Instability and Dynamics in Sovereign Debt

The Eurozone Debt Crisis

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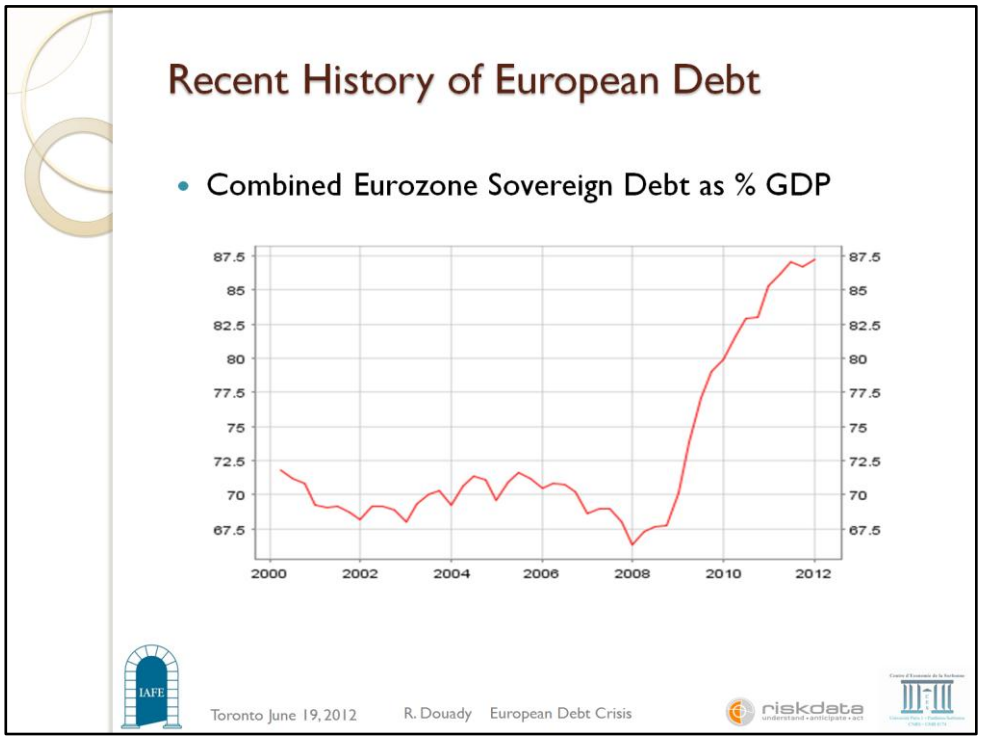
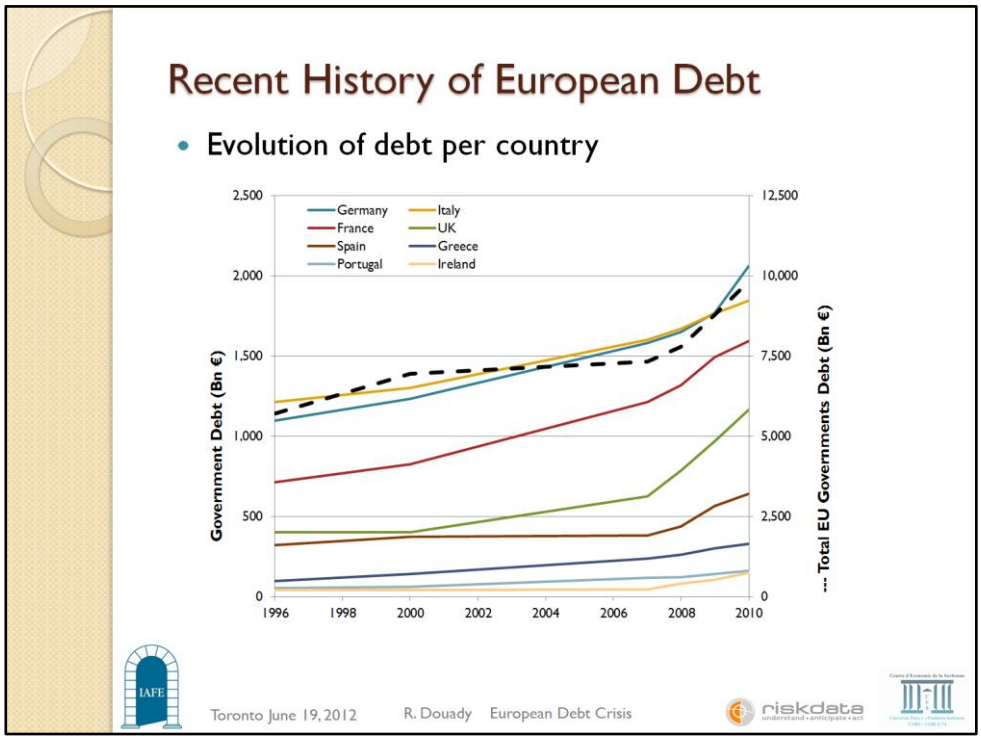
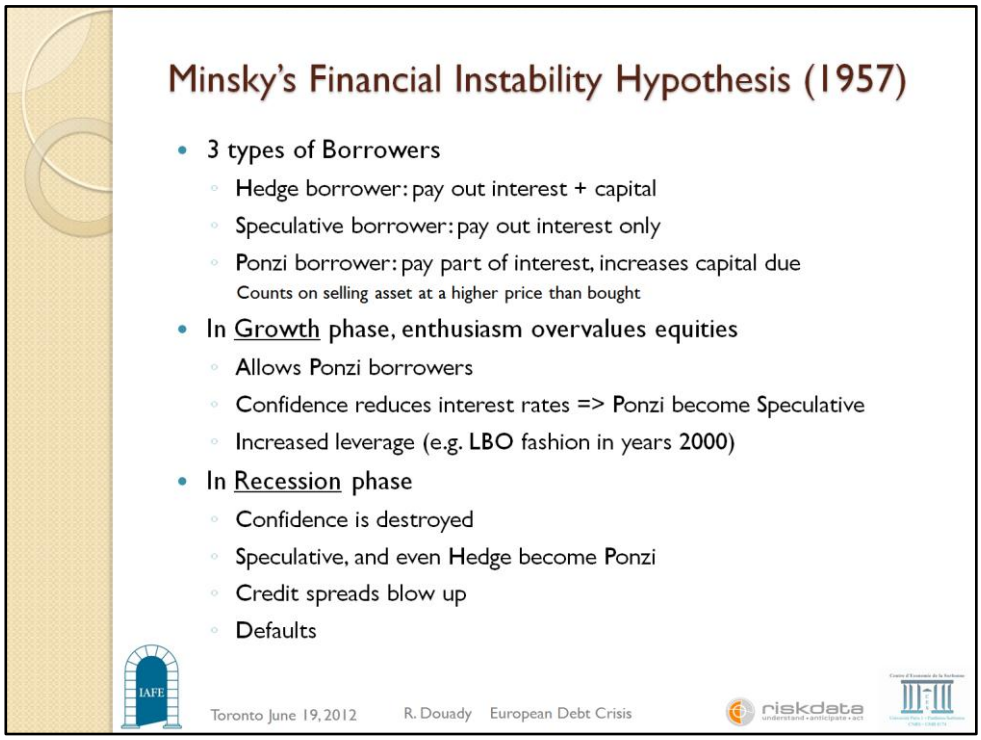


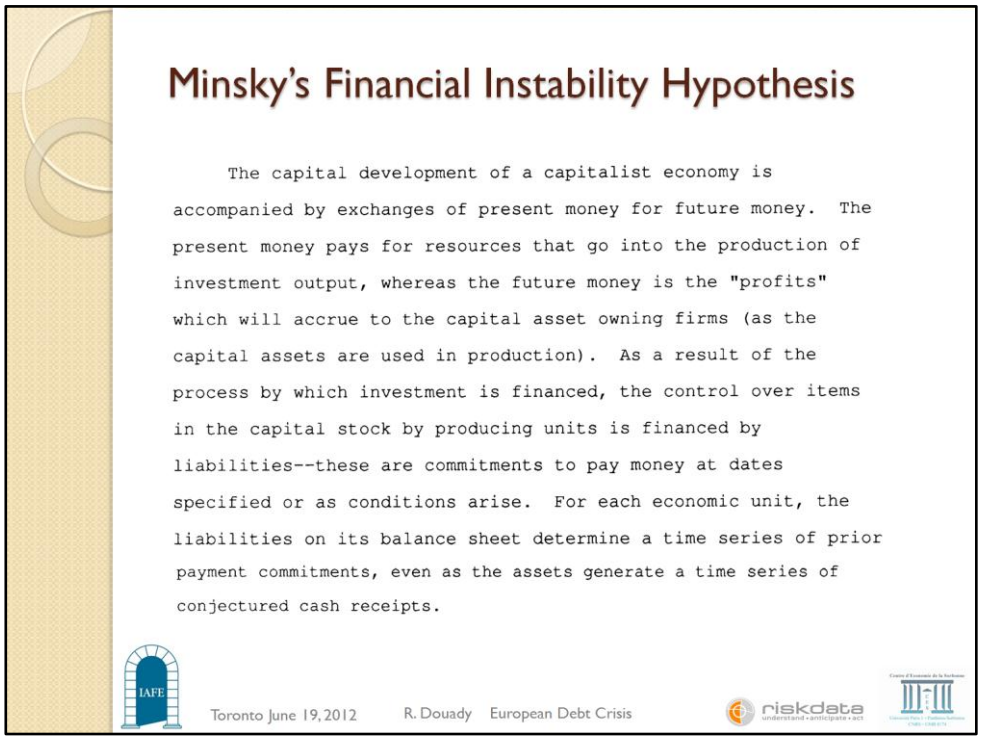
In the USA, with "quantitative easing" following 2008 financial crisis, the M1 monetary mass, doubled in a few weeks. The ECB didn't have such a material and fast reaction. States had to borrow massively and, as a whole literally blew up the 60% maximum Debt/GDP ratio imposed by Maastricht treaty.



