

Implications of Asymmetric Information in the Real Estate Crisis in US*

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Abstract. *The economic crisis is now a common reality in most parts of the world, being translated in mass unemployment, collapse of the social system and an impressive number of bankruptcies. The paper focuses on the beginning of the recession in the American real estate sector by analyzing the implications of imperfect information and moral hazard as main factors that contributed to the deterioration of real estate market and also to accentuating the overall poor economic situation. In that context, asymmetric information served the interests of banks and other institutional speculators who made use of it in order to increase their profitability through market manipulation. The central aspect the paper underlines is the international contamination created by disguising toxic real estate actives and spreading them throughout the global economy through transactions with foreign business partners.*

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1. Introduction

One of the essential conditions for a perfect competitive market is the existence of perfect information. All buyers and sellers must be completely informed regarding the characteristics of the goods and services, and about market conditions. The reasoning for this premise is simple: no economic agent will be able to take advantage of another under these circumstances. But market failures exist and they have to be also taken into account.

The most common types of market failures are public goods and externalities⁽¹⁾. Another one is related to imperfect information available to buyers or sellers, leading to inefficiency and costs incurred both by individuals and society as a whole. Some examples are connected to the labour market (when an employer hires an employee, the employer knows less than the employee about his or her desire to work, leading to poor results and lost productivity, as well as additional million of dollars costs), insurance market (unable to dissociate correctly between good and bad insurance risk, insurance firms decide to charge higher rates to all the policyholders, leading low-risk candidates out of the market while only the high risk ones choose to remain) or the used car markets (Waldman, 2004, pp. 553- 554).

This last example is relevant especially in relation to the famous economics article on asymmetric information, „The Market for Lemons: Quality Uncertainty and the Market Mechanism”, written by G. Akerlof in 1970. His Nobel winning argument is linked to the Lemon Game⁽²⁾. Two players, a seller and a buyer of a used car, have to make a decision. The seller who offers the car knows, from the very beginning, whether the car is a good car or a bad car, a „lemon”; on the other hand, the buyer does not know anything about the quality of the used car but the probability distribution of good cars and bad cars. In this case asymmetric information prevents the market from achieving Pareto efficiency.

But the Lemon Game is even more significant as it presents another issue associated to the asymmetric information matter: adverse selection. The concept refers to a situation in which less desirable economic agents, buyers or sellers, are likely to commercially engage as the information is insufficient in order to determine the true quality of the exchanged product. In the Lemons Game, the adverse selection is illustrated by considering again the buyers who cannot determine the level of quality of the desired car. So there are used cars having different qualities and real monetary values, within a certain price range; let us suppose a minimum price of 2,500 USD and 6,000 USD, but they are going to be sold at an identical 5,000 USD. However, some buyers will be acquiring a

lemon with its true value of only 2,500 USD, while the owners of high-quality cars will have no buyers at all as they ask for higher prices.

Of course the adverse selection issue is far more complex and it can be found on other markets, besides the above examples. Nevertheless, the main thing to be considered is how to solve this problem and one effective method is to get more information. In those situations where consumers have insufficient information in order to make the proper decision, the government involves and tries to solve the adverse selection matter by including compulsory disclosure to the uninformed parties. Such cases are found in US, where the Federal Trade Commission is authorised to prevent companies from using false or deceptive forms of advertising, so that low-quality products are less likely to be bought by uninformed buyers. Also a unique disclosure of non-performing loans was done by Japanese Shinkin banks in 1996 and 1997⁽³⁾ as weaker banks in general avoid voluntary disclosing this type of information.

Other possible solutions to this problem, other than the contractual ones which are going to be analyzed along with the moral hazard issue, are those related to legal ways of making the car quality contractible or using private warranties which add concrete substance to promises related to quality of the product. In addition, reputation is applicable as well, especially when the commercial relationship between the parties has a repeatability element included. The last possibility to be considered is related to penalties as social costs, not only economical; Akerlof presented in his 1980 and 1983 articles the interaction between social customs and market (Rasmusen, 2007, pp. 265-266).

2. Moral hazard and the credit institutions

As previously mentioned, the asymmetric information affects resources allocation and Pareto efficiency. Along with the adverse selection issue the moral hazard problem complicates it even more. This concept implies the existence of a contract between the parties, while one of them has the tendency to alter his or her behaviour in ways that are costly to the other party (McCornnel, Brues, 1996, p. 612). It has various applications, such as on insurance market, labour or financial markets.

