MIRACULOUS FINANCIAL ENGINEERING OR TOXIC FINANCE? THE GENESIS OF THE U.S. SUBPRIME MORTGAGE LOANS CRISIS AND ITS CONSEQUENCES ON THE GLOBAL FINANCIAL MARKETS AND REAL ECONOMY

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Abstract

In the fall of 2008, the U.S. subprime mortgage loans defaults have turned into Wall Street's biggest crisis since the Great Depression. As hundreds of billions in mortgage-related investments went bad, banks became suspicious of one another's potential undisclosed credit losses and preferred to reduce their exposure in the interbank markets, thus causing interbank interest rates and credit default swaps increases, a liquidity shortage problem and a worsened credit crunch condition to consumers and businesses. Massive cash injections into money markets and interest rates reductions have been assured by central banks in an attempt to shore up banks and to restore confidence within the financial system. Even Governments have promoted bail-out deal agreements, protections from bankruptcies, recapitalizations and bank nationalizations in order to rescue banks from disastrous bankruptcies.

The credit crisis originated in the previous years when the Federal Reserve sharply lowered interest rates (Fed Funds at 1%) to limit the economic damage of the stock market decline due to the 2000 dot.com companies' crisis. Lower interest rates made mortgage payments cheaper, and the demand for homes began to rise, sending prices up. In addition, millions of homeowners took advantage of the rate drop to refinance their existing mortgages. As the industry ramped up, the quality of the mortgages went down due to poor credit origination and credit risk assessment. Delinquency and default rates began to rise in 2006 as interest rates rose (Fed Funds at 5,25%) and poor households across the US struggled to pay off their mortgages. Many of them went bankrupt and lost their homes but the pace of lending did not slow.

Banks have transformed much of the high-risk mortgage debt (securitizations) into mortgage-backed securities (MBS) and collateralised debt obligations (CDO), and have sold these assets on the financial markets to investment firms and insurance companies around the world, transferring to these investors the rights to the mortgage payments and the related credit risk. With the collapse of the first banks and hedge funds in 2007 the rising number of foreclosures helped speed the fall of housing prices, and the number of prime mortgages in default began to increase. As many CDO products were held on a "mark to market" basis, the paralysis in the credit markets and the collapse of liquidity in these products let to the dramatic write-downs in 2007. When stock markets in the United States, Europe and Asia continued to plunge, leading central banks took the drastic step of a coordinated cut in interest rates and Governments coordinated actions that included taking equity stakes in major banks.

This paper written by the Author (on October 7th, 2008) at the rise of these dramatic events, aims to demonstrate, through solid and fact-based assumptions, that this dramatic global financial crisis could have been addressed and managed earlier and better by many of the stakeholders involved in the subprime mortgage lending process such as, banks' and investment funds management, rating agencies, banking and financial markets supervisory authorities. It also unfortunately demonstrates the corporate social responsibility failure and the moral hazard of many key players involved in this crisis, since a lot of them probably knew quite well what was happening but have preferred not to do anything or to do little and late in order to change the dramatic course of the events.

Key Words: U.S. Subprime Mortgage Loans Crisis, Toxic Finance, Financial Engineering

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"There's none so blind as those who will not see"
(The Prophet Jeremiah)

Most economists and financial analysts identify amongst the main causes of the current global financial crisis, the U.S. Federal Reserve's low interest rates policy (Fed funds) of the latest years with the resulting credit euphoria of both lenders and borrowers, the more "relaxed" credit initiation policies and procedures, the overwhelmingly positive expectations on the real estate market growth and prices increases, and the massive use of badly controlled innovative financial engineering tools.

Although these solid and fact-based arguments certainly represent a relevant and accurate portion of the "big picture" and help identify and explain some of key determinants of the global financial turmoil, the degree of complexity reached by the phenomenon and its global spread seem to suggest a more interrelated and articulated set of responsibilities than the ones represented by the more aggressive expansionary US monetary policy, the less rigorous credit policies and some adverse economic and market conditions.

