FACULTY OF FINANCE, INSURANCE, BANKING AND STOCK EXCHANGE (FABBV)
within Bucharest Academy of Economic Studies

SIF BANAT-CRIŞANA

ASOCIAŢIA ROMÂNĂ DE FINANŢE-BĂNCI – RoFIBA
(Romanian Association of Finance and Banking – RoFIBA)

International Finance and Banking Conference

FI BA 2013

(XIth Edition)

MARCH 28-29, 2013
Bucharest, Romania

FINANCIAL CONTAGION AND ITS TRANSMISSION CHANNELS BETWEEN PIIGS ECONOMIES

Daniela ZĂPODEANU
University of Oradea
dzapodeanu@uoradea.ro, danizapodeanu@yahoo.com
Edina KULCSAR
University of Oradea
kulcsaredina@yahoo.com
Sorina Ioana PETRIŞ
University of Oradea
sorina_petris@yahoo.com

Abstract. This paper identifies the most important similarities between the four PIGS countries: Portugal, Italy, Greece and Spain, in terms of principle macroeconomic indicators in the current crisis. This article also treats the principle transmission channels of sovereign risk and implicitly the financial crises. These transmission channels are the following: increase in sovereign bond yields, critically budgetary position, banks' exposures toward PIIGS economies and other states banks' exposures to sovereign debt of the PIIGS states. Studying the transmission channels of sovereign risk, results that, the European Framework is under institutional reform, but it should be improved in terms of instruments which quantify financial stability and crises prevention.

1. Introduction

The financial crisis revealed the weaknesses tax of EU countries, bringing to the fore a concern for states known under the acronym PIIGS namely: Portugal, Italy, Ireland, Greece and Spain. The specific of these states is the critical fiscal position and its influence on financial stability framework. If we look at the crisis as a debt crisis, we can ignore Ireland, as Ireland's debt respected the convergence criteria, since the adoption of the Euro. Another criterion for differentiating Ireland from PIGS is the geographic coverage of the four countries (S, SW Europe), which facilitates trade development between them.

Sovereign credit risk management has a significant impact on financial stability. Given this, we propose in this paper to analyze the main channels of contagion, that contributed to the spread of sovereign credit risk to identify similarities and differences of PIGS - Ireland that characterize these states, direction of spreading it among states, possibility to stop the financial crisis and potential ways of quantifying the stability/financial instability.

According to the European Central Bank, to which we subscribe, there are various channels of contagion of sovereign credit risk.

2. Channels of contagion of sovereign credit risk

The first channel of contagion is *deteriorating credit growth* due to sovereign debt, which resulted in an *increase in sovereign bond yields (ECB, 2010, 76 p.).*

Source: http://epp.eurostat.ec.europa.eu
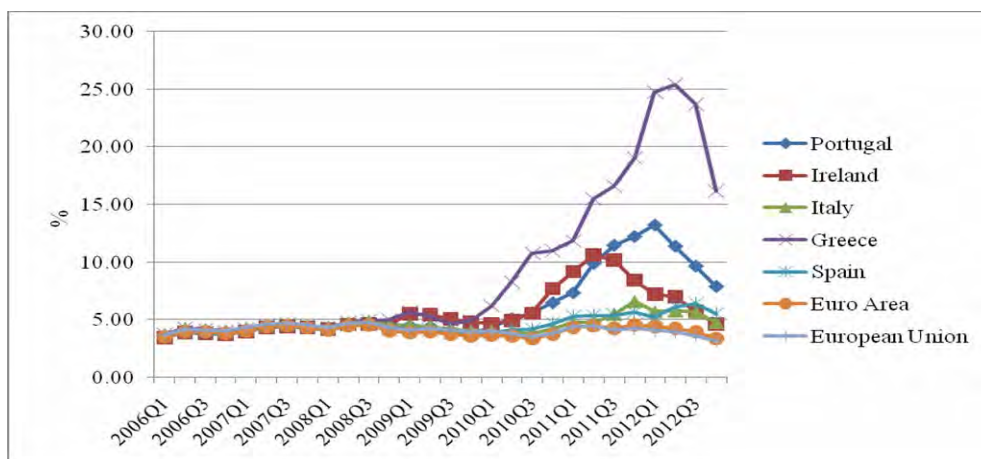
***Figure 1.** The evolution of long-term bond yields in the PIIGS (2006-2012)*

As shown in Figure 1, performance bonds of Greece came in 2010 to 11.03, registering an increase of 73%. Spain's government bond yields increased moderately at start of the period 2006 to the third quarter of 2010. Portuguese bonds with a maturity of 30 years reached 5.57 percentage points, an increase of 44% from recent lows. At the end of 2011 and the beginning of 2012, we assist to an improvement in terms of PIIGS economies bond yields, despite the fact that in some cases it's still critical: Greece, Ireland and Portugal (Table 1, Appendix).

