The twin moral hazard
and the role played by derivatives

Rainer Masera[1] **Giancarlo Mazzoni**[2] **Chiara Oldani**[3]

[1] Professor of Political Economy, Guglielmo Marconi University (Rome) and Member of the de Larosière Group; e-mail: r.masera@unimarconi.it.
[2] USI (Swiss Finance Institute); e-mail: giancarlo.mazzoni@usi.ch
[3] Researcher of Economics, University of Viterbo "La Tuscia" and Director of Research of Assonebb; e-mail: coldani@unitus.it
The Authors accept joint responsibility for the paper. The first part is the responsibility of R. Masera, while part 2 is the responsibility of C. Oldani. Mazzoni is responsible for the Appendix.

SUMMARY

INTRODUCTION

INTRODUCTION

The path between financial meltdown and moral hazard in banking is, at best, narrow and impervious. During the financial crisis, public support became the standard response to save the banks in difficulty, heightening and broadening the moral hazard issue: subordinated/senior debt holders and large depositors were bailed out and equity holders were partially sheltered. The implicit promise to bail-out European governments in difficulty has encouraged SIFIs and other financial operators to speculate on the yield differential between sovereigns and the ECB money market rates.

In Europe, the intertwining of sovereign and bank debt became a major feature of the economic scenario, with a double moral hazard emerging with continuing perverse action by relevant economic agents: bank managers and creditors, public debt owners, possibly governments themselves.

Taxpayers of relevant countries became the unwilling insurers for banks and government liabilities in Greece, Ireland and Portugal. The ECB became the willing additional insurer of both banks and governments in danger, through (i) repurchase operations with banks with sovereign debt as collateral, (ii) direct purchases of public debt in the secondary market, (iii) money creation by GIPS Central Banks through the workings of Target-2 accounts (the real-time gross settlement system operated by the Eurosystem).

INTRODUCTION

The relevant growth and spread of credit derivatives and many other OTC contracts trading contributed to fuel the systemic risks in the absence of an effective compensation system (e.g. the centralized counterparty systems (CCPs)), and monitoring.

Current difficulties in the global financial system are the result of not taken swift action on the fronts of control, regulation and monitoring of deregulated markets and operators; these difficulties, especially with respect to financial derivatives, have been largely recognised by a part of the literature (Oldani, 2008; Oldani and Savona, 2009) and from an institutional point of view (de Larosière Report, 2009; the Group of 30 and of 20, 2009).

The rescue of Bear Sterns in March 2008, the default of Lehman Brothers on 15 September 2008 and the bailout of AIG the following day underlined the shortcomings in the OTC derivatives market, where 80% of derivatives are traded.

Policy suggestions are offered to reduce risk and moral hazard, in particular with respect to Credit Default Swaps (CDS) that represent a dangerous threat to financial stability. The new regulatory system (e.g. Basle III, Dodd-Frank act) should explicitly address the issue of credit derivatives to finally take out moral hazard from the banking system and let financial markets conquer new confidence.

INTRODUCTION

In the first part of the paper, we describe the main drivers of the Eurozone crisis and its double moral hazard between banks and sovereigns.

We argue that the current Eurozone sovereign debt policy is ultimately doomed, unless the necessary structural adjustments of public finances are framed in a dynamic context of a sustainable relationship between interest and growth rates.

Furthermore we argue that Eurozone banks cannot be stabilized by relying primarily on further capital injections. We renew our proposal for a resolution fund approach pre-funded by a system of ex-ante risk sensitive fees paid by the industry (Masera, Mazzoni, 2010). This approach would have the benefit of reducing moral hazard by segregating all the funds raised ex-ante in a vehicle which is not correlated with bank's assets and default risk.

In the second part of the paper the lack of effective control and monitoring of financial derivatives will be described and analyzed. The need for centralized counterparty systems (CCPs) will be invoked to correct shortcomings of the OTC market. Policy suggestions along these lines are offered to reduce risk and moral hazard.

INTRODUCTION

A simplified framework to model the moral hazard of SIFIs and sovereigns is presented in the Appendix. The analysis is based on the theory and practice of modern contingent claims approach (CCA). The economic balance sheets for inter-linked sectors are derived to analyze the main implications of the vicious circle between banks and sovereigns in Europe.

PART I

EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

by Rainer Masera

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.1. Que sais-je? (what do I know?): how to resolve the European crisis

I.1.1. Trichet's approach

This famous aphorism by Michel de Montaigne was the starting point of J.C. Trichet's lesson (5th September, Paris) on how to overcome the current Eurozone crisis.

He calls for a rigorous framework to oversee Eurozone budgets and an immediate respect of national targets of budget balance.

He acknowledges the need for growth, but he concentrates (27th August, Jackson Hole) on the "first and overwhelming priority of structural reforms", to be accompanied by continued attention to macroeconomic imbalances.

He reiterates that the Stability and Growth Pact is indispensable, but seems to believe that growth will automatically follow from a rapid move to balanced budgets and from immediate adoption of structural reforms.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.1.2. The conventional wisdom: truth or trap?

The orthodox views by the Chairman of the ECB represent the conventional wisdom. Should we probe its validity, following Montaigne's approach?

– There can be no question on the need to restore sustainable public finances in the Eurozone (and elsewhere, notably in the United States).

– The question is: can mistakes of the past be corrected in the very short run through expenditure cuts, tax increases and structural reforms?

– The fallacy of composition may be at work: the attempt to increase government (and country) savings in the short run may result in a depression of economic activity, with less saving and less income. Hence higher debt/income ratios.

– Additionally, structural reforms (notably employment deregulation; more competition in the single market, especially in the area of services; adjustments in pension systems...) may imply short term adjustment costs.

– Sustainable public finances require an appropriate balance between interest rates on government debt and growth rate of national income. If recessionary forces and debt fears set in, the short-term balance tilts towards unsustainable solutions, with a perverse impact on agents' behaviour and expectations.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.2. The Eurozone crisis: economic growth and debt sustainability

Behind the idea that the Eurozone crisis may be solved by imposing restrictive fiscal policies there is a policy model based on the assumptions of: a) flexible wages/prices, b) efficient financial market, and c) rational expectations/behaviour. In this framework market failure is not allowed, and an inherent tendency to full employment is explicitly assumed (see Chart 1).

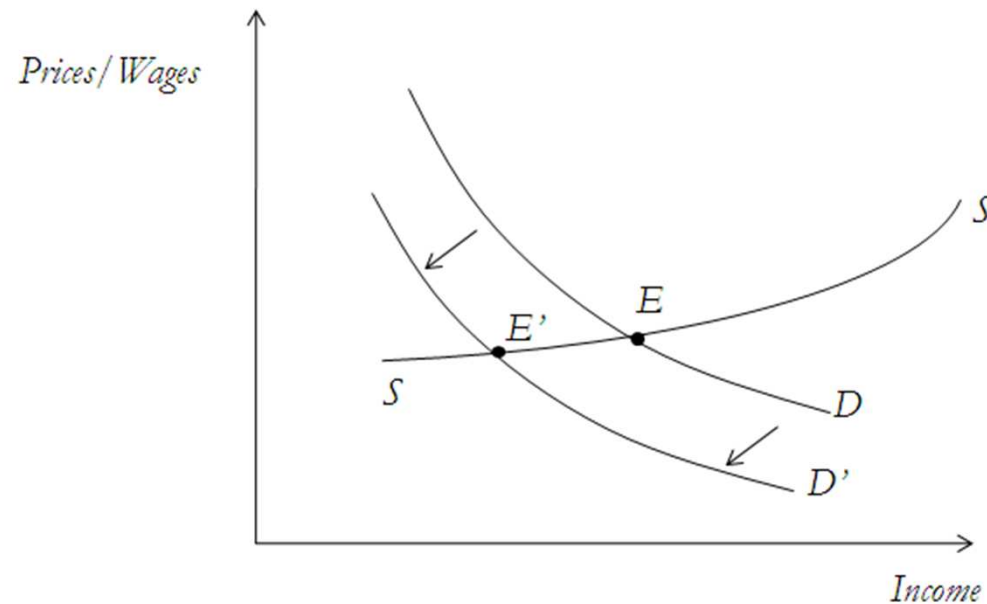**Chart 1 – Eurozone: the implicit current policy model (Model 1)**
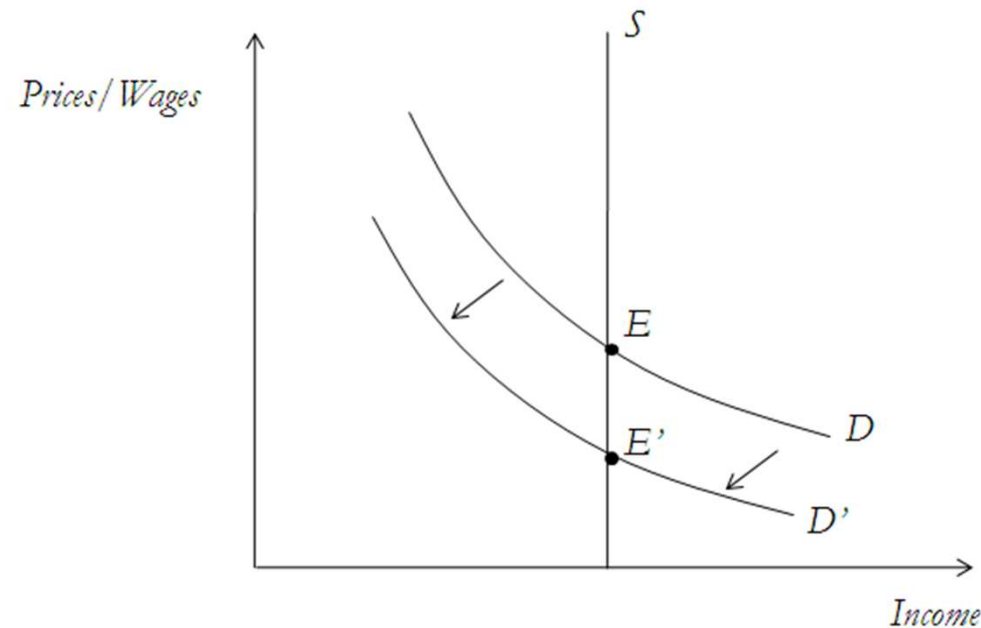
PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.2. The Eurozone crisis: economic growth and debt sustainability

During the current crisis we have understood that some of these hypothesis are flawed. In fact, a market failure is possible in a framework characterized by: a) rigidities in the price/wage system, b) financial markets not perfectly efficient, and c) no rational expectations/behaviours (see Chart 2).

