

Economic Crises and the Complexity of Animal Spirits Modeling*

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Abstract. *The rationale of this research goes into the origins of the economic crises from a different way of economic thinking, hence the professional interest on bringing again into the light the concept of animal spirits, used for the first time from classic liberals like David Hume, developed by doctrine founder John Maynard Keynes, and captured as groundbreaking economic crisis hypothesis in Nobel Prize laureates' books like George Akerlof. A familiar account of the last financial crisis underlines the collapse of confidence and evaporation of trust which led to failure of corporate governance and easy money policy. Nor were these problems of recent origin; they were rooted in deep structural changes in the economy that date back many years. Financial innovations overheated the world economy and gained steam because of irrational exuberance over a risk free better future. Considering the evidence analyzed in this paper work, this approach of economic crisis through animal spirits puts forward new highlights of economic thought.*

Keywords: animal spirits; economic crisis; financial innovations; risk bank; subprime credit.

JEL Codes: B41, E44.

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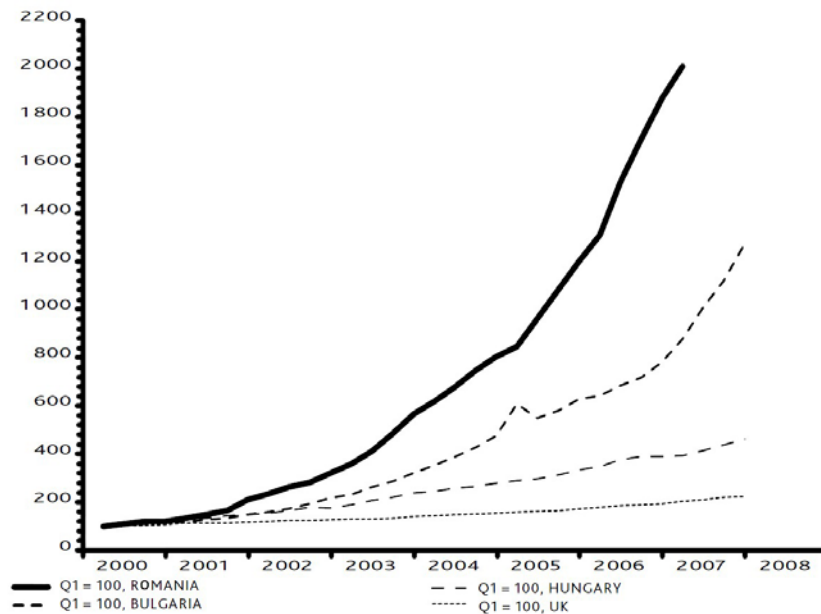
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A synopsis of the 2007 economic crisis

Crises are ruled by bursting bubbles, when the gap between the real price of an asset and its market value get an outstanding unsustainable level. This means that a speculative crimson tide finally burst along with the loss of the profits of an entire economic cycle. The bubble hold hands with general rise in debt, because market participants are eager to do whatever it takes to have the money that allow them to be part of the boom (Figure 1). Therefore the credit activity rise as well, and the central banks have to decide which politics is fitting best with the market conditions. Speculative bubbles need to be filled with money, and this is possible on the assumption that rising credit should provide the amount of money to sustain the growth of the bubble, therefore the rise of prices, and eventually of the inflation (Roubini, Mihm, 2010, pp. 22-64, 78-120). Of course, there are speculative bubbles when the rise of prices is not a consequence of credit expansion, but of rising anticipation of market participants, just how in dotcom crisis has happened (Chorafas, 2009, pp. 34-92).

In the summer of 2007 the sudden mania for flipping real estate which had begun in the early 2000 came to an end all over the world, once two hedge funds of Bear Sterns have run into bankruptcy. It was the beginning of the end of a spectacular era, one about people unfortunately thought that will last forever. Businesses and market participants ran out of money and the lack of money made things to go out of balance. It is not difficult to point out who is to blame for crisis, because the aftermath is always easier to understand than the solution to something bad that has just happened.

The get-rich-quick schemes supported by the big American investment banks could be one of the major causes. In the '90 investment banks made mostly property capital business, meaning that the principal amount of capital used in market transaction was constituted from their very own money, white-collars brokers being satisfied by gaining fees from consulting, management advisory, legally consulting, mergers or takeovers advisory and the like. There was of course an important field where investment banks ran supremacy, the stock market.



Source: Turner, 2008.