The second channel of contagion is the tax namely the *excessive deficits*, which increase long-term interest rates and risk premiums leading to an increase in the cost of borrowing.


Source: http://epp.eurostat.ec.europa.eu
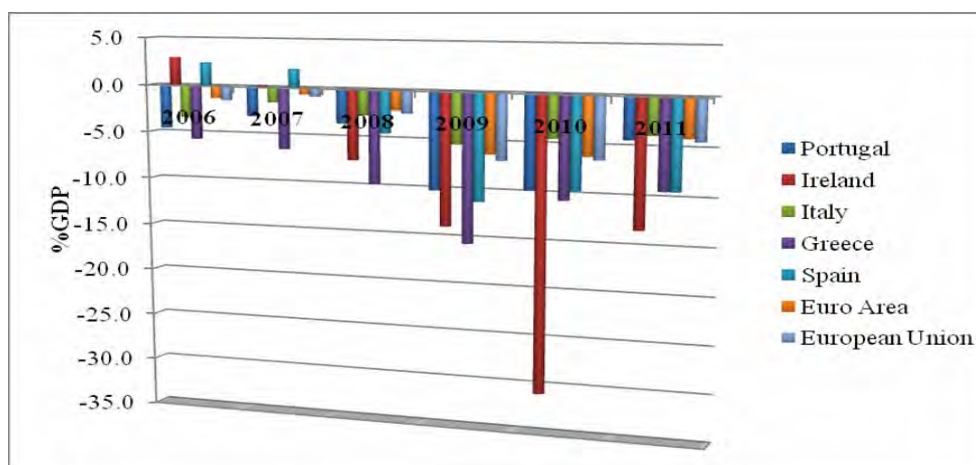
***Figure 2.** Evolution of the budget deficit in 2006-2011 (% in GDP)*

Increased sovereign vulnerability, states can translate into chronic budget deficits, which resulted in higher levels of debt default with worsening growth potential. Countries with weak fiscal position reached record double-digit deficits, Greece in 2009 reached a deficit of 15.6% of GDP, followed by Ireland with a deficit of 13.9% of GDP and 11.2% of GDP Spain. In terms of share in GDP, the public deficit of Ireland recorded a worsening again in 2010, reaching over 35% of GDP, followed by a decrease in 2011 (Table 2, Appendix). In other analyzed economies, we can observe an improvement of public deficit, but without touching the 3% target imposed by Maastricht Treaty.

Italy with a lower budget deficit of 5.4% of GDP is facing a very high public debt. Excessive deficits indicate the trend of rapid growth and increased vulnerability to debt financial position of a state.

Another common feature of the four analyzed countries refer to high public debt respectively exceeds 100% of GDP in the second quarter of 2010 (148.3% of GDP Greece and Italy 119.2% of GDP, with such high tax risk government debt of Greece proves to be too large to be paid, one of the primary problems is that the international community lacks a framework to deal with such situations. In 2011, the succession of these five economies remains unchanged in terms of public debt. The higher public debt, bigger than 100% from GDP is presented by Greece (170.6% of GDP), Italy (120.7% of GDP), followed by Portugal (108.1% of GDP) and Ireland (106.4%) (Table 3, Appendix). Spain, Portugal faces a level high indebtedness of the private sector. Increase refinancing costs for the government means additional efforts and private sector debt refinancing, resulting spread fiscal problems in the private sector.

Source: http://epp.eurostat.ec.europa.eu
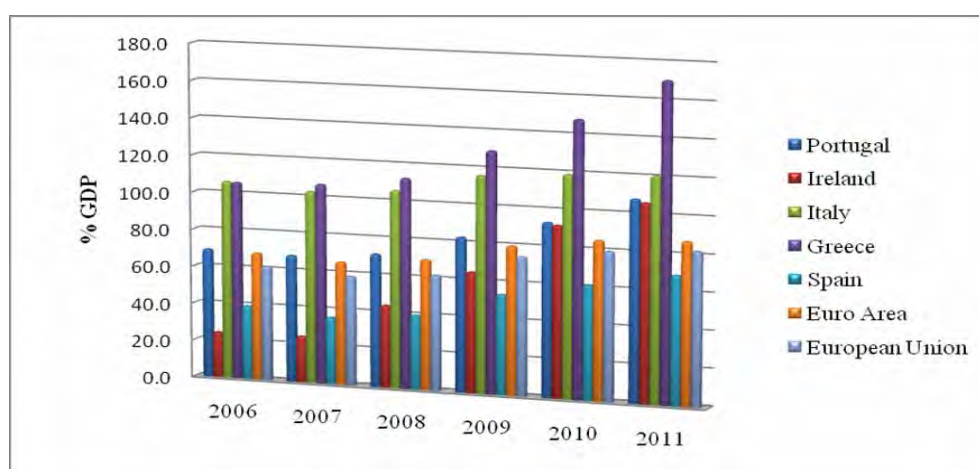
Figure 3. The evolution of public debt (% in GDP), 2006-2011

