, it is worthwhile noting that Germany had run persistent current account deficits during the nineties which turned into surpluses only after 2000.

Table 3.4 Current account balance in selected EMU countries- 2001/10 (Percentage of GDP)

	2001	2002	2003	2004	2005
France	1.8	1.2	0.7	0.5	-0.5
Germany	0.0	2.0	1.9	4.7	5.1
Netherlands	2.6	2.6	5.5	7.6	7.4
Finland	8.4	8.5	4.8	6.2	3.4
Greece	-7.2	-6.5	-6.5	-5.8	-7.6
Italy	0.3	-0.4	-0.8	-0.3	-0.9
Portugal	-10.3	-8.2	-6.4	-8.3	-10.3
Spain	-3.9	-3.3	-3.5	-5.2	-7.4

	2006	2007	2008	2009	2010
France	-0.6	-1.0	-1.7	-1.5	-1.7
Germany	6.3	7.5	6.3	5.6	5.7
Netherlands	9.3	6.7	4.3	4.2	6.6
Finland	4.2	4.3	2.6	1.8	1.4
Greece	-11.4	-14.6	-14.9	-11.1	-10.1
Italy	-1.5	-1.3	-2.9	-2.0	-3.5
Portugal	-10.7	-10.1	-12.6	-10.9	-10.0
Spain	-9.0	-10.0	-9.6	-5.2	-4.6

Source: Eurostat

The euro-zone reproduces the sort of regional problems that exist within many countries. There is a highly competitive core and a relatively backward periphery. Therefore, a long-run strategy for regional convergence is needed and, at the same time, a short-run one to smooth

the transition process. Although EU regional policy aims at promoting the "harmonious, balanced and sustainable development of the European Union," it has proven up to now to be insufficient to face the specific consequences of the monetary union. Therefore, the Greek government had to face the outcome of joining the euro-zone and had to take decisions that resulted in a worsening of the heavy indebtedness pre-existing at the time of joining the euro-zone.

Katsimi and Moutos (2010) emphasise the role of current of account imbalances due to the loss in Greek international competitiveness. However, productivity gaps and external deficits exist within each country. All American states have the same productivity? What about East and West Germany? Who cares what their external balances are? A region within a country can run a current account deficit indefinitely as long as there is a transfer of resources from the richer to the poorer regions. Therefore, this should not be a problem for the eurozone provided those who, thanks to the euro-zone, benefit of external surpluses are ready to transfer resources to the backward periphery. This is the real issue at stake as far as the productivity gap is concerned.

Germany's unification process could have been an interesting antecedent to take into consideration. The major economic implication of German economic and monetary union was precisely that East Germany would run a current account deficit with the rest of the country that was financed by transfers from the West. In the case of Germany, the New Länder began with an enormous competitive disadvantage and West Germans were supposed to transfer between 3% and 4% of GDP per annum to the East (Carlin, 1998, 16). However, no provision was taken in the euro-zone to make up for the short-run negative consequences that peripheral economies could suffer from joining the euro.[27]

In fact, when the monetary union was implemented in 1999, the functioning of the single currency was seen as a sort of panacea, making additional policy targeting seem superfluous. However, the result has been an increasing current account deficit for Greece and other peripheral countries. What has not been done before in the form of resource transfers from the richer to the poorer countries of the euro-zone has to be done in the way of helping these countries restructure their debts.

Somebody may argue that internal devaluation is the way through which Greek could become competitive. Downwards price and wage inflexibility makes this a very painful and unbearably long process. It did not work in Argentina, which, after three years of an ever-deepening recession/depression, had no alternative but to default and devalue its currency. It does not seem to be a valid alternative for Greece either.

The success of the 2012 Greek restructuring makes it more likely that debt restructuring will be seriously considered as a policy option if additional European countries lose market access, as Zettelmeyer et al. (2012) point out.

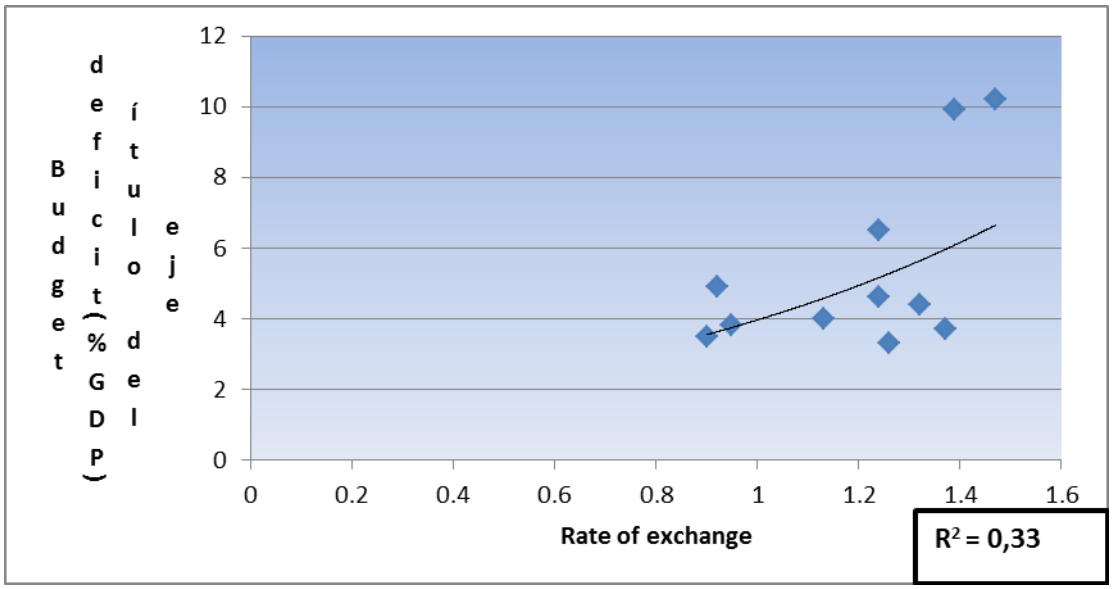
[27] I refer here to the specific consequences of joining the euro, which are independent of those following the EU integration to make up for which there were significant resource transfers, particularly through structural funds.

