The Actors of the Credit Crisis reflected by the Compram Methodology

Dorien DeTombe (MSc. Ph.D.)
Chair International Research Society on Methodology Societal Complexity
P.O. Box 3286, 1001 AB Amsterdam, The Netherlands, Europe
Tel: +31 20 6927526 Email: detombe@nosmo.nl
http://www.complexitycourse.org/doriendetombe

DeTombe, Dorien (2011) The actors of the credit crisis reflected by the Compram Methodology. CEJOR DOI 10.1007/s10100-011-0215-6 Springer-Verlag

Abstract

The credit crisis is a complex societal problem in which many phenomena and actors are involved. If one wants to analyze the causes of this problem, try to stabilize the situation and prevent new fall backs, a multi-disciplinary approach is prescribed. A careful analysis based on the scientific methodology of societal complexity is needed in order to find how the credit crisis happened and how new crises can be prevented. Theories of multiple disciplines must be used by a multi disciplinary team to analyze the situation and to find sustainable options. This process can be accomplished by following the Compram Methodology of DeTombe. The Compram Methodology provides a framework for policy making which includes many methods and tools. The Compram Methodology is specialized to handle complex interdisciplinary world-wide problems and to offer a step-by-step approach of analyzing the problem, finding and implementing sustainable interventions and evaluating the effects. The Compram Methodology offers a bird's-eye view on the complexity of the problem and gives directions to policy makers to build their decisions on using a multi-disciplinary, multi-actor approach. In this article the credit crisis is discussed in relation with the Compram Methodology. Aspects of the credit crisis are described with an emphasis on the role of the actors. Based on the Compram Methodology directions can be provided for handling the credit crisis and avoiding future similar problems.

Keywords: Compram Methodology, credit crisis, actor

1 Introduction: what is happening?

The credit crisis of 2008 started in the USA around 2006[1] as a local credit crisis. The first signs of the credit crisis were when too many people could no longer pay their mortgages. This lead to a downfall of house prices, which affected the banks and the stock market in the USA. In an internationally intertwined financial world, a local financial crisis can quickly evolve into a global crisis. Daily huge money flows are sent from one part of the world to the other. The ownership of these money packages changes often. Banks, multinational firms and insurance companies sell, resell, transfer and loan each other enormous amounts of money. Effecting one stock market means affecting all the other stock markets. This happened in mid September 2008 following the bankruptcy of the Lehmann Brothers[2]. As a result there was a world-wide downfall of stock markets, dragging millions of people into misery by losing their

[1] Some people set the start of the credit crisis in summer 2007 such as Hans Smit (Kragt 2008, p.7).
[2] The Lehmann Brothers is a large business bank in the USA.

money, their jobs, a large part of the value of their assets and parts of their pension plans. Consequently, many innocent people were led into poverty and despair. Due to the lack of sufficient social support, many people in the USA had to sell their houses and leave their homes to go to trailer parks, move in with relatives or even had to live in tents[3]. The credit crisis quickly spread over the world, hardly missing any country, although the severity of the blow differed from country to country. Its consequences included a massive disruption of global markets and a threat to global safety. The credit crisis threatened the international economic balance and the economic and social stability within the countries and between the countries (Van den Dunk 2009). How could this happen? What started this crisis?

2 How did the credit crisis start?

In the years from 2000 to mid 2005 (Morris 2008, p. 65) several events concerning the financial system went wrong in the USA. The first people that were negatively involved with the crisis were the relatively poor house owners. These people were seduced by the banks to buy a house of their own, the American dream, with easy to get and cheap mortgages. This resulted in a growing market for real estate driving the prices of the houses up. At the start these mortgages were with affordable interest. However, soon[4] after the people bought a house the interest of their subprime mortgage went up to a height they could no longer afford. They were forced to sell the house back to the bank and move elsewhere. However, the bank could not resell these houses for the same price and had to put the houses on the market, which lowered the price. This resulted in a decrease of the value of houses and thus a downturn in the real estate market, followed by a down fall in the stock market (Goodhart and Hofmann 2007). This can be marked as the start of the credit crisis[5]. Due to the credit crisis all over the world companies have gone bankrupt, banks and businesses have closed down, factories had to shut down, employees have lost their jobs, advisers and consultants are dismissed and temporary workers have been sent home. The credit crisis influences each part and every level of the world, the micro, meso and macro level. The world has become poorer and billions of dollars of value has been lost[6].

3 The Compram Methodology[7]: a scientific approach toward the credit crisis

How could it happen that banks were lending huge amounts of money to people who could probably not pay the money back?

---

[3] Although the credit crisis has a world-wide effect, the examples given in this article to illustrate some of the effects of the credit crisis are mainly of the USA and of the Netherlands.

[4] Usually after five years.

[5] This resulted also in a decline in the number of new housing and the cessation of construction of buildings. The new housing market in North America, along with Military, Automotive, and Medical Services has for a very long time been a driving force in the economy. When construction slows, the workers, who were well paid, stop spending.

[6] Due to the credit crisis the total debts of the government, the banks and the people together of some Western countries like USA (300% of the GNP (Gross National Product)), Germany (285% of the GNP), UK (466% of the GNP), Japan (471% of the GNP) has grown to 2-4 times their GNP (NRC, 10 February 2010, p 13, citing McKinsey Global Institute).