The rapid growth of public debt and budget balance deterioration may compromise financial stability as sovereign shocks are transmitted to the banking system that can help to spread across borders. In this key task of central government is to design medium-term fiscal consolidation strategy aimed at clear shots debt mitigation and emergency response in deteriorating public budget. Transmission of sovereign risk on local banking systems and its effects on the real economy is a threat to global financial stability.

The third channel of contagion could be through the banking system (Table 4, Appendix). Quantification of contamination can be achieved by analyzing *banks' exposures toward four PIGS economies* (Portugal, Italy, Greece and Spain). As a result of financing difficulties faced by Greece tend to differentiate markets in the euro area banks' exposure criterion to these economies (IMF-a, 2010, p. 4).

French and Dutch banks have significant exposures in the banking system in Spain. If not resume growth and not implementing fiscal consolidation measures, concerns will go on public finances of Spain. High interest rates in Spain can highlight the weaknesses of Spanish financial system. Savings banks, especially the "Cajas" face bad loans caused by deteriorating housing market and increased cost of funding. Concerns over the finances of a country may be transmitted to other financial systems. Exposures of banks in Belgium, Ireland and Netherlands to Italy and Spain are significant. Thus these states are extra vulnerable to worsening fiscal problems (Financial Stability Report, 2010, p. 23).

Banks' exposure level to the PIIGS (% GDP) in 2010

	Greece	Ireland	Italy	Portugal	Spain	Total
France	0-5	0-5	15-20	0-5	5-10	33
Germany	0-5	5-10	5-10	0-5	5-10	21
Holand	0-5	0-5	10-15	0-5	15-20	31
Spain	0-5	0-5	0-5	5-10	-	10
Belgium	0-5	5-10	5-10	0-5	0-5	21
Ireland	0-5	-	15-20	0-5	10-15	40
Italy	0-5	0-5	-	0-5	0-5	3
Portugal	0-5	0-5	0-5	-	10-15	23
Greece	-	0-5	0-5	0-5	0-5	<1

Source: Financial Stability Report, "Financial unrest in Europe –possible consequences for financial stability in Sweden", January 2010, p. 23.

The fourth channel, which can contaminate the financial system is that *banks resident in countries with excessive deficits are holders of government debt.*
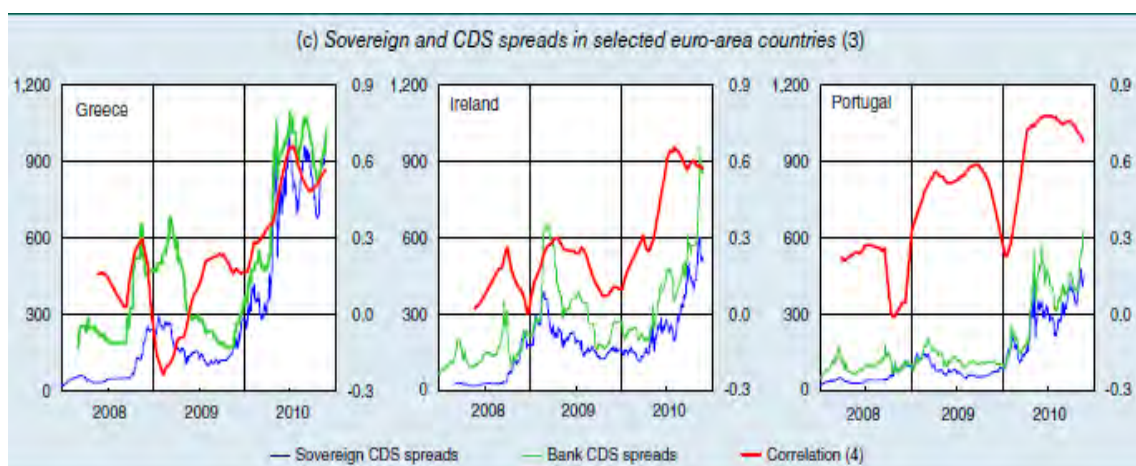
Source: Banca D'Italia, Eurosistema, "Financial Stability Report", December 2010, p. 20.