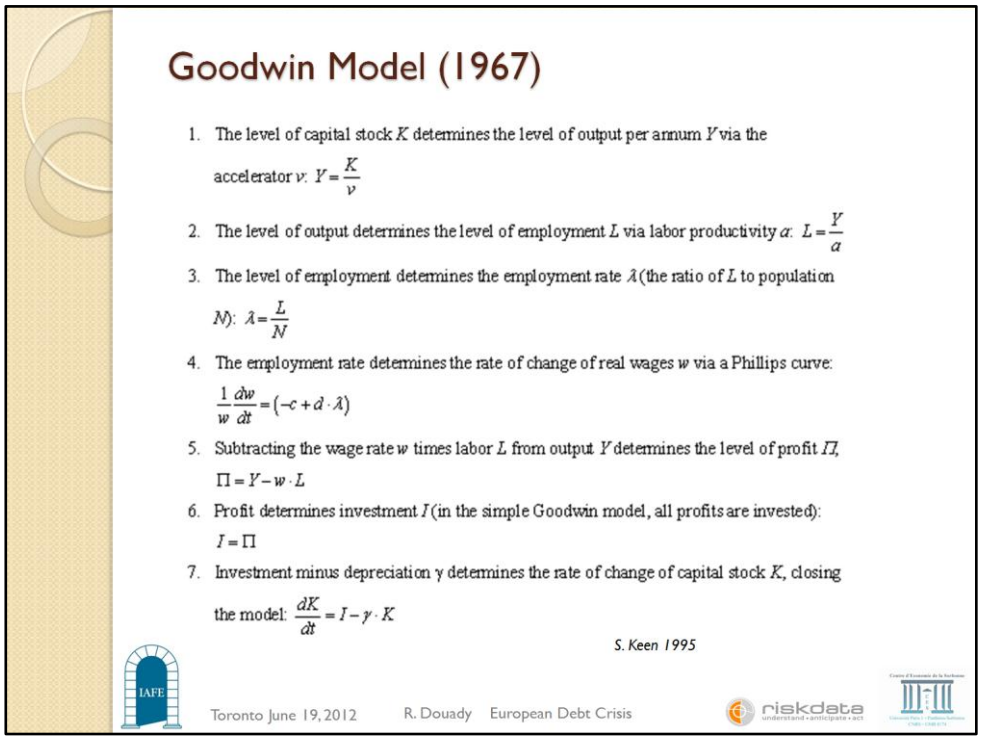
The black dotted line represents the Eurozone as a whole (right scale).
Whereas the debt of some countries like UK, Spain, Ireland suddenly increased after the crisis, that of other countries like Portugal, Italy has been progressively growing over the whole period 1996-2010. For France and Germany, the crisis induced an strong acceleration of the debt, but it was already in an upward sloping mode.



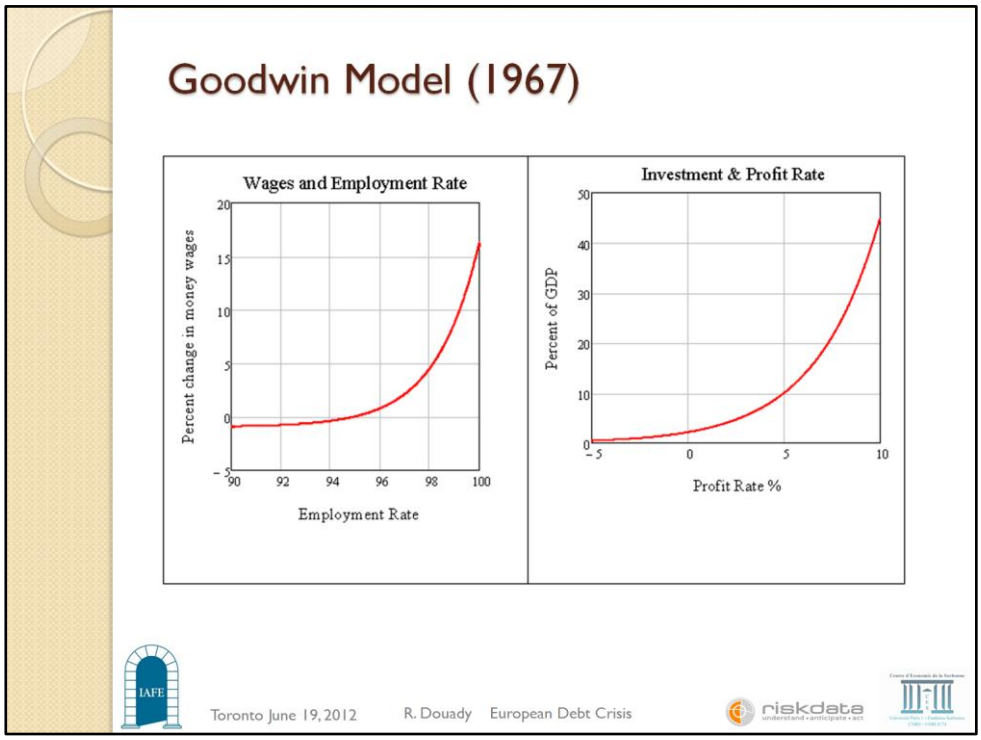
Minsky distinguish three types of borrowers, whether their income exceeds, is equal or is lower than their debt burden, i.e. the interests the must pay. In the first case, their borrowed capital can decrease, in the second case, it remains constant while in the third case, the borrowed capital increases exponentially, until a default occurs. Borrowers may migrate from one type to the other depending on interest rate fluctuations, their borrowing capacity, which is linked to economic phases and the market valuation of their equity, and changes in their income.
Economic cycles create a dangerous hysteresis: in growth phase, migration of borrowers from Ponzi to Hedge increases their average leverage. Then in recession phase, important migrations from Hedge to Speculative and Ponzi destabilize the market as a whole.



Hyman Minsky stated his "Financial Instability Hypothesis" only in 1992, but it in fact underlined all of his work since the 1960's. It received great attention during the subprime crisis in 2007, then the credit crunch in 2008. Indeed, after the Internet bubble of the 1990's burst in March 2000, the decade that followed saw a general leverage increase of corporations capital structure, together with a growing household debt in developed countries, thanks to easy credit conditions, whether consumer, car or mortgage. Loans were granted upon unrealistic financial projections. Even rating agencies failed to assume the possibility of a decline in real estate prices when assessing the risk of securitized mortgage loan pools. Following Minsky's hypothesis, this artificial growth phase created extremely unstable economic conditions which could not but end into a credit crunch.



Goodwin model is the first mathematical formulation of Minsky's "financial instability hypothesis". It describes the feed-back loop from the return on capital investment, through the employment rate, the level of wages, the global profits, back to the return on invested capital. This model has been followed by a number of more complex and realistic models, in particular including a banking system, leading to chaotic behavior .



With hypotheses corresponding to growth phase, Goodwin model simply leads to an exponential growth, which for obvious reasons is capped in the real world. This model can only be taken as a local approximation of the evolution of the economy.

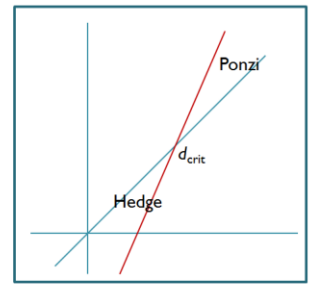
In order to further explore borrowing crises we recently observed, we must question the very reasons for a loan being accepted by the lender. In the same spirit as Minky's classification of borrowers, we classify lenders in 3 categories:

- Financers seeking mere return on investment
- Refinancers, trying to optimize a situation where they already invested in the borrower (whether by debt or by equity)
- Hoarders seeking to place their wealth in the safest possible place

This categorization of lenders is key to understand what drives the demand for bonds and the possible protections against liquidity crises.

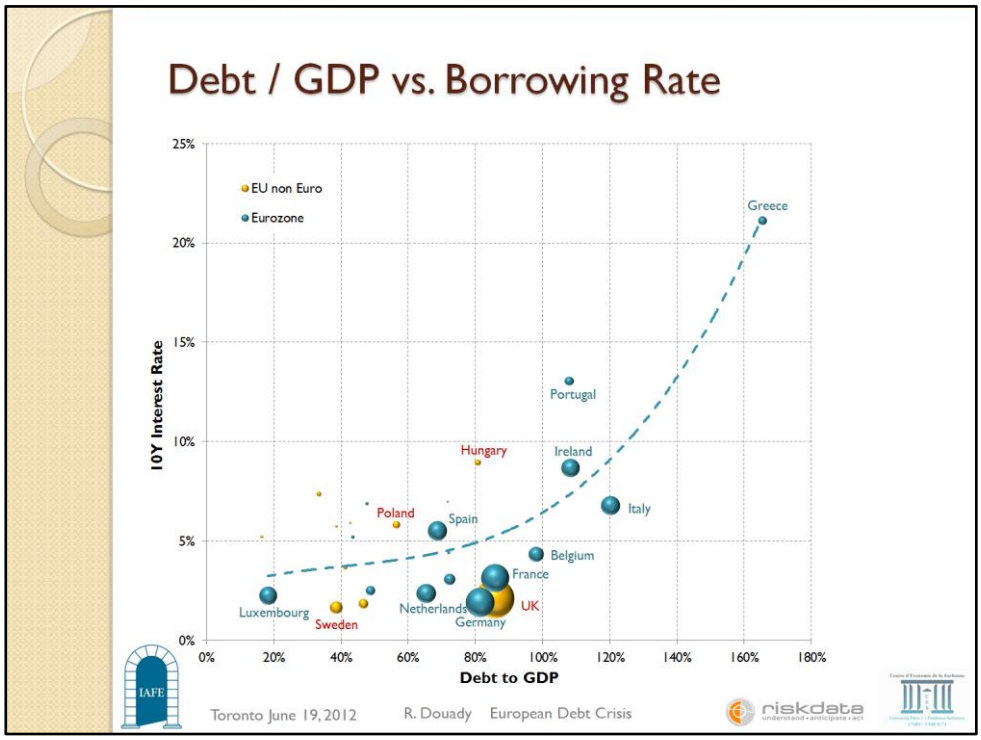
Interest Rates Instability

- Government Balance Sheet
  - G = GDP
  - D = Debt = $G \times d$
  - N = Govt Net Income (excl. debt) = $G \times n$
  - r = Interest rate
- Dynamics
  - $G_{j+1} = G_j \times (1 + g_j)$
  - $D_{j+1} = (1 + r_j)D_j - N_j$
  - $D_{j+1} / D_j = 1 + r_j - n_j / d_j$
  - $d_{j+1} = (1 + r_j - g_j)\, d_j - n_j$
- Critical debt level if $g < r$
  - $d_{crit} = n/(r - g)$
  - $r_{crit} = g + n/d$
  - $d > d_{crit}$ or $r > r_{crit} \Rightarrow$ Ponzi
- How many countries are in Ponzi Today?