One special area of interest is represented by the credit institutions. Here the problem is two-folded: there is the contractual relation between the bank and its clients, and the contract between the bank and its employees.

The first aspect is related to the relationship between the institution and its clients in the lending process. Asymmetric evolution of information, due to moral hazard, can determine excess demand for bank loans. The savers will not have available funds for all those who want to borrow at the equilibrium

interest rate. A possible consequence is that a bank will give credit to a person while denying to another one based only on arbitrary criteria. Some authors even suggest that Great Depression (1930) in US was caused by adverse selection in bank loans; due to numerous following bankruptcies of credit institutions the recovery was even more difficult as adverse selection made banks reticent to lending.

Another possibility is that the borrower may choose between different types of investments, with different degrees of risks. If the lender cannot supervise these choices the moral hazard problem emerges. As the borrower is confronted with higher interest loan rates it becomes more interested in investments with higher returns but also with higher risk levels (Stiglitz, Walsh, 1981).

The second part refers to the contractual relationship between bank and its employees. This is best pointed up by the implicit contract model as originally developed by Azariadis (1975), Baily (1974) and Gordon (1974). This type of contracts refer in fact to the way in which risk is shared between firms and workers, and not as some may understand through the term „implicit”, an informal arrangement (Bosworth, Dawkins et al., 1996, pp. 279-280). Its main novelty is that it presents employment contracts as the main instrument for the long-run exchange of labour services. Also, employees are more risk averse than companies, so according to the theory, the organization will absorb foremost of the risk and paid wages will be determined based on the variation in the workers' marginal product (Bosworth, Dawkins et al., 1996, pp. 289-290).

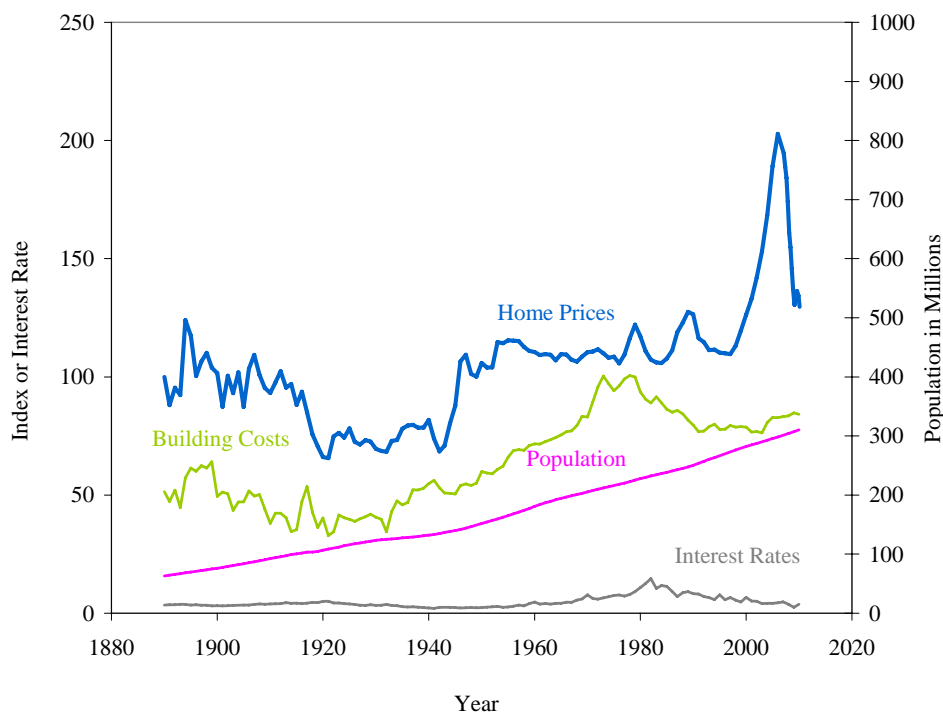
Nevertheless, the literature has evolved since then. Because the implicit contract theory along with asymmetric information can also provide explanations for the unemployment and unemployment compensation, interest focused on the firm and if it is or not reliable when telling the truth. Maybe the most normal thing to consider is that it is not; both in difficult times or during an economic boom a company would use as an argument the economical situation, difficulties encountered, etc. so employees to be paid less. But this is not always the case. If the company can restrain the same level of profit as high as reporting another state of nature this condition becomes additional but not sufficient for a feasible contract (Bosworth, Dawkins et al., 1996, pp. 286-287). Also, asymmetric information affects the parties of an employment contract as each one of them has private information which is unknown to the other one.