Figure 1. *European debt*

From one year to another, their power rose, as the most shares got in or out from the investors portfolios have passed through these banks' accounts. This particular field from their activity has evolved from the early 2000, up to the point of knowing the investment banks only for the investment consultancy. Because of the financial crisis of 2007, there is no clear view over the efficiency of investment consultancy. Probably all got well because of the tremendous rush for get-rich-quick formulas, which made people irrational exuberant for an easy brighter future. With or without investment advisory, people invested a lot of money, because they were willing to do this. Investment banks like Goldman Sachs, JP Morgan, Merrill Lynch, Bear Sterns or Lehmann Brothers got richer, while investors got richer or confident to get rich in near future. At least nobody complained as long as stock market was in continuous expansion and there were opportunities to cover current loses. It is impressive however how much money had common people and where they came from. People had begun to use their houses as cash machines. If someone needed money, he simply made a mortgage on the house and took a loan. On the assumption that real estate market could only go up, in time the debtor hoped to make another loan, and another, every time the value of the house gained some percents. There weren't many of them who have taken into account the possibility that real estate

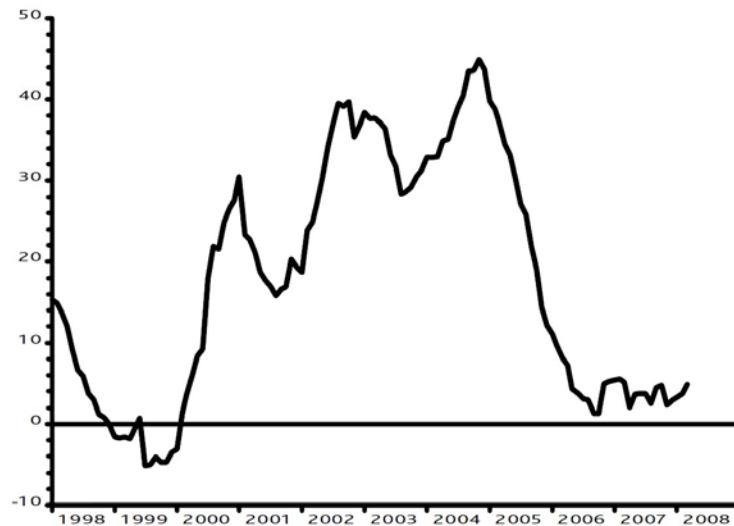
market could go under. People were living beyond their means, but this thing could not last forever. Highly motivated from bonuses, brokers were very persuasive and made people with low credit score to borrow money along with relaxing terms of return, but with pervasive conditions of paying back the money after a year, or a year and a half. Brokers had incentives to do that, but the people who borrowed the money and lived beyond their means didn't even ask themselves for how long could last that (Figures 2, 3). For that instance though, the living beyond the means supported an artificial economic growth (Roubini, Mihm, 2010, pp. 70-142, Krugman, 2009, pp. 27-67, 102-145).

Bubbles need easy money, but leverage as well. Without both of them the bubbles can not expand and not be bubbles in the economic sense. There must has been a source for the money of financial crisis. In the middle 2000 conditions of a crisis as deep as the depression of the '30 began to make the sum of all fears to come true. Then as now, the economy faced the same background: speculative bubble in real estate and stocks, financial innovation, minimal regulation. Fed did little to stem the speculative tide and so did the others central banks from all over the world.



Source: Turner, 2008.

Figure 2. *US Saving ratio*



Source: Turner, 2008.

Figure 3. *US Equity loans*

Market little understand securities like collateral debt obligations (CDOs) and others alike have hidden the risks and allowed some investors, but mostly the investment banks, to get richer on the short run. There was a matter of time until eager to get rich quickly investors wanted to mark their profits. Sooner or later, the economy was to go under. The bubble burst when the supply of houses exceeded the demand for houses (Shiller, 2000, pp. 12-39, 49-100).

Financial innovation – originate & hold vs. originate & distribute

Before '70 a mortgage loan has been made between borrower and the bank. In order to obtain lower monthly rates of return, people might be tempted to choose long time contracts of paying back the money, but for the loaner, as bank, this is not an advantage at all, and even implies some important risks. It is true that the longer is the contract of loan, the greater will be the amount of money returned by the debtor, but during that time anything could happened. Thus, a bank would be very interested to borrow money, but to have them back as soon as possible, having a little less money back, but sooner, therefore with a higher utility. A solution has not been late to be found. A SPV-special purpose vehicle was invented in order to fulfill everyone's expectations:

- people who needed money have just obtained it;
- the lending bank recovered the loan sooner, risk free;

- the investment bank received the fees for consultancy transaction between lender bank and the investors who have bought the SPV as a common share on the stock market;
- investors as stock market participants were pleased to own solid shares backed up from strong real assets like houses, which could only go up.

The common name of SPV has changed in the most specific CDO, marking an important difference between the old and the new way of making financial business. As long as investment banks were doing proprietary trading, their business was to originate & hold, meaning to originate, generate a business from ground zero, then holding the business along with others who put money altogether, for future returns. But holding a business proves to be sometimes the harder part of a business plan, and also the riskiest. So the business has evolved into generate & distribute, generating a business but then letting it go, to someone else willing to accept its risks (Shiller, 2000, pp. 23-89, 102-145, Roubini, Mihm, 2010, pp. 4-48).