[7] For an extended overview of the Compram Methodology see DeTombe (1992, 1994, 1997, 1999, 2000a, b, 2001, 2003, 2004, 2008, 2010) and http://www.complexitycourse.org/doriendetombe

Analyzing the credit crisis along the lines of the theory of societal complexity and according to the Compram Methodology, starts by asking questions and becoming aware of the various dimensions of the situation[8]. Is there a problem? Is it a complex societal problem? Is it urgent? What happened and when did this happen? What are the effects? What are the causes? Who and what is involved? These are some of the questions one has to answer in order to get at least a vague idea of what is going on. In the above paragraphs some answers are indicated. Yes, the credit crisis is a complex societal problem[9]. This is phase 1.1 of the problem handling phases of complex societal problems: becoming aware of a complex societal problem and forming a vague mental idea (see Fig. 1).

Sub-cycle 1: Defining the problem

phase 1.1	becoming aware of the problem and forming a (vague) mental idea
phase 1.2	extending the rough idea by reflection and research
phase 1.3	putting the problem on the agenda and deciding to handle the problem
phase 1.4	forming a problem-handling team and starting to analyze the problem
phase 1.5	gathering data, exchanging knowledge and forming hypotheses
phase 1.6	formulating the conceptual model of the problem

Sub-cycle 2: Changing the problem

phase 2.1	constructing an empirical model and establishing the desired goal
phase 2.2	defining the handling space
phase 2.3	constructing and evaluating scenarios
phase 2.4	suggesting interventions
phase 2.5	implementing interventions
phase 2.6	evaluating interventions

Fig. 1 The phases in the problem-handling process (DeTombe 1994, 2001, 2003)

Then one can, when the problem is interesting enough, extend the mental idea by reading, reflecting and research. This is phase 1.2 of the problem handling phases.
This phase is followed by the question: 'Is the problem interesting and/or important enough to be put on the political agenda in order to be handled by a legitimate problem owner?' (Fig. 1, phase 1.3). If this is answered positively further decisions are: 'At what level should this problem be handled? On which political agenda it should be placed? Should it be on the agenda of the government in order to handle the problem nation-wide, or should it be placed on the international agenda?'

[8] See Fig. 1: The phases in the problem handling process: phase 1.1.
[9] See Appendix I: Definition of a complex societal problem.

When the problem must be handled internationally, then one has to consider which institute or committee is the legitimate problem owner to handle it. For example, should it be on the agenda of the G7 or G20[10]?
When decided to handle the problem, the problem owner delegates the task to a methodological well skilled facilitator who is able to handle the problem according to the guidelines of the Compram Methodology.
Only when there is a good and deep insight into a complex societal problem, there is a chance to formulate and implement sustainable changes. In order to get this insight, the problem has to be analyzed according to the guidelines of a methodology like the Compram Methodology. The Compram Methodology consists of a six step approach see Fig. 2.

step 1	analysis and description of the problem by a team of neutral content experts
step 2	analysis and description of the problem by different teams of actors
step 3	identification of interventions by experts and actors
step 4	anticipation of the societal reactions
step 5	implementation of the interventions
step 6	evaluation of the changes

Fig. 2 The six steps of the Compram Methodology

The Compram Methodology states that a complex societal problem covers an area that is studied not only by one discipline but by different disciplines. Combing the knowledge of the different disciplines in relation to the problem gives a better insight into the problem and a better chance to make a policy which contains sustainable changes.

In phase 1.4 of the problem handling process the facilitator starts with step one of the Compram Methodology by reflecting on the fields that are involved in the problem of the credit crisis. Based on this analysis, the facilitator invites experts from these different fields, such as, concerning the credit crisis, experts from the field of economy with special knowledge of retail banks, business banks, mortgages, real estate market, stock market, world-wide financial system, experts of legislation, psychology, employment and sociology. The experts are neutral, that means neutral towards a certain outcome of the problem handling process[11]. These experts give an analysis of the problem from the point of view of their discipline.

[1010] The G7 is the meeting of the finance ministers of a group of seven industrialized nations Canada, France, Germany, Italy, Japan, United Kingdom and USA. The G20 is the major economic countries the above mentioned countries and Argentina, Australia, Brazil, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, European Union. In many countries, the credit crisis problem was first put on the state agenda; later on the problem was also placed on the international agenda.
The credit crisis seems to have changed the relation between the developing countries and the western countries. While the total debts of some developing countries does not exceeds 2x GNP ((Gross Domestic Product) India 129%, Brasilia 149%, China 159%) some western countries have debts of 3- 4x GNP (NRC, 2010c, p 13). This might also change the relations between the developed and the developing countries (Smit, W. 2009).
[11] The Compram Methodology emphasizes that the problem should be handled first with experts then with actors. Commonly the problem is directly handled with actors. However, discussing the problem first with

Phase 1.5 starts by gathering data, exchanging knowledge and forming hypotheses by the experts guided by the facilitator. Combining the analyses of these experts creates a better view on the problem and a deeper insight in the problem. The experts discuss together guided by the facilitator questions like: ‘What is going on? How is the temporary situation? How could this happen? How will this problem develop in the future? What are the causes and what are the effects? Who benefits from this problem and who suffers? Can this credit crisis be compared to previous ones? What are the phenomena and in which way are the phenomena connected?’
The goal of the first sub-cycle of the problem handling process is to formulate the conceptual model of the problem. The conceptual model of the problem is the definition of the problem. The definition of the problem can be reached working through phase 1.1-1.6 of the problem handling process. During the discussions in the problem handling phases 1.4, 1.5 and 1.6 the facilitator fills together with the experts the seven-layer communication model (see Fig. 3) to support the communication of the view on the problem between the problem handlers.