The case of Portugal

In the second half of the 1990s, Portugal showed impressive economic results. Its GDP per capita grew faster than the EU average and Portugal fulfilled the Maastricht criteria for the monetary union. However, by 2000 Portugal had already become the first country to be subjected to the EU's Excessive Deficit Procedure specified in the Stability and Growth Pact legislation, and again in 2005 when its deficit reached more than 6%.[28]

As in the case of Greece, the continuous revaluation of the euro worsened Portugal's budget imbalance after 2000. Figure 3.3 illustrates the positive relationship between the euro/dollar rate of exchange and the one-year lagged budget deficit /GDP ratio between 2001 and 2011.

Figure 3.3 Portugal's budget deficit and the euro/dollar rate of exchange 2001/11



However, the financial crisis worsened Portugal's economic situation. Its impact was first felt in Portugal at the beginning of 2008, with a severe credit squeeze, a reduction in banks' abilities to access capital markets and the collapse of two banks: BPN, which was nationalized in November 2008, and BPP, which was intervened in by the state and finally went bankrupt in 2010. The Portuguese government reacted by implementing an "Initiative to Strengthen Financial Stability," which focused on improving the information and transparency obligations of financial institutions, increasing deposit guarantees, granting state guarantees to banks and strengthening their financial soundness. These measures – particularly the nationalization of BPN and the intervention in BPP – implied an increase in public deficit and public debt. The international financial crisis, shrinking exports, declining investment (including in construction) and dampened consumer spending all contributed to the contraction of Portugal's economy.

[28] Indeed, throughout the entire democratic period following the 1974 revolution, Portugal never had a surplus in the state budget.

Table 3.5 Annual rates of growth 2000–11

Year	GDP rate of growth
2000	3.916
2001	1.975
2002	0.764
2003	-0.911
2004	1.560
2005	0.775
2006	1.448
2007	2.365
2008	-0.009
2009	-2.908
2010	1.401
2011	-1.669

Source: Eurostat

Portugal's already low rate of growth became negative in 2008 and 2009. The first reaction to the crisis was to stimulate demand. This increase in public expenditure on top of the measures taken to preserve the Portuguese financial system meant that the public deficit soared to 10.2% in 2009 and Portugal's public debt to GDP ratio jumped from 68.3% in 2007 to 93.3% in 2010. However, public accounts improved in 2011 after a series of tax hikes and salary cuts for public servants took place.

Table 3.6 General government expenditure, revenue and balance 2000/11 (Percentage of GDP)

Year	Expenditure	Revenue	Balance
2000	41,6	38,3	-3,3
2001	43,2	38,3	-4,9
2002	43,1	39,6	-3,5
2003	44,7	40,9	-3,8
2004	45,4	41,4	-4,0
2005	46,6	40,1	-6,5
2006	45,2	40,6	-4,6
2007	44,4	41,1	-3,3
2008	44,8	41,1	-3,7
2009	49,8	39,6	-10,2
2010	51,3	41,4	-9,9
2011	49,4	45,0	-4,4

Source: Eurostat

These measures allowed Portugal, in the first half of 2011, to receive a €78 billion IMF/EU bailout package in a bid to stabilize its public finances, as Greece and Ireland had done before. In 2012, the Portuguese government used €3 billion from the bailout package to rescue Portugal's largest listed bank by assets, Millennium BCP. By the end of 2012, Portugal had regained access to financial markets when the state managed to renew one-third of the outstanding bonds at a reasonable yield level (5.12%). The bailout funding program was supposed to run until June 2014, but at the same time it requires Portugal to regain complete bond market access by September 2013. While the budget deficit for 2012 was forecasted to end at 5%, the country is expected to reduce the budget deficit to a level below 3% of GDP in 2014.

3.7 Spain: a special case

The weight of Spain's public debt as of 2011 was substantially lower than the weight of the debt of the United Kingdom and of Germany. Spain's government debt ratio was just 68.5 of GDP against 85.7 in the UK and 81.2 in Germany, not to mention 165.3 in Greece and 120.1 in Italy. Why was, then, Spain involved in the European financial crisis? There is just one single reason: because it evoked the Irish case. In 2007, the public debt to GDP ratio in Ireland was only 24.8. However, it soared to 65.2 in 2009.