Collateral debt obligation is like a sausage. People borrowed money making mortgages on their houses. Investment banks bought the mortgages from the creditor financial institutions or from the lender banks, and put them together into a single financial instrument, a collateral debt obligation. The debtor didn't know that the creditor did that, and they could not do anything about it, anyway (Roubini, Mihm, 2010, pp. 22-28). For example, a collateral debt obligation of one million dollars could be the sum of four mortgages of 250,000 dollars. But just like some sausages are not to be known what they are made from, a CDO was made from many and different mortgages the owners of CDOs couldn't possibly know about. In other words, they enter in a world of moral hazard and awful asymmetric information. A CDO could be a sum of four mortgages, but of a hundred as well. More than this, there was CDOs of the second, and of the third grade. A CDO of the second grade is a CDO made from other CDOs of the first grade, and a CDO of the third grade is made from several or many other CDOs of the second grade. As it can be seen, it is almost impossible to track the origin a CDO, to evaluate it, to monitor the risk, to settle a standard. Thus, CDOs were called Chernobyl Death Obligations. They were fencing the law ever since, and must be prohibited if not highly regulated. CDOs were indeed a financial innovation, but a deadly one, just as atomic bomb. Other financial innovation were granted with trust and promoted by poor regulation:

- interest-only mortgages;
- negative amortization loans;
- teaser rates and NINJA loans (no income, no job or assets for debtor);
- option adjustable-rate mortgages;
- credit default swap insurance from governments.

There were little understand mechanism by the market participants, or even by the financial institution which have been using them, but there was also a common thought that someone, especially the golden boys of Wall Street, City of London or other financial centers, know what they were doing with other peoples' money. Nevertheless, the CDO was the flagship of all this rogue financial instruments. Its structure was as follows:

- equity;
- mezzanine;
- senior.

These types of shares were pies, tranches for banks, after the probability of paying back the loan in advance. Senior was the best shares, with high probability of returning the debt, therefore with AAA rating. But the rating agencies extended the rating of senior shares to equity and mezzanine too, so the entire CDO used the AAA rating, hiding the truth about the risks and sending erroneous data to the market. The rating trap became more dangerous when CDOs were replaced with CDOs of second grade, with tens or hundreds of CDOs, or with CDOs of the third grade, formed by hundreds of CDOs of the second rank. That moment rating activity lost its role of guardian of risk and investors remained defenseless. If that weren't bad enough, there is a interest conflict between who will need the rating and who is paying for it. The most appropriate would be that investors should pay for the rating, not the issuer of the bonds, because they take great comfort in having stocks with good rating scores. It might be the best that investors would pay for the rating, but it still remains the problem of clandestine passenger: some other investors than the ones who paid for them could use the ratings (Krugman, 2009, pp. 65-102, Shiller, 2008, pp. 49-89, Roubini, Mihm, 2010, pp. 34-80).

The use of insufficient tested new financial instruments in United States took place along with low interested rates between 2001 and 2003, what made investors from all over the world to sent their money in America, with low concern about the risk of investments. Fed raised the interest rate between 2004 and 2006, but it was already too late, the money kept coming in United States, feeding the bubble (Taleb, 2007, pp. 24-106).

Subprime credit as a new type of animal spirits

In 1739, David Hume published *A Treatise of Human Nature*, where he used the term of animal spirits in order to trace the origins of human decision making as major field of human nature (Hume, 1739, pp. 62-98, Rogojanu, 2010, pp. 48-62). But the most important economist who has written about animal spirits was John Maynard Keynes who used it in *The General Theory of Employment Interest and Money*. Keynes was interested to find that something

like an engine which determines people rather to act than not to act in the real life. He finally captured the conclusion that aggregate economy might be driven by human sentiments, feelings, like optimism or pessimism. Without animal spirits and using only mathematics and strong economic analysis, people should probably react very shy and doubtful, or even they would not react at all. In other words, animal spirits are the very core of human decision making: “Most, probably, of our decision to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits – a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities” (Keynes, 1936, pp. 161-162).