---

experts increases the chance to get a better and broader view of the problem and prevent that one of the powerful actors draw the problem into the direction of their desired goal due to actors who have less power.

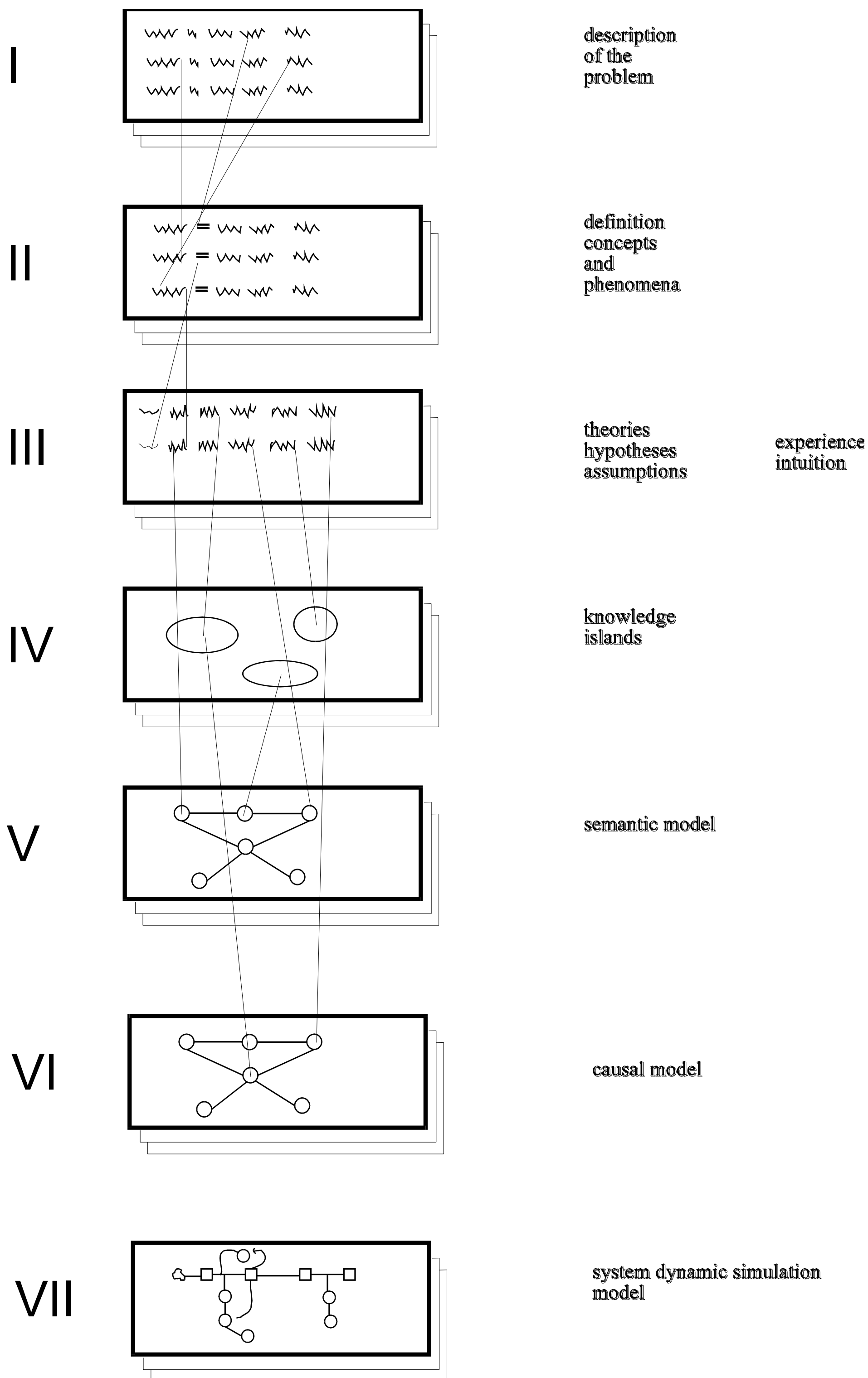

Fig. 3 The seven-layer communication model DeTombe (1994)

The seven-layer communication model is a way to describe the conceptual model of a problem and by doing this, defining the problem. This is in step one of the Compram Methodology the definition from the point of view of experts. In the first layer the problem is described in words, normal language, in the second layer the concepts of the text are defined,

in the third layer there is a reflection on the status of the knowledge described in layer one. Is the knowledge based on theory, hypotheses, experience, intuition or is it an assumption? Based on the description in the first layer a semantic model is made in layer five[12]. This semantic model is the basis of the causal model in layer six, in which the phenomena of the problem are related to each other by cause-effect connections. The causal model is the basis of the simulation model in layer seven, in which the cause–effect and feedback loops are indicated between the phenomena that are involved in the problem.