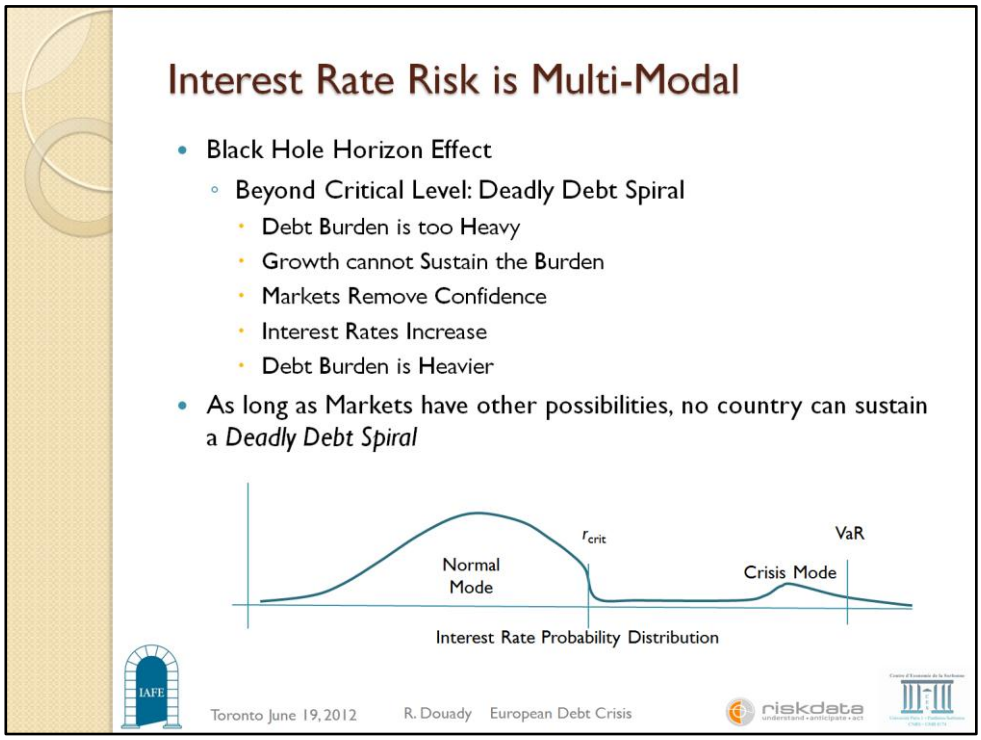


Applying Minsky's classification to governments, on can easily find the critical debt level – as a percentage of the GDP – beyond which the government is itself a Ponzi borrower. Equivalently, given a debt level, there is a critical level of interest rates beyond which the debt burden is unsustainable.

Any country with an a priori savvy economy can become insolvent if markets desert its debt and rates reach this critical level. Then the "deadly debt spiral" occurs and default is inevitable.



Each sphere represents a country of the European Union. The area of the sphere is proportional to the size of the debt. Blue spheres are those of the Eurozone, while yellow ones correspond to European countries using their own currency.
The blue dotted line shows the trend linking interest rates to the debt ratio for Eurozone country. When the “deadly debt spiral” occurs, spheres migrate along the line, up to the extreme case of default represented by Greece. This graph represents the situation at the end of Dec 2011. Since then, Spain has migrated close to the Irish sphere. This link between interest rates and the Debt/GDP ratio is due to the inability of countries to print money.
The picture is much less clear for yellow spheres, the position of which depends on the market confidence in their currency. The case of UK vs. Poland is emblematic.



When an investment is following some kind of random walk – whether Brownian or with other type of elementary step, such as a Levy process or more sophisticated motions like those thought of by Mandelbrot – the term distribution of the outcome displays a bell shape, possibly with so-called “fat tails”.
But when there is a risk of dynamical explosion, the term distribution is very different. Like the famous picture of the quiet fisherman in a calm lake with a chute, there are two possible outcomes: the chute is avoided and the distribution is a limited area around the current situation, or one is caught in the chute and the size of the move is entirely determined by the height of the chute. No medium move is possible. The probability of being trapped in the chute depends on the current volatility – that is, the size of the range of possible outcomes under “normal conditions” – and on the proximity of the chute, that is, how far are we from critical levels triggering a “deadly spiral”.
In terms of value-at-risk, either the probability of the chute is lower than the set percentile – i.e. the chute is considered “very unlikely” – and it can be computed without and consideration of “fat tails”, because only “normal conditions” matter, or the probability exceeds the set percentile and the value-at-risk is given by the size of the chute, not by any type of “fat tail” model, which will never capture such large moves. In other words, only a scenario-type of approach can provide VaR figures in line with the actual risk.

Avoiding the "deadly debt spiral" means understanding market demand for sovereign bonds. This demand is driven by mostly three considerations, which we may call "negative":

- Risk aversion lack of confidence in other investments, such as equities or corporate bonds
- Cost of capital implied by regulations, such as Basel I, II, III. A lower risk coefficient in the computation of "risk weighted assets" (RWA) leads investors to buy sovereign bonds
- Liquidity reasons, such as the easiness to convert bonds into liquidities or to use them as collateral, also creates a demand for these assets.

All "negative" reasons being equal, the market will seek returns, i.e. countries delivering the highest yield. As long as European regulations applied a zero-risk policy to European countries, European banks bought massive amounts of Greek, Portuguese and other risky sovereign debt. As soon as this rule was changed, the debt was deserted and these countries entered in the "deadly debt spiral".

This risk doesn't exist for major countries, whose debt ceiling seems unlimited – such as Japan or USA. The question is then up to which point market trust the currency? The 3 above reasons seem to put the limit pretty high for major reserve currencies such as, obviously, USD, but also EUR, JPY, GBP…

Is the Financial System a Gigantic Ponzi?

In the wings, glances were exchanged, shoulders shrugged; banker's tape and marked "One Thousand Roubles." His neighbors crowded round as he picked at the wrapping with his fingernail to find out whether it was real money or a stage prop.

"**M**y God — it's real money!" came a joyful shout from the gallery. (…)

"**W**ell, now," replied the magician reflectively. "They're people like any others. They're over-fond of money, but then they always were... Humankind loves money, no matter if it's made of leather, paper, bronze or gold. They're thoughtless, of course... but then they sometimes feel compassion too... they're ordinary people, in fact they remind me very much of their predecessors, except that the housing shortage has soured them..." (…)

A red-haired girl in a black evening dress who had suddenly appeared from nowhere, her beauty only marred by a curious scar on her neck, smiled from the showcases with a proprietorial smile.

With an engaging leer Faggot announced that the firm would exchange, absolutely free of charge, any lady's old dress and shoes for model dresses and shoes from Paris, adding that the offer included handbags and the odds and ends that go in them. (…)

"**G**uerlain, Chanel, Mitsouko, Narcisse Noir, Chanel Number Five, evening dresses, cocktail dresses..." (…)

The ice was broken. Women from all sides poured on to the stage. In the general hubbub of talk, laughter and cries a man's voice was heard, "I won't let you!" followed by a woman's saying: "Let go of my arm, you narrow-minded little tyrant!" Women were disappearing behind the curtain, leaving their old dresses there and emerging in new ones. (…)

Then Faggot announced that because it was so late, in exactly a minute's time the shop would close until tomorrow evening. This produced an incredible scuffle on stage. Without trying them on, women grabbed any shoes within reach. One woman hurtled behind the screen, threw off her clothes and seized the first thing to hand – a silk dress patterned with enormous bunches of flowers – grabbed a dressing gown and for good measure scooped up two flacons of scent. Exactly a minute later a pistol shot rang out, the mirrors disappeared, the showcases and stools melted away, carpet and curtain vanished into thin air. Last to disappear was the mountain of old dresses and shoes.(…)

At this point a new character joined the cast: "**I**t's high time, sir, that you showed the audience how you do your tricks, especially the bank-note trick." (…)

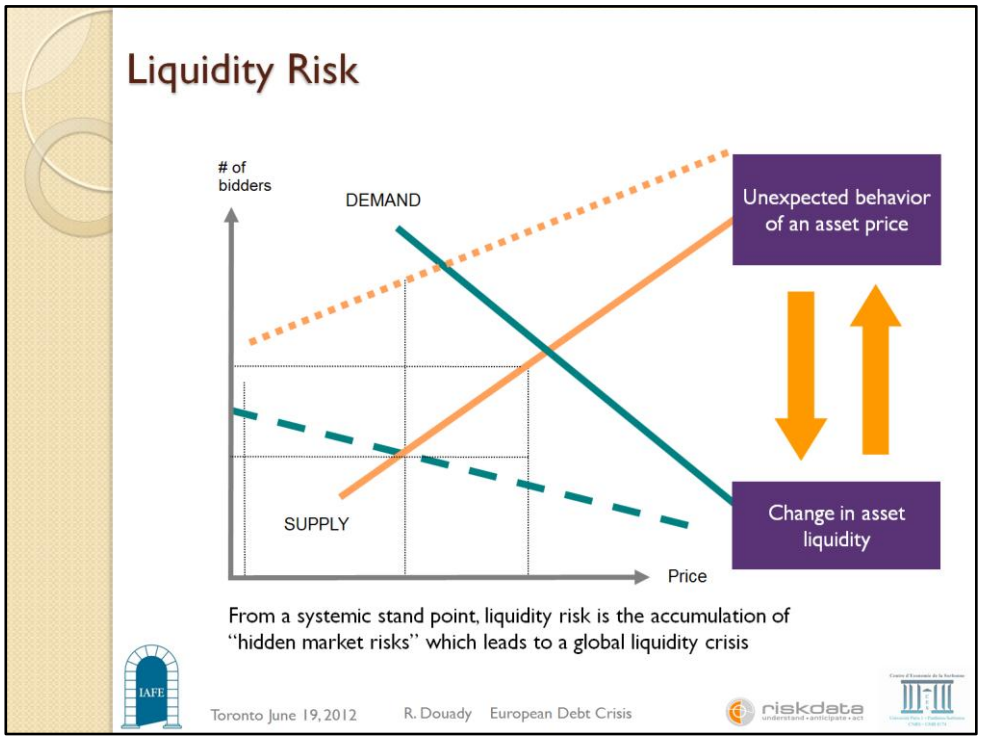
"**I** beg your pardon," replied Faggot. "I'm sorry, but there's nothing to reveal. It's all quite plain." (…)

Suddenly the stage was empty. The horrible Faggot and the sinister cat Behemoth melted into the air and disappeared, just as the magician had vanished earlier in his shabby armchair. (…) *Bulgakov "The Master and Margarita" 1930-40*