As in Ireland, construction had been a fast growing industry in Spain. It expanded at a rate of 5% per year between 1996 and 2007. Between 1998 and 2007, the number of housing units grew 30% (Arellano and Bentolila, 2009, 28). House prices increased dramatically and people expected the process to go on without an end. Real house prices – house prices adjusted for the change in the consumer price index – increased by 127% between 1996 and 2007 (André, 2010, 9). Therefore, real estate became the preferred destination for savings. Tax benefits[29] stimulated even greater demand for real estate, biasing household investment to housing in place of other types of assets. This process was reinforced after 1999. After becoming a member of the euro-zone, Spain benefited – as in the case of Greece and other southern Europe countries – from a drastic reduction in interest rates. The flight of capital from the equity markets that occurred between 2000 and 2003 was primarily funneled to the real estate sector. Loans became available at lower interest rates. Therefore, businesses and individuals saw their borrowing capacities increase; this stimulated the demand for house building. Housing became a shelter for assets: real estate investments promised attractive capital gains. Houses were bought because prices were expected to rise and prices rose because there were more and more purchases increasingly financed by loans. The construction market flourished. Banks offered 40-year and, later, even 50-year mortgages. The construction sector increased its share of Spanish GDP from 6.9% in 1995 to a high of 10.8% in 2006. In 2007, construction accounted for 13.3% of total employment. However, that year, coinciding with the global economic crisis, the real estate bubble burst. When international liquidity – until then cheap and plentiful – started lacking, the Spanish real estate market entered a crisis. Prices started declining in 2008.

Regional loans and savings banks, the so-called "*cajas*," were very active in the real estate market. They owned 56% of the country's mortgages in 2009. They were the first victims when the market crashed that year: debtors fell into bankruptcy and bad loans dramatically increased. In March 2009, the Spanish government announced its first bailout of a *caja*. After that, more bank bailouts were announced by the Spanish government. While these

[29] Altogether, 15% of mortgage payments are deductible from personal income taxes in Spain.

government bailouts kept these banks from going bankrupt, investor confidence in the Spanish economy sunk even lower. Many real estate developers avoided bankruptcy only because banks kept permitting them to refinance their loans. In this way, loans were reported as performing. In May 2012, Bankia, a bank that resulted from the merger of several *cajas*, had to be bailed out by the government. At that time, it was the fourth bank by size in the Spanish ranking of banking institutions.

3.8 The evolution of public finance in Spain

Table 3.7 shows the evolution of general government expenditure, revenue and deficit between 2000 and 2011. It shows that Spain had a small deficit between 2000 and 2004, far below the ceiling of 3% of GDP that the European Stability and Growth Pact established for member states after the introduction of the euro on January 1, 1999. From 2005 to 2007, the increase in revenues allowed the government to run a surplus. The situation abruptly reversed in 2008 precipitated by a significant decrease in revenues, a decline that deepened in the following years, as a reflection of the international financial crisis.

Table 3.7 General government expenditure, revenue and balance 2000/11 (Percentage of GDP)

Year	Expenditure	Revenue	Balance
2000	39.2	38.2	-0.9
2001	38.7	38.1	-0.5
2002	38.9	38.7	-0.2
2003	38.4	38.0	-0.3
2004	38.9	38.8	-0.1
2005	38.4	39.7	1.3
2006	38.4	40.7	2.4
2007	39.2	41.1	1.9
2008	41.5	37.0	-4.5
2009	46.3	35.1	-11.2
2010	45.6	36.3	-9.3
2011	43.6	35.1	-8.5

Source: Eurostat

As can be seen in Table 3.8, the rate of growth plummeted in 2008 and became negative in 2009 and 2010. The contraction in international liquidity supply was followed by a restriction on credit and subsequently by a sharp decline in construction and employment. The increase in unemployment meant a rise in spending on unemployment and other social benefits. The bailout of several *cajas* was another source of increase in public expenditure. On the other hand, the decline in GDP was followed by a weakening of public revenues, especially those linked with the real estate sector.

Table 3.8 Annual rates of growth 2000/11

Year	GDP rate of growth
2000	5.00%
2001	3.60%
2002	2.70%
2003	3.10%
2004	3.30%
2005	3.60%
2006	4.00%
2007	3.60%
2008	0.90%
2009	-3.70%
2010	-0.10%
2011	0.70%

Source: INE

Therefore, the swift deterioration of Spain's public finance flashed warning lights on the capacity of its government to face the services of its increasing public debt, which had exceptionally short maturity structures. Spain was following Ireland's steps with a three-year delay.

3.9 Italy: a different "old" debtor

The Italian government was highly indebted long before the crisis outburst. In 2007, the general government debt to GDP ratio was already 103.1, second only to Greece, and well above the 60% Maastrict criterion. However, nobody worried at that time for the Italian public debt and the Italian government had no problem refinancing it. Between 2007 and 2010, it only increased 15%.