Therefore if the previous theory is being used to make predictions it should be taken into account that the informational structure found at the bottom of this model is very sensitive. However, according to econometrics, the premises, both moral hazard as well as principal-agent problem' implications⁽⁴⁾, can be mathematically determined and tested (Stancu, 2001, pp. 90-91).

This results in valuable data both for contract theory and for creating a solid framework in optimal contracts in an uncertain business environment.

3. The role of credit policy in the real estate crisis

The real estate market in the US had not been seen as a worthy investment for most of the last century. The reasons for this were numerous: it required large amounts of money considering the income of the average person, on one hand, and it lacked liquidity and it offered low returns that will not attract the attention of large investors, on the other hand. For these causes large investors and speculators were not interested and, in the absence of a large inflow of money, the prices of houses were relatively stable, taking into account large social changes determined by events such as The Great Depression and other economic downturns. In other words, buying a house was the same as buying a home.



Source: Robert J. Shiller, *Irrational Exuberance*, 2nd Edition, Princeton University Press, 2005, 2009, Broadway Books 2006, also *Subprime Solution*, 2008, as updated by author.

Figure 1

However, all this changed in the late 1990 when, following a downturn in the market, prices soared. They kept rising for the next decade until it all came crashing down. The grounds for this surprisingly transformation will be analyzed next.

a) Political interferences

The first piece of this complex puzzle is the creation the Federal National Mortgage Association, informally known as Fannie Mae, in 1938. Its purpose was to create a strong secondary mortgage market by buying federally insured mortgages from credit institutions thereby freeing their money so that they can issue more loans.

This practice continued for the following decades until the company switched from public to private ownership in 1968, when it was converted to a shareholder-owned corporation. What actually happened was that the institution itself was divided into two companies, one backed by the government, Government National Mortgage Association (GNMA)⁽⁵⁾, that still had the restraint of buying federally insured mortgages, and the other part, Fannie Mae⁽⁶⁾, that operated as any company on market without the previously mentioned restraint. At the same time the Federal Home Loan Mortgage Corporation was founded as a government sponsored enterprise with the same charter as Fannie Mae.

Fannie Mae and Freddie Mac, while officially functioning as private entities, were still tied to the public sector due to their charters and so were subject to political influence. This is made obvious by the *Federal Housing and Enterprises Act* of 1992 that required the two companies to set aside funds for affordable housing. Through subsequent revisions of the *Community Reinvestment Act* (1992)⁽⁷⁾ funds were redirected from the original purpose of the company towards buying CRA mortgage loans, therefore dedicating their efforts to medium and low income families that would not normally qualify for a loan, in other words they brought government backing to the sub-prime market.

In 1999, as a result of increased political pressure, Fannie Mae reduced the requirements to qualify for mortgage loan with the stated purpose of having half of Fannie Mae's and Freddie Mac's portfolio made up of low and medium income family loans. In November 1997, for the first time ever, Fannie Mae helped a private lender repackage their CRA loans as bonds to be sold on the market, all of them carrying a Fannie Mae guarantee of payment. This was a consequence of strong political pressure; while home ownership reached a 70% in 1990, American politicians considered the "ownership society" as the foundation of the economic policy, therefore it was vital for the rest of 30% to

be provided with houses. A two steps process was enforced; firstly, people were allowed to acquire houses without money down but only borrowing the equity from the house, secondly, financial innovative products which allow banking companies to transfer assets off their balance sheet (Sharma, 2009, pp. 177-178).

While these decisions might have been made with a noble purpose they did little to actually help anyone but the politicians get re-elected by boosting their public image. What it did was to make sure that these two companies took on more risk thus lowering the risk of first market lenders which in turn lowered rates pushing the prices up and promoting predatory lending.

b) Predatory practices

A common stratagem which involves taking advantage of the lack of knowledge of the borrower, due to asymmetrical information and the moral hazard created, by forcing him to accept a higher interest than normal, by failing to inform him of his rights (asymmetric information takes effect) or forcing him into a situation where he renounces.