Chart 2 – The fallacy of composition paradigm (Model 2)

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.2. The Eurozone crisis: economic growth and debt sustainability

There is a fallacy in assuming that what holds for each individual also holds for the sum of all individuals. Attempt by every economic agent to increase saving may result in less saving by the economy as a whole, as a result of less consumption, less investment, less output and employment.

Traditionally the sustainability of public debt for a country which cannot monetize its debt is represented by the following condition (in the second part of the paper a stochastic version of this equation, explicitly considering sovereign default risk, is presented):

$$\frac{PB}{Y} \geq \frac{i-g}{1+g} \times \frac{D}{Y}$$

where i is the average nominal rate of interest on debt, and g is the nominal rate of growth of the economy. For governments with high D/Y, swings in market confidence may be of crucial importance. More generally, there is a high exposure to rising interest rates and falling GDP.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.2. The Eurozone crisis: economic growth and debt sustainability

In the conventional model expenditure cuts, tax increases and structural reforms make adjustment possible, determining higher primary balance, lower i and same g.

However, when we introduce rigidities in the market and no completer rational expectations, a policy characterized by expenditure cuts, tax increases and structural reforms may result ineffective, fundamentally because g is 0 or becomes negative, hence it becomes more difficult to improve the primary balance and to restore market confidence.

Therefore, in this framework the time horizon of adjustment measures becomes crucial to ensure the feasibility of fiscal rehabilitation.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.3. The twin moral hazards in Europe

In the scenario of Model 2, the support provided by ECB to countries, and banks, in difficulty may backfire. The ECB became, over the last two years, the insurer of both banks and governments in danger, by providing support in three reinforcing ways.

Repurchase operations with banks traditionally play a key role in money creation of the ECB; support was provided by accepting sovereign debt as collateral for fresh finance. However, this made it possible – and indeed high profitable – for banks to borrow from the ECB at its base rate, while obtaining the nominal return on public debt (LTRO – *Long Term Refinancing Operations*). Large banks were also selling protection against sovereign defaults through CDS, adding to their profits and to the moral hazard.

A second mechanism consisted of direct purchases by the ECB of public debt in the secondary market (SMP – *Securities Market Programme*). This was regarded by many (notably, by the President of Germany Christian Wulff[1]) as against the EU Treaty establishing the European Central Bank.

Finally, and more important from a quantitative point of view, the ECB permitted money creation by GIPS' Central Banks through the workings of Target-2 accounts (the real-time gross settlement system operated by the Eurosystem).

[1] *"Even a guarantor can behave immorally if he is just putting off inevitable insolvency" (Christian Wulff), 24 August 2011.*

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.3. The twin moral hazards in Europe

This third point is of crucial importance not only because of its quantitative relevance (at the end of 2010 Germany had built up a net creditor position amounting €326 billion), but also from an analytic point of view.

The fundamental characteristic of a unified currency is that monetary transfers take place automatically. No central bank "interference" is possible. The experience of the Eurozone can contradict this basic tenet, since the netting of cross-border payments of individual Eurosystem members is allowed to protract and grow over time (the total is by definition equal to zero and this is the reason why the aggregate and its components are not widely reported in the ECB statistics).

The policy adopted on both sides of the Atlantic in the aftermath of Lehman (2008) implied widespread bailouts of banks. This prevented a financial meltdown, but exacerbated moral hazard: bank creditors, notably bondholders and large depositors, and to some extent equity holders were sheltered from the consequences of their mistakes. The average taxpayer had to pay the bill, with large negative impacts on deficits and debts. As we see now, bank welfare comes at the cost of social welfare.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.3. The twin moral hazards in Europe

In the US, the Dodd-Frank Act was based on the need to ensure that bank bailouts with public money would no longer be accepted.

In Europe, the intertwining of sovereign and bank debt became a major feature of the economic scenario. As indicated, a double moral hazard emerged, with continuing perverse action by relevant economic agents: bank managers and creditors, public debt owners, possibly governments themselves.

Taxpayers of relevant countries became the unwilling insurers for banks and government liabilities in Greece, Ireland and Portugal. As explained, the ECB became the willing additional insurer of both banks and governments in danger.

The European Financial Stability Fund was created to support governments, but was also instrumental in avoiding bailouts of banks, notably in Greece and Ireland, outside a Resolution framework, and therefore increased the moral hazard in the system.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.4. Greece: inconsistent policies and contagion

Events in Greece were idiosyncratic in nature. The lack of a determined/credible/policy response to the Greek crisis transformed them into systematic risk, with a contagion effect. The contradictions, quarrels and inconsistencies in the policies adopted to address the Greek case have undermined policy makers' credibility and market confidence, with a very dangerous contagion effect (see Chart 3).

Chart 3 – 10 year spread bonds vs. Bund
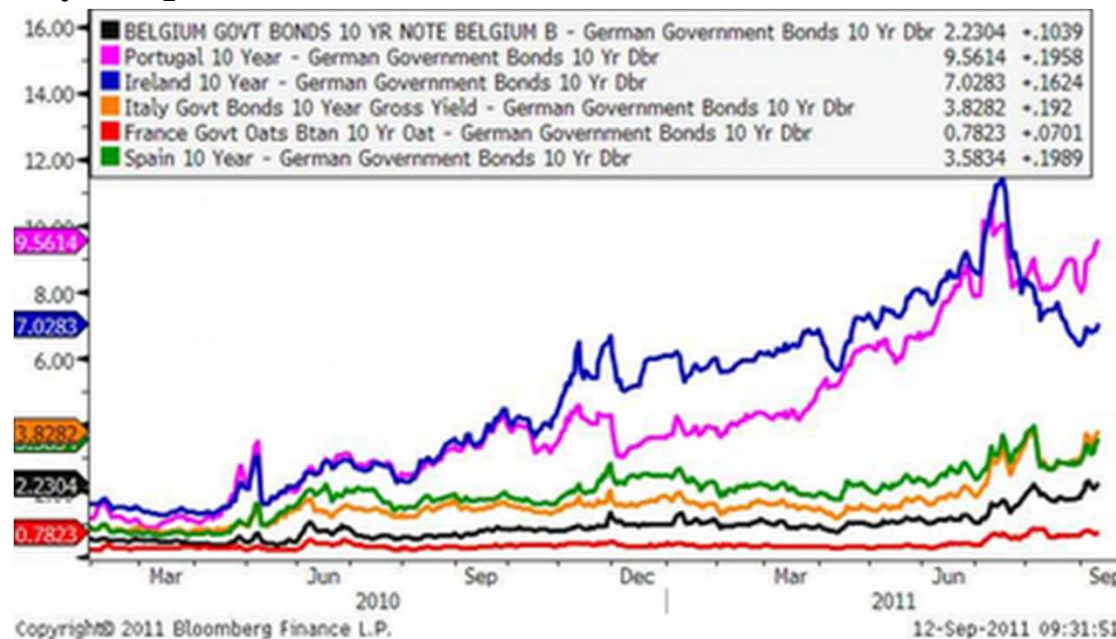
PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.4. Greece: inconsistent policies and contagion

The original sin: no response to the problem of a resolution approach to large banks, a partial, incomplete and insufficient response to country risk through the EFSF.

The sequel of mistakes comprises the current decision to resort to "voluntary" restructuring of Greek debt, on a going concern basis, in private banks, without having set up a credible commitment to official support measures and a workable structural adjustment of public finances: Greece has asked banks and other investors to swap at least 90 per cent of their holdings for new bonds, that would be worth less, but carry European guarantees.

This created a huge credibility gap, after the statement made by EU leaders participating in the Seoul G20 Summit on November 12th 2010, which had ruled out any private sector involvement until mid – 2013.

"Whatever the debate within the euro area about the future permanent resolution mechanism and the potential private sector involvement in that mechanism, we are clear that this does not apply to any outstanding debt and programme under current instruments. Any new mechanism would only come into effect after mid- 2013 with no impact whatsoever on the current arrangements".

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.4. Greece: inconsistent policies and contagion

In the first half of this year, the German and other finance ministers declared that corporate bondholders would have to extend the terms of their loans, after German Parliament approved a non-binding resolution supporting extra emergency loans, but only a condition that bondholders be made to share the burden.

Juncker, head of the Eurozone finance ministers, backed (June 2011) Germany proposal for a self structuring of Greece's debt, based on a voluntary contributions from private sector creditors.

The Commission and the EFSF accepted the private involvement. But the stand off between governments and the ECB intensified and causes further unrest in the debt markets.

The ECB and, notably Chairman Trichet, repeatedly rejected as unwise and dangerous any suggestion of a restructuring of Greek debt.

Juncker and Tremonti indicated that Eurobonds would be the appropriate response to the sovereign debt crisis. But Merkel and Sarkozy rejected as unwise and inappropriate this scheme.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.4. Greece: inconsistent policies and contagion

Trichet supported this view against the Eurobonds, apparently without realising that this ultimately undermines the support measures of the ECB.

In sum, policy credibility, trust in a truly unified policy response and market confidence evaporated: the risk of hard default (as opposed to soft restructuring) of Greece within one year is now high, as Greek GDP is expected to contract sharply.

No surprise that the contagion extended.

The fundamental issue to overcome moral hazard rests with the answer to the question of who has to bear the burden of banks' and governments' difficulties: banks and government creditors or the average taxpayer, and more specifically the taxpayer of creditor countries?

In other words, the external diseconomies of SIFIs' and governments' hard defaults may justify "social" support, which inevitably entails growing moral hazards. But alternative options are available, if action is taken rapidly on a going-concern basis. This why a broad Resolution framework is necessary.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.4. Greece: inconsistent policies and contagion

In the Eurozone, the issue is especially difficult, because the Treaty and the ECB were built on the principle that there would not be any bailout, and fiscal policy does not have a federal point of reference. The question, therefore, becomes whether current difficulties will help overcome the asymmetries between fiscal and monetary policies (with a surrendering of national independence in fiscal policy) or will eventually bring down the Euro itself.

Sovereign countries with no monetary sovereignty are prone to market attacks.

The policy of muddling through followed so far cannot be expected to continue in a recessionary environment.

The rigid fiscal adjustment measures, to be enacted immediately, may defeat themselves by bringing forth a decline in economic activity in deficit countries and hence ultimately a perverse rise in debt to income ratios, accompanied by high/growing unemployment, and more disparities in the Eurozone itself. On the other hand, the average citizen in creditor countries may find it increasingly difficult to accept bailout policies.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.5. Basel capital rules and their likely perverse effect

Bank capital rules (Basel 3): another instance of fallacy of composition?

Lagarde and the IMF call new capital injections for EC banks: "urgent and substantial recapitalization" (€200-€300 billion, see IMF Global Financial Stability Report, September 2011).