4 The actors of the credit crisis

As an example of how the Compram Methodology can be used to analyze a complex societal problem as the credit crisis the role of some of the actors/stakeholders as a hypothetical outcome of the discussion of the experts guided by the facilitator in step one of the Compram Methodology will be described. In order to understand the credit crisis one has to understand the role the actors play in the credit crisis as an important part of the problem analysis. This can be done by describing and later on by modeling, in a simulation model, the role of the actors in the problem. In the following paragraphs the roles of these actors will be described shortly in hierarchical order of cause and effect in the credit crisis. Some of the questions the experts like to answer could be: ‘Which actors are involved? What power do they have? What role to do play? Which actor benefits from the way up to the credit crisis, which actors suffers from it?’

There are many institutional and individual actors. Each actor has a different role or different roles and different power on different moments in the situation, and, consequently, differing ability to steer the situation towards their desired outcome. Confronted by the crisis each actor has a desired goal towards the ‘solution’ of the problem. Some actors benefit of the period up to[13] the credit crisis, some actors first benefit from the situation, but later on suffered, and some actors only suffered from the credit crisis.

In the description of the role of the actors is differentiated in a hierarchical order in the view of cause and effect of the credit crisis. Some actors are actively involved with the causes of the credit crisis by taking huge financial risks, often on costs of others. We like to call these actors the first category actors. Some actors support the risks by given the opportunities to the ones who take the risks. We call these actors the second category actors. Some actors took huge personal risks by borrowing too much money. These are the third category actors. Some actors have the role of preventing a credit crisis by controlling the financial flows and by legislation of financial activities. These are the fourth category actors. The last category actors we like to indicate are the people who only suffered from the credit crisis, without having directly benefited from it. These are the fifth category actors.

The first category actors are the active actors, the ones who caused the credit crisis. These are no doubt firms like the business and retail banks, and in a later phase of the period up to the

[12] For the explanation of layer four, the knowledge islands, see DeTombe (1994) chapter three, paragraph 3.3.5.4 p. 82.

[13] By the term ’the period up to the credit crisis’ we indicate the period from the last big world-wide credit crisis in 1929, when the New York Stock Market on Wall street went down, till October 2008, the moment the credit crisis of 2008 started.

credit crisis, the private equities and hedge funds[14], the individual employees working in these firms and funds, and the shareholders. These firms and funds, and the individuals working in these firms together with the shareholders caused the credit crisis. These actors played an important role in creating the credit crisis and, at least for a long period, benefit from the period up to the credit crisis. The risk full behavior of the employees within the funds and banks was stimulated by the pressure of the shareholders and the banks it selves, and was rewarded by high bonuses.

The risky financial activities of the individual employees working in the banks and funds were made possible within the financials institutes such as the stock markets and the world-wide financial system. These are the second category actors.

The controllers of the financial system and the government as regulator/facilitator of the financial system are the third category actors. They had the tasks to regulate and control financial activities in order to prevent a credit crisis. The failure of the controllers of the financial system and the government as regulator/facilitator made it possible that the first category actors could benefit themselves in such a way that it caused a world-wide credit crisis. It is interesting to see whether the controllers of the financial system and the government as regulator/facilitator could have been able to prevent the credit crisis, and why they failed in their role as controller.

The fourth category actors are the individual persons who benefit at first by taking huge loans and later on suffered due to the credit crisis. These are people[15] who borrowed more money from bank than they could afford. This category of actors is partly responsible of the crisis. Partly because they are seduced by the banks to take these financial risks and because their individual power is very limited compared to the first category actors.

The fifth category actors are institutes and persons who suffered due to the result of the credit crisis without having directly participated in the cause of it. They are the victims of the credit crisis. They are the largest category of actors, the institutes and individuals who suffers due to the world-wide credit crisis. These actors are confronted with large budget cuts such as in the field of education, culture and healthcare.

5 The business banks

The banks belong beyond any doubt to the first category actors, the ones who actively caused the credit crisis. What is their part in the crisis? There are in general two types of banks: business and retail banks. The laws regulating banks differ between these two types. The retail bank is more restricted than the business bank, because the retail bank deals with private people’s money, which is to a limit guaranteed by the government[16]. The business banks are allowed to take more risks.

[14] One has to keep in mind, that the analyses, as described here as a part of the outcome of the discussions of the neutral experts in step one of the Compram Methodology, are hypothetical.

[15] The word ‘people’ is used to indicate an individual involved in the credit crisis, but not working in the financial system.