By backing sub-prime mortgages with the government's image, and money as a result of the subsequent bailout, politicians created a situation that is excellent for the development of predatory lending. This system, known as "origination, securitization and servicing model", started with a credit agency, a mortgage broker or some other similar institution that will take advantage of its client, the institution then receives some form of backing from a bank, be it in the form of: a letter of credit, working capital loans or loan guarantees (Sharma, 2009, pp. 177-178). In turn, the banking organizations, such as Bears Sterns, Lehman Brothers, Merrill Lynch, or Goldman Sachs, with the help of Fannie Mae and Freddie Mac securitized these loans, more exactly bundling of loans into packages which were then sold to outside investors. Thereby they were ensuring also even more funding for the original brokers.

While, most likely, there were numerous mortgage brokers that observed normal business practices, the link between CRA loans and predatory practices was without doubt and it has been proven in this situation but also by the historic precedent of the saving and loan boom and subsequent crisis of the 1980s (Engel, McCoy, 2002).

A prime example for this type of business practice is the case of Ameriquest. It started out as a bank in 1979 and was transformed into a pure mortgage lender in 1994. The company's history of predatory practices starts out in 1996 when, in order to settle a lawsuit accusing it of predatory lending practices against older, female and minorities, it agreed to create a \$3 million fund to train its employees. The company came under scrutiny again when evidence surfaced which showed that it was common practice to misinform or

lie to the borrower or to forge signatures and paperwork just so that the loan could be approved (Hudson, Reckard, 2005, p. 5).

Taken this into account, there can be little doubt that starting with the political decisions at the top and continuing with every key decision maker on the line all the way to the first credit institution everyone can be accused of moral hazard because they ignored all the obvious signs and instead focused on their own gains.

c) Irrational investment

The picture would not be complete without looking at the evolution of the housing market as an investment. At the beginning it was said that it lacked the necessary elements for an investment; however, this changed starting from 1997, when two important events took place.

Firstly, it became easier to finance a sub-prime loan as a result of changes in regulations which allowed Fannie Mae and Freddie Mac to buy CRA loans. This in turn spread the risk, lowered the rates and brought attention to the market and with this it became even simpler to enter the market at a lower income level. Along with the increased activity of the market prices were pushed up even further, thus providing a decent return on the investment.

Secondly, as a result of the introduction of the Tax Payer Relief Act of 1997, more lenient rules were put into place; any gains from selling real estate that are under \$500,000 for couples and \$250,000 for singles would be tax exempt. Because of these exemptions it became viable to invest in a second home or in other types of property.

As a result prices for houses started to rise. At the same time the stock market was hit by the fall of the dotcoms in 2000. Similar to a self fulfilling prophecy, as they kept rising, more people lost interest in shares and became interested in real estate. In 2001 the Federal Funds rate was lowered from 6.5% to 1.75% in the course of a single year; suddenly it became affordable for more people to buy a second home, move into a new one or to refinance their old one⁽⁸⁾. The effect was that the number of people active on the market grew even more both because of the new entrants and individuals who already had a home were looking for a new one. As a consequence, aggregated demand increased and pushed prices even further, thus sparking a vicious circle.

But this is just half of the image, the other half showing Fannie Mae and Freddie Mac as the largest companies on the US mortgage market, together having over 60%, packaging them as bonds and selling them on the international market with AAA ratings. These were then used as underlying assets in the creation of high volatility structured products and derivatives such as CDO, ABS and MBS which were then placed in mutual funds, pension

funds, hedge funds as low risk assets with good returns thus creating what can only be described as a “miraculous product” with high return and low risk.

But what about the credit policy and the other banking institutions, can they be blamed for the subprime crisis in the real estate sector? When analyzing the subprime crisis the credit policy may be considered as a starting point together with the central bank of the country that is responsible for it. In the case of United States, the Federal Reserve, founded in 1913 by the Congress, has increasingly expanded over time its attribution in the banking sector.

Besides conducting the monetary policy and so influencing the credit conditions, it deals with supervising and regulating banking institutions to ensure the safety and soundness of the nation’s banking and financial system and to protect the credit rights of consumers⁽⁹⁾ (Board of Governors of the Federal Reserve System, 2005, pp. 1-2). Still, some responsibilities are carried by a network of twelve Federal Reserve Banks and their Branches (twenty five as of 2004), including supervising and regulating member banks and bank holding companies, and serving as banker for the US Treasury; they are supervised by the board of Governors, as well as by the Federal Open Market Committee (FOMC), which is composed of the seven members of the Board of Governors and five of the twelve Reserve Bank presidents⁽¹⁰⁾.