However, the American financial crisis deeply affected the Italian economy. The transmission mechanism was the contraction in the interbank loan market that was the immediate consequence of the crisis. Banks refused to lend money to each other because of a lack of liquidity and the uncertainty about the financial soundness of borrowers. Besides the contraction in liquidity, Italian banks were also affected by their close links with central and eastern European countries where they had built a network of branches and affiliated banks. There was a risk of the collapse or illiquidity of this part of the network. The government responded to the risk of banking crisis by guaranteeing bank deposits to a maximum of €103,000 in the event of a bankruptcy. This avoided a bank run on deposits. However, banks reacted to the liquidity crisis by reducing credit to clients and consumers and raising the amount of collateral required for new loans. These measures affected investment and consumption. Bugamelli et al. (2009, 11) estimate that in the period from January 2008 to June 2009 production fell by more than 35% in sectors such as electrical machinery,

metallurgy and cars. The GDP rate of growth became negative in 2008 and 2009 (Table III.9). Growth resumed in 2010, but was snuffed out in 2011.

Table 3.9 Annual rates of growth 2000/11

Year	%
2000	3.7
2001	1.9
2002	0.5
2003	0.0
2004	1.7
2005	0.9
2006	2.2
2007	1.7
2008	-1.2
2009	-5.5
2010	1.8
2011	0.4

Source: Eurostat

The reduction in economic activity cut the amount of tax collected and anti-cyclical policies increased public expenditure. As a result, there was a significant increase in the public deficit (see Table 3.10).

Table 3.10 General government balance 2000/11 (Percentage of GDP)

Year	%
2000	0.8
2001	-3.1
2002	-3.1
2003	-3.6
2004	-3.5
2005	-4.4
2006	-3.4
2007	-1.6
2008	-2.7
2009	-5.4
2010	-4.6
2011	-3.9

Source: Eurostat

After Berlusconi stepped down, the new Prime Minister Mario Monti launched a deep austerity plan including measures such as increasing the retirement age, raising property taxes, simplifying the operation of government agencies and going after tax evaders.

In contrast to most European countries, the banking system in Italy practically did not resort to any public help between 2008 and 2011. Italian banks mainly faced the crisis by raising funds in capital markets. Italy's banking system required very low support from the ECB (Table III.11). The results of the EU-wide stress test carried out by the European Banking Association in 2010 and 2011 show that the included Italian banks successfully passed the test. Moreover, the Italian banking system seems to have low exposure to government debt; it holds less than 10% of domestic public debt –against more than 40% in the case of Spanish banks – as well as low exposure to foreign sovereign risk, which represents only 23% of the total government debt Italian banks hold (see Bolton and Jeanne, 2011).

Table 3.11 Funds provided by the ECB to national banking systems as of December 2011
Percentage of GDP

Country	%
Ireland	87.79
Greece	61.46
Portugal	27.65
Netherlands	26.9
Spain	16.83
Italy	12.65
France	10.89
Belgium	9.54
Austria	4.5
Germany	2.16

Source: OECD

Therefore, in contrast to Spain, Italy's problem seems to be essentially located in its public debt, whose ratio to GDP, although high, is no worse than it was 20 years ago, when nobody worried about it. In fact, the country's debt first hit 120% of GDP in 1993, after the public deficit reached 9.5% of GDP in 1992.

After the exchange rate turmoil that hit the European monetary system in 1992, Italy devalued the lira. Italian trade performance improved as import growth slowed, while export growth remained relatively constant. Therefore, Italy went into the euro-zone with a large surplus on its trade accounts. The high levels of Italian public debt only became a problem when, in the context of the 2011/12 European economic climate, the private sector began to lose confidence in the ability of the Italian state to service its debt.

3.10 Summary

The European indebtedness process does not accept a unique explanation. Of course, it may be argued that the European as well as the American crises are just chapters in a *global* credit bubble (McKinsey Global Institute, 2011) or the consequences of a global money or

savings glut. However, this explains little except that Europeans and Americans have had access to cheap money during the past 10 years.

This paper shows that among the most indebted European countries there are at least two different groups. One made up of "old" debtors, whose debt to GDP ratios slightly grew between 2001 and 2007. This means that in these countries the debt problem antecedes the introduction of the euro. A second group of "new" debtors comprises those countries whose debt suddenly increased as a result of the 2007/08 financial crisis. These are the cases of Ireland and Iceland.

Spain is a special case whose debt to GDP ratio was substantially lower than the weight of the debt of the United Kingdom and Germany not to mention Greece or Italy. However, its public debt was severely punished by the market because of the doubts about its banking system's health, which raised suspicion that it might require governmental support, as in the cases of Ireland and Iceland.

Therefore, although it is true that the US financial crisis triggered the European debt crisis, it did it through different channels. In the cases of Ireland and Iceland, through a severe credit squeeze and a reduction in banks' abilities to access the capital markets. The drain of liquidity experienced by the banking system precipitated governmental intervention with the consequential jump in public debt. However, in the cases of Greece, Italy and Portugal, the American financial crisis mainly brought attention upon the fiscal situation of countries already heavily indebted, who could face growing difficulties to roll over their debts in an increasing climate of fear and distrust.

Far from helping to reverse their pre-existing fiscal imbalances, entrance into the euro-zone had aggravated them for Greece and Portugal. In fact, the continuous revaluation of the euro worsened their budget imbalances after 2000, increasing their public debt. A positive association between the rate of exchange and budget imbalance was found for both countries. After the debt crisis burst, both countries found themselves without access to capital markets and had to resort to IMF/EU bailout packages in an attempt to stabilize their public finances.