There is no doubt that in today's globalized world and highly integrated financial markets the wave of profits and losses (from capital, monetary, equity, debt, derivatives, commodities, liquidity, foreign exchange markets) moves very quickly across the continents. The speed of communication devices, online and real-time decision support systems, advanced ICT architectures and computer-based solutions have certainly simplified but also amplified the benefits and threats associated to global financial trading, since the higher interrelations and integration leads also to a higher level of complexity.

A more thorough and in–depth analysis of how the U.S. subprime mortgage loans crisis has originated and evolved, seems to reinforce the idea that this dramatic financial event is predominantly related to the underestimated complexity generated by the exponential growth of innovative financial engineering products (derivatives), by the SPVs *(Special Purpose Vehicles*), by the too ambitious short-term oriented bonus/profitability/capital gains objectives of banks' management and their shareholders, by speculators, and by a major failure of banks, rating agencies, and banking and financial markets' supervisory authorities to proactively and timely assess and mitigate the exploding crisis.

An evidence of this assumption is proved by the difficulty of many experienced credit and financial analysts to believe that all the risk management specialists of banks and financial institutions involved in the subprime mortgage loans crisis, simultaneously lost control of their portfolio risk and had no clue about what was really happening in their organisations even at the very senior management levels.

Even more incredible to believe is that the subprime mortgages loans portfolios have deteriorated so suddenly and unexpectedly that risk managers, internal auditing teams, external independent auditors, rating agencies, banks management, industry and investment analysts and banking and financial markets supervisory authorities (i.e., FED and SEC and others) have not perceived the dangerous rising burden of risks or at least have seriously underestimated the potential blast. This is quite difficult to believe, indeed, given that in the US mortgage lending market two semi-governmental agencies alone, like mortgage giants Fannie Mae and Freddie Mac, account for over sixty percent of the total national mortgage lending industry.

The banks' subprime mortgage loans securitizations have received in many cases *investment grade* ratings (i.e., Fannie & Freddie – AAA rating) from the leading rating agencies (i.e., Standard & Poor's, Moody's and Fitch) for the placement of their securitized mortgages loans as structured products and derivatives (i.e., *CDOs* - Collateralized Debt Obligations, *ABS* – Asset-Backed Securities, *MBS* Mortgage-Backed Securities). This is a very convenient way of funding the business especially with a AAA ratings (low default risk = low cost of debt capital (*WACC*) from the well-known *CAPM* methodology). This generous low-risk assessment of the rating agencies has recently led many investors and economic journalists to declare serious concern about a possible conflicts of interest in the relationship between the two parties (banks and the rating agencies). Furthermore, the securitization process was expected to make the markets safer through diversification and distribution of risks to a wide spread number of investors and investment portfolios globally. CDOs are offered in trances of increasing seniority (equity/first loss, mezzanine, senior, super-senior). At the more senior level of debt, investors are able to obtain better yields than those available on more traditional securities. CDO issuers usually hedge their position by selling credit default swaps (CDS) on the reference portfolio. The counterparties in the hedging transaction are the ones who actually sell credit risk to the CDO buyers.

Other doubts that seem to confirm the unlikely hypothesis that senior bankers, rating agencies analysts and fund managers were unaware of the subprime crisis escalation are represented by the traditional preventive and pro-active fact-based risk management approaches and philosophy of most North-American banking and financial services institutions. Credit and financial risk management specialists of the retail and investments banks, rating agencies and mutual funds are highly qualified professionals rigorously trained to make fact-based decisions on the debt (lending)/securities/derivatives portfolios, who rely heavily on highly advanced and state-of-the-art metrics, statistical models and

computer-based technologies to assess credit, operational, market and financial risks.

In addition to these powerful tools, these professional also use a set of standard internal policies and procedures and risk review processes which allow them to have a high level of confidence in the governance of their risk management

American banks have a long tradition of expertise in the mortgage lending and unsecured lending industry and in proactively managing their portfolios with state-of-the art credit risk management techniques which generally include timely and systematic use of early warning indicators (KPIs) sourced from credit scoring systems (*application and behavioural scoring* from FICO, NextGen, VantageScore, and the CE Score), *bureau scores* (from credit bureaus like Equifax, Experian, and TransUnion), *portfolio aging* and *vintage analyses*, *delinquency/roll rates/flow* rates analyses, *internal ratings-based approaches*, *external rating agencies' models*, *classified accounts* for corporate exposures, *Basel II* models, *CreditMetrics*, *Credit Portfolio View*, *CreditRisk+*, *Merton OPM/KMV Moody's*, *Reduced Form KPMG/Kamkura*, *VaR*, *Algorithmics* models, and so on.