Figure 4. *Spread the sovereign CDS and bank in 2010*

Following an analysis of the Euro area, it was found that an increase of 100% government bond yield increases of 10-20% corporate bond yields in the euro area as a whole (ECB, 2010, p. 77). Moreover, the situation is amplified in the case of banks: government intervention from the euro area to support the financial institutions has diminished the distinction between sovereign and private debt thereby transferring risk from the banking system by governmental sector, which resulted in a close correlation between the spread the bank CDS[1] and sovereign. This close relationship resulted in higher spreads of banks, resulting in increased financing costs. So, the growth of the yield bonds may weaken the banking activity, because of the decreased market value of the portfolio. Approximately 50% of long-term bond market are issued by euro area countries and held by banks from the euro area, some of them with high levels of exposure to governments.
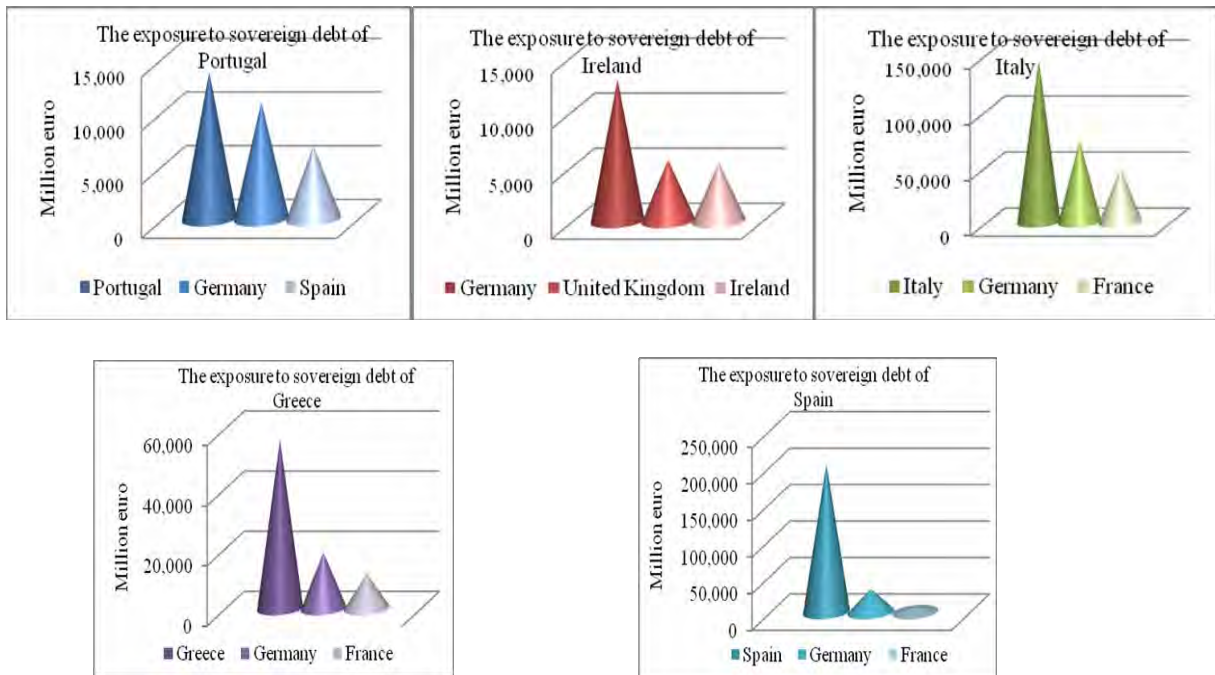
Source: Adrian Blundell-Wignall and Patrick Slovik, "The EU Stress Test and Sovereign Debt Exposures", August 2010, p. 8
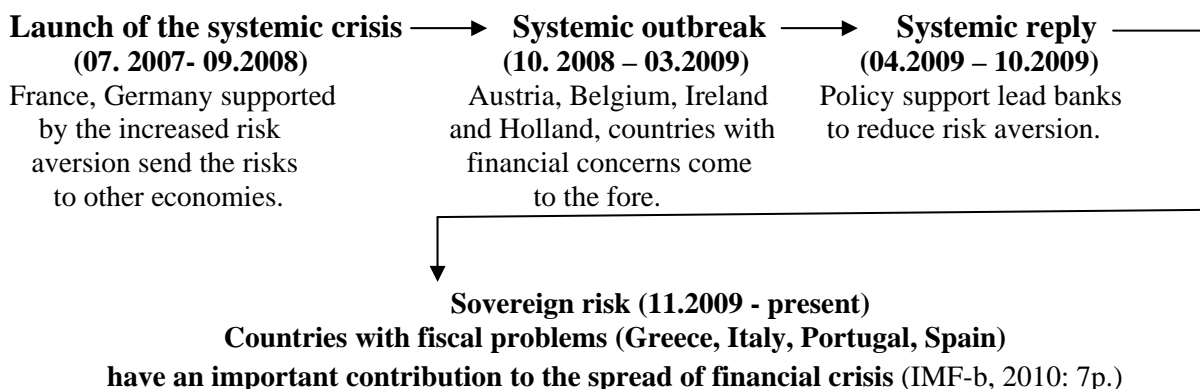
Figure 5. Banks' exposures to sovereign debt of the PIIGS (million Euro)