Admittedly, risk of deleveraging through asset sales is high (e.g. Socgen and BNP Paribas). But, in aggregate terms, are the capital markets able to provide substantial new funds?

If not, public funds would become necessary. But most government are unable to take extra burdens, which may produce a second round feedback effect on bank's solvency/stability, thereby exacerbating sovereign risk: the financial sector (banks and insurance companies) own much of the public debt in Europe.

Would the EFSF be able to provide enough money to banks and/or sovereigns in trouble? Probably not. The lending capacity of the EFSF (and therefore its effective role as lender of last resort) could be seriously jeopardized by its pre-condition to guarantee the AAA rating on its funding. The EFSF is necessarily a de-leveraged institution (only a fraction of its funding can be used for lending policies). The Eurozone requires a lender of last resort. The ECB is the only institution which can fulfill this role, but it lacks Treaty authority.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.5. Basel capital rules and their likely perverse effect

The advantages of a resolution fund approach pre-funded by a system of ex-ante risk sensitive fees paid by the industry (Masera, Mazzoni, 2010): reduction of the moral hazard, segregation of the funds raised ex-ante in a vehicle not correlated with banks' assets and default risk.
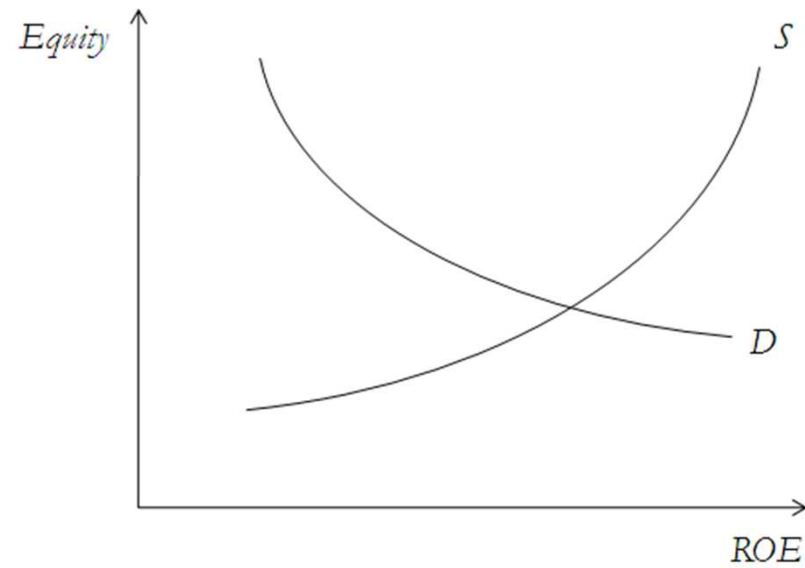
I.5.1. Bank capital conventional model

Demand

Equilibrium can always be achieved in a conventional model of bank capital. Banks' management faces a trade-off between ROE and Equity demanded.

For a given level of RWA, banks' management will decide its optional demand of capital by maximizing its value function. A trade-off problem must be solved: risk-adjusted returns will be maximized. Higher levels of equity decrease non risk-adjusted returns ROE (see Chart 4). At the same time, higher levels of equity reduce the probability of default (and therefore banks' risk). The final effect in terms of risk-adjusted returns depends on the elasticities to equity of both ROE and PD.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.5.1. Bank capital conventional model

Chart 4 – Bank capital: conventional model (Model 1)

Assumption : given RWA

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.5.1. Bank capital conventional model

Supply

Supply of equity is positively correlated to returns.

For a given level of RWA, higher levels of ROE increase the supply of equity (see Chart 4). This is true if the increase of ROE is mainly determined by an increase of the profitability of the bank and not only by a reduction of the equity. In the latter case, the positive effect on ROE will be more than offset by an increase of the PD and therefore by a reduction of risk-adjusted returns, which will reduce the supply of equity.

I.5.2. Bank capital: fallacy of composition

Market supply of equity is constrained, especially during a financial crisis. Market price of risk increases (investors' risk appetite reduces). The supply curve for equity downward shifts and flattens (i.e. for a given level of ROE, investors will offer less capital than before because of their increased reluctance towards risk).
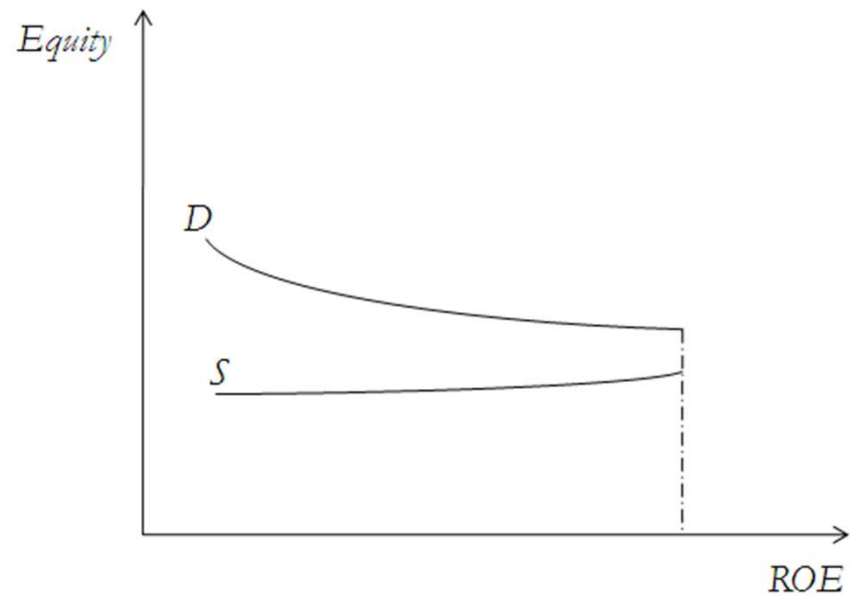
Higher capital requirements imposed by regulators determine an exogenous floor on equity demanded by banks. This floor produces an upward shift of demand (for a given level of ROE, stringent capital requirements impose an extra-burden in terms of capital which is not optimal on a risk-adjusted basis).

The consequence is the market failure (see Chart 5).

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.5.2. Bank capital: fallacy of composition

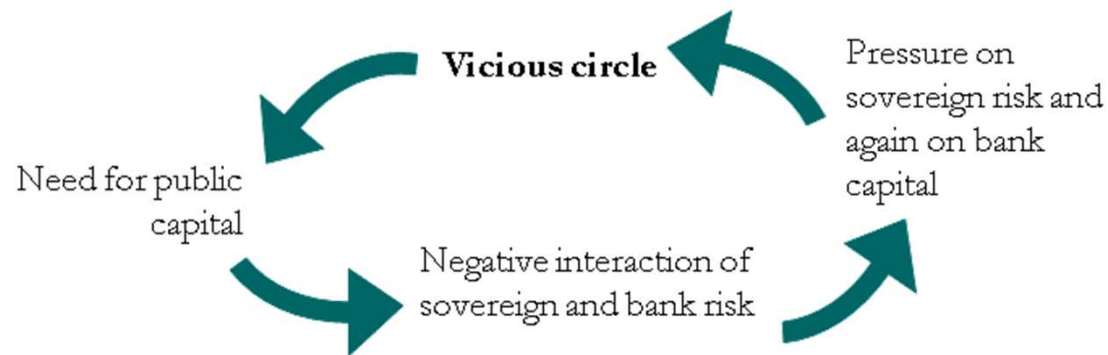### Chart 5 – Market supply of equity is constrained (Model 2)

Assumption : given RWA

I.5.2. Bank capital: fallacy of composition

In this framework, banks attempt to de-lever their balance sheets from the assets side, determining a credit contraction. Attempt to recapitalise through less credit and retained earnings produce, at the aggregate level, less credit, less growth (or recession), and, at the end, a need of more capital, because of the increased credit risk in the economy (see Chart 6).

Chart 6 – The vicious circle in Europe

Vicious circle

Pressure on sovereign risk and again on bank capital

Need for public capital

Negative interaction of sovereign and bank risk

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.6. M&M proposal for a Special Resolution Fund (SRF) for SIFIs

Masera and Mazzoni (M&M) propose the institution of a Special Resolution Fund (SRF) to cope with the problem of systemic risk generated by Systemically Important Financial Institutions (SIFIs).

I.6.1. Risk sensitive fees

The SRF would be funded through a system of risk-sensitive fees paid by SIFIs. The amount of fees paid by each institution (for example on a yearly basis) would be a positive function of its:

– marginal contribution to systemic risk (measured, for example, in terms of its CoVaR);

– Probability of Default (PD).

The calibration of these risk-sensitive fees would be decided in a coordinated way by the microsupervisors and the macrosupervisors.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.6.2. An incentive-based framework to reduce SIFIs' risk appetite and increase financial stability

An incentive-based system imposing risk-sensitive fees, that penalizes SIFIs with high contribution to systemic risk and high idiosyncratic PD, would represent a clear disincentives to excessive complexity and risk appetite of these intermediaries.

On the other hand, the introduction of a flat fee/levy on SIFIs would not introduce any sort of incentive to reduce SIFIs' attitude towards risk and it could penalize/discriminate less risky SIFIs, by imposing on them the same cost paid by riskier players.

The risk–sensitive fees would be known by the market and would therefore represent an early signal of excessive risk taking.

The proposed incentive-based system would reduce contagious knock-on and/or feedback effects, by increasing financial stability.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.6.3. Risk related fees, taxes and taxpayers' money

The introduction of a SRF completely financed through a system of private-risk-based fees would be gradually put in place, and, over time, it should accumulate a relevant amount of resources paid by the financial industry to be used to cope with the systemic risk generated by SIFIs, without burdens on tax-payer money.

The system envisaged here may be depicted as a tax on financial intermediaries. But, contrary to certain official proposes, the resources collected would not enter the ordinary taxation channels and would not be related to the net results of financial institutions. Instead the fees would be ring-fenced and earmarked to provide a cushion to cover the costs of losses connected to early interventions and out right failure of a SIFI.. In terms of public accounts they would represent a transparent counterpart funding of government liabilities.

PART I - EUROZONE: MORAL HAZARDS AND FALLACIES OF COMPOSITIONS

I.6.4. Governance of the SRF, supervision and early intervention powers

The fund would be owned and run by governments and/or central banks and would obviously be accountable to Governments/Parliaments.

The fund should be responsible for supervision, or, at least, it should work in close cooperation with supervisors responsible for micro and macro supervisions on SIFIs.

In our view, the fund should be accompanied by legislative changes which would allow it to intervene, before the default itself.