[16] Guaranteed means that, in case of bankruptcy, the government pays the guaranteed amount of money back to the private owner. The limit for this amount of money in the USA was up to 100,000 US dollars; in Europe till

The business banks get their money by advising, from buying and selling shares, and by giving out loans to companies and to other banks. Advising with takeovers[17] or with reorganization of a company became a real booming business in the second half of the first decade of the 21st century.
The bank shares are often sold to companies that have to take care of other people's money such as insurance companies and pension funds. During the last decade these bank shares became highly over rated and were not covered by real value of assets, such as land, buildings, factories, commodities or goods. When one is willing to take high risks, much money can be gained in buying and selling on the stock market.
In the 70s the Federal Reserve of the USA increased the interest on the mortgages sold by the retail banks. This drew the attention of the business banks. Now they became interested in dealing with mortgages. One of the first banks that started this was the Savings and Loan bank in the USA, later this bank became part of the City bank in the USA (Kragt 2008). This bank wanted to buy mortgages; however, because dealing with one mortgage is not worthwhile, they wanted to buy a group of mortgages. This was the beginning of selling and reselling of the mortgage packages. So, gradually, while the rules for both types of banks became less restricted, the retail banks and the business banks became more intertwined.

6 The role of the retail bank

Other first category actors who actively caused the credit crisis are the retail banks. Retail banks are banks for private people for their savings and their private credits, such as credits for residential mortgages and for other personal things like cars, televisions, holidays and renovating houses. The retail banks are called system banks, because they facilitate the financial money exchange between people and in this way support the basis system of the finance of the society. The retail banks get their money from private people and by giving out shares. For a small amount of interest 2-4% people lend their money to the bank. The bank uses this money to give mortgages to people and to lend money to people for personal things. For the money for private use, like for cars or holidays, people have to pay a high interest rate of about 15-20% a year[18]. For financing a house by a mortgage, partly or total, an interest rate of something between 3-10% will do, because the bank has, in an increasing market or by partly financing of the house, more guarantees to get the money back. In general people who borrow money must pay a monthly amount of interest and often a percentage of the primary loan[19]. The amount of mortgage that can be borrowed is often based on a person's monthly income[20]. When a person asks for a mortgage, the bank evaluates the person's ability to repay

autumn 2008 mostly up to 20,000 Euro. This amount is (temporarily) increased in Europe to 100,000 Euro after November 2008.

[17] A takeover is when one company buys another company.

[18] The interest rates given here are only rough estimates.

[19] On a mortgage there is in general a possibility to pay about 5 % of the total sum each year during 20 years, although there are variations in this type of loan. Sometimes people do not have to pay the original sum of the loan back, because the mortgage will be paid after the house is sold. In this case only the interest rate has to be paid. This is only possible in an increasing market, where the price of the houses rises. Loans for personal use have to be paid back sooner, interest as well as capital, mostly within two years.

[20] In essence each mortgage gets a rating from an independent company. This rating indicates the risk the bank takes on the mortgage. This is the risk of not getting the money back. A triple A (AAA) indication means a safe mortgage for the bank, which means the mortgage will be most likely paid back. The company that is giving these ratings benefits from the sold mortgages. This way of rewarding seduces these companies to give a triple A rating even when the risks are too high.

the loan. Each mortgage gets a rating indicating the risk the bank takes in providing these mortgages. For a long time the retail banks were restricted by law to a safe financial policy in order not to jeopardize the financial system of the country. This was ordered by the Glas-Steagall Act of 1933 of the American Congress. This law was passed after the 1929 crisis to prevent future stock market crashes. The crisis of 1929 had devastated the financial system and lead many people into total despair[21]. Gradually from 1968 on under the auspices of the governments guided by Reagan, Bush senior and Margaret Thatcher[22], the legislation restricting financial risks was loosened until it became quite free in 1999[23]. The retail banks could now earn more and faster money than by just attracting more clients for their savings, because they were allowed to take more risks in the financial market. However, this was not enough. To be able to earn even more money, many of the retail banks merged with business banks. Offering mortgages became very profitable, so profitable that the bank even wanted to sell mortgages to people of whom they knew that they could not afford this[24]. By doing this the bank was taking huge risks. In order to make the mortgages attractive for relatively poor people, the bank gave the mortgages at a low interest rate. The low monthly mortgage payments were very attractive for those people. Now they could afford a house they always wanted to have[25]. Actually, it appeared initially that everyone was a winner. This was true in the early 2000 to 2006 period. The sellers got a very high price for their home, the real estate agents received good commissions on these sales, the lenders were receiving good interest on their money and the bankers received bonuses for their work. It seems though that as more risks were taken, the higher the year-end bonuses to the employees of the financial system became. These rewards further stimulated the employees to take even more risks. However, many of the sales were not truly valuable[26].

Meanwhile, in order to decrease the risks, the retail banks decided to pack mortgages together and sell these as a mortgage package to a bigger bank or a business bank. The package contained both fairly safe and more risky loans. It was left to the bigger banks to sort this out. These banks in their turn packed a group of mortgage packages together and sold these combined packages of grouped mortgages to an even bigger bank[27]. The safety status[28] of these commercial mortgage-backed securities (CMBS) was very unclear (Morris 2008, p. 73). It was difficult to determine whether the mortgage could be paid back. The big banks, being impersonal, started to raise interest rates on the mortgages. Usually, about five years after the people bought the house, the interest of their subprime mortgage increased to a level they could no longer afford, and consequently, the owner could not repay the mortgage. The people were forced to sell the house back to the bank and to leave their homes. This left the bank with houses that they had to put on the market again and thus lowering the value in the

[21] The 1929 crash was created by a downfall of the stock markets due to extreme speculation with high risks taken by people working in the financial system. This crash subsequently resulted in the Great Depression of the 30s.