Looking at the chart (Table 5, Appendix) above, we see that banks tend to be exposed to the sovereign debt of the country resides. This rule is not valid in the case of Ireland, where a significant proportion of exposure to public debt is owned by Germany, followed by Great Britain. This is another difference of Ireland compared to the four PIGS countries.

3. Direction of contagion

In the early stages of the crisis, France and Germany, the healthy core of Eurozone benefited from increased risk aversion. After the collapse of Lehman Brothers, states that reacted negatively on other sovereigns issuers, have been hit hard by the financial crisis. These countries were Austria, Ireland and the Netherlands. Some states have influenced their government balance - public budget, to support banks, which improved the concerns regarding the systemic crisis and the risk aversion decreased. But the financial crisis has turned into economies with weak fiscal outlook and financial tensions. These tensions were most evident in Greece.

If we were to give back the main stages of the financial crisis, chronologically and spatially, we can distinguish the following steps in drawing the schedule for conducting financial crisis:

Launch of the systemic crisis ⟶ **Systemic outbreak** ⟶ **Systemic reply**
(07. 2007- 09.2008)   **(10. 2008 – 03.2009)**   **(04.2009 – 10.2009)**
France, Germany supported   Austria, Belgium, Ireland   Policy support lead banks
by the increased risk   and Holland, countries with to reduce risk aversion.
aversion send the risks   financial concerns come
to other economies.   to the fore.

Sovereign risk (11.2009 - present)
Countries with fiscal problems (Greece, Italy, Portugal, Spain)
have an important contribution to the spread of financial crisis (IMF-b, 2010: 7p.)

Countries with fiscal problems (Greece, Italy, Portugal, Spain) have an important contribution to the spread of financial crisis (IMF-b, 2010, p. 7)

Another significant difference between Ireland and the PIGS states is in terms of temporal scale deployment financial crisis. Ireland comes to the fore in October 2008, contributing to the outbreak of systemic crisis, compared with PIGS states that are emerging in the context of the transmission of sovereign risk, until November 2009.

Regarding the contribution of risk propagation, it can be observed the significant contribution of the analyzed states. The main contributors to transfer the sovereign risk are Greece and Portugal, followed by Spain and Italy, in order mentioned.

4. Ways of quantifying the financial stability

The crisis has shown that the system of financial supervision in Europe is inadequate scale integrated in EU financial services market. Importance of systemic risks lately led to the conclusion that the emphasis should fall on macro-prudential regulation and not on micro-prudential regulation. Micro-prudential regulation concerns the protection and regulation of individual institutions and macro-prudential regulation refers to the risk of collapse of financial systems, considered as a whole. It is necessary to have simultaneously two types of regulation, because they are interconnected.

Indicators of financial stability and systemic risk measures the current level of instability and systemic stress. A complete macro-prudential analysis requires that the financial stability indicators to be available and relevant to each market and market infrastructure, intermediate, and combinations of these components, in the financial sub-sectors and in the financial system as a whole. Using indicators of systemic risk and financial stability of macro-prudential bodies is justified by their typical task of identifying systemic risks and issuing warnings about the increased risks. Moreover, the availability of systemic stability indicators can serve as an input to identify emergencies. An advantage of these indicators is that they can be developed for all relevant systemic intermediaries and markets. Moreover, the set of indicators can be expanded relatively rapidly and flexibly, depending on the specific problems of interest at some point in time, and in response to innovation and structural change in the financial system. This is why macro-prudential authorities should have a comprehensive set of indicators of financial stability at their disposal and to continuously review and update extensions.