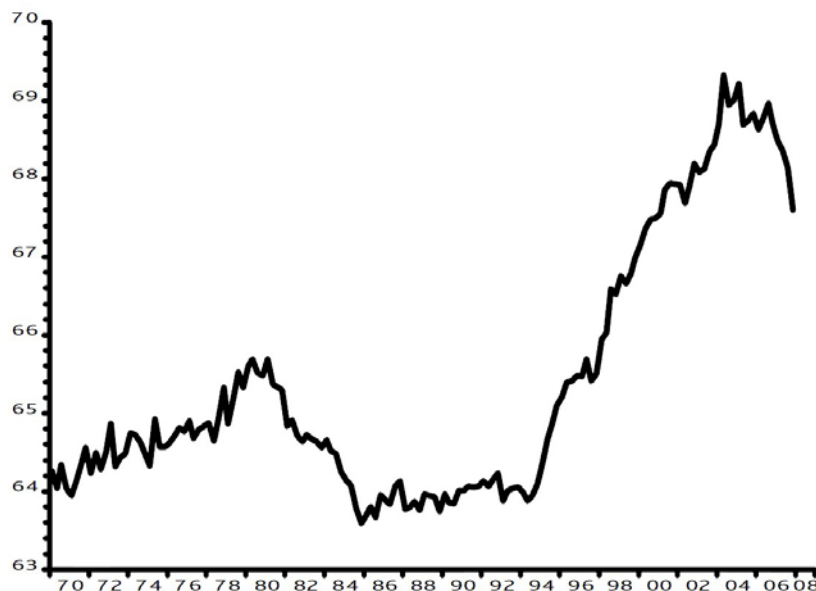
Perhaps Keynes was somehow able to foresee what was going to happen. Subprime borrowers behavior was certainly spontaneous, because otherwise they probably would have thought about consequences on the long run. The present utility of having a lunch is bigger than the utility of having the same lunch next day or next week. But this present utility could be even bigger when the one who has the meal hadn't that kind of meal before. People with unstable and low incomes, therefore also with bad credit scores, have encountered historical opportunities to live a life they normally wouldn't afford to live, but only to dream about. The subprime debtor became a member of a new social class. After all, a subprime borrower has probably thought that he wasn't the only one, so there must have been a logical algorithm somewhere to allow everybody to get richer. Unfortunately, Keynes has pointed out that there is no free meal too, but few gave him credits for that.

John Stuart Mill has been one of the first great modern economic thinkers who had written about economic crises and especially about those crises related on speculative bubbles. According to Mill, a bubble has its ground zero when a market for an innovative product just entered the economic scene. But along with the genuine products, there are always counterfeits because the demand exceeds the supply for the innovative product. This means that people expectations about the future supply of the innovative product will be overrated, because the genuine supply is bigger than normal one predicted, having also counterfeits products included. Shortly the supply will exceed the demands, and the rising price of the innovative product will lose some steam because first counterfeits are already revealed and people lose the trust even in the genuine ones, not knowing which is real, but knowing for sure that there is somewhere a fake. Its price was artificial therefore the market will have a correction and the bubble will burst. The most proper way to explain Mill's approach is to take a look over dotcom crisis from 2000-2001 and over the real estate market evolution from all over the world beginning from 2002-2003 (Rogojanu, 2010, pp. 221-245, Münchau, 2010, p. 201).

In the early 2000 informatics technology (IT) registered a tremendous expansion and technical progress which pushed forward globalization and erase boundaries between countries. IT was a main vector of this new economic age and new opportunities that anyone could hardly imagine few years ago were announcing a glamour super-technologies future where every market participant should have had a laptop connected to internet. This thing has pretty much happened today, but ten years ago IT boom was too advanced for the world economy. A mild recession of nine month fired the fake IT programmers and optic fiber contractors, but the huge stocks of IT inventory has been bought at fire sale prices and used later. There must have been an IT boom at the beginning of this millennium, but not by far one so big. Fake programmers and IT engineers made market participants that the IT is a field bigger than it was in reality and the dotcom bubble grew up to the point when junk bonds of young IT companies have not been able to be sold to anyone.

In the mid 2000, having deregulation, low interest rates and financial innovation, people transformed a traditional strong asset like real estate market into a risky real asset and eventually in a fake one. First of all owners of houses have discovered that they use their houses as cash machines. Couple of years they did well, because the real estate market was on a rising tide and banks lone them money for greater value of the houses. For that particular reason people became interested in houses not for shelter of a home, but for assets suitable of mortgages and new loans. A house rush appeared to come, so many people managed to find money to invest in real estate market (Figures 4, 5). Finding the money wasn't difficult, because credit was lax and interest rate was low. But the growth from this field was artificial, because people didn't need houses, but assets for mortgages. However, real estate bubble would have not been soon lethal without subprime system of credit. If a person is able to answer to all banking requests of a loan, then it could be said that the person is a prime borrower, or debtor, because he is in the first class of debtors. This first class, a prime class, is one of risk free, or lowest risk possible, because the debtor is a person with stable income and high financial score. After the prime class of credit there are of course the second class, the third, and so one, but what really matters is that all of them are subprime, meaning outside the security of the prime criteria. Normally the bank wouldn't lone money to people with bad credit scores, but financial institutions and credit brokers have found in the subprime debtors a new client target, for what was called later NINJA loans. This way the subprime debtors became prime debtors for a while. They enjoyed relaxing terms of paying back the money for a year, or more, but at the end of that period they had to pay all, the principal and the interest up to date. Meanwhile, the financial institutions sold their debts to investment banks