[22] These politicians were rather right wing; supporting a policy of privatizing governmental goods and declining governmental influence. They even privatized institutions important to the common good such as hospitals, energy companies, schools and railroads.

[23] See Appendix II: Financial legislations in USA in the period of 1938-1995.

[24] Selling mortgages is not the only way to earn money. There are more ways to increase the bank's income. This goes beyond the limits of this article.

[25] In the USA one is free of charge after handing the house back to the bank. In Europe, for instance The Netherlands, one remains responsible for paying the debts. Even after selling the house, the remaining mortgage has to be paid to the bank.

[26] We like to tank Dr. Steve Taylor for his informative contribution of the details on the US mortgage markets.

[27] These packages are called asset backed commercial paper (ABCP).

[28] The status of a loan can be high or low indicating a solid or a risky investment.

real estate market. The bank had to take a loss on these contracts, which became to be known as bad mortgages and the packages of these mortgages bad mortgage packages[29]. By this way in 2006 the credit crisis in the USA began.

7 The role of the private equity funds and hedge funds

The banks are not the only players in the financial world. Other financial firms that actively caused the credit crisis are funds like the private equity funds and hedge funds. These actors belong also to the first category actors. During the last decades these financial funds played an important role in buying and selling companies. In the last decades before the credit crisis these funds disrupted the financial market and business market by rather persistent and aggressive buying of companies without having enough private money to do so. In this way these funds steered up the credit crisis.
Private equities are firms that acquire an active role in a company in which they invest through buying shares with a relatively small amount of money. They take over the control of the company often by replacing the management, and/or by selling parts of the company. Private equity funds are generally less regulated than ordinary mutual funds[30].
The goal of hedge funds[31] is to take over other companies and sell parts or the whole business to other financial firms later on. They often do the takeover in a rather aggressive way. Hedge funds are exempt from many rules and regulations governing business banks, private equities and other mutual funds. This allows them to accomplish aggressive investment goals. For both these funds, private equities and hedge funds, neither the company taken over, nor its employees matter[32]. The only thing that is important to them is making money; money for themselves and money for their shareholders. These active investors were able to buy a company with only 1 to 10% of their value in cash[33]. The rest of the purchase price could be borrowed. After the deal, the company, which had been taken over, often had to pay all the expenses for closing the deal. The company taken over was billed for 'advising' and left with

[29] These packages are known as collateralized mortgage obligations (CMOs), or as collateralized debt obligations (CDOs), collateralized loan obligations (CLOs), collateralized bond obligations (CBOs) (Morris 2008).
[30] A mutual fund is a collective investment fund that pools money from many investors and invests it in stocks, bonds and other securities (Wiki Pedia English 2009).
[31] A hedge fund is an investment fund open to a limited range of investors that is permitted by regulators to undertake a wider range of investment and trading activities than other investment funds, such as short selling and derivatives. The hedge funds take greater risks and use aggressive strategies. They are exempt from many of the rules and regulations governing other mutual funds. This allows them to accomplish aggressive investing goals (Wiki Pedia English 2009).
[32] In the 20th century large companies like Philips, a company which makes lamp bulbs, radios and televisions, which are sold in different continents, not only hired employees, but took also care of its employees. At their headquarters in Eindhoven The Netherlands, Philips gave their employees decent houses to live in, schools for the children and supported free time activities such as creating a soccer team (PVV). Of course, this positive side also has the negative side of controlling and 'owning' the laborers. However, the employees were protected and not subject to arbitrary lay-offs, like the flexible employees in the first decade of the 21st century are (Sennett 1998).
[33] Buying without having the money to buy is not new. Galbraith (1954, 1997, pp. 16-20) reports that this kind of behavior was frequently performed in the period of 1926-1928, just before the stock market crash of 1929. This was done, for instance, by buying land in Florida for speculation with only a down payment of 10% and meanwhile still keeping full profit of the reselling price. The term short selling derives from the 17th century when the VOC (Verenigde Oost-Indische Companie (a Dutch commercial trade company)) was dealing like this. Short selling is selling something that one does not own; one buys it just before one sells it.

huge debts[34]. The active investors were able to take hold of the company by making deals with the managers in charge, the CEO's[35], sometimes together with the head of finance, by giving them huge bonuses[36]. Often these CEO's lacked any feeling of responsibility towards the employees[37]. Their own private interests prevailed over job security for the employees, as well as the long term interests of the shareholders. Due to the activities of the private equities and hedge funds many companies, that had been in family hands or in a country for more than a half century, were taken over in the last decades[38]. Governments have little or no control over the ownership of the companies on which a large part of the society is dependent. Thus the people seem to be on the mercy of these big gamblers (Het Financieele Dagblad 2008; FEM Business 2009).