Composite indicator of systemic stress ("CISS") developed by the European Central Bank, allowing real-time monitoring and assessing the level of stress in the financial system, also helps to delimit and characterize historical episodes of "financial crisis". This indicator could be used to assess the impact of the policy measures to reduce systemic stress levels. For current assumptions crisis, and considering the current state of global interconnection of economic markets, it is important to analyze the contagion of financial instability. This is extremely important to examine in the case of the countries we analyzed.

Building an *aggregate financial stability index* (ISF) is one of the quantitative methods which measure the stability of a financial system along with early warning systems and stress tests.

Early warning systems allow the predictions of the probability of a financial crisis, but does not provide information about the capacity to respond to shocks, respectively that techniques such as "stress testing", which enable comparisons between the performance of stability of different periods or between the stability of financial systems. Compared with early warning systems, *aggregate financial stability index* (ISF) offers the possibility of making comparisons between different periods and systems and also observe the development level of stability.

Even though this technique is considered simple, rigid and mechanical, it has many advantages over other methods: high transparency, can more easily identify the necessary statistical data and simplicity of calculations. To determine the ISF is calculated three

composite indices – Financial Development Index (IDF), Financial Vulnerability Index (IVF) and Financial Soundness Indicators (FSI) – the sum gives rise to aggregate financial stability index (ISF). In the event of unavailable data, composite indicator can be calculated as the average of available indicators.

$$IDF = \frac{\sum_{j=1}^{4} i_{dj}}{4} \; ; \; IVF = \frac{\sum_{j=1}^{6} i_{vj}}{6} \; ; \; FSI = \frac{\sum_{j=1}^{5} i_{sj}}{5}$$

Thus, individual indicators used in determining composite indicators are:

(i) for the IDF: Total credit/GDP, Bank margin, Market capitalization/GDP, Banking reform and the interest for liberalization;

(ii.) for IVF: NGO Credit/Total Credit (Reserves/Deposits)/(Cash/M2), Inflation rate, Budget deficit/GDP, Loans/Deposits, Bank deposits variation/Variation M2;

(iii.) for SWFs: Nonperforming Loans/Total Loans, Equity/Total Assets, Regulatory capital/Risk-weighted assets, Liquid assets/Total assets (%) ROA (Albulescu, 2009, p. 77).

Aggregate Financial Stability Index (ISF) is obtained by summing the three composite indicators.

Conclusions

Contagion and spillover models are used primarily to assess cross-transmission of financial instability (ECB, 2010, p. 144). A strict definition approach derived from the contagion effect is given by Kaminsky and Reinhart and Eichengreen and Rose: "contagion effect is the situation where information about the existence of a crisis in another country increases the probability of a crisis in the local plan" (Păun, 2010, p. 2).

Price stability does not ensure financial stability, and not every problem has a fiscal origin (eg. Spain), evasion of regulation and supervision of financial markets creates major systemic risk and excessive leverage private sector (banks) gives rise to systemic risks. Due to the extremely high degree of interconnection within the EU countries, and hence the PIGS states, is difficult to stop the contagion between economies of these countries, since the crisis and problems in these economies already exists. European framework for financial stability at this time is unable to stop the negative effects of contagion, European authorities are currently powerless to influence the negative effects of economic downturn spread among the countries analyzed.

Portugal, Italy, Greece and Spain are the countries in the Euro zone and adopted the single currency euro. This means that adjustments in these countries can be made only by fiscal and structural reforms, rather than by adjusting national currency, its devaluation.

In our opinion, the best solutions to ensure financial stability objective should take into account the contradictions generated by imposing a single currency in countries with different fiscal policies. Since the adoption of the euro, the four PIGS states facing budget deficits and public debt burden, causes uncertainty in the situation in each country is different, however. Italy and Greece, despite the fact that does not comply with the convergence criteria on public debt and have high pre-crisis debt, are still supported in the euro area. However, the two countries have opted for debt weighting against the adoption of austerity policies, which led to a chronic debt situation and the expansion to other states with poor fiscal positions. At the same time, importance of systemic risks lately led to the conclusion that the emphasis should fall on macro-prudential regulation and not on micro-prudential regulation. But not forget to take into account the interrelationship between micro and macro regulations.

We believe that, in order to avoid future financial crises, the task of the European surveillance currently covering classical, traditional geared more towards regulation and legislation, should in future be complemented by surveillance based on identification, prevention indicators that quantify financial crisis.

Note:
[1] CDS- Credit Default Swap - is a swap contract in which the protection buyer makes periodic payments (spread) to the seller and punching exchange, receives a certain amount if the credit (loan or bond) suffers an unexpected event (not reimbursed).