as CDOs, and then investment banks posted the CDOs on the stock market, as shares of hedge funds, convincing investors to buy it, using their reputation to promote them. Hedge funds and retirement funds from all over the world rushed to buy shares backed up by American real estate. But when they finally had to pay the loans, subprime debtors didn't manage to do it, and the investment banks didn't pay the dividends. People became anxious and banks had to execute the subprime debtors. The problem was that all this became a fire sale and the real estate market crumbled, letting investors from all over the world with bonds whose assets were worth much less (Shiller, 2008, pp. 90-142, Zandi, 2009, pp. 87-186).



Source: Turner, 2008.

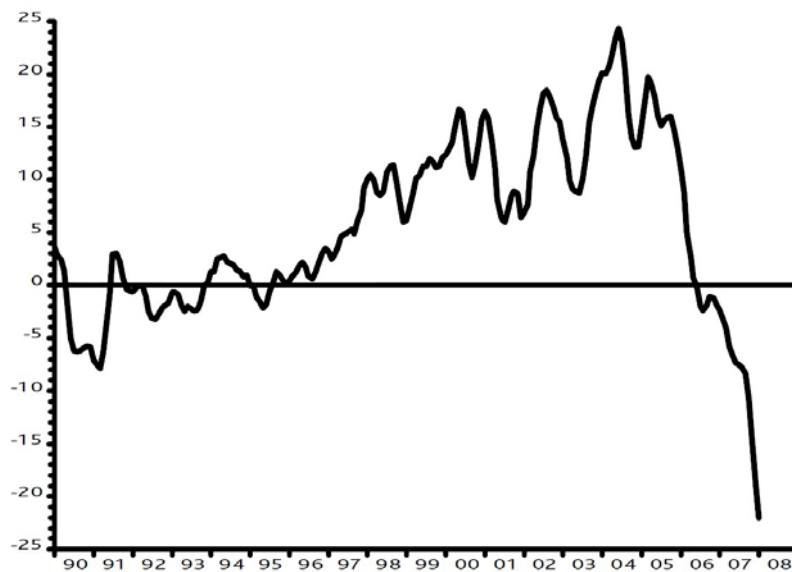
Figure 4. *US Homeownership*

First of all, animal spirits mean need for investments. Up to one point, animal spirits are able to explain some economic behavior of market participants. But sometimes the need for investments become a rush for investments. Hyman Minsky, in his book *Stabilizing an Unstable Economy*, has presented an interested hypothesis, The Financial Instability Hypothesis. According to this hypothesis, there are three kinds of debtors in a credit equation:

- hedge borrowers, who are able to pay the interest and the principal as well;
- speculative borrowers, who are able to pay for sure only the interest. They use to make financial speculations with others' people money

and they will pay the principal only if they win the speculative game, in other words the bet;

- Ponzi borrowers, the most dangerous. Their incomes can cover neither the interest nor the principal. They take comfort in selling their future incomes, betting that these incomes will be bigger and in continuous growth.



Source: Turner, 2008.

Figure 5. *US House prices*

During the boom, the number of hedge borrowers decreases while the percent of speculative and Ponzi borrowers increases. Ponzi borrowers are the first casualties of the financial crisis, because when credit dries out, financial institutions have to accept desperate measures like fire sale, in order to pay their bills. Fire sales make Ponzi borrowers to lose the bet on their future growing incomes, making the crisis deeper. The problem with fire sale is that the prices of assets are getting lower faster than the real shortage of the debt. A good example of that risk is what happened during the Great Depression: between October 1929 and March 1933 the real value of assets grew with 40 percent even the nominal value dropped with 20 percent. This is a nightmare come true, because people have to pay back much more money than the value of the assets in that moment (Minsky, 2008, pp. 99-145).

Risk bank and the lender of last resort

Recent crisis shared much in common with past crises. Greed, foolishness, exuberance are always to blame for crises, but every time people press the trigger and unleash the crisis, different origins requesting different approaches come to light. This time it seems that the pervasive bonus incentive system for unsustainable good economic results on the short run made market participants blind to side effects on the medium and long run. Therefore people took risks beyond their inventory of risk management. More than junk loans and junk investments, there was an antagonistic conflict between investors and boards of listed companies. The last ones wanted to hold the shares and to transform them into strong low-yielding long run securities, while common people with couple of bonds wanted to get rid of them as quickly as possible, as risky high-yielding short run shares. This lack of consensus regarding the future of investments was in fact a proof of corporate governance failure (Taleb, 2007, pp. 23-128, Turner, 2008, pp. 12-48, 56-88).