The fund would be given ample powers for early interventions, such as removing bank management, adopting ad hoc measures for risk mitigation and for capital enhancement, such as mandatory conversion of bonds into capital, to minimize losses and costs of a potential crisis.

The fund would supervise the process of sovereign default (SCDS) protection by banks, which exacerbates moral hazard issues.

I.6.5. The overall proposed system

After the introduction of this SRF the system for banks would therefore be based on accumulated reserves of two separate funds, to insure appropriate resources and the credibility of the overall resolution structure.

The first fund would be modelled on the basis of the Federal DIF in the United States, and would cover all deposit taking institutions, including SIFIs in respect of their deposit liabilities. The second fund would apply only to SIFIs.

I.6.6. Our proposal and SIFIs moral hazard

Moral hazard is implicit in the very existence of financial institutions deemed "too big to fail" by bank managers, shareholders, bondholders and large depositors, on the one hand, and governments, supervisors, central banks, on the other hand: therefore it can never be completely eliminated.

However, we believe that our proposal can reduce moral hazard: a SIFI could well be allowed to fail. In our framework the fund would act as a sort of ultimate buyer of troubled banks' assets, and should therefore be able to counter negative systemic spillovers.

PART II

DERIVATIVES AND MORAL HAZARDS

by Chiara Oldani

PART II - DERIVATIVES AND MORAL HAZARDS

II.1. The CDS Issue

The relevant growth and spread of credit derivatives contributed to fuel the systemic risks in the absence of :
– an effective compensation system (e.g. the centralized counterparty systems (CCPs)), and
– monitoring.

The new regulatory system should take out moral hazard from the banking system and let financial markets conquer new confidence.

II.2. The CDS market

Similarly to other derivatives, CDS should improve the pricing mechanism of the underlying, reduce noise and the bid-ask spread. Investigations are rare, due to scarcity of data; results are often not robust (e.g. Ericsson, 2009).

Soaring deficit and debt in Europe and US reflected in the spread of bonds; however, the freedom still left to OTC contracts fuels excess volatility and contributes to misprice contracts, with uncertain drawback effects on the underlying.

PART II - DERIVATIVES AND MORAL HAZARDS

Chart 7 – Spreads of weak European countries' bonds.
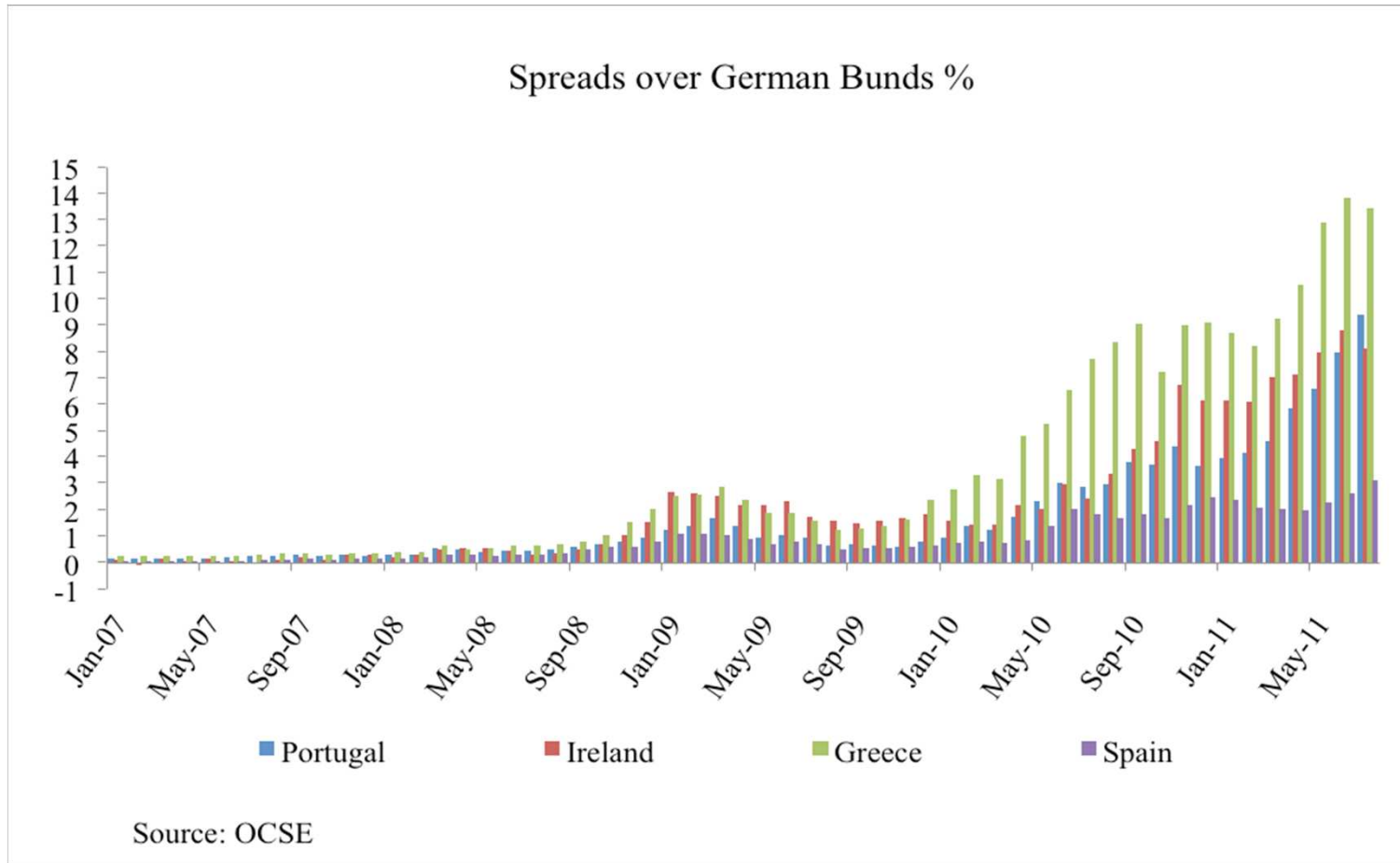
PART II - DERIVATIVES AND MORAL HAZARDS

II.3. CDS on Sovereign Bonds

CDS price the risk of bonds, but there are evidences of missing pricing efficiency:

– market segmentation,

– excess supply of money,

– un-perfect credit assessment that reduce the efficiency of the pricing mechanism.

II.4. Weaknesses of CDS

In order to restore market confidence prompt action is required in the CDS market with respect to:
1. the difficulty in clearing and management,
2. the liquidity,
3. the evaluation of the assets underlying the contract.

PART II - DERIVATIVES AND MORAL HAZARDS

II.5. Difficulty in clearing and management

Shadab (2009): CDS are superior to securitization in transferring risks and the crisis was due to their concentration outside the regulated financial system, under no compensation system.

➢ Introduce the centralized clearing counterparty system CCCP (i.e. electronic trading platforms) to promote efficiency. Still, bilateral contracts survive.

II.6. Liquidity

Liquidity substitution.
Liquidity creation (undisclosed counterparty information).

PART II - DERIVATIVES AND MORAL HAZARDS

II.7. Evaluation of the CDS underlying asset

Contracts can be mispriced because of:

– regulatory mistakes (e.g. rating agencies),

– the value of the underlying assets is not univocally defined (i.e. multiple equilibrium).

II.8. CDS: need swift action

The relevant exposure of European banks toward the default risk of Greece(roughly US$210 billion as of Sept. 2010) supports the need for hedging tools, such as CDS; the external debt of Greece reached US$ 615 billion in 2011Q1.

CDS on sovereign bonds represents a small dangerous threat to financial stability because of:

– the opacity,

– the absence of a compensation system,

– the liquidity that is not distributed uniformly,

– the mis-pricing due to market segmentation, excess money supply and ineffective credit assessment.

CONCLUSIONS

CONCLUSIONS

Fiscal sustainability and monetary stability are fundamental goals of economic policies in the Eurozone.

However, the objective of a structurally balanced budget should allow for golden rule considerations (accompanied by very strict EIB-monitored public investment eligibility).

This should be the second leg of the Stability and Growth Pact.

Expenditures in technology, education and training, R&D, energy, environment, core transport networks should be actively fostered, to raise production and productivity in the EU.

The expenditures should be planned in terms of co-financing, given the strong externalities. The projected amounts, indicated by Euro-Council and the Commission, amount between € 3-4 trillion in Europe over the next decade: the role of the EIB and Euro-project bonds.

Fiscal consolidation for countries with low growth rates should be realized over a 3-5 year time horizon, with corresponding adjustments in the workings of the EFSF, to be transformed into a permanent Mechanism/Fund.

CONCLUSIONS

Time horizon for fiscal consolidation should also be different for crisis and non crisis countries. If the latter take simultaneously austerity measures, by exacerbating spending cuts and tax increases, for the EC as a whole growth will be lower, undermining, in this way, the path to fiscal consolidation.

As to sovereign and bank moral hazard, the European policies should set up a credible plan to stop taxpayers' commitments, and a rigorous approach to containing moral hazard, as was done in the US with the Dodd-Frank Act.

No commitment to support EC banks through public capital outside a well structured Resolution framework.

Continued liquidity support by the ECB (possibly through the EFSF), to help buy the necessary time for fiscal adjustment, and to avoid the interest rate/growth rate insolvency trap.

APPENDIX

by Giancarlo Mazzoni

APPENDIX

The aim of this appendix is to derive a simplified framework to model the moral hazard: SIFIs' moral hazard and sovereigns' moral hazard.

The model presented here is a simplified version of Mazzoni (2011) and is based on the theory and practice of modern contingent claims analysis (CCA).

This framework provides economic balance sheets for inter-linked sectors and a risk accounting framework for an economy, therefore it represents the natural tool to model the main implications of the vicious circle between banks and sovereigns in Europe.

A stochastic model for banks and sovereigns' assets, and their respective optimal liquidation policies, is introduced

The implications in terms of SIFIs and Sovereigns' attitude towards risk (and consequently their moral hazard) are analyzed.