It is difficult to believe that all the retail and investment banks, insurance companies, and mutual funds involved in the subprime crisis with the availability of these state-of-the art metrics, risk assessments models and senior managers expertise, were simultaneously not able to spot the problem at an early stage of the threat. They were, instead, extremely talented at convincing leading rating agencies of the good quality (low probability of default) of their mortgage portfolios (including the risky subprime segments) in order to transform these "risky assets" (mortgages loans receivables) into apparently low risk securitizations and very convenient funding for the banks.

These securitized subprime mortgage loans were then used as underlying assets or collateral of complex and high volatility structured products and derivatives (i.e., CDO, ABS, MBS) and placed in the mutual funds, pension funds and hedge funds' portfolios and sold all over the world to institutional investors as low risk (AAA rating) investments with very attractive return rates (profitability). With this strategy the financial engineering "miracle" was actually invented. Contrarily to the established investment techniques principles (low risk/low returns and high risk/high return) the financial engineering miracle has created the (low risk/high return) paradigm, at least in the short-term. Most stakeholders of this innovative banking approach must have been very happy about the miracle at least in the beginning. Rating agencies' risk models have certainly underestimated the impact that widespread defaults in a declining home price environment could have on the value of complex financial engineering products like the CDOs.

As good risk managers know quite well, lending portfolios' deteriorations do not occur overnight (even in the subprime segments) if the credit origination and credit risk management process are managed properly. At least many risk managers should not receive significant unexpected surprises simultaneously, having in their banks different credit policies, corporate strategies, and constantly reviewed and audited processes.

Many leading secured and unsecured lending organizations in the US/UK use profitability-based models (NPV models) to systematically monitor portfolio performances and to forecast/plan portfolios projected trends/results. It seems a bit awkward and difficult to believe that some of the best risk managers and savvy financial analysts of the world have suddenly "missed the boat" causing the dramatic bankruptcies (i.e., Douglass National Bank, Hume Bank, First Integrity Bank, IndyMac, Silver State Bank, Lehman Brothers, Washington Mutual and others) or severe losses of many prestigious banks and investment firms, mutual/private/hedge equity funds and insurance companies which had to be saved by the Governments recapitalizations/debt-equity swaps, or by the acquisitions/takeovers of competitors or investors (i.e. Bear Stearns, Countrywide, Merrill Lynch, Hbos, Aig, Northern Rock, Fannie Mae and Freddie Mac, Fortis, Bradford & Bingley, Morgan Stanley and others).

The reasonable explanation for a crisis of this magnitude and the hypothesis that this paper is aiming to state, is that a combination of a number of complex and highly interrelated factors have strongly contributed to this global financial turmoil. The factors are related to economic elements, to the corporate governance of banks and financial institutions, to the U.S. Government monetary policy, to the lack of rigorous supervisory controls in the banking industry and financial markets, to the high leverage credit culture of people in the U.S.A. and the U.K., to the banking management culture and philosophy, to the role played by the rating agencies.

To be more specific, the combined factors which have probably strongly contributed to the subprime issue are related to:

1) the **low interest rates** introduced in the last years in the U.S. market (expansionary monetary policy) to stimulate aggressive growth of the credit industry (mortgage lending) and to sustain a steady growth of the real estate industry;

2) the **high level of leverage** of both the U.S. citizens (consumer credit/mortgage lending) and the U.S. banks and financial institutions (through the use of a remarkable increase of the innovative, complex and highly volatile financial engineering products such as securitizations and derivatives placed on external vehicles - SPVs);

3) the **"credit euphoria" of both mortgage lenders and borrowers in the US market,** generated by the low interest rates and the more relaxed credit

origination terms applied by banks, has facilitated the level of credit risk increase in particular in the subprime customer segment. It has also allowed at least in the short term the US GNP growth and an improved position in the Balance of Payments;

4) the **profitability incentives/objectives** of the management of banks, investment firms, and mutual funds that combined with low interest rates and rapid mortgage portfolio growth have probably stirred even more speculative behaviours of bankers, shareholders and investors to pursue more aggressively short-term financial benefits.