The commercial banks are divided according to which governmental body charters them and whether or not they are members of the Federal Reserve System. Those chartered by the federal government (through the Office of the Comptroller of the Currency in the Department of the Treasury) are national banks; by law, they are members of the Federal Reserve System. Banks chartered by the states are divided into those that are members of the Federal Reserve System (state member banks) and those that are not (state nonmember banks) (Board of Governors of the Federal Reserve System, 2005, pp. 11-12)⁽¹¹⁾.

However, member banks must subscribe to stock in their regional Federal Reserve Bank in an amount equal to 6 percent of their capital and surplus, half of which must be paid in while the other half is subject to call by the Board of Governors. This is binding obligation, and it may not be sold or pledged as collateral for loans. The banks receive a 6% dividend annually, legally specified⁽¹²⁾.

The supervising activity of the domestic banking institutions is determined according to the type of institution and the governmental body which authorized its activity. Therefore, the Federal Reserve shares supervisory and regulatory responsibilities with the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), and the Office of Thrift Supervision (OTS) at the federal level, and with the banking departments of the various states.

Component	Supervisor and regulator
Bank holding companies (including financial holding companies)	FR
Nonbank subsidiaries of bank holding companies	FR/Functional regulator ¹
National banks	OCC
State banks -Members -Non members	FR FDIC
Thrift holding companies	OTS
Savings banks	OTS/FDIC/FR
Savings and loan associations	OTS
Edge and agreement corporations	FR
Foreign banks ² Branches and agencies ³ -State-licensed -Federally licensed Representative offices	FR/FDIC OCC/FR/FDIC FR
<p>Note: FR= Federal Reserve; OCC= Office of the controller of the Currency; FDIC= Federal Deposit Insurance Corporation; OTS= Office of Thrift Supervision</p> <p>1. Non bank subsidiaries engaged in securities, commodities or insurance activities are supervised and regulated by their appropriate functional regulators. Such functionally regulated subsidiaries include a broker, dealer, investment adviser, and investment company registered with and regulated by the Securities and Exchange Commission (or, in the case of investment advisors, registered with any state); an insurance company or insurance agent subject to supervision by a state insurance regulator; and a subsidiary engaged in commodity activities regulated by the Commodity Futures Trading Commission.</p> <p>2. Applies to direct operations in the United States. Foreign Banks may also have indirect operations in the United States through their ownership of U.S. banking organizations.</p> <p>3. The FDIC has responsibility for branches that are insured.</p>	

Figure 2. *Federal supervisor and regulator of corporate components of banking organizations in the United States*

Nevertheless, all these institutions focus on a common objective, to determine the level of overall safety and soundness of the banking organizations. This evaluation includes an assessment of the organization's risk-management systems, financial condition, and compliance with applicable banking laws and regulations. Instruments used are periodical on-site examinations, at least once a year, and inspections and off-site surveillance and monitoring. Additionally, there is an annual inspection of large bank holding companies (with consolidated assets of \$1 billion or greater) and smaller bank holding companies that have significant nonbank assets. In the last case, they

also make use of the consolidated financial information from subsidiaries in order to reduce double work.

The second component of the supervising activity is represented by the supervisory rating (CAMELS)⁽¹³⁾ based on the confidential report written after the on-site inspection. This tool is useful in determining those banking institutions which may raise concerns and in communicating the evaluation result further on. The Federal Reserve has another rating system known as RFI/C(D) and which analyzes risk management, financial condition, potential impact of the parent company and nondepository subsidiaries on the affiliated depository institutions, and the CAMELS rating of the affiliated depository institutions (Board of Governors of the Federal Reserve System, 2005, pp. 62-63).

As important as the previous mentioned elements, the financial regulatory reports filed

by the banking institutions, the Consolidated Reports of Condition and Income, often known as the Call Report, and the Consolidated Financial Statements for Bank Holding Companies, also offer valuable information which is used together with the findings from off-site monitoring. With the help of the System to Estimate Examinations Ratings (SEER) it is statistically estimated an institution's supervisory rating.

But market discipline cannot be improved without a proper accounting and disclosure policy. Some important steps towards the encouraging present state of things are the Federal Deposit Insurance Corporation Improvement Act, focusing on the importance of auditing, accounting and control standards applied by the financial institutions, and Sarbanes-Oxley Act of 2002, which tries to increase the accuracy of corporate disclosure and to determine and reduce corporate fraud.