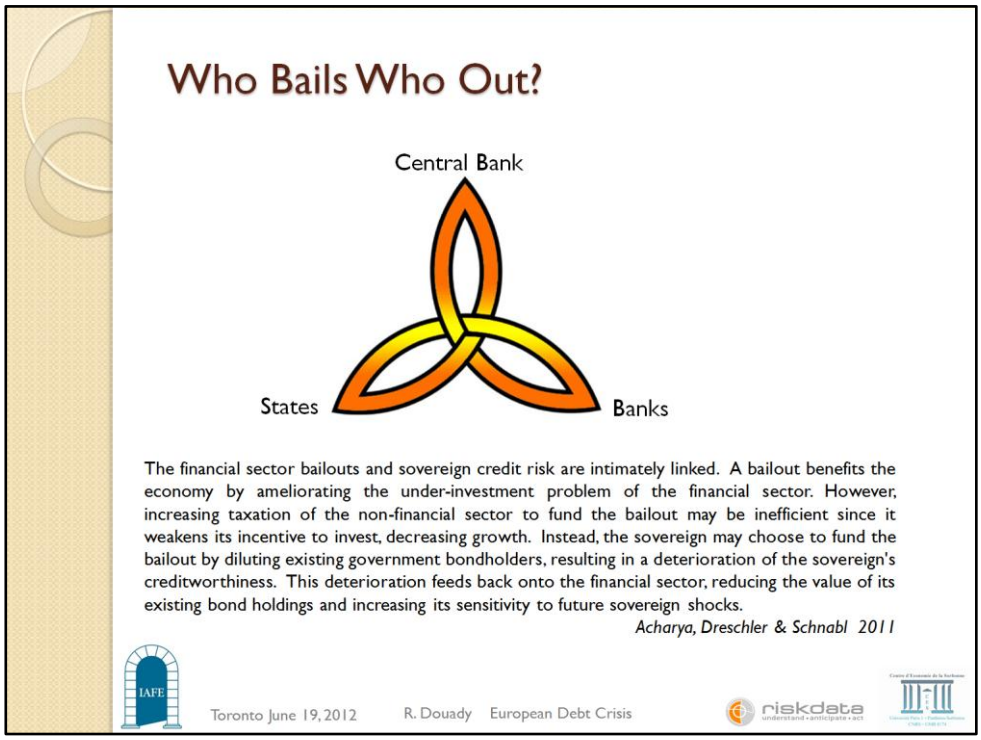
This excerpt from Bulgakov's masterpiece *The Master and Margarita* has not aged one bit. This is the beauty of the "marked-to-market" accounting rule: "There is nothing to reveal. It's all quite plain…"

A good proof that the demand for sovereign bonds is less driven by classical rick/return considerations than by capital cost and liquidity ones is to observe two very similar investments during Sep 2008 crisis: a rolling 20Y T-bond and a corporate AAA bond with the same maturity. Both are, as expected, highly correlated, but when the crisis occurs, a *flight to quality* make the corporate bond – even though AAA – plunge, while the demand for the T-bond is maintained. Later on, when the market recovers in Mar-Apr 2009, the allocation in corporate bonds is readjusted and the AAA bond experiences a rally that the T-bond ignores.

Most "black swans" are in fact dynamic effects endogenous to the market, rarely have they external causes. Traders blame a "liquidity trap" which are like the mirror image of a speculative bubble. Demand vanishes – here on corporate bonds – while offer flows in. The opposite occurs on assets sought in replacement – here T-bonds. This phenomenon can be anticipated, as well as its impact on other assets, both qualitatively and quantitatively, as it repeatedly occurs in any long enough historical period.



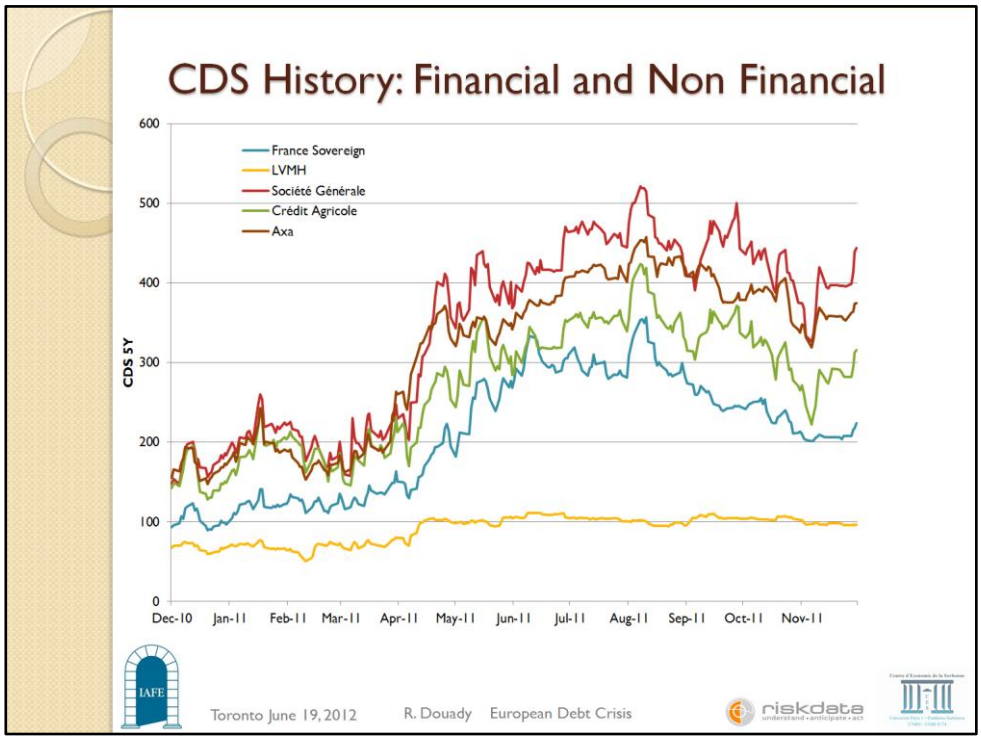
Liquidity risk is not as much the effect of illiquid assets; their illiquidity is known and not a surprise. It is rather the sudden lack of liquidity of assets thought as liquid ones. Let us remind that an asset is deemed *liquid* if it can promptly be converted into cash or equivalent, or can easily be posted, without haircut, as collateral of a loan that is immediately financed. During a crisis, assets that, prior to the crisis, had sustained demand, may experience a drop of it, while, conversely, their supply surges, due to the panic and the need to get rid of them. In such circumstances, where market dynamics operate as the mirror image of a speculative bubble, but in a much more accelerated timing, the price of assets becomes unrelated to the theoretical "discounted expectation of future returns" even taking into account default risk.
When it comes to sovereign bonds of countries deemed "fragile", as long as replacement assets exist, liquidity crisis may lag and close access of the country to credit markets. More than 10 years after its default in 2001, Argentina considers that its access to credit is still quasi impossible, whereas the country's finances are today much better off.



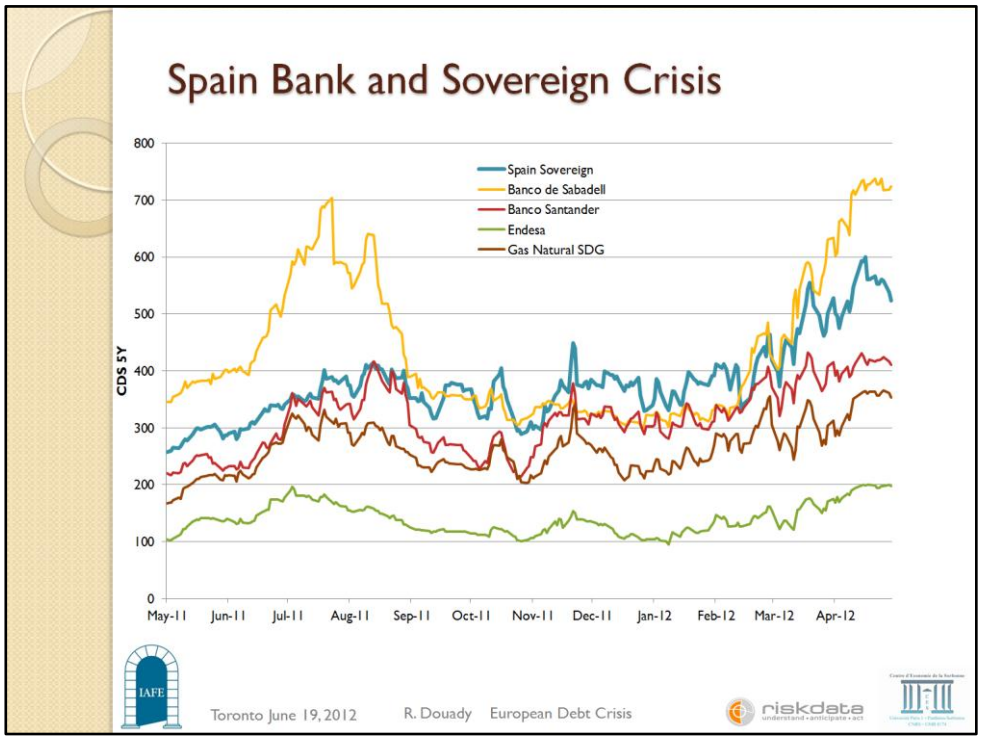
In a recent research work, Acharya & al. pointed the intricacy between governments, banks and central banks mutual implicit guaranty. States offer their banking system an implicit guaranty, due to the social and economic disorder that would result from a major banking crisis, but also some times explicit, through the customers guaranty fund. Conversely, banks of a given country, or even at the continental level, are strongly solicited to buy sovereign debt, through regulatory capital incentives and other "friendly pressure". When this mutual bailing system turns instable, the central bank (ECB, Fed, etc.) is called for help of various kind: QE (money printing), TARP and T-bond purchase program in the USA. The ECB first created the EFSF, then made a European version of QE by opening virtually unlimited lines of credit to troubled financial institutions and, finally bailing states themselves, such as Greece, Ireland, Portugal.

This series of mutual bail-outs creates dynamic financial cycles which are fast versions (in months or weeks) of the usual economic cycles, but with as significant consequences on the "real economy", in particular on investments of the corporate sector and, therefore on the level of employment.

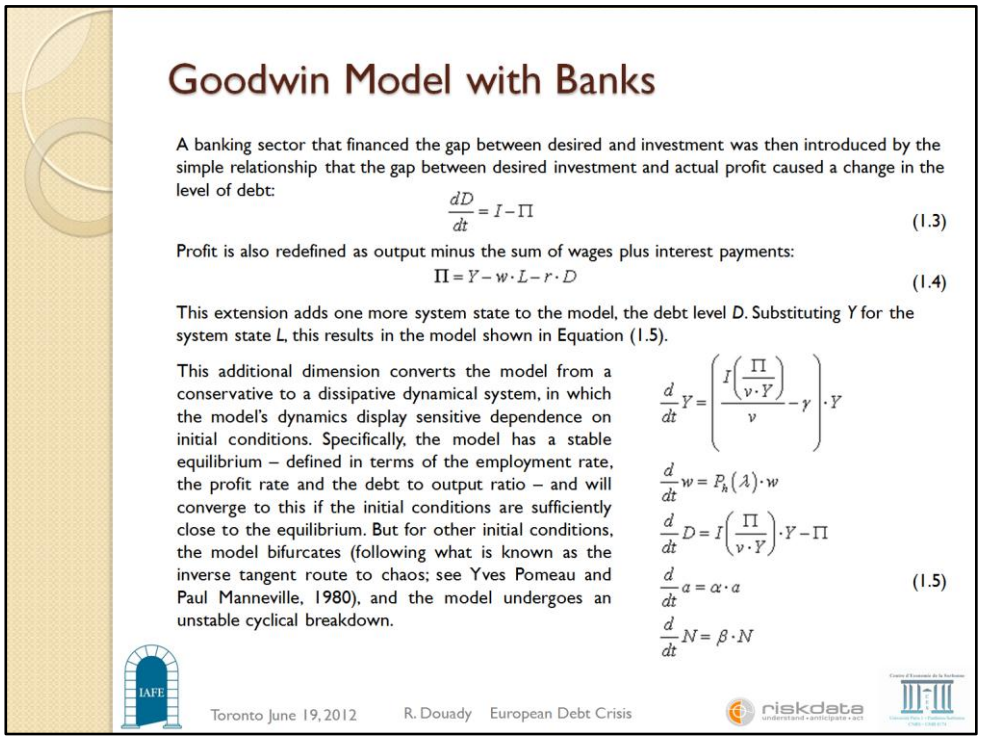
The recent case of Spain is interesting as this imbrication between the state and the banking system is explicitly admitted and the bail-out program addresses the joint problem. For the first time we heard appeals to create a "European banking union". Admitting this obvious link has strong political implications, whether legal in the European treaties, or simply by the population acceptance of its own responsibility in the financial disorder. The German blockage of vital measures is a good example.