This last assumption is demonstrated by the unusual salary and bonus increases in the last few years of CEOs of U.S. banks, investment firms, an other financial institutions. It is possible that the "credit boom euphoria" might have shifted the attention of many CEOs and senior managers of these organizations from their core business (professional lending and investment management) and organizational/industry culture (lending and credit management, portfolio risk/return-based decision making, and systematic risk reviews and audits) to a more aggressive short-term orientation. They might have closed one eye or maybe even two sometimes, to pursue immediate profitability benefits rather than focusing on the long-term sustainability, profitability, growth and brand awareness and reputation of their financial institutions.

Although this hypothesis sounds, as it is, quite worrying and alarming about the ethical and professional integrity of some of the bankers and financial gurus involved in the subprime crisis, the gloomy assumption does not explain, however, why the rating agencies have apparently not immediately reported the mortgage portfolios' deteriorations downgrading these assets (mortgages receivables/securitizations/or the financial institutions) or raised issues/warnings about the risky SPVs. Even the banking and financial markets supervisory authorities in U.S. (*FED, SEC*) and other countries (*ECB, BOE,* and others) apparently have investigated the problem when it was already quite too late.

The role of the Central Banks is to contribute to financial stability. Financial stability is a situation where financial markets, payments and settlements systems and financial institutions function smoothly and can withstand shocks. This involves monitoring the financial system closely. Now in this case things seem to have gone in a totally different direction.

It results quite difficult to believe that the U.S. banking and financial markets supervisory authorities were totally unaware of the subprime mortgage loans crisis, considering that the two mortgage lending giants, Fannie Mae and Freddie Mac, which manage a portfolio of above sixty percent of the overall U.S. mortgage lending market, are in fact government-sponsored enterprises" (GSEs). This means that they are privately owned, but receive support from the Federal Government, and assume some public responsibilities. When Fannie Mae and Freddie Mac on September 6, 2008 requested a 200 billion dollars rescue plan, they were still rated AAA. The same occurred with Lehman Brothers, since a few hours before its bankruptcy announcement on September 14, 2008 was still rated as an investment grade (A rating) organization.

Perhaps there has not been sufficient attention to the risk management aspects of mortgages loans and derivatives, or perhaps there has been limited auditing and supervisory controls, but one thing which is sure is that, at least in the short-term, the rapid portfolio growth has certainly strongly contributed to the salary and bonus increases of CEOs and top managers, to the ROI of the banks and hedge and private equity funds, to the dividends and capital gains of the shareholders, and to the growth of the US. Economy.

These are the risks of **short-termism!**

Now, however, has come the time to mend the broken pieces and to start paying the bill of all this big mess. Looking at the accrued loss figures and the new potential ones (other institutions that may go bankrupt and the threat of global recession) the "bill" might become a bit too expensive. Since we have identified who have been the winners of the financial engineering miracle, at least in the short-term, we can easily identify as well who the losers of this "gambling-with-the-risk game" will be.

The extent of the fallout of the global financial crisis in terms of social costs are still highly unknown.

For sure these poor victims of this risky business will be taxpayers who will have to refund the governments' rescue plans for the banks involved in the crisis, but also the people who have variable-rate mortgage loans and other financial products with similar flexible rates at least in the short-term. The reason for this penalization is related to the liquidity problem of banks that for many months did not trust one another anymore and have preferred not to lend their counterparts on the interbank markets (short-term monetary markets), thus causing an increase in the interbank offered rates and subsequent increase in the interest rates of the variable-rate mortgage loans and other adjustable-rates unsecured lending products.