In 2007, Italy's general government debt to GDP ratio was 103.1, second only to Greece, and well above the 60% Maastricht criterion. However, nobody worried at that time for the Italian public debt and the Italian government had no problem in refinancing it. Moreover, it only increased 15% between 2007 and 2010. Therefore, the Italian debt crisis is a clear example of the change in humor in financial markets after the American financial crisis.

The announcement by the President of the ECB, in mid-2012, that the ECB would become the euro-zone's lender of last resort by starting to purchase the sovereign bonds of the area's stricken economies calmed the waters, allowing European authorities to buy time to figure out how they could get the area out of the debt crisis.

As Lane (2012, 60) points out, a country with a high level of sovereign debt is vulnerable to increases in the interest rate. "This risk can give rise to self-fulfilling speculative attacks: an increase in perceptions of default risk induces investors to demand higher yields, which in turn makes default more likely." The opposite happens if default risk is perceived to be low. So, we are in the presence of a multiple equilibria problem. The announcement by the ECB acted as a signal to push the system to the "good" equilibrium.

On top of this, a new European Stability Mechanism was created to replace the European Financial Stability Facility and the European Financial Stabilization Mechanism. This offered bank recapitalization packages directly to the financial sector, rather than doing so via national treasuries as in the past with existing EU funding programs. In parallel, a Single Supervisory Mechanism was established for the oversight of credit institutions.

4. Conclusions

4.1 Huge risk misjudgment

This paper aimed to find out why vast masses of individuals and institutions risk their money in ventures that turn out to be a complete fiasco and to explore how to prevent this from happening again in the future. In the three cases analyzed – Argentina's 2001 crisis, the US subprime crisis and the Euro debt crisis – a common feature was the huge misjudgments by investors of the risks really involved. However, in at least two of these three cases, this misjudgment was induced by important actors in the financial world. In the case of Argentina, by the IMF backing of the Convertibility program; in the case of subprime mortgages, by the rating agencies' ratings. The European debt case is a bit more complicated.

In the case of the euro-zone, there was a general assumption that the common currency automatically meant a common level of risk. Having gotten rid of exchange rate risk, investors seemed to assume that sovereign default risks were negligible or in the case national situations worsened, governments would be bailed out by other countries in the euro-zone in order to forestall a breakup of the euro. In other words, the country-specific bankruptcy risk in Europe was either considered to be almost negligible or Article 125 – that says that no country or EU entity can assume responsibility for a member country's public debt – was not taken into due consideration by investors or expected to have a soft interpretation, thus allowing an *in extremis* bailout of debtor countries.

An example of this underestimation of country-specific bankruptcy risk is the following comment in a 2004 article. Speaking on cross-country differences in yields among euro-zone countries, the authors candidly qualified them as striking "as a sovereign default of any of these countries within 10 years seems far-fetched, given their economic history since World War 2" (Pagano and von Thadden, 2004, 550).

This underestimation of default risks has its roots in two huge mistakes. First, the very common one of considering government bonds as almost risk-free assets. As Reinhart and Rogoff (2009) have extensively shown, throughout history rich and poor countries alike have often defaulted on their public debts. Therefore, historical evidence does not support that curiously extended belief.

Second, there was a mistake related to the creation of the euro-zone and its impact on default risk. With a national currency, a government facing a public debt crisis can turn to the central bank and order it to print money and buy up debt. A sovereign default can be avoided at the price of high inflation. In the euro-zone, national governments had transferred monetary sovereignty to the ECB. Therefore, this avenue was closed. The implication is that in a monetary union the probability of a government default is *higher* not smaller than for an isolated individual country government.

Although in the European case the role of rating agencies has been mainly emphasized in connection with the downgrading of European public debt after the crisis burst[30], the fact is that – as in the case of the US financial crisis – the rating agencies long gave overly generous ratings to assets that finally proved to be highly risky and – in the case of Greece – only downgraded them *after* the market had done so. For instance, in Table 1 the mid-2006 S&P's ratings are shown. Ireland's government debt – a country where the banking crisis outburst in 2007 – was still rated as an AAA, with Greece an A and Portugal an AA-.

Table 4.1. Mid-2006 S&P rating

Austria	AAA
Belgium	AA+
Finland	AAA
France	AAA
Greece	A
Ireland	AAA
Italy	AA-
Netherlands	AAA
Portugal	AA-
Spain	AAA

Source:Manganelli and Wolswijk (2007)

Therefore, a key issue for the future is how to protect investors from risk misjudgment.

4.2. The role of the IMF

As stated in the chapter devoted to the analysis of the Argentine case, the IMF played a key role in restoring confidence in Argentina's payment capacity through capital markets. In fact, the misjudgment by the IMF on the sustainability of the Convertibility regime played a key role in reopening Argentina's access to capital markets. The IMF erred in its assessment of the Argentine economy by underestimating the vulnerabilities of the Currency Board regime. Although it was initially reluctant to support the Convertibility regime, which was against the IMF's traditional recipe of a free floating exchange rate, it not only endorsed it but later on even advised other countries – mainly eastern European countries – to adopt it.