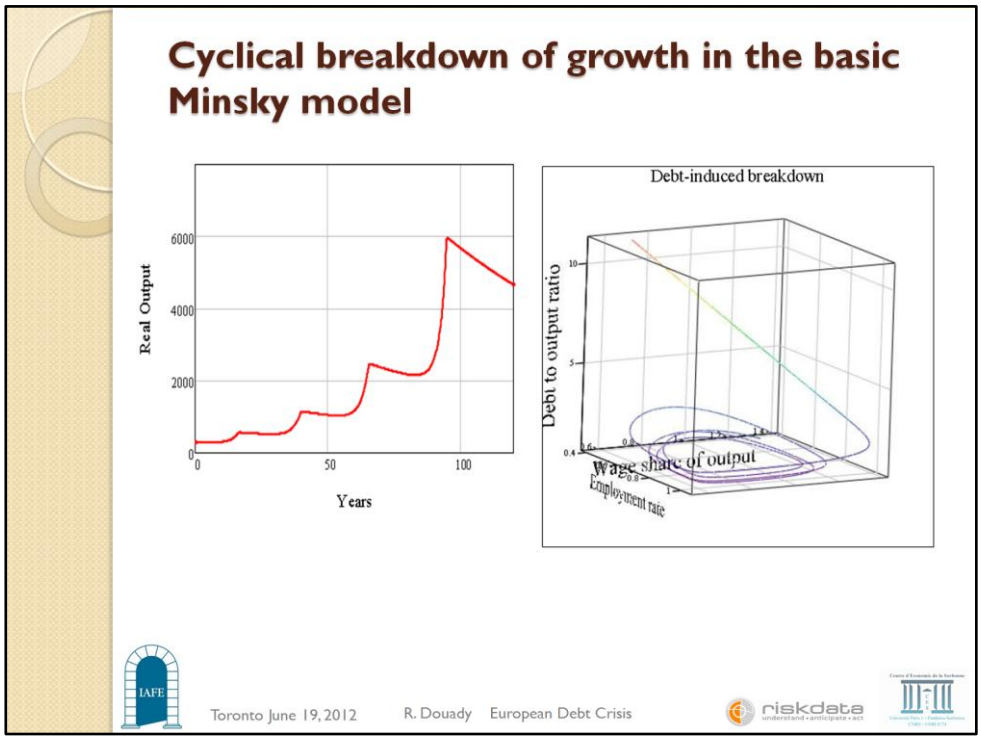
To support evidence of the impossibility to separate sovereign risk from that of the financial sector, we have plotted the historical value of several French CDS rates: that of the state, that of two large banks – a solid one, Credit Agricole and a troubled one Société Générale – an insurance company, Axa, and that of a non financial company, LVMH, whose business is very international (4 companies pertaining to the CAC40 index). The correlation between the state and the financial sector through Aug-Sep 2011 sovereign debt crisis is extremely high, while non financial institutions follow their own path (we have tested several non-financial firms: their CDS rate is closer to that of LVMH than to that of the state).



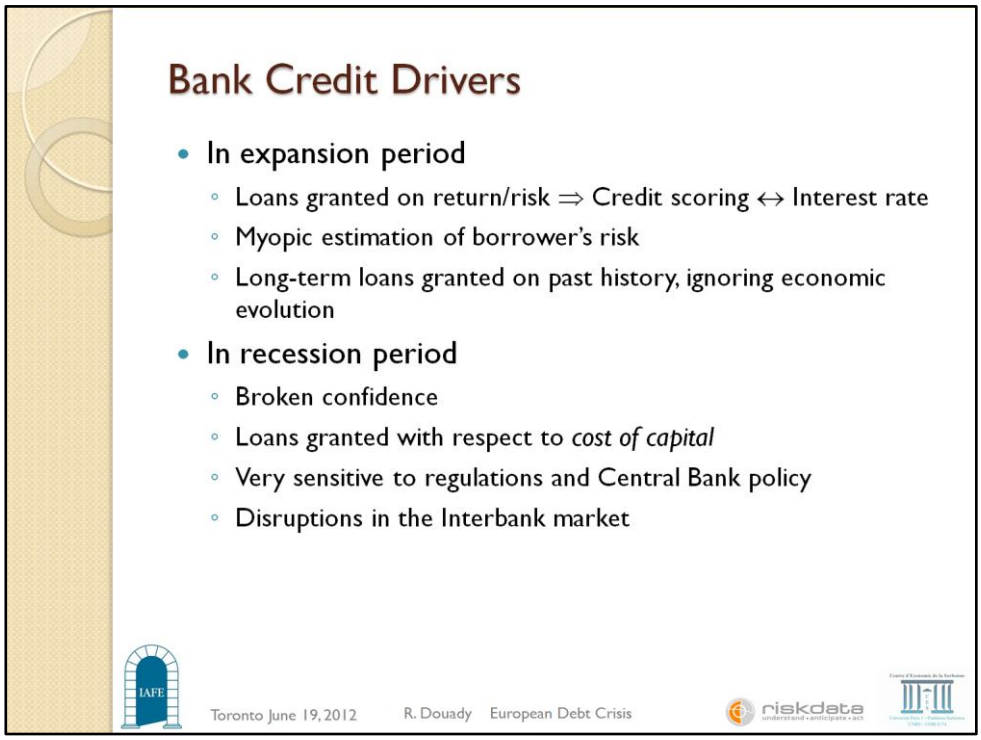
In Spain, the same correlation between the sovereign CDS and the financial sector is observed, while the non-financial sector is preserved. Except that the much tighter situation exacerbates market reactions, strongly impacting the CDS rate of more fragile banks, such as Banco de Sadabell, known for its exposure to real estate.
The case of Gas Natural SDG, which is 1/3 owned by La Caixa, one of the largest Catalan financial institution, shows how ownership and, consequently, bail-out possibilities, influence the market appreciation of default risk.



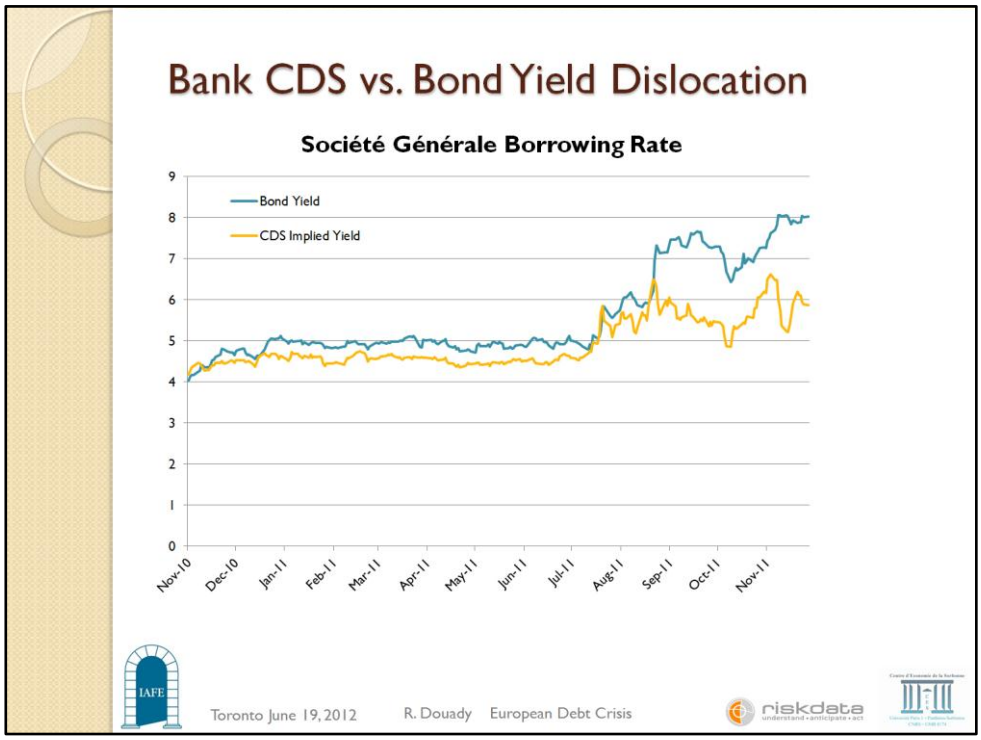
In order to visualize Minsky's instability hypothesis where firms leverage increases during bullish periods and defaults occur as a consequence in subsequent bearish ones, a banking sector has been added to Goodwin model by Keen. This model emphasizes the coupled dynamics between the corporate sector, deemed "value creator", the working population, helping to create value in exchange of wages and the banking system as a money facilitator.



"Optimal choices" of each sector, seen as an "intelligent agent", but with a myopic estimation of risk – based of short term estimates, not incorporating the global economical dynamics – lead to large cyclical oscillations.
Eventually these oscillations destabilize the system which drifts towards a situation with unsustainable debt and deflation: absence of bank credit, of corporate investment and, finally high unemployment.