Furthermore, there are those who have lost their homes and jobs, and the companies that might go bankrupt because of a potential recession or stagflation that further reduce consumer spending. Other losers will be the banks themselves, private equity and hedge funds or insurance companies and individual investors who still hold toxic subprime products in their portfolios or derivatives with underlying assets or collateral represented by risky subprime mortgage loans (unless they will be adequately recapitalized by Governments/taxpayers). Companies might also be affected by this crisis, without the necessary financial support from banks,

especially the SMEs, due to their weaker negotiating power, they will experience more selective and expensive pricing for their borrowings due to the credit crunch.

And now after the first **"financial tsunami"** of the subprime mortgage crisis what else should we expect? A second potential wave of undeclared losses from other banks and financial institutions which might challenge the governments' rescue plans or a new potential crisis affecting other financial products such as, credit cards, revolving cards, personal loans, leasing products, bank acceptances, overdrafts, commercial papers and so on.

It is difficult to know what the consequences of this crisis will be. One thing which is surely known is that in the U.S. and in the U.K. markets the average household debt as percentage of income (installment-to-borrowers' income ratio) is approximately 130% versus a ratio of 40%-50% of a country like Italy.

The dramatic effect of the very high level of leverage of banks' customers (mortgage loans borrowers) in addition to the high level of leverage of mutual funds, private equity hedge funds and SPVs (Special Purpose Vehicles) with external (SPVs) portfolios concentrated on highly volatile financial engineering products (i.e., derivatives, securitizations) has increased significantly in recent years the risk factors in the U.S. lending industry. In particular the placement of these credit receivables in SVP, external to the banks, have moved away the risky subprime portfolios from the banks accounting books, generated funding at very convenient terms (with AAA ratings) and have allowed subsequent use of these assets (securitized subprime mortgages) as collateral for derivatives products (CDO). Furthermore, this securitization strategy has allowed the SPVs to benefit of more convenient capital adequacy requirements from the banking supervisory authorities (lower equity and more profitability) since they were holding derivatives in their portfolios rather than regular mortgages loans portfolios (trading book).

American banks have strongly increased in recent years the use of securitizations, derivatives and SPVs and progressively reduced the traditional funding mix (represented primarily by the interbank market facilities, bank current and savings accounts, bank deposits, repos and bonds).

A massive and intensive CDO derivatives trading between investments banks, mutual funds, private equity funds, and other institutions has then spread the innovative and "explosive" financial engineering products all of the world making almost impossible to understand how many funds and organizations are exposed to these toxic derivatives and which bank has originally issued the mortgage subprime loans.

The greater worrying concern then becomes, how do SVPs, investments funds, financial analysts, rating agencies and banking supervisory authorities monitor the quality of these mortgage portfolios which represent the underlying assets or collateral of complex CDO derivatives after their placement/trading on the markets occurs. Who is supposed to control portfolio risk deteriorations and assure timely and controlled risk assessment and disclosure on the markets? In Europe and other parts of the world Basel II has already been introduced in its advanced implementation approach (Advanced Basel II Capital Adequacy Framework) with the well-known pro-cyclical effects/problems, but in the U.S.A. the "Advanced Approaches Rule" has become effective only on April 2008, and starting from January 2009, the US banks that will implement the Basel II Advanced Approaches will be subject to a three years transitional floor period for potential capital reductions versus current risk-based capital rules.

Probably no one has really assured the necessary end-to-end controls in this complex process. Banks or banks' management involved in the subprime lending were concentrated to boost convenient funding, portfolio growth (through massive origination of subprime and Alt-A mortgage lending), and profitability and to transfer credit risk to other counterparts, through securitizations, with moral hazard responsibility; the rating agencies have based their evaluations on pro-cyclical models and perhaps engaged in conflicts of interest; and the investment banks, private equity funds, mutual funds and hedge funds have been too busy trading and speculating frantically on these toxic derivatives every day, trying to maximize their short-term profitability while aiming to effectively control credit risk through advanced risk management and portfolio diversification strategies, CDOs trances and the use of CDS.

A Basel III and specific supervisory regulations will certainly need to be launched quite soon to overcome some of the shortcomings of the pro-cyclical effects of Basel II also to introduce adequate risk assessments for securitized assets, derivatives and SPVs.