APPENDIX

A.1. The model for a SIFI

Assume that a SIFI produces a payout flow, under the risk neutral measure Q, that is specified by the following stochastic process

$$\frac{d\delta}{\delta} = \mu \ dt + \sigma \ dz^Q$$

Therefore, the values of the claims to the entire payout flow (i.e. SIFI's assets value) is

$$A = E^Q\left[\int_0^\infty \delta e^{-rt} dt\right] = \frac{\delta}{r-\mu}$$

APPENDIX

A.1. The model for a SIFI

Since r and μ are constants, we can write the stochastic process for the market value of SIFI's asset as:

$$\frac{dA}{A} = \mu \, dt + \sigma \, dz^Q$$

In this framework VaR can easily obtained

$$VaR(A, q, T) = A\left[1 - \exp\left(\left(\mu - \frac{1}{2}\sigma^2\right)T + N^{-1}(q)\sigma\sqrt{T}\right)\right]$$

Capital requirements may be defined as

$$CR = Am\left[1 - \exp\left(\left(\mu - \frac{1}{2}\sigma^2\right)T + N^{-1}(q)\sigma\sqrt{T}\right)\right] = Ac$$

APPENDIX

A.1. The model for a SIFI

A SIFI may finance its assets with capital (K) and demand deposits, D (on aggregate basis modeled as perpetuities paying risk-free rate r which does not consider explicitly the embedded option):

$$K(c) = CR = Ac$$

$$D(c) = A[1-c]$$

Obviously these are the book value of SIFI's liabilities. Management maximizes market values of equity, E.

In this framework any generic claim, F (liability), paying continuously a generic payoff P must satisfy the following Partial Differential Equation (PDE):

$$\mu A \frac{\partial F}{\partial A} + \frac{1}{2} A^2 \sigma^2 \frac{\partial^2 F}{\partial A^2} + \frac{\partial F}{\partial t} - rF + P = 0$$

APPENDIX

A.1. The model for a SIFI

The assumption that a bank finances its investments (with equity and debt) with perpetual claims implies that:

$$\frac{\partial F}{\partial t} = 0$$

We can therefore rewrite PDE as an ODE

$$\mu A \frac{\partial F}{\partial A} + \frac{1}{2} A^2 \sigma^2 \frac{\partial^2 F}{\partial A^2} - rF + P = 0$$

its general solution is:

$$F = aA + bA^{-\gamma}$$

with

$$\gamma = \frac{m + \sqrt{m^2 + 2r\sigma^2}}{\sigma^2}$$

APPENDIX

A.1. The model for a SIFI

By imposing appropriate boundary conditions, liabilities fair prices can be easily obtained. In particular, market value of equity (E) and market value of deposits (B) are respectively:

$$E(c) = A - D(c) + [D(c) - A_d(c)] \left(\frac{A}{A_d(c)} \right)^{-\gamma}$$

$$B(c) = D(c) \left[1 - \left(\frac{A}{A_d(c)} \right)^{-\gamma} \right] + [A_d(c)] \left(\frac{A}{A_d(c)} \right)^{-\gamma}$$

Where $A_d(c)$ is the default trigger endogenously determined.

APPENDIX

A.1. The model for a SIFI

$$pd(c) = \left(\frac{A}{A_d(c)} \right)^{-\gamma}$$

is the Arrow-Debreu price of default.

In theory capital is not expensive (M&M), unless it dilutes value of public guarantee.

APPENDIX

A.2. SIFI's moral hazard

A SIFI exploits the market value of this public guarantee by maximizing its value.

$$Max[E(c) - K(c)] =$$

$$Max[A - D(c) + [D(c) - A_d(c)]\left(\frac{A}{A_d(c)}\right)^{-\gamma} - A - D(c)] =$$

$$Max[D(c) - A_d(c)]\left(\frac{A}{A_d(c)}\right)^{-\gamma} =$$

$$MaxPG(c)$$

SIFI's management can maximize this public guarantee (which is an embedded option) by maximizing the risk (i.e. their moral hazard):

$$\frac{\partial PG(c)}{\sigma} > 0$$

APPENDIX

A.3. A stochastic model for sovereigns

To simplify the analysis suppose that Europe is populated by two country: a core country, C, with a strong public finance position and a peripheral country, P, with a distressed public finance situation.

In these two countries the values of sovereign country's assets are determined by the present value of their future revenues raised from taxing income, assuming a constant tax rate.

Assuming that in each country the price of tradable corporate stocks are the present value of future income, the assets of the sovereign countries can be synthetically replicated by investing in the countries' stock markets.

The assets are then tradable and markets are complete. In this framework the values of sovereign country's assets in C and P are governed, under the risk neutral measure Q, respectively by:

$$\frac{dV_C}{V_C} = rdt + \sigma_C dz_C^Q$$

$$\frac{dV_P}{V_P} = rdt + \sigma_P dz_P^Q$$

APPENDIX

A.3. A stochastic model for sovereigns

Each country finances its assets by issuing perpetuities.

Market values of theses sovereign liabilities can be easily obtained

$$B_C = F_C \left[1 - \lambda_C \left(\frac{V_C}{V_C^*} \right)^{-\frac{2r}{\sigma_C^2}} \right]$$

$$B_P = F_P \left[1 - \lambda_P \left(\frac{V_P}{V_P^*} \right)^{-\frac{2r}{\sigma_P^2}} \right]$$

where λ_C and λ_P are the LGD implicitly priced by the market on sovereign debt issued by C and P, while V_C^* and V_P^* are the default triggers on sovereigns' assets priced by the market.

APPENDIX

A.3. A stochastic model for sovereigns

Therefore, in this framework the Arrow-Debreu price of default (i.e. PDs) on C and P are respectively

$$\left(\frac{V_C}{V_C^*} \right)^{-\frac{2\,r}{\sigma_C^2}}$$

$$\left(\frac{V_P}{V_P^*} \right)^{-\frac{2\,r}{\sigma_P^2}}$$

To keep the analysis as simple as possible suppose that sovereign debt issued by C and P is subscribed by a SIFI of country C, and sovereign debts represent the only asset class in which the bank invests, and it defaults when country P defaults (obviously this hypothesis which simplifies and clarify the analysis here can be easily relaxed without changing the results that will be obtained (Mazzoni 2011)).

APPENDIX

A.3. A stochastic model for sovereigns

In this framework SIFI's assets, A, are:

$$A = B_C + B_P = F_C \left[1 - \lambda_C \left(\frac{V_C}{V_C^*} \right)^{-\frac{2r}{\sigma_C^2}} \right] + F_P \left[1 - \lambda_P \left(\frac{V_P}{V_P^*} \right)^{-\frac{2r}{\sigma_P^2}} \right]$$

As previously explained SIFI may finance its assets with capital and demand deposits, D (on aggregate basis modeled as perpetuities).

Fair price of deposits should be less that par because of the SIFIs' embedded default risk (in this specification of the model intimately related to sovereign risk).

Bank exploits the public guarantee supplied by country C on its deposits, therefore it maximizes its profits by maximizing the value of this option that is

$$H_S = Max \left[\left(D - \left(F_C \left[1 - \lambda_C \left(\frac{V_C}{V_C^*} \right)^{-\frac{2r}{\sigma_C^2}} \right] + F_P [1 - \lambda_P] \right) \right) \left(\frac{V_P}{V_P^*} \right)^{-\frac{2r}{\sigma_P^2}} \right]$$

APPENDIX

A.4. Sovereigns' moral hazard

When country P is distressed and near default country C has two option: i) let country P defaults and save its SIFI, using tax-payers money, with a cost of H or finance country P, avoiding its immediate default.

Obviously the financing guarantee of country C to country P will reduce the LGD priced by the market for country P' debt and, consequently, it will reduce the default probability of the SIFI, by reducing, in this way, the value of the public guarantee supplied to its SIFI.

Country C will prefer to finance country P until the cost of this financing will be more than offset by the reduction of the implicit guarantee supplied to its domestic financial system.

APPENDIX

A.5. Main results and conclusions

A simplified formal framework to model and study SIFIs and Sovereigns' moral hazard has been derived.

Academics and policy makers need analytical tools to analyze this vicious circle between sovereigns and SIFIs.

Government bonds and liabilities issued by financials (i.e. SIFIs' equities and bonds) are no more considered as two different asset classes. Trading desks now trades cash and derivatives instruments written on govies and financial as complementary securities which can be traded simultaneously by trying to exploit arbitrage and relative value opportunities.

REFERENCES

Acharya V. (2009), "A Theory of Systemic Risk and Design of Prudential Bank Regulation", Journal of Financial Stability, 5(3), pp. 224-255.

Acharya V., Pedersen L., Philippon T., Richardson M. (2009), "Regulating Systemic Risk," in Acharya V., Richardson M. (eds.), Restoring Financial Stability: How to Repair a Failed System, Hoboken (NJ): John Wiley & Sons, pp. 283-303.

Acharya V., Richardson M. (eds.) (2009), Restoring Financial Stability: How to Repair a Failed System, Hoboken (NJ): John Wiley & Sons.

Acharya V., Yorulmazer T. (2008), "Information Contagion and Bank Herding", Journal of Money, Credit and Banking, 40(1), pp. 215–231.

Adrian T., Brunnermeier M. (2008), "CoVaR", Staff Report, No. 348, New York: Federal Reserve Bank.

Aguilar L.A. (2010), "An Insider's View of the SEC: Principles to Guide Reform", Speech, Berkeley: U.S. Securities and Exchange Commission, October 15th.

Akerlof G. (2002), "Behavioural Macroeconomics and Macroeconomic Behaviour", American Economic Review, 92(3), pp. 411-433.

Allen F., Babus A. (2008), "Networks in Finance: Network-based Strategies and Competencies, Chapter 21", Working Paper, n. 08-07, Philadelphia: Wharton School.

Allen F., Gale D. (2000), "Financial Contagion", Journal of Political Economy, 108 (1).

Athanasopoulou M., Segoviano M., Tieman A. (forthcoming), "Banks' Probability of Default: Which Methodology, When, and Why?", IMF Working Paper, Washington (DC): International Monetary Fund.

Bair S. (2009), "Too Big To Fail", Committee on Banking, Housing and Urban Affairs, US Senate, Senate Office Building, May 6th.

Bank for International Settlements (BIS) (2010), "International banking and financial market developments", Quarterly Review, Basel: International Monetary Fund, September.

Bank for International Settlements (BIS), Consolidated banking statistics, available online at the URL: http://www.bis.org/statistics/consstats.htm

Bank for International Settlements (BIS), Basel Committee on Banking Supervision (2010a), Agreement on Basel Committee capital and liquidity reform package. Annex, Basel: BIS, July 26th.

Bank for International Settlements (BIS), Basel Committee on Banking Supervision (2010b), Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability, Consultative Document, Basel: BIS, August 19th.

REFERENCES

Bank for International Settlements (BIS), Basel Committee on Banking Supervision (2010c), Group of Governors and Heads of Supervision announces higher global minimum capital standards, Press release, Basel: BIS, September 12th.

Bank for International Settlements (BIS), Basel Committee on Banking Supervision (2010d), Countercyclical capital buffer proposal, Consultative Document, Basel: BIS, July.