A central bank has a vital role in the economic mechanism. Related on the central bank are the politics regarding money supply, interest rate and inflation control. The central bank controls the money supply through operation on the open market, buying or selling short-term government debt. In fact, what is commonly known as adjusting the interest rate is not about adjusting or changing anything at all. If there is a risk of higher inflation, then the central bank will simply offer some millions in short-term government debt, in order to restrain the amount of money from the market. The commercial banks will have in their accounts less money than central bank intended to withdraw from the market, therefore they will have to borrow money from the other central banks which have deposits on central bank. The demand for money will grow, and the same thing will happen with the interest rate, a fund rate actually, used by commercial bank for loans made to each other with money deposited in central bank accounts, hence the expression that central banks raised interest rate.

If additional supply of money is required on the market, central banks can do the opposite thing to offer more money to market participants. Commercial banks will not need additional money anymore; therefore the fund rate between them will be lower. Sometimes this new low could be dangerous if the interest rate will reach a value near zero. Central banks do not lend money to commercial banks, but to sellers of government debt, in order to lend the money forward to the banks. But if the interest rate is zero, it might be said that little incentive will be found in order to have deposits to the commercial banks (Krugman, 2009, pp. 101-209, Read, 2009, pp. 29-59).

A bank is in peril of collapsing from two main reasons:

- Loans offered to market participants bring back fewer money than current debts of the bank;
- Bank runs, hence the necessity of accepting fire-sale rescue plans.

More than this, a bank has to return the money it clients asked for, as liabilities payable on demand. But it simply can not do the same thing to the clients who borrowed money from it for long run commitments, because its assets are not payable on demand too. It is possible that things would do fine for a time, but if couple of banks experiences bank runs, then the immediate repercussion over the trust in the banking system will be a bank panic, because of the mismatch of bank assets and liabilities. Once the bank panic burst, even strong solvable banks are in danger of bank runs. To understand bank runs it might be important to understand first of all why banks still use to hold assets that can not be costlessly and quickly liquidated. In order to support this issue, economists Bruce Champ and Scott Freeman made a model of demand deposit banking.

They assumed that here is a financial market where people are trading product y . The analysis is based on the assumption that product y is not traded when people are young. Another assumption is that there are two types of market participants, type 1, one who use the y product in the next period after youth, and type 2, one who use the product in the second period of time after youth. During the childhood nobody knows what type of market participant will going to be. This could be revealed only when an individual person will be mature and will know if will use the product y sooner or later. For simplifying the analysis, the two authors further considered that there is a probability of 0.5 for a market participant to be included in type 1 population, or in type 2 population, not knowing about the others what are their types. Therefore the model will be constructed on the hypothesis that exactly half of each generation belongs to each type (Champ, Freeman, 2004, pp. 23-109, 230-254).

Market participants have to choose between two assets, storage and capital. Storage an asset has the meaning of storing the asset in a basement, warehouse, or account, if the asset is money. Storage pays a rate of return 1 over one period, no matter if this happens in the first period after youth, or during the second. Capital starts to produce interest only in the second period, an interest $X > 1$. During the first period there is no interest, nevertheless the capital can be sold for v^k . Selling capital before its maturity period does not allow the owner to exploit the maximum from an investment; therefore the owner might be tempted to issue fake titles of capital. Thus, capital sold before its maturity period has to be verified with additional costs θ , with $\theta > X - 1$. All these assumptions about assets lead the analysis around the rates presented in the following table:

Table 1

Rates of return for storage and capital		
Effective rates of return to:	One period	Two periods
Storage	1	1
Capital	$v^k - \theta$	X

For capital producing X goods, market participants will pay the present value of X goods. The present value of X is X divided by one-period rate of return from the alternative use of capital, therefore people will pay at most $X/1 = X$ goods in a present time for capital which will worth X goods in future. Therefore $v^k \leq X$, but because $\theta > X - 1$, then $\theta > v^k - 1$ or $1 > v^k - \theta$. As a conclusion, the one-period rate of return for storage exceed the same period returns for capital. If $1 > v^k - \theta$ is not true, then return payment of capital will exceed return over storage in both periods, hence the lack of interest for storage on the long and on the short run as well. A higher probability that $v^k \geq X$ will arise and without taking into account the cost to avoid fake capital titles, some market participant might find short run investments more attractive than the long run safer investments. Thus, the model is based on the assumption that $1 > v^k - \theta$.

The reason people made savings is the greater utility they hope to achieve in the future. In this model economy market participants do not know when they will consume the goods. People have to choose between storage and capital, which is difficult because of need of liquidity. If a market participant owns capital and decides to sell it after one period, he will receive only $v^k - \theta$, instead a better alternative of storage interest rate of 1. However, if the market participants prefer to hold the storage to consume it in the second period, he receives only rate of return 1 instead of X offered by capital alternative. A person who does not know his type at the moment of choosing the assets cannot have secure arguments of receiving the best rate of return. Thus, the rationale of this model should be a solution to grant the best rate of return for a market participant whatever his type would be (Champ, Freeman, 2004, pp. 232-246).