The average level of leverage (debt) of the American families and in particular of the subprime segments (higher risk profiles) is very high and difficult to sustain in adverse macroeconomic conditions. The lack of rigorous and timely controls on credit policies, underwriting procedures, and portfolios risk monitoring of the rating agencies, banking supervisory authorities, corporate governance members, and internal auditing and risk management teams, associated with the opportunistic and short-term orientation of speculators on derivatives and short selling, have seriously contributed to the subprime mortgages fallout.

Certainly a mortgage loan borrower with a higher risk profile (subprime) and a high probability of credit default or bankruptcy (which is applicable in the U.S. also to individuals), who is also likely to lose

either his/her job or home purchased on credit (mortgage loan) or both, will probably have, sooner or later, a very hard time also to reimburse any type of credit exposure.

Furthermore, in case of a generalized worsening of the economic conditions the financial crisis may affect also the real economy with a significant decrease of consumer spending and consumer confidence levels. These conditions, if not offset by effective and timely economic stimuli of the governments and central banks (monetary policies, fiscal policies, investments, or adequate government protections and financial supports) will have an inevitable negative impact on the banking industry and in particular on the consumer and retail banking segments.

The situation may certainly improve in the medium-term with massive financial plans (recapitalization) from Governments and central banks to shore up the banks and investment funds, otherwise the risks will remain very high due to the lack of trust among banks.

The lack of reassurance of the investors who would scramble for liquidity, might cause in such difficult financial situations the risk of a potential implosion of the financial institutions. In these circumstances, as it has occurred in mid-October 2008, the signs of dramatic risks are the very high rates of *credit default swaps* (which are typically traded OTC and without a regulated marketplace) and the high rates of *interbank rates* (i.e., Libor, Euribor) which remained very high for a while, regardless of the massive central banks cash injections, interest rates reductions, and government bail-out deal agreements, protections from bankruptcies, commercial papers markets coverage and bank nationalizations.

The challenge we face today is that Governments and other institutions have to clean up the mess, save the global financial markets from their collapse, avoid a global recession, re-establishing some credibility and confidence in the banking and financial markets and in the consumers' minds. The social costs of this ruthless game may be quite high and in Europe (Eurozone countries) this may further worsen at least in the short/medium term some countries' difficulties to comply with the Maastricht convergence criteria due to their higher budget deficits and national debts.

The Governments intervention to shore up the banks and investment funds through bail-out deal agreements and the Troubled Asset Relief Program may prove to be useful in the short-term but it may also generate additional problems related to market distortions, thus somehow penalizing the "ethical financial institutions" in favour of the unethical ones.

According to the famous lessons of "Chicago School", there is no better and fair judge than the market to punish or reward "good" and "bad" players in the marketplace. The central issue in this very dramatic case is not whether one should prefer the theories of the Chicago school, (i.e. Frank Knight, Friedrich von Hayek, Ronald Coase, George Stigler, Milton Friedman, Robert Fogel, Gary Becker, Richard Posner, Robert E. Lucas) associated with neoclassical price theory and libertarianism and with the view that regulation and other government intervention is always inefficient compared to free market, to the theories of Keynes about the need of Governments' interventions to come out of a serious recessionary crisis or depression.

The issue in this very serious financial crisis is that certainly "pragmatism" calls for immediate and effective rescue plans to save banks, financial markets and the overall international economic stability, nevertheless, interfering with the market mechanisms can be a very danger policy since it may generate serious distortions if not well orchestrated.

The failure in this financial crisis is not due to economic philosophies (Libertarianism versus Keynsianism) but rather to the lack of ethical values and behaviours of many players involved in the subprime mortgage lending and securitization/CDOSs trading process.

The Third Pillar of Basel II was introduced to increase market discipline through enhanced transparency and disclosure in addition to the Second Pillar's supervisory review mechanisms. The Third Pillar was meant to develop a much more robust global risk-adjusted capital measure based on expected increase in transparency. Basel II has addressed also some issues related to securitizations.

The Governments' interventions, although reasonable, have certainly partially undermined the key central role of the market discipline as the true unbiased and independent regulator of the ethical or unethical behaviours of banks and financial institutions involved in the crisis. The limited regulatory policies and supervisory controls for SVPs, derivatives and OTC trading, as well as, the late interventions of the Governments' and Central Banks' bail outs, should not justify the banks' moral hazards or the rescue plans as an inevitable choice regardless of the banks' unethical practice and moral hazard.