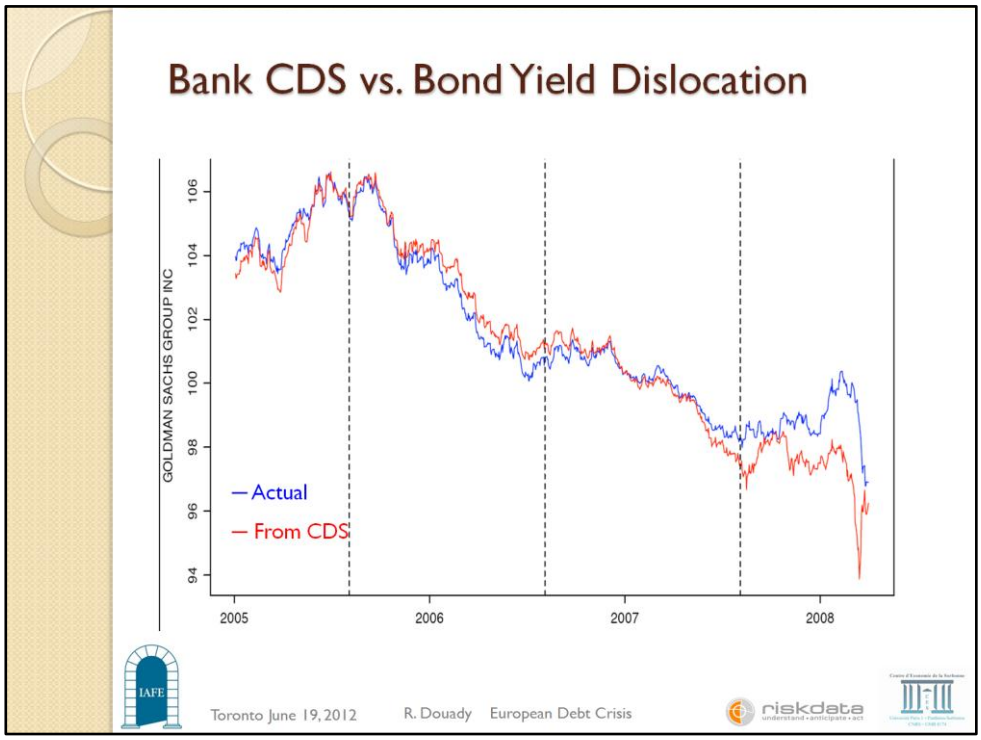


In expansion periods, Minsky noted the myopic attitude of banks, lending on default estimates based on the recent past and increasing the firms and household leverage, making them extremely sensitive to a downturn: many "hedge borrowers" then become "speculative" or even "Ponzi".
Expansion periods are also subject to regulatory easing, as regulators tend to trust the system's self-regulation.
In recession periods, after the downturn has occurred, confidence is broken at all levels: between banks and corporations, banks and households and, even between banks themselves. Concomitantly, regulations tighten, more capital is requested from banks for lending, while credit scoring are also downgraded, due to the deterioration of balance sheets and income statements. The primary river of banks lending activity is no longer a return/risk assessment, but an estimation of the cost of capital. Because of the worsened interbank confidence and the more difficult access to liquidities, banks are under capital pressure and restrict their loan activity (for instance, the amount of mortgage loans in France between Q1 of 2011 and Q1 of 2012 was divided by a factor 4). This mechanism is probably the strongest path towards recession and, possibly, deflation, as it prevents corporation from engaging incompressible expenses, such as hiring.

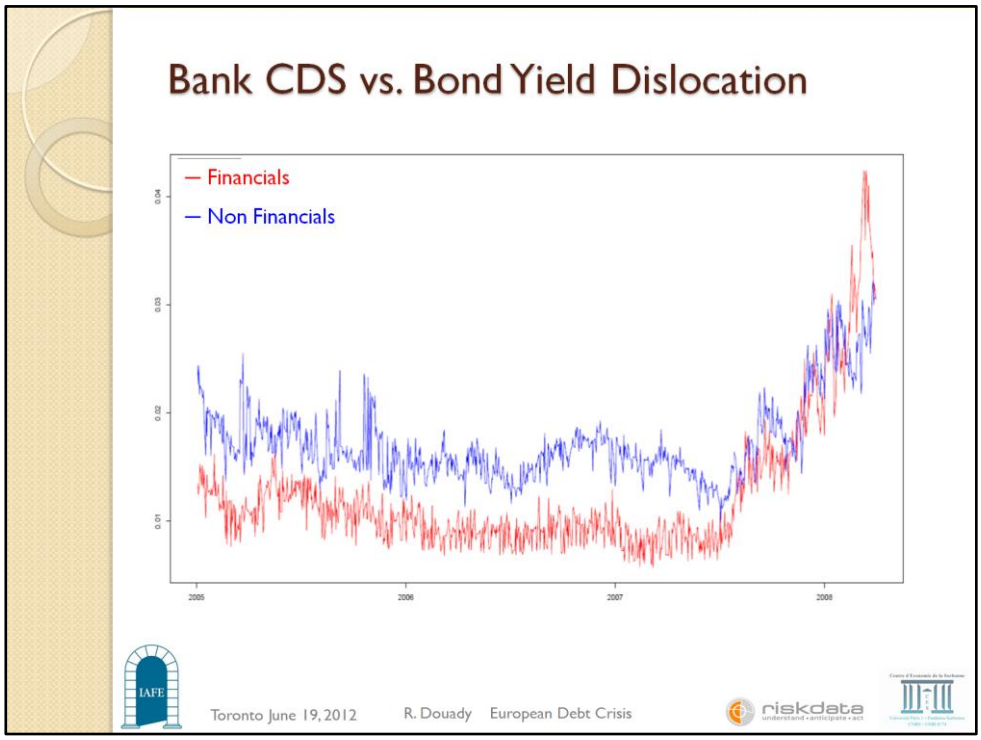


An illustration of capital cost arbitrage is the disruption between the yield of bonds issued by Société Générale and its CDS rate, which occurred during the sovereign debt crisis of Aug-Sep 2011. For an investor, holding a bank's bond requires a regulatory capital determined by the Cooke ratio, which increased from 4% to 8% after the bank was downgraded. On the other hand, hedging the bond with a CDS only reduces the capital to that required by the CDS writer, usually another bank with a better rating, hence a Cooke ratio of 4% - only half the way.

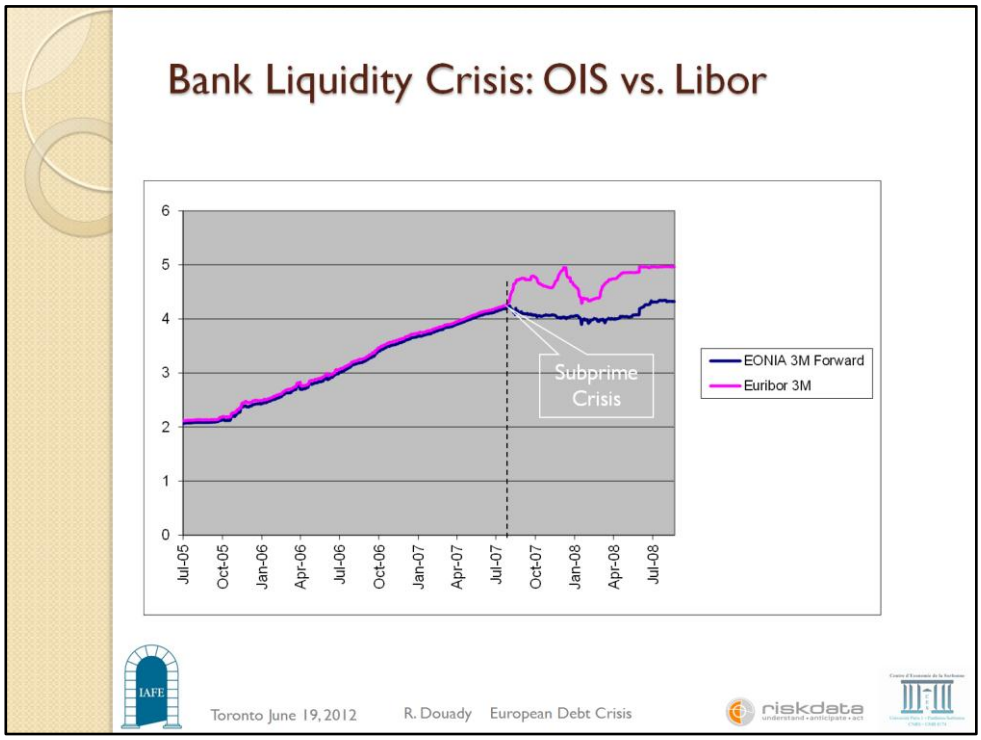
In this graph, the orange curve represents the synthetic bond yield one would obtain from an interbank Libor swap and the sale of a CDS on Société Générale. Because the swap rate is based on a transaction that only requires a capital equal to its "credit value adjustment" (CVA), significantly lower than the Cooke ratio applied to the notional amount, this position, which synthetically replicates the bank's risk, is priced at a lower yield by the market.



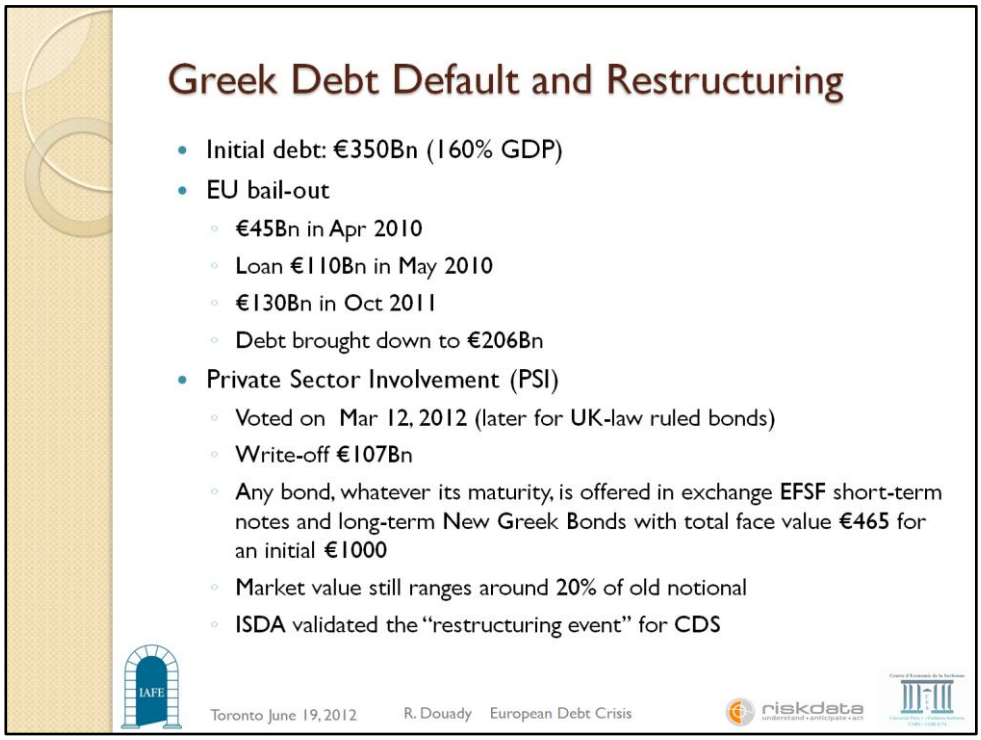
The case of Goldman-Sachs in 2008 goes the opposite way. In the case, immediately after the crisis, while markets in total darkness on the exact situation of banks, CDS are highly demanded, but bonds are simply kept in portfolios, hence their price is more or less maintained. The surge of CDS rates implies a drop of the synthetic bond price and its depart from the actual bond price.