8 The role of the shareholders

On the level of the institutes and individual persons who also played an active role in creating the credit crisis, and thus belong to the first category actors, are the shareholders. Shareholders are often active players on the financial market and in this way belong to the first category actors, the ones who caused the credit crisis. The shareholder is the one who, at least in the last two decades before the credit crisis benefit largely from the increasing shares on the stock market. Shareholders can be private people, but mostly, when referring to shareholders, we refer to large firms such as private equities, hedge funds and large (semi) public institutions like insurance companies and pension funds[39]. Shareholders in general own a part of the company by investing money in it. In the last decades the role of the large shareholders, like the insurance companies[40] and pension funds, became very important. These shareholders want to get as much money out of their investments as possible. Because they can easily move their money to another target on the stock market, their wishes and demands are taken very seriously. Again here the fund managers are rewarded with high salaries, generous payments and bonuses in spite of their actual performance. The position of these managers prevails over that of their individual investors, policy holders, and future retiring employees, as well as even over the long term the continuation of the company. In

---

[34] The firm Hema (Hollandse Eenheidsprijzen Maatschappij Amsterdam (Dutch Uniformity Price Company Amsterdam)) is a firm well connected to The Netherlands and its culture. The firm sells basic articles, which many of the people in The Netherlands buy, such as toothpaste, underwear, children's clothes and paper supplies. This firm, owned by Maxeda, was taken over in 2007 by a private equity firm Lion Capital, which borrowed 95,5 % of the money to pay for the firm and left the firm with a huge debt of 91%, while it was still making good profit (Het Financieele Dagblad 2008; FEM 2009). Then the firm dismissed many employees, mostly part time working women, and ordered the ones who were allowed to stay to compensate by working twice as hard.

[35] CEO is an abbreviation of chief execute officer, in daily life 'the boss' of the firm.

[36] This happened with the ABN Amro bank in The Netherlands, where the CEO in charge, Groenink, got 23 million Euro for selling the firm to another company (Smit J. 2009).

[37] Kets de Vries (2009) indicates that, from his research on managers of firms, a huge percentage of the managers are psychopaths.

[38] In the first decade of the 21st century many large old companies who were intertwined with the Dutch economy and the Dutch culture were taken over by foreigners. Dutch firms such as Stork (metal), Hoogovens (steal) Numico (food) and ABN Amro (bank) (Fennema and Heemskerk 2008).

[39] It is interesting to reflect on the position of the pension funds. These companies get money from the workers, who reserve some of their income for later when they are not able to work anymore. Meanwhile, the way these pension funds invest the money by jeopardizing the firms can be very risky for the employment of the workers.

[40] World-wide insurance companies own 1600 billion Euro. Possessing this capital they are an important source for lending money to the government in the way of buying state bonds.

general, this type of shareholder does not care whether an investment or withdrawal is good or bad for the company they invest in. Their short term private strategy prevails over long term strategy of the company they deal with.

9 The role of the employee in the financial system

In order to understand how the credit crisis could have emerged, it is necessary to reflect on the role of the individual person within the financial system. The employee in the financial system is an actor which can be regarded on the individual level. He/she is an active actor and as such one of the causers of the credit crisis, and thus belongs to the first category of actors. Employees working in the financial businesses can earn enormous amounts of money by getting high salaries and high bonuses[41]. These employees are often respected and admired within the society, although many of them act ruthlessly and think only of their own benefit while being careless of the effect of their activities on others[42]. Their risk taking behavior is stimulated and encouraged by their employing companies. This kind of irresponsible behavior and greed precipitated the financial crisis of 2008, and consequently, dragged many innocent people into poverty and despair. However, most activities that led towards the credit crisis are within the law. Giving the banks legal freedom after 1999 for their activities, gave room for this greedy and risky behavior. An interesting reflection on the behavior of these greedy individual comes from Kunneman (2005). In reflection of these employees he uses the term 'het dikke-ik', which means, free translated, 'the fat ego'. The person who wants to have it all regardless of others.

10 The stock market

The second category actors are the supportive actors involved in the credit crisis. One of the supportive actors is the stock market, where financial papers, like shares, bonds and derivates are traded. The stock market is not an active actor who caused directly the credit crisis, however, an institute as the stock market made it possible for others to play and gamble with (other person's) money. An investor on the stock market is loaning money to a company through this process and expects to receive a share of the profits of the company as well as a share of the capital gain when the company is successful in its business. Trading in the stock market can be done carefully, but it can also be done in risky and ruthless ways, that can result in large gains for some players, while others lose large amounts of wealth.

An example of ruthless playing on the stock market is that of George Sores (USA), who speculated with the UK pound in 1992 and with the Asian currency in 1995. This resulted in a decline of the value of the currency (Schinkel 2010). This provided him an enormous amount of profit and fame, but resulted in Asia in a major decline of the economy with the accompanying misery and pain of millions of people. Another example is that of the Baring Bank, a well-respected 300 year old bank (1717) in the UK, which was brought to bankruptcy

[41] The salaries of the top employees in the bank often exceed two million Euro a year plus one million Euro as a bonus. In the beginning of 2010 the Minister of Finance of The Netherlands announced that the salaries of the employees of the state bank are not allowed to exceed 650,000 Euro a year plus a bonus of 360,000 Euro a year, which is, by the way, still eight times the salary of a university professor.

[42] Psychology (Frijda 1996) shows that people are more often led by emotions like passion, greed, jealousy, risk taking thrills and gambling than by rational behavior.

in a few months by gambling on the Nikkei-index, the stock market of Japan, in winter 1995 by one of its employees, located in Singapore, who was only 27 years old[43].
How it is possible that such important financial systems as the stock markets are vulnerable to the manipulation of a single or a few person(s)? How is it possible that this goes beyond the control of any public institution or government? How one can prevents these disastrous effects of the gambling of these people?