The continuous support by the IMF of the Argentine program, even after the Tequila crisis showed the high sensitivity of the Argentine economy to external flows, allowed the government to pile up huge debt, long after it was evident that the Currency Board regime was unsustainable. That support can only be explained by a combination of political and ideological reasons: Argentina had become a star country that was following most of the policies recommended by the Washington Consensus.[31] It was considered that its free markets, deregulation and privatization policies deserved the IMF's support in spite of the inconsistencies in the economic program.

[30] An exception may be Iceland where high ratings provided by the rating agencies seem to have played an important role in attracting funds to its bank system. Apparently, these ratings played for investors the role that belonging to the euro-zone provided to its member countries.
[31] "The IMF yielded to external political and market pressures to continue providing its support, despite serious concerns over fiscal and external sustainability" (IMF, 2003, 72).

Because of the weight that political and ideological arguments have in the IMF's decisions as the Argentine case certifies, it is not a reliable source on which investors can be confident. This underlines the need for an independent source of assessment not subject to political or ideological influences. Unfortunately, the next candidate – credit rating agencies – delivered similar or worst results than the IMF.

4.3 The role of credit agencies' ratings

Investors depend on credit ratings to determine the creditworthiness of the assets in which they invest. In the case of institutional investors, it may be argued that, as highly sophisticated investors, they have the capacity to produce their own internal risk analysis. If so, the rating agency's rating would only be used to corroborate the conclusions of their own studies. However, as Keynes (2008) suggests, even professional investment managers have a strong incentive to follow the herd because "it is better to fail conventionally than to succeed unconventionally" (p. 141).

However, there is another reason why it is hard to overstate the importance of the role of credit rating agencies and their ratings: since the mid-1970s, statutes and regulations in the US have increasingly come to depend explicitly on credit agencies' ratings. Therefore, they became regulatory licensors. It was then that rating agencies stopped selling ratings to investors and began charging companies that issue the debt they rate. Regulatory dependence on ratings created higher demand for ratings. However, in several cases their ratings proved spectacularly inaccurate. Prominent examples include California's Orange County and Enron Corp., both of which received high credit ratings until just before they filed for bankruptcy protection. Finally, they certified in large scale as almost risk-free securities assets that were actually highly risky, as the events after 2007 overwhelmingly showed.

In Europe, following the so-called "Basel II recommendations," adopted in 2005, the Capital Requirements Directive introduced a new capital requirements framework for banks and investment firms. The use of credit assessments by External Credit Assessment Institutions was considered to be essential for the determination of risk weights. In essence, it forced European banks and even the ECB itself to rely on the standardized assessments of credit risk provided by credit rating agencies. The new rules on the regulation of credit rating agencies passed by the European Parliament in 2009 restrict banks to use the ratings only for regulatory purposes.[32]

The fact that rating agencies are paid by the issuer raises a conflict of interest. One alternative scheme is investor-paid rating agencies. However, it has been argued that they may also be subject to potential pressure from clients to slide ratings one way or another. Anyway, the experience provided by the US and European crises proves that to rely – as has been argued – only on the self-disciplining role played by reputation makes little sense.

It seems clear that the issuer-paid model does not offer any guarantee to investors. Incentives should be better aligned. A credible threat of civil liability would undoubtedly force credit rating agencies to be more vigilant in guarding against negligent, reckless and fraudulent practices (Partnoy, 2009, 14). Credit ratings should only be part of the mosaic of information considered

[32]In May 2011, the European Securities and Markets Authority was assigned the registration and supervision of credit rating agencies in the EU.

to be a part of the investment process. For this purpose, more competition in the industry and the development of new tools to evaluate credit risk seem to be absolutely necessary.

The Dodd-Frank Act passed in July 2010 mandates the SEC to remove ratings requirements for many credit products within a few years. Kurlat and Veldkamp (2011, 3) analyze its effects and conclude that the repeal of ratings mandates will have no effect on the amount of information available about the average security. It would simply transfer the cost of providing the information from the asset issuers to investors.

4.4 Why investors often make the wrong choice?

Besides the misjudgment of risks by institutional actors such as the IMF or credit rating agencies, an additional issue is why investors are frequently attracted by riskier assets. It seems that, as there is "money illusion," there is also "profit illusion" that is, profit is considered without taking into consideration the level of risk involved. Therefore, important portions of capital are usually invested in high-yield high-risk sectors such as the stock market, real estate or assets of dubious quality from tulip bulb contracts to subprime mortgages to Argentine or Greek bonds.

According to prospect theory, as proposed by Kahneman and Tversky, decision makers can become less risk-averse and even risk seeking if they find that they are operating below target or aspiration levels. Laughhunn et al. (1980) examine the behavior of 224 managers from the US, Canada and Europe and find that the majority are risk seekers when faced with below-target outcomes. Strikingly, this picture coincides with the type of behavior described 150 years ago by Marx (2007, 294) according to which the fall in the rate of profit pushes capital "into adventurous channels, speculation, fraudulent credit, fraudulent stocks, crises."

Such behavior also agrees with Minsky's description of investor behavior: "over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is large weight to units engaged in speculative and Ponzi finance" (1992, 8).