Animal spirits and the investment banking

An intermediary institution, like a bank, could offer a solution by giving each person the rate of return 1 after one period if it turns out that he is type 1 and the rate of return X after two periods for type 2 individuals. Market participants will make a huge deposit to this intermediary institution, letting it to hold their money and to manage the future rate of returns for each period. The intermediary institution will know for sure which person is from type 1 and which from type 2 in order to keep the money for demand deposits, which from

originate bank runs. It is not difficult to clearly views over the market participants' intentions. If a type 1 person pretends that he is in fact type 2, he would be able to consume X instead 1, but only later with a lower utility. If he is type 2 and pretends to be type 1 having access to other type 1 person's demand deposit, then he will gain only 1 instead of X . In fact the intermediary might be a bank whose principal activity should be the providing of liquidity. On the assumption that there is more randomness for an individual than for an aggregate economy, the bank will know to some extent the fractions of depositors who will withdraw the money after one period, or after two periods. Nevertheless, if more than one type 2 persons pretend to be type 1 and want to withdraw early, the bank must sell its capital in order to meet the promises made to its clients. Any client should get 1, but the bank has to sell capital at the price of $v^k - \theta$, which is less than 1, hence the first loses of fire sale. After the bank paid all type 1 deponents and the lying type 2 deponents as victims of bank panic, the bank might not be able to pay anything for type 2 investors who kept calm.

It has come into the light that moral hazard is a speed vector for irrational exuberance on the financial markets. Governments make deposit insurance in order to protect the depositors which will find great comfort in that, especially if bank's investments are targeting risky assets. Having deposit insurance, depositors might not be interested in monitoring the risk and the solvability of the bank. They will only be interested in higher returns, therefore the rush of banks for riskier assets that pay higher returns instead of safer assets that pay lower returns (Farmer, Guo, 1994, pp. 79-129). The problem of moral hazard is strongly related to one of the most critical aspect of animal spirits: the blindness of market participants related to short lasting of economic growth. In other words, analyzing risk bank is like a beauty contest where the audience is impressed by the most beautiful models in that very moment, not into the future. Depositors will be interested in riskier assets for high-yielding returns instead of safer assets on the long run. This is the very animal spirit of the banking investments. People are tempted to hope that economy will everlasting grow, finding dangerous incentives to invest much and riskily on the assumption that nothing wrong could ever happen. George Akerlof and Robert Shiller embedded in *Animal Spirits* the most important economic issues of animal spirits:

- social limits of profit;
- monetary illusion;
- changes into economic equity;
- legends instead facts and figures;
- corruption;
- exuberance and overconfidence.

All these features of animal spirits were backing up false financial economic models people used to gain steam in their economic decisions (Akerlof, Shiller, 2009, pp. 48-59), (Howitt, McAfee, 1992, pp. 40-99).

Investments are always in the shadow of risk. Payments are to be made in the future along with future specific uncertainty. Should depositors find out that their bank's assets are not strong enough to meet its liabilities, they will be afraid enough to cause a bank run and a fall in the value of the bank's portfolio because of the fire sales. Both banks and investors need to be protected against risk. Banks can simply hold larger fraction of their portfolios in safer assets, and can also make attractive offer to depositors giving hem the chance to become shareholders. The switch between depositors and shareholders enables bank to have a greater positive net worth W , as illustrated in the following balance sheet:

Table 2

A bank's balance sheet		
Assets		<i>Liabilities</i>
Reserves	γH	H
Interest-bearing assets	$(1 - \gamma)H + W$	W
Capital	$H + W$	$H + W$

The equity holders invest W in return for a share of the bank's value. Depositors have the first claim on the assets, because of the demand deposits. When loses occur, the board will have to redirect resources subtracted from bank's net worth, not from deposits. Only after the net worth falls to zero, the deposits will be in peril. As a conclusion, it might be said that shareholders are the most exposed to the risk (Champ, Freeman, 2004, pp. 248-256). It only depends to some extent could be the risk taken, and how many shareholders are aware of it. This risky exposure might be softening if some of the following economic features could be integrated into economic models, along with the previous animal spirits features (Akerlof, Shiller, 2009, pp. 190-223, Mathews, 1984, pp. 45-90):

- opportunity to learn from experience;
- opportunity to make contacts with market maker, policy-maker, other market participants;
- reputation;
- synergy with other businesses from the same field.