The introduction of specific ethical codes for banks', hedge funds' and other financial institutions' management are in principles valuable initiatives to enforce more discipline in the industry practice and transparency, nevertheless however, what needs to be learned from this dramatic events, is that policies, procedures and ethical codes alone are not sufficient, since the crisis was not caused only by the lack of effectively regulated markets. Even rating agencies, supervisory and regulatory authorities have probably had their share of responsibilities in what has happened. This consideration provides just another useful evidence and confirmation that only the market discipline represents the primary and totally unbiased mechanism to assure ethical and fair practice in the

industry when all activities in the financial markets are properly regulated and controlled. The problem with the intervention of Governments to save banks from bankruptcy is related to the fact that it can certainly immediately mitigate risks and avoid "domino effects" in the financial markets, but it does not restore so easily investors' trust towards these financial institutions or in the organizations that should have controlled their equity, debt, credit, market, operational, liquidity, and financial risks.

The primary moral hazard in this dramatic financial crisis should be associated to the lack of adequate preventive controls of supervisor authorities, the potential conflicts of interest of rating agencies, the unethical practice of banks' risk management professionals, and the unrealistic expectations of senior executives and global investors to maintain sustained double digits profitability growth for a number of years.

With regards to this last point, in particular, it has probably come the time to start thinking about a new way of measuring company's and investors' profitability. The new approach should probably account also elements of Corporate Social Responsibility (CSR). Banks' and companies' management and shareholders should start measuring their profitability with the following indicators:

- **SROI ©** = sustainable return on investments;
- **SROE ©** = sustainable return on equity;
- **SP/E ratio ©** = sustainable price/earning ratio;
- **SDCG ©** = sustainable dividends and capital gains;
- **SRS ©** = sustainable reward system (salaries, bonuses, stock options, incentives to the management).

The concept of sustainability, of course, should be based on the bank's liquidity, financial, economic, and leverage position, planning and strategic vision, market conditions, and full disclosure and regulation over all existing assets and liabilities (internal and external – SVPs).

As much as possible, all financial activities should be traded and negotiated in regulated and controlled markets.

More in general, the complex issue today is also related to how can our society, political and legal systems, business schools, universities, educators, religious entities, communities change the greedy, individualistic, and short-term orientation of some key players of the financial markets industry (hedge funds, mutual funds, private equity funds, investment banks and others) to become more socially responsible and committed to the long-term sustainability of their organizations, employees, stakeholders, communities, nations, and to the world peace and sustainable development. Our moral responsibility as a society is to live, share, develop, enrich and hand-over the world we have received from our parents and ancestors to the new generations and possibly a better world than the one we have received.

Our responsibility is to breed a new generation of business and political leaders who can pursue their goals and ambitions of successful careers and personal lives in the best interest of the whole society and not only to satisfy their greed, selfishness, and short-term speculative goals.

If our legislators and our regulatory authorities believe that just by assuring billions of dollars to avoid global economic collapse or by imposing new and more strict laws, policies, sanctions and controls on these ruthless and unethical senior executives will be sufficient to assure a new era of socially responsible leaders, then they are just heading for a very big disappointment or other speculative disasters to come in the future.

There is no benefit from any painful experience when there is no lesson learned.

Banks, investment funds, and financial institutions in general base their mission, reputation, corporate image and identity on their professional behaviour, transparency, reliability, solidity, competence and integrity. **"Trust"** is that single word that theoretically should symbolized and summarize what a bank really means to customers, other financial institutions and the whole society.

Now if we consider that in the last weeks of September 2008 banks and investment funds did not trust one another for mutual speculative reasons, how can people and the whole society still trust many of these banks and financial institutions? The dramatic events of the subprime crisis have demonstrated to our society that today the global banking and the financial markets systems are quite sick (with the necessary exceptions, of course), and not just for a temporary, devastating, and socially expensive liquidity crisis, but for a much more insidious and persistent problem to solve, the lack of trust towards socially irresponsible individuals and organizations operating in the global finance industry.

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