According to Schumpeter (1961), the primary waves of prosperity initiated by entrepreneurial ventures that implement technological innovations inevitably become overridden by larger secondary waves of speculative prosperity. In his words: "Many things float on this 'secondary wave', without any new or direct impulse from the real driving force, and speculative anticipation in the end acquires a causal significance" (Schumpeter, 1961, 226). Financial crises result from the elimination of speculative ventures and positions but, unfortunately, also of otherwise sound firms that are denied liquidity by now overly cautious bankers. Schumpeter (1950) maintains that 'reckless banking' and financial speculation should be separated from the 'creative destruction' process of innovation by means of "rational as distinguished from vindictive regulation by public authority" (p. 91).

Following Schumpeter's terminology, in the 'primary wave' banks create credit to finance entrepreneurial ventures that introduce new products or processes that increase productivity. However, sooner or later banks find that investment opportunities are running scarce, while savings go on flowing into their vaults. Then, the time for 'financial innovation' comes. One example of financial innovation has been structured finance: in the US, banks neatly packaged multi-trillion dollar dubious mortgages as 'safe' securities and sold them to investors eager to get high yields. Another example of 'secondary wave' financial speculation

and 'reckless' banking was the sale of Argentine bonds by Italian banks to half a million naïve Italian retirees in the 1990s.

These mechanisms are favored if a veil conceals the real risks those investments involve. Here comes the role that rating agencies played in the US subprime financial crisis assuring that those assets were safer than they really were.

However, financial innovation develops only up to the limits that regulations allow. That is why subprime speculation developed *after* financial deregulation took place in the US and not before. For this reason, the 'rational' regulation advocated by Schumpeter should limit 'reckless' banking and speculative excesses.

Although it is true that financial crises can blow up themselves, the severity and social costs of the downturn may be unbearable. Frightened banks severely tighten credit to firms, and this may mean the massive destruction of enterprises and jobs that otherwise would have survived. Alarmed depositors run to withdraw their money from banks, worsening the crisis. Therefore, public authorities should intervene through regulation to avoid that, in Keynes' words, "the capital development of a country becomes a by-product of the activities of a casino" (Keynes, 2008, 142). However, if this is not enough to avoid a financial crisis, government intervention is also necessary to minimize the damage once the crisis blows up. It is always better a soft than a crash landing.

Some may argue that it would be better to let market forces deal with the financial crisis because government intervention creates a moral hazard problem. This was the reasoning behind the denial of a bailout for Lehman Brothers. However, this case precisely showed that one thing is to talk about moral hazard in theory and quite another one to put the idea into practice. After Lehman Brothers' failure, the Fed and the Treasury had to aggressively step in to stop a colossal bank run and rescue the financial system. The argument that troubled banks should not be saved because this would eliminate market participants' incentives to monitor and self-regulate banks' risk behavior proved to be impractical. Given the negative externalities of bank failures due to systemic effects, the social costs of a bankruptcy – particularly in the case of large financial institutions – largely exceed private costs. This puts the onus on regulation in order to minimize the space for moral hazard.

As Keynes (2008, 143) suggests, public access to financial markets should be like access to casinos, "inaccessible and expensive." That is why he argued that the "introduction of a substantial Government transfer tax on all transactions might prove the most serviceable reform available, with a view to mitigating the dominance of speculation over enterprise in the United States" (Ibid.). His idea was that throwing grains of sand into the gears of financial markets might deter financial speculation. However, taxing financial transactions may be a necessary but not sufficient condition for that.

Financial activity as a whole is a public good: systemic risks to financial institutions are risks for the economy as a whole. That is the basic case for the regulation of financial activity. Let us have a look at some of the issues at stake.

4.5 Some issues at stake in financial regulation[33]

There is no doubt that ¨financial regulation is a complex thicket of highly technical policy challenges¨ and that ¨the devil is generally in the details¨ (Véron 2012, 8).

The first issue to be considered is that any regulation means a restriction on the expected rate of return by lowering the level of risk investors or banks are allowed to take. However, this does not necessarily mean a lower *ex post* average rate of return; it only means that riskier bets are excluded or restricted, precisely those that may result in huge losses. Regulation should restrict the types of financial products that financial institutions can offer to the public. It should also include the conditions financial guarantees must meet. The higher transparency of the financial guarantee insurance sector is highly desirable, especially because the assessment of a financial guarantor is further complicated by the presence of an important element of circularity: the values of financial guarantors depend on the values of the securities that they have backed and, in turn, the values of these assets depend on the financial health of the financial guarantor (Schich, 2008, 110).

As stated above, financial institutions have a perverse incentive to take excessive risks. In fact, it is unwise to play safely while everyone else gambles; that is why banks maximize their correlations in order to fail when all other banks are failing, betting that a bailout will take place when a large number of banks are in distress.[34]

Thus, special attention should be placed on those risks capable of damaging the financial system as a whole. This goes beyond the traditional regulatory approach whose primary focus is the safety and soundness of individual institutions and markets in isolation. Systemic significance is not only related to the size of the firm itself but also to its interconnectedness with the rest of the economy. For this purpose, a systemic tax fee – as suggested in Acharya et al. (2009, 284) – for all financial institutions based on their contributions to systemic risk may be a useful tool. This tax would either dissuade financial institutions from those behaviors that increase systemic risk or make them contribute to a fund to be used in the case of a systemic calamity. As in environmental economics, those who pollute must pay for the cost of the clean-up. It is a matter of efficiency and equity.