References

Blundell-Wignall, A., Slovik P., *"The EU Stress Test and Sovereign Debt Exposures"*, OECD Working Papers on Finance, *Insurance and Private Pensions,* No. 4, August

Albulescu, C.T. (2009). "Utilizarea unui indice agregat pentru măsurarea stabilității sectorului financiar din România", http://www.oeconomica.ro/files/pdf/15.pdf

Banca D'Italia, Eurosistema, "Financial Stability Report", Number 1, December 2010

http://www.bancaditalia.it/pubblicazioni/stabilita-finanziaria/rapporto-stabilita-finanziaria/2010/rapstaeco-1/en-rapstaeco1/1-Financial-Stability-Report.pdf

Borio, C. (2003). "Towards a macroprudential framework for financial supervision and regulation?", *BIS Working Papers,* No 128, February, http://www.bis.org/publ/work128.pdf

Hollo, D., Kremer, M., Lo Duca, M. (2010). „CISS – A *"Composite Indicator of Systemic Stress"* in the Financial System", 2010, *Working Paper,*November 10

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1611717

ECB (2010). *"Financial stability review"*, June
 http://www.ecb.int/pub/pdf/other/financialstabilityreview201006en.pdf

Financial Stability Report (2010). „Financial unrest in Europe –possible consequences for financial stability in Sweden", January

http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Rapporter/2010/FSR1/FS_2010 _1_eng_box1.pdf

IMF-a, Global Financial Stability Report, *"Sovereigns, Funding and Systemic Liquidity"*, October 2010 http://www.imf.org/external/pubs/ft/gfsr/2010/02/pdf/text.pdf

IMF-b, Global Financial Stability Report, *"Meeting New Challenges to Stability and Building a Safer System"*, april 2010 http://www.imf.org/external/pubs/ft/gfsr/2010/01/pdf/text.pdf

Nieto, Maria, J., Schinasi, G.J. (2007). "EU Framework for Safeguarding Financial Stability: Towards an Analytical Benchmark for Assessing its Effectiveness", *IMF Working Paper,* 07/260, November

http://www.imf.org/external/pubs/ft/wp/2007/wp07260.pdf

Păun, C. (2010). *"Criza economică - cauze, caracteristici, implicații. Cauzele, propagarea şi efectele crizelor într-o lume din ce în ce mai globalizată"*, http://www.sferapoliticii.ro/sfera/148/art02-paun.html

Rabah, A., Candelon B.,, Amadou, Sy (2010), *"Sovereign Ratings News and Financial Markets Spillovers: Evidence from the European Debt Crisis", Working Paper,* October

http://epp.eurostat.ec.europa.eu

http://www.bnr.ro

http://www.ecb.int/ecb/orga/tasks/html/financial-stability.ro.html

http://www.mifn-sdu2010.com/doc/arezkicandelonsy%5B1%5D.pdf

Appendix

Table 1

The evolution of long-term bond yields in the PIIGS (2006-2012)[1]

	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
Portugal	3.61	4.07	4.04	3.94	4.16	4.49	4.60	4.45	4.31	4.69	4.77	4.30	4.51	4.44	4.05	3.85	4.35	5.11	5.63	6.50	7.36	9.9	11.5	12.2	13.2	11.4	9.67	7.91
Ireland	3.48	3.95	3.88	3.75	4.03	4.38	4.44	4.38	4.21	4.64	4.69	4.56	5.54	5.45	5.09	4.82	4.70	4.98	5.59	7.70	9.17	10.6	10.2	8.44	7.21	7.03	5.77	4.68
Italy	3.72	4.27	4.17	4.03	4.24	4.54	4.64	4.53	4.38	4.78	4.90	4.66	4.54	4.46	4.19	4.06	4.02	4.03	3.90	4.19	4.78	4.81	5.49	6.61	5.71	5.79	5.69	4.78
Greece	3.77	4.28	4.19	4.03	4.26	4.57	4.66	4.51	4.39	4.82	4.97	5.03	5.72	5.35	4.66	4.97	6.24	8.30	10.79	11.03	11.9	15.5	16.6	19	24.7	25.4	23.7	16.2
Spain	3.49	3.97	3.89	3.79	4.06	4.39	4.45	4.33	4.15	4.51	4.64	4.16	4.15	4.11	3.87	3.79	3.93	4.18	4.19	4.70	5.3	5.38	5.43	5.66	5.23	6.17	6.43	5.56
Euro Area	3.54	4.02	3.95	3.83	4.08	4.41	4.46	4.34	4.13	4.50	4.56	4.05	3.89	3.96	3.77	3.65	3.69	3.60	3.44	3.74	4.32	4.51	4.3	4.53	4.39	4.27	3.99	3.41
European Union	3.72	4.18	4.16	4.04	4.34	4.65	4.70	4.55	4.36	4.73	4.77	4.31	4.12	4.26	4.15	3.97	4.03	3.83	3.59	3.85	4.38	4.45	4.14	4.25	4.12	3.97	3.66	3.2

Source: http://epp.eurostat.ec.europa.eu

[1] Data source for Figure 1. from page 1.