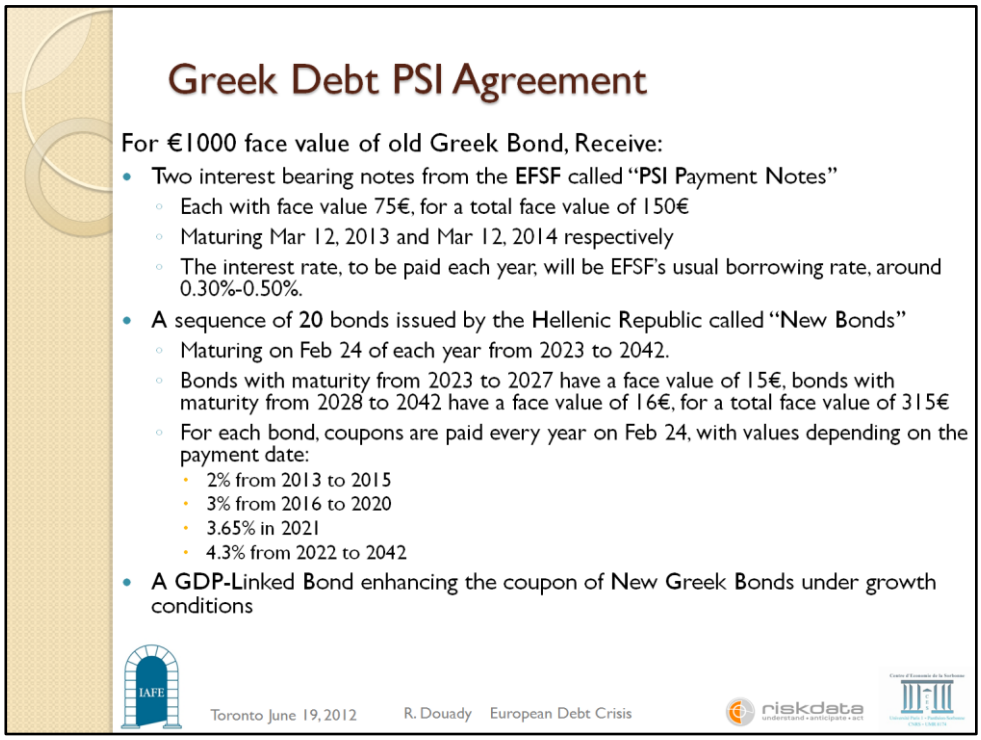
Generally speaking, due to the mechanism described for Goldman-Sachs bonds and CDS, the average *basis* that is, the difference between the actual yields of bonds and that one can theoretically compute from the CDS rates, suddenly rises after Lehman's failure. Before the crisis, the average *basis* in the financial sector was lower than in other sectors, due to liquidity reasons. After the crisis, interbank confidence disappeared and the *basis* of the financial sector followed the same path as that of other sectors.



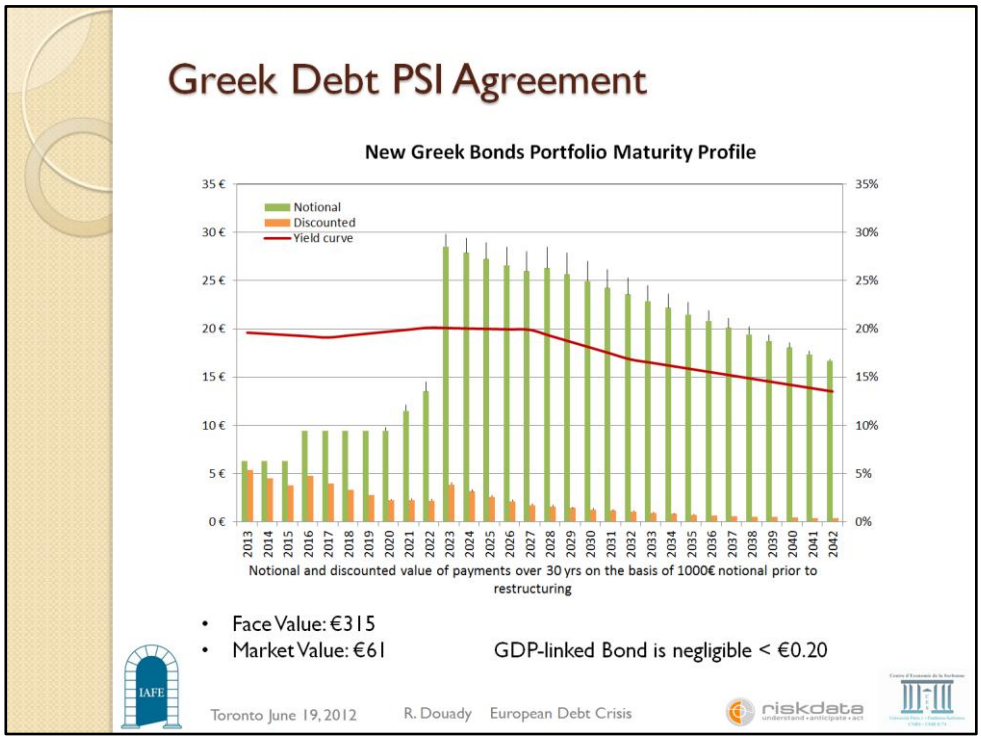
Another illustration of the disruption in the interbank market is the sudden difference between Libor and OIS swap rates, thus invalidating arbitrage theory.
This difference is due to the extra yield requested by banks for mobilizing capital over 3 months instead of 1 day. This discrepancy can be seen as the price of a cap option on the cost of capital: by lending for 3 month, the bank is exposed to a surge in its refinancing cost, would it need capital for its operations or for meeting margin call requirements.



According to the terms of the Greek PSI agreement for debt restructuring, holders of sovereign Greek bonds will be delivered a portfolio of EFSF "PSI notes" and New Greek Bonds. In the context of the European debt crisis, we calculate the price of the new portfolio to be 211€ for each 1000€ of initial face value, whatever the particular bond being held, 150€ (71%) of EFSF note, 61€ (29%) of New Greek Bonds, the GDP-linked securities counting for less than 0.2%. The combined Duration of the two EFSF notes is 1.5, while that of the New Greek Bonds is close to 10 years. The first phase of the swap, involving bonds issued under Greek law, was completed on March 12, cancelling more than 94.8 billion Euros in near and mid-term debt. The deadline for Greek Debt securities issued under foreign law has been extended to April 4, but the Greek Ministry of Finance has warned that investors who refused voluntary exchange would be forced to accept the same swap terms. Moreover the International Swaps and Derivatives Association (ISDA), which manages Credit Default Swap (CDS) rules, has declared that a Restructuring Credit Event has occurred with respect to the Greek Private Sector Involvement (PSI). A CDS auction on Mar 19, 2012 has valued sovereign Greek bonds at 21.5% of their face value for the purpose of CDS settlement.



A sufficient proportion of bond holders has, accepted the swap provisions that will ultimately become mandatory for all investors. Moreover, whatever the term structure of previous bonds, they are being uniformly exchanged for a set of securities with clearly pre-defined characteristics. Specifically, 1000€ face value of old sovereign Greek bonds is replaced by a new basket with a combined face value of 465€: 150€ for EFSF notes (equally split between 1-year and 2-years) and 315€ for a set of New Greek Bonds, producing as a whole an amortizing structure from 11 years to 30 years (see Fig. 1). The GDP-linked securities represent a small coupon enhancement in case the Greek GDP meets certain conditions of level and growth. They have little impact on either price and or risk profile of the combined structure. Altogether, the portfolio of New Greek Bonds has an average duration of slightly under 10-years. In terms of market value as of today, while the EFSF notes are approximately equal to their face value, the portfolio of New Greek Bonds is worth 61€ and the GDP-linked securities amount to a fraction of a Euro (exact price depending on Greek growth assumptions), making the whole structure slightly above 211€.

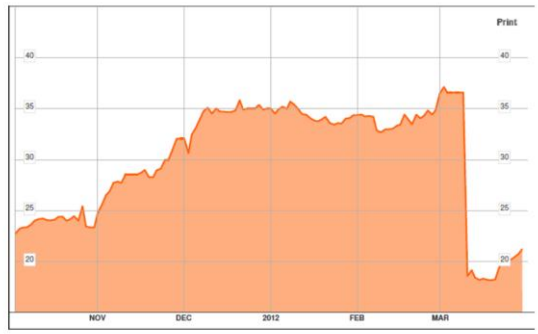


Green bars represent the notional amount paid by the Hellenic Republic on Feb 24 of each year. Purple complements are the expected enhancement due to the GDP-linked securities, assuming an optimistic hypothesis that the coupon will gradually start being paid in 2020 up to being fully paid in 2030 and onwards. The orange bars represent the current value of these payments after discounting by the current zero-coupon yield curve (right scale), assuming yields based on current prices of the New Greek Bonds: 20% up to 11yrs, decreasing to 17.3% at 30yrs. Small brown complements on top of orange bars represent the discounted value of the GDP-linked coupon payments.

Key Rate Durations are represented in this graph. The resulting modified Macaulay duration is indicated by the orange arrow: 9.79 years.

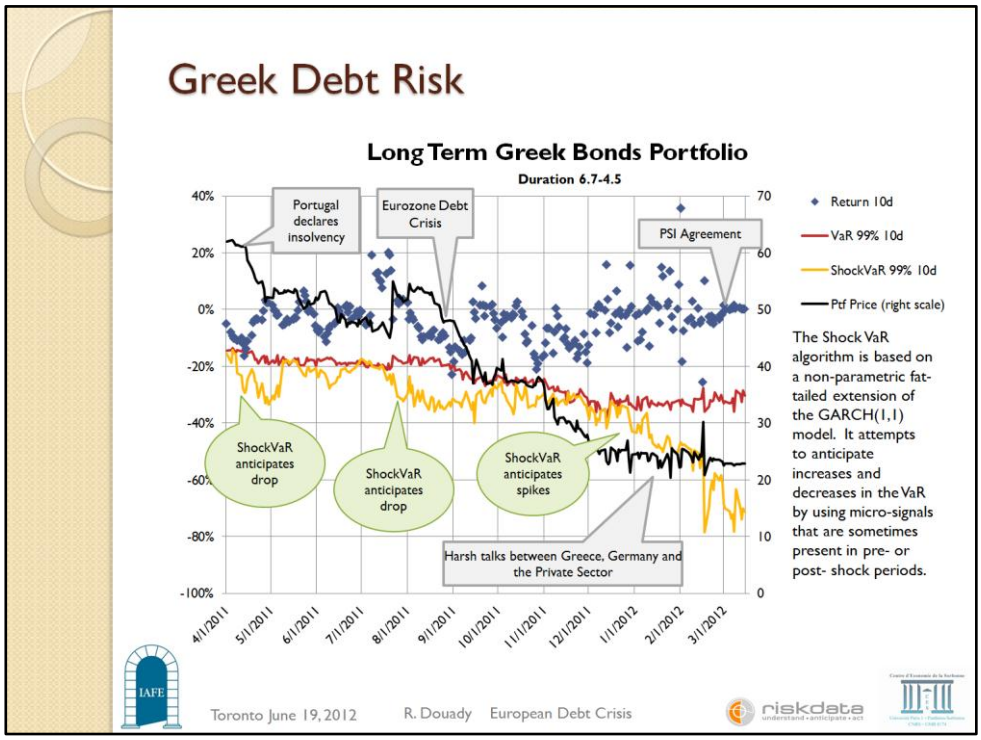
Greek Debt Restructuring

- Yield experience a mechanical drop due to the change of Face Value



10Y Sovereign Greek Yield (Bloomberg)

This Bloomberg® chart of the 10Y sovereign Greek yield shows the mechanical drop on March 12 from 36.55% to 18.45% upon restructuring, corresponding to the change in face value.