However, changes are inevitable at structural level of the financial market so that in 1999 the Gramm-Leach-Bliley Act (GLB Act) was enforced. It permits banks, insurance companies and securities brokers-dealers to associate though the holding bank structure, by respecting certain requirements. In this situation, the Federal Reserve shares supervisory responsibilities with the other responsible authorities, according to the parties of the holding (Board of Governors of the Federal Reserve System, 2005, pp. 64-65).

The last part of supervisory activity is related to the international operations of American banking organizations (authorizing the establishment of foreign braches and foreign investments, chartering and regulating the activities, and establishing supervisory policy and practices regarding foreign lending) and of the activity of foreign banking organization in USA. Before 1978 the foreign banks were not subject to any supervision; the International

Banking Act of 1978 (IBA) created a federal regulatory structure for the activities of foreign banks with US branches and agencies. According to IBA, they are given the same powers as American banking organizations and they obey the same supervision rules as them.⁽¹⁴⁾ In 1991 another law was enforced, the Foreign Bank Supervision Enhancement Act (FBSEA), which increased the Federal Reserve's authority over the operations of foreign banks in the USA. It meant that a foreign banking company had to obtain Federal Reserve consent before establishing branches, agencies, or commercial lending business subsidiaries. Additionally, they must be examined on-site at least once a year or at every 18 months, depending on certain criteria, and in case of acquiring more than 5% in an American bank or holding bank they must obtain the consent of the Federal Reserve.

To sum up, though legislative improvements took place in time unfortunately the cautions regarding critical data such as credit history, income requirements and employment status were set aside when allowing borrowers to assume considerable higher risk than they were financially capable of. As the suppositions that the prices of houses were steadily increasing and assuming that the market level of liquidity would always allow selling eventual unwanted mortgages at profitable prices, loans were easily offered. In addition, portfolios were difficult to analyze and if access was to be given to them it was practically impossible for someone, especially without solid economical background education, to determine the assets' structure as they had a very intricate financial structure.

Once again, asymmetric information and adverse selection issues were complicating things. Not having enough information to determine the genuine value of the exchanged houses, prices did not reflect the reality and risks were underestimated.

4. Critique and empirical evidence

Trust and honesty are core elements in business. The mutual belief that the other part will stay true both to the contract as well as to its unspoken principles, which are made self evident through countless repetitions and the establishment of customs, is essential. However, when everybody's attention lessens, moral hazard can strike at the heart of business and destabilize the system as a whole.

The crash of the real estate market can be attributed to a series factors:

1) Low interest rates that stimulated aggressive demand (the political element had a huge weight, as both Democrats and Republicans enforced the

economical policy wherein the cornerstone was the increase in the number of citizens who had a house);

2) High level of leverage of US citizens and companies (innovation played a key-role as numerous financial products were launched on the market, also asymmetric information, as buyers of those instruments had less information than the sellers, as well as adverse selection amplified the negative result);

3) “Credit euphoria” of lender and borrowers in the US (due to the lax legislation which lost track of the methods used to evaluate risks, methods used by financial institutions in order to determine possible borrowers and their financial capacity of returning that credit);

4) Profitability incentives for higher management of banks, investment funds and mutual funds (as different objectives were in place, the principal-agent problem caused a expected vicious circle: higher assumed risks by the companies led to higher gains so that motivation increased, and managers were ready to risk more and more in order to obtain short-run results, sacrificing the financial long-term sustainability).

Of all these causes, the last one is the most alarming. By staying true to this philosophy the system worked for decades. But, when the incentives for short term results grew to large, many of them in the form of large bonuses or political votes, caution was tossed aside. Moral hazard started to play a key role in decision making and suddenly appearances became more significant than the reality itself.

Therefore, both the business community and simple citizens follow the general trend, and so just like the risk, the blameworthiness was spread among the parties. First the borrowers, who, even when they knew that they were at their limit, bought a dwelling. Second, policy makers, who chose to ignore economical considerations and used the image of the government in order to back a highly volatile market and to create the illusion of stability.

The authorities’ attitude is mostly concerning. The people who were supposed to know and to sign the alarm, refraining from doubtful practices chose to do the opposite. They turned a blind eye to the whole situation and jeopardized everything while thinking of the end of the year bonus that would be more than enough for them to retire. Because of these practices a shadow of doubt has been cast over the ethical and professional integrity of the world’s financial leaders as a whole. This is especially important when considering that, currently, they are the same ones who are supposed to solve the problem.