Bank for International Settlements (BIS), Basel Committee on Banking Supervision (2010e), Comprehensive quantitative impact study, February.

Barley R. (2010), "Europe's incredible shrinking bailout", The Wall Street Journal, September 21st.

Barnier M. (2010), "Building a new financial framework together", Speech, Washington: European Institute, May 11th.

Barnier M. (2010), "Effective Financial market Regulation After Pittsburgh – Achievements and Challenges", Speech, Berlin, May 20th.

Barone-Adesi G. (2009), "Seven Pillars of Wisdom", The Swiss Finance Institute, Lugano: University of Lugano, May 14th.

Berger A., Herring R., Szegö G. (1995), "The Role of Capital in Financial Institutions", Working Paper, No. 9501, Philadelphia: Wharton Financial Institution Centre.

Bergo J. (2002), "Using Financial Soundness Indicators to Assess Financial Stability," IMF Conference, Washington (DC), September 17th.

Bernanke B., Gertler M. (1989), "Agency Costs, Net Worth and Business Fluctuations", American Economic Review, 79(1), pp. 14-31.

Black F., Scholes M., 1973, "The Pricing of Options and Corporate Liabilities," Journal of Political Economy, 81(3), pp. 637–59.

Black J. (2010), "The Rise, Fall and Fate of Principles Based Regulation", LSE LAW, *Society and Economy Working Papers*, No. 17, London: London School of Economics and Political Science.

Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation (2010), U.S. Banking Agencies Express Support for Basel Agreement, Joint Press Release, September 12th.

Borio C., Drehman M. (2008), "Towards an Operational Framework for Financial Stability 'Fuzzy' Measurement and Its Consequences", Financial stability, monetary policy and central banking, 12th Annual Conference of the Banco Central de Chile, Santiago, November 6th–7th.

Bowers T., Hamoir O., Marrs A. (2010), "Financial Services Practice. What's next for global banks", McKinsey Quarterly, McKinsey & Company, March.

REFERENCES

Brierley P. (2011), "Contingent Capital and Bail-in", Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Brunnermeier M., Pedersen L.H. (2008), "Market Liquidity and Funding Liquidity", Review of Financial Studies, 22(6), pp. 2201-2238.

Brunnermeier M., Crocket A., Goodhard C., Persaud A., Shin H. (2009), "The Fundamental Principles of Financial Regulation", Geneva Reports on the World Economy, No. 11, CEPR.

Capriglione F. (2009), Crisi A Confronto (1929 e 2009). Il caso italiano, Padova: Cedam.

Capuano C. (2008), "The option-iPoD. The Probability of Default Implied by Option Prices Based on Entropy," IMF Working Paper, No. 08/194, Washington (DC): IMF.

Carmassi J., Herring R. (2009), "The Corporate Structure of International Financial Conglomerates", in Berger A., Molyneux P., Wilson J. (eds.), The Oxford Handbook of Banking, Oxford: Oxford University Press.

Carmassi J., Luchetti E., Micossi S. (2009), "Overcoming too-big-to-fail. A regulatory framework to limit moral hazard and free riding in the financial sector", Brussels: Centre for European Policy Studies (CEPS).

Chan-Lau J.A., Amadou S. (2007), "Distance-to-Default in Banking: A Bridge Too Far?", Journal of Banking Regulation, 9(1), pp. 14-24.

Cont R., Moussa A., Minca A., Basto E. (2009), "Too Interconnected to Fail: Contagion and Systemic Risk in Financial Networks", Lecture presented at the IMF, Washington (DC), May.

Counterparty Risk Management Policy Group (CRMPG) III (2008), "Containing Systemic Risk: the Road to Reform", August 6th. Available online at the URL: www.crmpolicygroup.org

Cover T.M., Thomas J.A. (2006), Elements of Information Theory, 2nd Edition, New York: Wiley.

Cross G. (2011), "Proposal for contingent capital, bail-ins and tools for orderly resolution. Some difficult questions in search of answers", Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Davis P., Karim D. (2008), "Could Early Warning Systems Have Helped to Predict the Sub-Prime Crisis?", National Institute of Economic Review, No. 206.

Davis P., Wardwell L.L.P. (2010), "Agreement on Quantification and Timing of Basel III Capital Standards", Client Memorandum, September 13th.

REFERENCES

de Larosière J. (2009), Report of the High Level Group on Financial Supervision in the EU, Brussels: European Commission, February 25th.

de Larosière J. (2010), "Monetary policy has played a major role in the run up to the financial crisis", EUROFI, February.

de Villeroché H. (2011), Note for Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Demirguc-Kunt A., Detragiache E. (1998), The Determinants of Banking Crises in Developing and Developed Countries", IMF Staff Paper, 45(1), Washington (DC): International Monetary Fund.

Demirguc-Kunt A., Detragiache E. (1999), "Monitoring Banking Sector Fragility: A Multivariate Logit Approach," IMF Working Paper, 99(147), Washington (DC): International Monetary Fund.

Demirguc-Kunt A., Detragiache E. (2005), "Cross-Country Empirical Studies of Systemic Bank Distress: A Survey", IMF Working Paper, 05(96), Washington (DC): International Monetary Fund.

Deutsche Bank (2008), "Monitoring Banking Sector Risk," Deutsche Bank Research, October 28; Available via the Internet: www.dbresearch.com.

Di Noia C., Micossi S., Carmassi J., Peirce F. (2009), "Keep It Simple Policy Responses to the Financial Crisis", Brussels: Centre for European Policy Studies (CEPS).

Dornbusch R., Park Y.C., Claessens S. (2000), "Contagion: Understanding How It Spreads", The World Bank Research Observer, 15(2), pp. 177–197.

Draghi M. (2009a), Indagine conoscitiva sulle tematiche relative al sistema bancario e finanziario, Commissione VI (Finanze) della Camera dei Deputati, Roma, 17 marzo.

Draghi M. (2009b), "Remarks at the Turner Review roll-out", The Turner Review Conference, London: Financial Services Authority (FSA), March 27th .

Draghi M. (2009c), "Keynote Speech" at IOSCO's Annual Conference Financial Stability in the global environment? Learning the lessons from the market crisis, Tel Aviv, June 10th.

Draghi M. (2010), "Annual Report. Concluding Remarks", Rome: Bank of Italy, May 31st.

Dragomir L. (2009), "European Prudential Banking Regulation and Supervision", London: Routledge.

Dungey M., Fry R., González-Hermosillo B., Martin V. (2006), "Contagion in International Bond Markets during the Russian and LTCM Crises", Journal of Financial Stability, 2(1), pp. 1-27.

REFERENCES

Dungey M., Fry R., González-Hermosillo B., Martin V. (2007), "Unanticipated Shocks and Systemic Influences: The Impact of Contagion in Global Equity Markets in 1998", North American Journal of Finance and Economics, 18, pp. 155-174.

Elsinger H., Lehar A., Summer M. (2006), "Systemically Important Banks: An Analysis for the European Banking System", International Economics and Economic Policy, 3(1), pp. 73-89.

Emsden C. (2011), "Italy's Tremonti:Triple-A Nations Need To Take Blame For Banks", The Wall Street Journal, February 11.

Enria A. (2010), Audizione - Lo stato del sistema bancario italiano e le prospettive per l'attività normativa, Camera dei Deputati - VI Commissione (Finanze), Rome, November 17th.

Ericsson J., Jacobs K., Oviedo R. (2009), "The determinants of credit default swaps spreads", Journal of financial and quantitative analysis, 44(1), pp.109-132

Ervin W. (2011), "Bank Resolution and Too Big To Fail: Is Bail-in the best answer?", Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

EUROFI (2010), "Defining priorities to reform the regulatory and supervisory financial framework in the global context", Eurofi high level seminar co-hosted by the Spanish EU Presidency, Madrid, April 14th-15th.

European Central Bank (2006), "Special Feature on Identifying Large and Complex Banking Groups for Financial Stability Assessment", Financial Stability Review, Frankfurt, December.

European Central Bank (2008), "Special Feature on Recent Policy Initiatives to Strengthen the Resilience of the Financial System", Financial Stability Review, Frankfurt, December.

European Central Bank (2010), Fiscal Policies, Frankfurt, December, available online at the URL: http://www.ecb.int/mopo/eaec/fiscal/html/index.en.html

European Commission (2009a), "Communication to the Spring European Council, Driving European Recovery", Brussels, March 4th.

European Commission (2009b), "Recommendation on remuneration policies in the financial services sector for the remuneration of directors of listed companies", Brussels, April 30th.

European Commission (2009c), "Recommendation complementing Recommendations 2004/913/EC and 2005/162/EC as regards the regime", Brussels, April 30th.

European Commission (2009d), "Communication on European Financial Supervision", Brussels, May 27th.

REFERENCES

European Commission (2009e), "Communication on Ensuring efficient, safe and sound derivatives markets", Brussels, July 3rd.

European Commission (2009f), "Communication on Ensuring efficient, safe and sound derivatives markets: Future policy actions", Brussels, October 20th.

European Commission (2009g), "Communication on An EU Framework for Cross-Border Crisis Management in the Banking Sector", Brussels, October 20th. European Commission (2010a), "Proposal for a Directive of the European Parliament and of the Council on Alternative Investment Found Managers (AIFMD)", Brussels, April 30th.

European Commission (2010b), "Communication on Bank Resolution Funds", Brussels, May 26.

European Commission (2010c), "Communication on Regulating Financial Services for Sustainable Growth", Brussels, June 2nd.

European Commission (2010d), "Green Paper. Corporate governance in financial institutions and remuneration policies", Brussels, June 2nd.

European Commission (2010e), "Proposal for a Directive of the European Parliament and of the Council amending Directives 98/78/EC, 2002/87/EC and 2006/48/EC as regards the supplementary supervision of financial entities in a financial conglomerate", Brussels, August 16th.

European Commission (2010f), "Proposal for a Regulation of the European Parliament and of the Council on enforcement measures to correct excessive macroeconomic imbalances in the euro area", Brussels, September 29th.

European Commission, DG Internal Market and Services Working Document (2010), Technical details of a possible EU framework for bank recovery and resolution, Brussels, January 6th.

European Commission, DG Internal Market and Services Working Document (2010), Follow-up to the Green Paper on Corporate Governance in Financial Institution.

European Community (2008), "Memorandum of Understanding on Cooperation between the Financial Supervisory Authorities, Central Banks and Finance Ministries on the European Union on Cross-Border Financial Stability", Brussels, November 8th.

European Council (2010a), "Council to negotiate with Parliament on draft EU rules for hedge funds managers", Brussels, 7500/10 (Presse 64), May 18th.

European Council (2010b), "Press release 3030th Council meeting Economic and Financial Affairs", September 7th.