Table 2

Evolution of the budget deficit in 2006-2011 (% in GDP)[2]

Period State	2006	2007	2008	2009	2010	2011
Portugal	-4.6	-3.1	-3.6	-10.2	-9.8	-4.4
Ireland	2.9	0.1	-7.4	-13.9	-30.9	-13.4
Italy	-3.4	-1.6	-2.7	-5.4	-4.5	-3.9
Greece	-5.7	-6.5	-9.8	-15.6	-10.7	-9.4
Spain	2.4	1.9	-4.5	-11.2	-9.7	-9.4
Euro Area	-1.3	-0.7	-2.1	-6.3	-6.2	-4.1
European Union	-1.5	-0.9	-2.4	-6.9	-6.5	-4.4

Source: http://epp.eurostat.ec.europa.eu

Table 3

The evolution of public debt (% in GDP) 2006-2011[3]

Period State	2006	2007	2008	2009	2010	2011
Portugal	69.4	68.4	71.7	83.2	93.5	108.1
Ireland	24.6	25.1	44.5	64.9	92.2	106.4
Italy	106.3	103.3	106.1	116.4	119.2	120.7
Greece	106.1	107.4	112.9	129.7	148.3	170.6
Spain	39.7	36.3	40.2	53.9	61.5	69.3
Euro Area	68.6	66.4	70.2	80.0	85.4	87.3
European Union	61.6	59.0	62.2	74.6	80.0	82.5

Table 4

Euro area states' contribution to financial crisis propagation (%)

		Contribution from									
		Germany	France	Italy	Spain	Nether-lands	Belgium	Austria	Greece	Ireland	Portu-gal
Contribution to	Germany	-	12	11.1	13.4	4.8	7.4	6.9	19.8	6.2	18.3
	France	5.6	-	13.4	14.8	6	8.1	7.7	18.2	8	18.3
	Italy	4	10.4	-	16.4	3.3	6.8	7.2	24.2	7.2	20.5
	Spain	4.3	10.2	14.4	-	3.3	7	7.4	23.9	8.4	21.1
	Netherlands	4.5	13.2	10.2	12.2	-	8	5.3	22.1	3.3	21.2
	Belgium	4.3	10.3	10.9	12.9	4.6	-	7.6	22.6	8.1	18.8
	Austria	3.8	8.7	10.8	12.5	3	7	-	26.5	6	21.8
	Greece	4.1	7.5	14.2	15.7	4.2	7.8	10.5	-	15.7	20.3
	Ireland	3.1	7.7	9.9	12.8	2	6.8	5.9	31.3	-	20.6
	Portugal	4.2	8.5	13.7	15.7	4.6	7.4	10	23.6	12.3	-
	Total	3.7	8.3	**11**	**12.7**	3.4	6.5	7	**21.4**	8.1	**18**

Source: *IMF-b, Global Financial Stability Report, " Meeting New Challenges to Stability and Building a Safer System"*, april 2010 http://www.imf.org/external/pubs/ft/gfsr/2010/01/pdf/text.pdf

---

[2] Data source for Figure 2. from page 2
[3] Data source for Figure 3. from page 3

Banks' exposures to sovereign debt of the PIIGS (million euro)[4]

Exposure State	The exposure to sovereign debt of Greece
Greece	56,148
Germany	18,718
France	11,624

Exposure State	The exposure to sovereign debt of Spain
Spain	203,310
Germany	31,854
France	6,592

Exposure State	The exposure to sovereign debt of Portugal
Portugal	13,707
Germany	10,888
Spain	6,807

Exposure State	The exposure to sovereign debt of Ireland
Germany	12,922
United Kingdom	5,580
Ireland	5,322

Exposure State	The exposure to sovereign debt of Italy
Italy	144,856
Germany	72,717
France	48,185

Source: Adrian Blundell-Wignall and Patrick Slovik, "The EU Stress Test and Sovereign Debt Exposures", August 2010, p. 8

---

[4] Data source for Figure 5. from p. 5.