Notes

- (1) See R. McConnell, S. L. Brues, *Economics. Principles, Problems and Policies*, McGraw-Hill, Inc. Publishing House, thirteenth edition, 1996, pp. 595-610.
- (2) The extensive form of the Lemons Model game can be found in Don E. Waldman, *Microeconomics*, Pearson Education Publishing House, 2004, pp. 554-558.
- (3) More information on the important role of disclosure in a modern financial system and in reducing asymmetric information effects can be found in Mark M. Spiegel, Nobuyoshi Yamori, *Determinants of voluntary bank disclosure: evidence from Japanese Shinkin banks*, CESIFO working paper no. 1135, February 2004
http://www.cesifo.de/pls/guestci/download/CESifo+Working+Papers+2004/CESifo+Working+Papers+February+2004/cesifo1_wp1135.pdf.
- (4) The principal-agent problem deals with a contractual relation where one party, known as the principal, contracts with another one, the agent, who is supposed to act in his behalf. The problem emerges when the interests of the agent are different than the one of the principal, and therefore the agent's action can be hidden (McEachern, 2009, pp. 321-322).
- (5) The Government National Mortgage Association is referred to herein as "Ginnie Mae." Ginnie Mae, a wholly-owned corporate instrumentality of the United States within the Department of Housing and Urban Development, was created on February 10, 1938 by the Federal Housing Administrator, acting under Title III of the National Housing Act. Originally called the "National Mortgage Association of Washington," later the same year its name was changed to the "Federal National Mortgage Association" ("Fannie Mae"). Effective September 1, 1968, Fannie Mae was partitioned into two separate bodies, Ginnie Mae and Fannie Mae. At the same time, Fannie Mae's functions were partitioned, with secondary market operations retained by Fannie Mae and special assistance and management and liquidating functions transferred to Ginnie Mae. See Section 302 of the Charter Act (<http://www.ginniemae.gov/guide/statutes.pdf>).
- (6) Fannie Mae is a government-sponsored enterprise (GSE) chartered by Congress with a mission to provide liquidity, stability and affordability to the US housing and mortgage markets. Fannie Mae was established as a federal agency in 1938, and was chartered by Congress in 1968 as a private shareholder-owned company with three lines of business - Single-Family, Multifamily and Capital Markets - that provide services and products to lenders and a broad range of housing partners (<http://www.fanniemae.com/kb/index?page=home&c=aboutus>).
- (7) The Community Reinvestment Act (CRA), enacted by Congress in 1977 (12 U.S.C. 2901) and implemented by Regulations 12 CFR parts 25, 228, 345, and 563e, is intended to encourage depository institutions to help meet the credit needs of the communities in which they operate (<http://www.ffiec.gov/CRA/>).
- (8) See for more information Open Market Operations Archive, Intended federal funds rate, Change and Level (http://www.federalreserve.gov/monetarypolicy/openmarket_archive.htm).
- (9) More information on the purposes and functions of the Federal Reserve System can be found in „The Federal Reserve System: Purposes & Functions”, 9th edition, June 2005, Board of Governors of the Federal Reserve System, Washington, D.C.
- (10) The president of the Federal Reserve Bank of New York is a permanent member; the other presidents serve one-year terms on a rotating basis. The rotating seats are filled from the

following four groups of banks, one bank president from each group: Boston, Philadelphia, and Richmond; Cleveland and Chicago; Atlanta, St. Louis, and Dallas; and Minneapolis, Kansas City, and San Francisco. An alternate for each Reserve Bank president also is elected. This alternate, who must be a president or first vice-president of a Reserve Bank, may serve on the FOMC in the absence of the relevant Reserve Bank president (Board of Governors of the Federal Reserve System, 2005, pp. 11-12).

- (11) As of March 2004, of the nation's approximately 7,700 commercial banks approximately 2,900 were members of the Federal Reserve System – approximately 2,000 national banks and 900 state banks (Board of Governors of the Federal Reserve System, 2005, p. 12).
- (12) Stock in Federal Reserve Banks is not available for purchase by individuals or entities other than member banks (Board of Governors of the Federal Reserve System, 2005, p. 12).
- (13) CAMELS is an acronym for the six components of the rating system: capital adequacy, asset quality, management and administration, earnings, liquidity, and sensitivity to market risk.
- (14) The IBA implemented a policy of "national treatment" for foreign banks operating in the United States.

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