This graph shows the historical price of the long term bond portfolio, its 10 days returns (shown ahead for proper comparison with the VaR), the standard Riskdata® VaR (in green) and the ShockVaR (in red). It is visible that every time the ShockVaR departs from the standard one, a crisis is about to occur.

We tested, over the past year (Apr 2011 – Mar 2012), Riskdata's standard VaR and Shock VaR against actual returns of 28 individual bonds and 3 portfolios, one concentrated on short bonds, with a duration decreasing from 3 to 2 years, one equally weighted on all Greek bonds, having a duration decreasing from 4.7 to 3.2, and one concentrated on long term bonds, with a duration decreasing from 6.7 to 4.5. It is interesting to notice that, unlike what happens usually, the VaR of individual bonds and that of aggregated portfolios hardly depends on their duration: through the test period, it increases from 15% to 35-40%, whatever the security, showing that the market was anticipating that the restructuring would deliver the same portfolio of new bonds, whatever was the originally held security.

The ShockVaR is not only more efficient as a VaR measure, it also demonstrated its ability to predict crises: whenever the ratio ShockVaR/VaR rises, the probability of a crisis occurring in the near future is high. In this case, this ratio surged in three occasions (see Fig. 4). First in April 2011, when Portugal declared insolvency, immediately followed by a sharp rise of Greek spreads; then in July 2011, anticipating the August crisis which impacted all of the Eurozone, and finally in January-February 2012, while it wasn't obvious whether the PSI agreement would be accepted or not.

Politicians and economists advertising abandoning the Euro should be jailed for irresponsibility and "crime against humanity"[1]. Like one cannot turn a movie backward in reality, the "eraser" doesn't exist in history. There is no peaceful way out of the Euro.

The consequences of an explosion of the Eurozone would be dramatic and immediate. Financial deterioration would occur in weeks, an economic disaster can be forecasted within a year with its cohort of social consequences. The economic machine will be totally broken in a matter of months. Europe having such a weight in the global economy, despite its dynamism, USA will not be able to face such a large vanishing client and its own debt problem will blow up in its face. Emerging countries such as China will also enter into recession because of exports downturn and will not be able to save the situation.

Reasoning supposedly on "hard facts", such as the total amount of money to be reimbursed, is often a lure. Nothing fluctuates more than the value of money. The more unstable the situation, the more one must focus on preserving the *economic machine*: people at work and social order. Talking "hard facts", no debt will ever be refunded if the *economic machine* is broken. In a fully globalized economy, any attempt to pretend to insulate a country against the risk of others, ignoring problems at a global level, is a suicide in the short or medium term.

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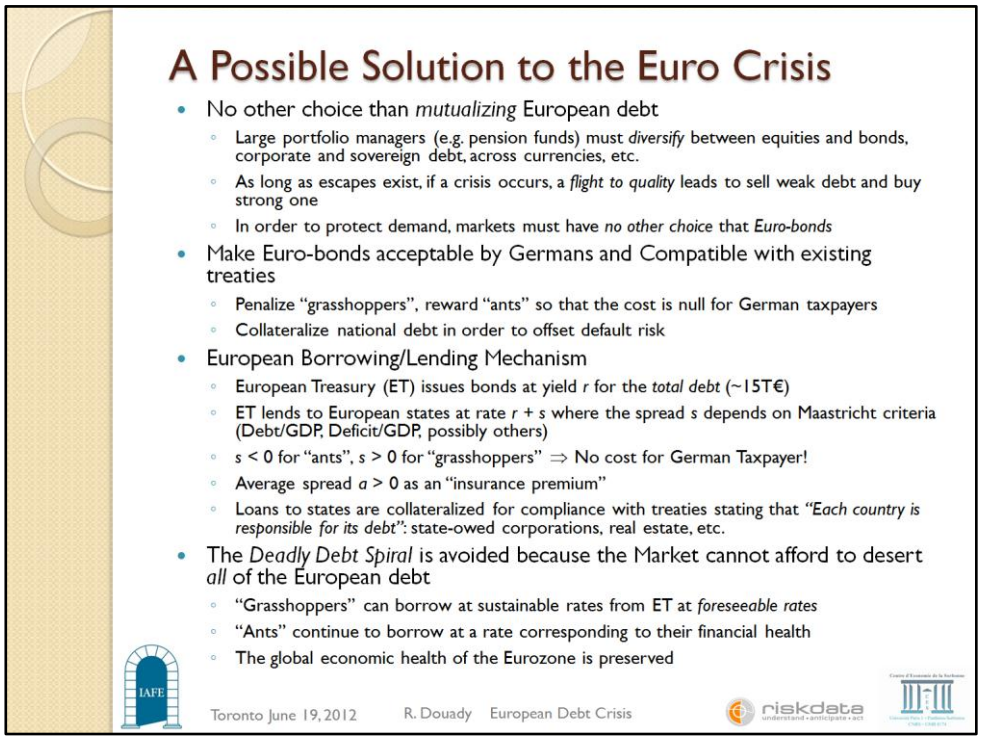
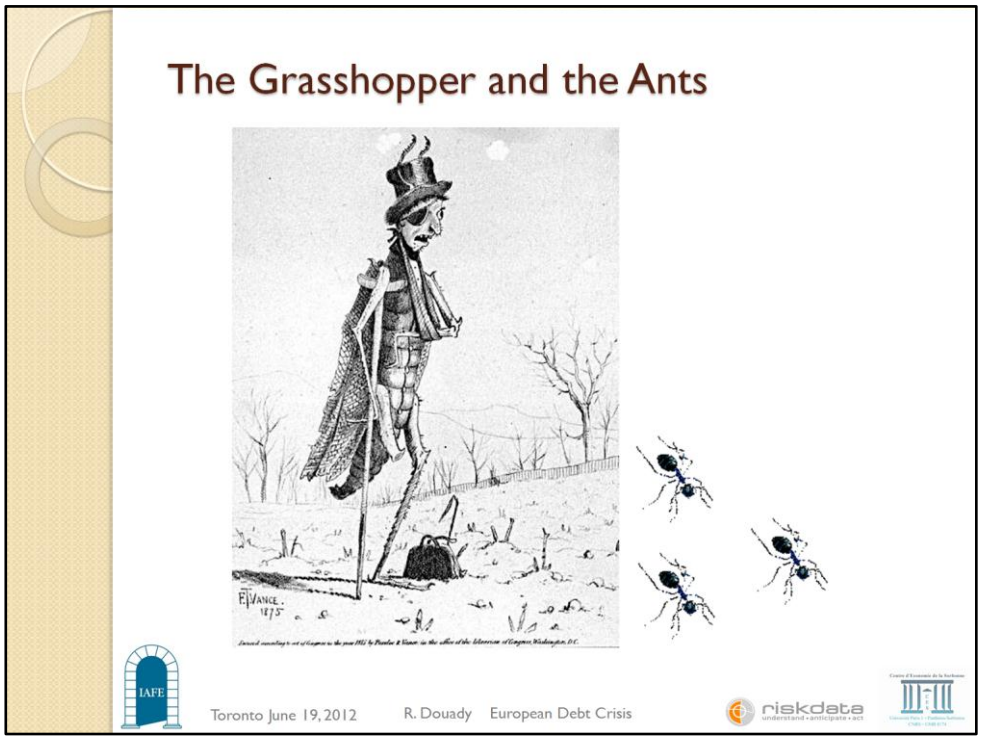
[1] Reference to former French Premier Rocard who, not exactly knowing the topic, declared that "Math teachers who teach their students how to make stock shots, commit, without their knowledge, a crime against humanity."



Ironic comments on the debt are easy, maneuvering the ship in the storm is another story! Paths to economic recovery exist but are extremely narrow. As Henri Laborit (Nobel Prize of medicine) once said in *Mon Oncle d'Amérique* (*My American Uncle*), in order to fly a plane, one cannot ignore the law of gravitation, but do with it. Similarly, in order to resolve the European debt problem, one cannot ignore the basic market law, namely *Supply and Demand*, but do with it. In order not to be *cornered* by the Market, Europe must itself *corner* it by proposing only one type of paper and manage internally to differentiate between the various countries according to their financial health.

Once this premise is understood and accepted, constraints for a solution are simple and clear, so that all obstacles can be overcome and a solution be designed.

The proposed solution is probably not perfect and many objections will certainly rise. But the problem at stake is so huge that discarding it on the only argument that it is not perfect is highly irresponsible, unless one, for obscure reasons, advocates for an economic and social disaster.



In a field one summer's day a grasshopper was hopping about, chirping and singing to its heart's content. A group of ants walked by, grunting as they struggled to carry plump kernels of corn.

"Where are you going with those heavy things?" asked the grasshopper.

Without stopping, the first ant replied, "To our ant hill. This is the third kernel I've delivered today."

"Why not come and sing with me," teased the grasshopper, "instead of working so hard?"

"We are helping to store food for the winter," said the ant, "and think you should do the same."

"Winter is far away and it is a glorious day to play," sang the grasshopper.

But the ants went on their way and continued their hard work.

The weather soon turned cold. All the food lying in the field was covered with a thick white blanket of snow that even the grasshopper could not dig through. Soon the grasshopper found itself dying of hunger.

He staggered to the ants' hill and saw them handing out corn from the stores they had collected in the summer. He begged them for something to eat.

"What!" cried the ants in surprise, "haven't you stored anything away for the winter? What in the world were you doing all last summer?"

"I didn't have time to store any food," complained the grasshopper; "I was so busy playing music that before I knew it the summer was gone."

The ants shook their heads in disgust, turned their backs on the grasshopper and went on with their work. *But they had no more work…* *(Aesop & RD)*