REFERENCES

European Council (2010c), "Strengthening Economic Governance in the EU", Report of the Task Force to the European Council, Brussels, October 21st.

European Parliament and European Council (2002), "Directive 2002/87/EC on the supplementary supervision of credit institutions, insurance undertakings and investment firms in a financial conglomerate", Brussels, December 16th.

European Parliament and European Council (2003), "Directive 2003/6/EC on insider dealing and market manipulation (market abuse) (MAD)", Brussels, January 28th.

European Parliament and European Council (2004), "Directive 2004/39/EC on markets in financial instruments (MiFID)", Brussels, April 21st.

European Parliament and European Council (2009a), "Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating toundertakings for collective investment in transferable securities (UCITS) (Recast of the Directive 85/611/EEC)", Brussels, July 13th.

European Parliament and European Council (2009b), "Regulation (EC) No. 1060/2009 on credit rating agencies (CRA)", September 16th.

European Commission (2010), "Making derivatives markets in Europe safer and more transparent", IP/10/1125, Bussels, September 15th.

European Parliament and European Council (2009b), "Regulation (EC) No. 1060/2009 on credit rating agencies (CRA)", September 16th.

European Union (2011), Antitrust Commission probes Credit Default Swaps market, press release, April 29. (http://europa.eu/rapid/pressReleasesAction.do?reference=IP/11/509&format=HTML&aged=0&language=EN&guiLanguage=en)

European Union Committee-House of Lords (2009-10), "The future regulation of derivatives markets: is the EU on the right track?", 10th Report of Session.

Federal Reserve Bank of Dallas (2008), "Fed Intervention: Managing Moral Hazard in Financial Crises," Economic Letter, 3(10).

Financial Services Authority (FSA) (2009), "The Turner Review. A Regulatory Response to the Global Banking Crisis", March. Available online at the URL: http://www.fsa.gov.uk/

Financial Times (2010a), "Brown hails move on global bank tax", April 4th.

Financial Times (2010b), "The new disintegration of finance", September 10th.

REFERENCES

Fitch Ratings (2011), "2011 Critical for Sovereign-Debt Crisis", March.

Forti N. (ed.) (2010), Preventing and Managing Future Crises. New Regulation, Resolution Funds and Deposit Insurance as tools for European banking groups, Rome: Bancaria Editrice.

Frank N., Hesse H. (2009), "Financial spillovers to Emerging Markets during the Global Financial Crisis," IMF Working Paper, 09 (104) Washington (DC): International Monetary Fund.

Frank N., Gonzalez-Hermosillo B., Hesse H. (2008), "Transmission of Liquidity Shocks: Evidence from the 2007 Subprime Crisis", IMF Working Paper, 8 (200), Washington (DC).: International Monetary Fund.

Furfine C. (1999), "Interbank Exposures: Quantifying the Risk of Contagion", BIS Working Papers, No. 70, Basel: Bank for International Settlements.

G-20 (2010), Seoul Summit Document, available online at the URL: http://www.seoulsummit.kr/

Gaspar V., Schinasi G. (2009), "Global Financial Crisis, Current Market Conditions and Remaining Policy Challenges", BEPA Monthly Brief, March.

Geltner D. (1993), "Estimating Market Values from Appraised Values Without Assuming an Efficient Market", Journal of Real Estate Research, 8(3), pp. 325-345.

Geneva Association (2010), Systemic Risk in Insurance, Special Report of the Geneva Association Systemic Risk working Group, Geneva, March. Giliberto M.S. (1990), "Equity Real Estate Investment Trusts and Real Estate Returns", Journal of Real Estate Research, 5(2), pp. 259-264.

Goldman Sachs (2011), Contingent capital: possibilities, problems and opportunities, February 16th. available online at the URL: http://www2.goldmansachs.com/ideas/global-economic-outlook/contingent-capital.html

Goldstein M., Véron N. (2011), "Too Big to Fail: The Transatlantic Debate", Working Paper Series, WP 11-2, Washington (DC): Peterson Institute for International Economics.

González-Hermosillo B. (2008), "The Role of International Investors' Risk Appetite in Global Financial Crises: 1998-2007," IMF Working Paper, 8(85), Washington (DC): International Monetary Fund.

González-Hermosillo B., Hesse H. (forthcoming), "Global Market Conditions and Systemic Risk," IMF Working Paper, Washington (DC): International Monetary Fund.

Gorton G. (2008), "The Panic of 2007," prepared for the Federal Reserve Bank of Kansas City Jackson Hole Conference, August.

Gray D.F., Malone S. (2008), Macrofinancial Risk Analysis, Hoboken (NJ): John Wiley & Sons.

REFERENCES

Gray, Dale F., Robert C. Merton, and Zvi Bodie. 2003. "A New Framework for Analyzing and Managing Macrofinancial Risks of an Economy." MfRisk Working Paper No. 1-03.

Gros D., (2010), "The seniority conundrum: Bail out countries but bail in private, short-term creditors?", December, Vox.

Group of Ten (2001), Consolidation in the Financial Sector, Basel: Bank for International Settlements, Basel, January.

Group of Thirty (2009), The structure of financial supervision – Approaches and Challenges in a Global Marketplace, Washington, D.C., April.

Group of Twenty, Working Group 1 (2009), "Enhancing Sound Regulation and Strengthening Transparency," Final Report, March. Available online at the URL: http://www.g20.org/366.aspx.

Gyourko J., Keim D.B. (1992), "What Does the Stock Market Tell Us about Real Estate Returns", Journal of the American Real Estate and Urban Economics Association, 20(3), pp. 457-485.

Harding R. (2011), "Lagarde calls for urgent action on banks", Financial Times, August 27.

Hau H. (2011), "Bank recapitalisation is the best euro rescue strategy", VoxEU.org, September 2.

Herring R.J. (2011), "The Capital Conundrum", EBR Advisory Board, Rome, March 25.

Honohan P. (2010), "Two-way interdependence between the banking system and the State", BIS Review, No. 66.

Huang X., Zhou H., Zhu H. (2008), "A Framework for Assessing the Systemic Risk of Major Financial Institutions", BIS Working Papers, No. 281.

Hutchinson M.M. (2002), "European Banking Distress and EMU: Institutional and Macroeconomic Risks," Scandinavian Journal of Economics, 104(3), pp. 365–389.

Hutchinson M.M., Mcdill K. (1999), "Are All Banking Crises Alike? The Japanese Experience in International Comparison," Journal of the Japanese and International Economies, 13(3), pp. 155–180.

International Monetary Fund (2009), Global Financial Stability Report, Washington (DC), April.

International Monetary Fund (2010), Crisis Management and Resolution for a European Banking System, Washington (DC), March.

Inter-Institutional Monitoring Group (IIMG) (2007), Final Report Monitoring the Lamfalussy Process, Brussels, October 15.

Juncker J.C., Tremonti G. (2010), "E-bonds would end the crisis", Financial Times, London, December 5th.

Kahneman D. (2007), Economia della Felicità, Il Sole 24 Ore, Milano.

REFERENCES

Kahneman D. (2007), Economia della Felicità, Il Sole 24 Ore, Milano.

Kaminsky G.L., Reinhart C.M. (1999), "The Twin Crises: The Causes of Banking and Balance of Payments Problems," American Economic Review, 89(3), pp. 473-500.

Kim O., Verrecchia R.E. (1997), "Pre-announcement and Event-period Private Information," Journal of Accounting and Economics, 24(3), pp. 395-419.

Lamfalussy A. (2001), Final report of the Committee of Wise Men on the regulation of European Securities Markets, Brussels, February 15th.

Langen W. (2010), Report on derivatives markets: future policy actions, Brussels, June 7th.

Lastra R. (2006), Legal Foundation On International Monetary Stability, Oxford: Oxford University Press.

Lawson S. (2011), Contingent Capital, Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Lehne K.H. (2008), Report of the European Parliament with recommendations to the Commission on the transparency of institutional investors, Brussels, July 9th.

Lo A. (2009), "Hedge Funds, Systemic Risk, and the Financial Crisis of 2007–2008", Written testimony to the US House of Representatives Committee on Oversight and Government Reform, November 13th.

Lugaresi S. (2011), "Proposal for bail-ins, contingent capital and tools for orderly resolution", Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Maino R. (2009), "Credito e mercato dopo la crisi: appunti per regole e regolatori post Basilea II", Bancaria, No. 2.

Maino R. (2011), "Regolamentazione e gestione degli intermediari a rischio sistemico dopo la crisi", Working Paper, forthcoming.

Maino R., Masera R., Mazzoni G. (2010), "Reform of the Risk Capital Standard (RCS) and Systemically Important Financial Institutions (SIFIs)", pp. 75-136, in Forti N. (ed.), Preventing and managing future crises. New Regulation, Resolution Funds and Deposit Insurance as tools for European banking groups, Rome: Bancaria Editrice.

Marsh I., Stevens I., Hawkesby C. (2003), "Large Complex Financial Institutions: common influence on asset price behavior?", Bank of England Financial Stability Review, London: Bank of England, No. 15, pp. 91-101.

Masera R. (ed.) (2009a), The Great Financial Crisis. Economics, Regulation and Risk, Rome: Bancaria Editrice.

Masera R. (2009b), "Global finance, regulation and supervision in the light of the de Larosière report", pp. 269-276, in Rapporto sulla finanza immobiliare 2009, Bologna: NOMISMA.

REFERENCES

Masera R. (2010a), "Crisi finanziaria e rimedi normativi", pp. 1121-1150, in AA.VV., Scritti in onore di Francesco Capriglione, Padova: CEDAM.

Masera R. (2010b), "Towards a new regulatory and supervisory framework of the financial sector in Europe: role and contents of the AIFMD, with specific reference to Non-listed Real Estate Funds", Rivista Trimestrale di Diritto dell'economia, No. 2, pp. 108-144.

Masera R. (2010c), "Crescita, stabilità, regole di bilancio e regolazione finanziaria: l'Unione monetaria dopo la crisi della Grecia", L'industria. Rivista di economia e politica industriale, No. 2, pp. 193-202.

Masera R. (2010d), "Reforming financial systems after the crisis: a comparison of EU and USA", PSL Quarterly Review, 63 (255), pp.299-362.

Masera R. (2011), "The Basel III global regulatory framework: a review", working paper, University G. Marconi, April.

Masera R. (2011), "Taking the moral hazard out of banking: the next fundamental step in financial reform", PSL Quarterly Review, 64 (257).

Masera R., Mazzoni G. (2007), "Actuarial and Continuous Time Risk Models: Towards a Synthesis", Proceedings of the CLADAG Conference, Macerata, September 12th-14th.