Milne (2013, 20) argues that “macroprudential tools should be used within a strict rule based framework, in which the impact on the cost and availability of credit can be readily predicted.” In this respect, he proposes using “cap and trade” for controlling aggregate systemic liquidity risk instead of the regulation of individual institutions and markets. For the implementation of “cap and trade,” a central register of financial assets and liabilities should be established. The systemic risk regulator would determine periodically an amount as the upper limit on the short-term liabilities of financial intermediaries and licenses for this amount would then be distributed to financial institutions. All short-term liabilities used to finance financial investments, both loans and securities, would be subject to licensing control including any offshore funding (Ibid., 5). Exchange between institutions (the trade of licenses) would be allowed to determine the most efficient allocation between institutions. Milne argues that control over the stock of licenses would limit the amount of maturity mismatch in the entire

[33] For the dynamics of financial reform as they have unfolded since the start of the crisis see Véron (2012).
[34] Farhi and Tirole (2009, 22) make explicit under what assumptions this is the optimal behavior for banks.

financial system by preventing a rapid increase in the ratio of short-term liabilities to nominal GDP.

4.6 The case of public debt

While regulation can help reduce the level of investors' exposure to risk in the case of private assets, a different issue arises when public debt is involved. How can we minimize the investors' risk of being the victims of a sovereign debt default?

A key issue is transparency in public accounts.[35] However, transparency is not just an issue of making public large quantities of raw data. They must be accessible, relevant and easy for all to understand. Otherwise the public cannot use them to make comparisons and exercise choice. Therefore, the first step is to define the key indicators that allow having a clear idea of fiscal sustainability and a crystal clear way to present them together with a strict schedule for that. For this purpose, the key indicators should also include relevant quasi-fiscal activities conducted outside the general government as well as commitments and contingent liabilities. Pressures to engage in nontransparent practices usually appear during periods of fiscal stress. Therefore, once a schedule has been established, its lack of fulfillment or the delay in reporting on some indicators may be in themselves a signal of fiscal difficulties. If the difficulties are not too serious, the government would probably prefer to air them instead of alarming the financial markets.

An important instrument for ensuring transparency in government operations is an independent review agency responsible for conducting performance audits and studies of selected fiscal issues (Kopits, 2000). To be effective, such an agency must be endowed with wide investigative and reporting authority over government operations.

Finally, as the recent experiences of Iceland, Ireland and Spain illustrate, banking crises may be a cause of sovereign debt crises. Therefore, the health of the banking system is also a critical issue in assessing a country's public debt. Thus, improvement in financial regulation and prudential supervision are not only important for the financial system itself but may also be an important contribution to lower the risk of sovereign debt default.

4.7 A digression: what triggers a financial crisis outburst?

This paper has centered on finding out the reasons why investors risk their money in ventures that turn out to be complete failures and exploring how to avoid this from happening again in the future. That is why very little has been said on the factors that make crises suddenly blow out. However, let me devote a few lines on the research agenda on this subject.

It is difficult to identify the exact factors that determine a crisis outburst. Usually, tensions accumulate during a more or less protracted period until, suddenly, the crisis bursts out. In the case of Argentina, as well as in the cases of Greece, Italy and Portugal, the public debt to GDP ratio was in the dangerous zone several years before the crisis detonated. The outburst seems to have been precipitated by a high share of short-term external debt, which would have required huge doses of creditors' willingness to roll it over. Public debt short maturity structures were also present in the Spanish case.

[35]Greece manipulated data to become a member of the euro-zone and concealed the real amount of its public deficit for years until 2009.

The weakening of the government's political power was present in the case of Argentina, where the governing coalition was undergoing a political crisis since the resignation of the vice-president in October 2000, Italy under Berlusconi, Portugal under the minority Socialist government of José Sócrates and Spain under Rodriguez Zapatero. In the presence of a weakening political power, financial markets become suspicious about the ability of the government to collect the taxes needed to fulfill its sovereign debt.

In the case of banking crises, the detonator has usually been the collapse of or the need to rescue an important financial institution, facts that trigger a bank run. The Lehman Brothers' bankruptcy in the US and the nationalization of Iceland's second largest bank were examples of this. The Greek case has something in common with the outbreak of banking crises: it was the sudden disclosure that the amount of its public debt was much higher than it was known up to that moment that triggered a run against Greek public bonds.

Babecký et al. (2012) find that the key early warning signal of crisis comes from growth in domestic credit to the private sector at the horizon of four years. An increase in government debt, the current account deficit and FDI inflow, or a fall in house prices and share prices, are also indicators of an imminent crisis, according to these authors.

Further research may contribute to understanding the specific factors and mechanisms that trigger the outburst of crises. However, I think that the significant question is why financial turmoil can develop until culminating in a crisis without being averted before. Obviously, the key issues are regulation in the case of financial crises and the transparency of public accounts in the public debt case, as stated above.

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