The two first features can be subsumed in a Δ_c^k indicator along with θ and ρ^k in order to adjusting return for the capital in the first period in the previous example. It will be a cost indicator and it should be subtracted from v^k . Δ_c^k is a cost because there are transactional costs and cost of research for creating and maintaining a functionally network between market participants for sharing

experience and information. For the long run an important indicator suitable to be integrated into the model could be reputation of capital which from market participants is expecting returns, presented as Ω^k . Reputation could be either bad or good, hence the representation of it with both the signs. One of the most important indicators which should be taken into account is the rating. After all, the rating agencies have played a distinctive role into the financial crisis by covering the real facts and figures over the economic background and particularly over solvency of major banks or over the security of leading companies' assets. The rates for storage and capital should be adjusted as follows:

Table 3

Rates of return for storage and capital taking into account rating, reputation and experience		
Effective rates of return to:	One period	Two periods
Storage	1	1
Capital	$v^k - \theta - \Delta_c^k - \rho^k$	$X(1 \pm \Omega^k)$

Introducing new variables such cost of creating the network, rating and reputation, a new matrix for the rates of return should be available for market participants. From the return of the capital on the short run v^k will be subtracted not only θ , as a cost already explained, but Δ_c^k and ρ^k as well. This means that, on the short run, v^k is not only exceeded by 1, but is exceeded by far, because transactional costs such as network and rating could only decrease the profits expected by a person who wanted to transform capital into liquidities after one period. On the long run there are new issues introduced into the model, such as reputation Ω^k , but the weak link in the people's economic thinking was their expectations on the short run, not on the long run.

Conclusions

The new model for rates of return for storage and capital could be a useful indicator for preventing bank runs and further bank panics. The model might be proved useful also for making investors understand that there could not be such a gap between real assets value and their nominal value. The gap is supported by fading lucky stories, hence the hopes of get-rich-quick schemes and the irrational exuberance which has allowed the crisis to burst. On the short run market participants have to accept that there can be hardly higher returns from the capital because of several types of cost which are sometimes hard to be spotted and ten integrated into the economic decision making. Targeting high returns on the short run could only be risky, just as financial crisis of 2007 has proved. Introducing variables such as cost for network of sharing information

and experience, rating and reputation is just an example of how complex financial analysis should be. Nevertheless, on the short run rate of returns for capital should be far lower than the rate of returns for deposits. If market participants would have been aware of that, there are reasons to claim that crisis might have been milder or even avoided.

Animal spirits are determinant factors for economics, but unfortunately not yet for economic thinking. Economists should start to review their inventory theoretic knowledge and evolve in their way of economic thinking because economic crises have already evolved. Avoiding an appropriate answer to this new quest should be a confirmation that economic science by itself is in crisis (Dinu, 2010, pp. 318-323, 339-346).

References

- Akerlof, G.A., Shiller, R.J. (2009). *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism*, N.J.: Princeton University Press, Princeton
- Champ, B., Freeman, S. (2004). *Modeling Monetary Economies*, Cambridge University Press
- Chorafas, D.N. (2009). *Financial Boom and Gloom*, Palgrave Macmillan
- Dinu, M. (2010). *Economia de dicționar. Exerciții de îndemânare epistemică*, Editura Economică, București
- Farmer, R.E.A., Guo, J.-T., „Real Business Cycles and the Animal Spirits Hypothesis”, *Journal of Economic Theory*, 63, 1994, pp. 42-73
- Howitt, P., McAfee, P., „Animal Spirits”, *American Economic Review*, 82, 1992, pp. 493-507
- Hume, D. (1739). *A Treatise on Human Nature*, Book 1
- Keynes, J.M. (1936). *The General Theory of Employment Interest and Money*, McMillan London
- Krugman, P. (2009). *The Return of Depression Economics*, W. W. Norton & Company, New York
- Mathews, R. (1984). *Animal Spirits*, in *The Proceedings of the British Academy*, London 70, 209-29, Oxford University Press
- Minsky, H.P. (2008). *Stabilizing an Unstable Economy*, McGraw Hill
- Münchau, W. (2010). *Meltdown Years*, McGraw Hill
- Read, C. (2009). *Global Financial Meltdown*, Palgrave Macmillan
- Rogojanu, Angela (2010). *Stăpânii ideilor economice*, vol. II, Editura Economică, București
- Roubini, N., Mihm, St. (2010). *Crisis Economics*, The Penguin Press, New York
- Shiller, R.J., (2000). *Irrational Exuberance*, Princeton University Press, Princeton and Oxford
- Shiller, R.J. (2008). *The Subprime Solution*, Princeton University Press, Princeton and Oxford
- Taleb, N.N., (2009). *Foiled by Randomness*, Texere, New York
- Taleb, N.N., (2007). *The Black Swan*, Random House, New York
- Turner, G. (2008). *The Credit Crunch*, Pluto Press, London
- Zandi, M. (2009). *Financial Shock*, Pearson Education, Inc., New Jersey