Masera R., Mazzoni G. (2010), "Contributi - La riforma dei requisiti prudenziali e la proposta di un Fondo di risoluzione per la gestione delle crisi / Crises and systemic risk: the proposal for a Resolution fund financed by Sifis", Bancaria, 66(6), pp. 13-24.

Masera R., Mazzoni G. (2011), "A proposal for a Special Resolution Fund (SRF) for SIFIs (Systemically Important Financial Institutions) financed through risk-sensitive fees. A market based measure of systemic risk", working paper.

Mazzoni G. (2011), PhD Thesis, USI (Swiss Finance Institute), unpublished manuscript.

Matthews B.C. (2010), "Preventing the Next Financial Crisis: Coordination and Competition in Global Finance", American Society of International Law Annual Meeting, Washington (DC), March 26th.

McCaffrey U., O'Brien C. (2011), "Rating agency downgrades unsecured bank debt", The Irish Times, February 12th.

McKinsey&Company (2010), Basel III and European banking: its impact, how banks might respond, and the challenges of implementation, EMEA Banking, November.

Merton R.C. (1974), "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates," Journal of Finance, 29(2), pp. 449-470.

REFERENCES

Merton R.C. (1995), "A Functional Perspective of Financial Intermediation", Financial Management, 24(2), pp. 23-41.

Merton R.C. (1973), "Theory of Rational Option Pricing", Bell Journal of Economics and Management Science, 4(1), pp. 141-183.

Merton R.C. (1990), "Continuous Time Finance", Oxford: Blackwell.

Messori M. (2009), "The financial crisis: understanding it to overcome it", Milan: Assogestioni, September.

Moody's (2009), "Corporate Default and Recovery Rates", May.

Moore M. (2011), "Contingent Capital and Statutory Bail-In Within a Crisis Prevention/Crisis Resolution Framework", Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Morgan Stanley (2010), "Quarterly Short-Term Credit Market Update", 2nd Quarter.

Morrison & Foerster (2010), "The New Global Minimum Capital Standards Under Basel III", News Bulletin, September 15th.

Mussari G. (2011), Audizione del Presidente dell'Abi nell'ambito dell'Indagine conoscitiva sui mercati degli strumenti finanziari, Camera dei Deputati - Commissione VI (Finanze), Rome, January 12th.

Nestor Advisors Ltd. (2011), A comparative analysis of the boards of the largest US and European banks, Research Note No. 2, London.

New York Times (2010), "Europe's Web of Debt", May 1st.

Nuttall R., Sandoval S. (2010), "The new value at stake in regulation", McKinsey & Company, March.

Obama B., Volcker P. (2010), http://www.whitehouse.gov/photos-andvideo/video/volcker-rule-financial-institutions, January 21st.

Oldani C. (2008), "Governing Global Derivatives", Ashgate Publishers, London.

Oldani C., Savona P., (2009), "Crisis, Response And Innovation In Europe", Proceedings of "The 2009 Pre-G8 Summit" Conference, Rome, June 30th.

Oliver Wyman (2011), The Financial Crisis of 2015 - An avoidable history, State of the Financial Services Report.

Pagliari J.L., Scherer K.A., Monopoli R.T. (2003), "Public versus Private Real Estate Equities: A Risk-Return Comparison", Journal of Portfolio Management, No. 29, pp. 101-111.

Panetta F. (2010), Audizione, Camera dei Deputati, V Commissione (Bilancio, tesoro e programmazione), Rome, June 8th.

REFERENCES

Pazarbasioglu C., Zhou J., Le Leslé V., Moore M. (2011), Contingent Capital: Economic Rationale and Design Feature. IMF Staff Discussion Note, SDN/11/01, Washington (DC): IMF, January 25th.

Pedersen L., Roubini N. (2009), "A Proposal to Prevent Wholesale Financial Failure," Financial Times, January 29th.

Pennacchi G., Vermaelen T., Wolff C.C.P. (2010), Contingent Capital: The case for COERCs, INSEAD Working Paper, 2010/55/FIN, Fontainebleau: INSEAD, August.

Pianalto S. (2010), "Regulatory Reform: The New Face of Bank Regulation", Joint Convection of the Ohio Bankers League and the Illinois League of Financial Institutions, French Lick (IN), September 11th.

Quan D.C., Titman S. (1997), "Commercial Real Estate Prices and Stock Market Returns: An International Analysis", Financial Analysts Journal, 53(3), pp. 21-34.

Rasmussen P.N. (2008), Report of the European Parliament with recommendations to the Commission on Hedge funds and private equity, Brussels, September 11th.

Reinhart C.M. (2010), "La carta straccia è ancora nei bilanci", Corriere della Sera, September 20th.

Reinhart C.M., Rogoff K. (2009), This Time Is Different: Eight Centuries of Financial Folly, Princeton: Princeton University Press.

Roncaglia A. (2010), Why the economists got it wrong, Anthem press.

Rosengren E. (2009), "Challenges in resolving systemically important financial institutions", The Institute of Regulation and Risk North Asia, Hong Kong, May 5th. Rossi S. (2010), Metodi di analisi economica: cenni ed esempi, Roma: Gangemi Editore.

Ruding O. (2010), From National to European regulation. Towards European Financial Supervisory Authorities, Frankfurt, May 19th.

Sabatini G. (2010), Intervento alla Tavola Rotonda "Regolamentazione, Autorità e Rischi Sistemici", Presentazione del Dottorato di ricerca in Analisi dei Sistemi Finanziari e dei Processi di Gestione dei Rischi, Università G. Marconi, Senato della Repubblica, Rome, November 24th.

Sabatini G. (2011), Intervento al Seminario AREL "Riforma del framework di vigilanza bancaria come reazione alla crisi (Basilea III)", Roma, 23 febbraio.

Saccomanni F. (2008), "La Crisi Internazionale: Elementi Di Dialogo Con Gli Operatori", Proceedings of the Conference La turbolenza dei mercati finanziari: dialogo fra autorità e operatori, Milano, February 19th.

REFERENCES

Saccomanni F. (2009), "Nuove regole e mercati finanziari", SSPA - Scuola Superiore della Pubblica Amministrazione, Rome, January 19th.

Sarcinelli M. (2009), "2007: La Crisi da Subprime", pp. 97-123, in Perez R. (ed.), Finanza privata e finanza pubblica, San Marino: Maggioli.

Segni L. (2010), "Verso un nuovo assetto della vigilanza europea", pp. 152-186, in Marchesi D. (ed.), Priorità nazionali. Trasparenza, Istruzione, Finanza, Energia, Milano: Francoangeli.

Segoviano M., Goodhart C. (2009), "Banking Stability Measures", IMF Working Paper, No. 09(04), Washington (DC): International Monetary Fund.

Seiler M.J., Webb J.R., Myer F.C.N. (1999), "Diversification Issues in Real Estate Investment", Journal of Real Estate Literature, 7(2), pp. 163-179.

Shadab H.B. (2009), "Guilty by association? Regulating Credit Default Swaps", Entrepreneurial Business Law Journal, Fall.

Siani G. (2011), "Proposal for contingent capital, bail-ins and tools for resolution. An update on the FSB and BCBS' work, Workshop "How promising are contingent capital instruments and bail-ins to strengthen financial stability?", Brussels: Bruegel , February 11th.

Signorini L.F. (2011), Intervento, 17° Congresso AIAF-ASSIOM-FOREX, Verona, February 25-27th.

Spaventa L. (2009), "La crisi della nuova finanza", in Perez R. (ed.), Finanza privata e finanza pubblica, San Marino: Maggioli.

Strauss-Kahn D. (2009), "Speech", Washington (DC): School of Advanced International Studies, April 23rd.

Strauss-Kahn D. (2010), "Speech", Brussels: European Commission Conference, March 19th.

Strauss-Kahn D. (2011), Transcript of a Press Conference following the Group of 20 Finance Ministers and Central Bank Governors Meeting, Paris, February 19th. Available online at the URL: http://www.imf.org/external/np/tr/2011/tr021911.htm

Strongin S., Hindlian A., Lawson S. (2009), Effective Regulation: Part 5. ending "Too Big To Fail", Goldman Sachs, Global Markets Institute, December.

Tarullo D.K. (2010), Comments on "Regulating the Shadow Banking System", Washington (DC): Federal Reserve System, September 17th.

REFERENCES

Tremonti G. (2009), "International Legal Standards", available online at the URL:
www.tesoro.it/documenti/open.asp?idd=20499

Trichet J.C. (2010a), "Macro-prudential Regulation as an Approach to Contain Systemic Risk: Economic Foundations, Diagnostic Tools and Policy Instruments", Speech at the 13th Conference of the ECB-CFS Research Network, Frankfurt am Main, September 27th.

Trichet J.C. (2010b), "Keeping the momentum for financial reform", Keynote address at the EUROFI Financial Forum 2010, Brussels, September 29th.

Trichet J.C. (2010c), "Europe's frameworks for macro-prudential oversight and economic governance", Speech at the Economic Club of New York, New York, October 12th.

Trichet J.C. (2010d), "Global economic governance and euro area economic governance", Speech at the World Policy Conference Marrakech, October 16th.

Trichet J.C. (2011), "Intellectual challenges to financial stability analysis in the era of macroprudential oversight", Speech for the panel discussion on: "Global imbalances and financial stability" at the Eurofi G20 High Level Seminar, Paris, February 18th, Available online at the URL: http://www.ecb.int/press/key/date/2011/html/sp110218.en.html

Unicredit Group (2009), Forum on financial cross-border groups, Milan, March.

United States Congress (110th) (2008), Emergency Economic Stabilization Act of 2008, Washington (DC), October 3rd.

United States Congress (111th) (2010), Dodd–Frank Wall Street Reform and Consumer Protection Act, Washington (DC), July 21st.

United States Senate (2010), Collins Amendment SA 3879, Washington (DC), May 6th.

Vermaelen T. (2010), "Message to Basel: Another way to avoid bank bailouts", The Wall Street Journal, August 20th.

Wells S. (2002), "UK Interbank Exposures: Systemic Risk Implications", Bank of England Financial Stability Review, London: Bank of England, December, pp. 175–181.

White W.R. (2003), "International financial crises: prevention, management and resolution", Berne, March 20th.

Wolf M. (2010), "Basel: the mouse that did not roar", Financial Times, September 15th.

Zazzara C. (2011), "Credit Risk in the Trading Book: Benchmarking the Incremental Risk Charge", Conference "Rischio di credito, rischio di mercato, rischio di liquidità. Accordo di Basilea 3", Milan: Synergia Formazione, March 3.

  GARA