11 The role of the world–wide financial system

The banks were not operating as standalone firms any more. Many former local banks created branches which spread out over large areas and gradually over the country. Some of them crossed the international borders opening branches in other countries and in other continents. Over the past decades the financial system became gradually more globally intertwined with the result that, when something happens to one bank, it affects the other banks in the world. The way the financial world is connected made the activities of one bank much more vulnerable for the whole system. The world-wide financial system played a less active role than the retail and business banks, private equity and hedge funds, however by its enormous intertwines, increased considerable the risk for a credit crisis. In this way this actor can be considered as a second category actor, a supportive actor towards the credit crisis.

12 People who borrow money

The people who borrow money from the bank are the individual actors of category three. These actors are partly to blame for the credit crisis. Partly, because they are seduced by the financial market which operated rather aggressive towards these individuals, and also, because their individual contribution to the credit crisis is very limited. This third category actor often first benefited and later on after the crisis often suffered. In the USA, where the credit crises started, it is not uncommon that people borrow money; money for a house, a car and many other personal things. People are often living on the edge of their financial means[44]; on a too high standard of living based on credit cards. This is encouraged by the financial organizations in the USA like the banks and the credit card companies in cooperation with the government[45]. This vulnerable way of living can go on as long as the jobs are safe and the salaries and house prices are increasing. However, when the mortgage payments go up as interest rates increase, the stock market goes down, and job availability decreases, it is easy for a person to get into financial trouble. Many people have had to declare personal bankruptcy due to the credit crisis by losing sometimes half the value of their shares including those of their pension plan, and 30-50 % of the value of their house[46] as well as either losing their job or having their work seriously reduced.

[43] This employee ran up a debt of 1.4 billion US dollars, which was twice the value of the commercial capital of the bank. The Baring Bank was taken over by the Dutch ING bank for one pound. Many stock market dealers are men between 25 and 30 years. Young men, who in general, take more risks than the average people do.
[44] There is a saying that the people in the USA are often only one pay check away from bankruptcy. Living on credit cards is more expensive and risky than paying cash.
[45] See Appendix II: Tax Reform Act of 1986.
[46] The data are based on interviews of the author with people in eastern USA and in New York in the period of spring 2009.

13 The role of the controllers

Are there no controllers in the financial system who could have warned the government or the people? Yes there are official controllers. These are the fourth category actors in the credit crisis. In many countries there is an institute which has the task to control the financial organizations within the country. However, most of the controllers of the countries did not take their responsibility to the people they were supposed to protect. The controllers of the financial system are actors that had the tasks to regulate and control financial activities within the state in order to prevent a credit crisis; a task in which they failed.
In The Netherlands De Nederlandse Bank (The Bank of The Netherlands, DBN) has the task to control the stability of the banks and the financial system; this is in general the same task like that of the American Central Bank: the Federal Reserve[47] in the USA has. In The Netherlands[48] the controllers, the managers of the bank as well as ministers, are one social group: friends and board members; many times changing places, supporting each other and getting the benefits[49] being part of the 'old boys' network. Although The Bank of The Netherlands (DBN) noticed that some financial institutes endangered the stability of the savings accounts of the Dutch people and institutes, they were reluctant to say anything to outsiders about this[50].

14 The role of the government

The government is an actor who is suppose to control the financial system of a country and therefore belongs to the fourth category. A credit crisis does not start overnight. After the crash in 1929[51] when the Wall Street Stock Exchange broke down, the USA government

---

[47] Alan Greenspan, born in 1926, was until the beginning of 2006 Chairman of the Board of Governors of the Federal Reserve System and the Federal Open Market Committee in the USA. His successor is Ben Bernanke. The support the 'Fed' gave to the American banking system in its bailout plan of October 2008 was 700 billion dollars of public money (The New York Times, 12 January 2010).

[48] It is not unlikely that this is true in other countries including the USA.

[49] This is clearly shown in the Dutch case of the DSB Bank (Dirk Scheringa Bank), which took up to 80% benefit of each purchase of the forced combination of a mortgage with a life insurance. The bank went bankrupt in autumn 2009. Many of the board members of this bank were (former) politicians of the government belonging to the VVD Party (liberals) and known as well respected men.

[50] An example of this lack of warning is that of De Nederlandse Bank (The Bank of The Netherlands, DNB) in relation to the Icesave bank. The Icesave bank was allowed to enter the Dutch market in spring 2008 and offered, in a rather aggressive way, a percentage 5% interest on people's savings; at that time the highest one could get on a flexible savings account. The director of the DNB, Nout Wellink, knew in the summer of 2008 that the Icesave bank, a part of the Landsbanki in Iceland which belonged to a Russian owner, was a very unstable bank, but did not warn the people. In the end of September 2008 the Icesave bank was bankrupt and the people could not get their money back. The Dutch government guaranteed a pay back of the first 100,000 Euro and then tried to get the money back from the state of Iceland. Although after one year the government of Iceland promised to pay the money back to the Dutch government and to the people of Ireland and England to whom the bank was also in debt, the people of Iceland are reluctant to do so. France did not allow the Icesave bank to enter their market.

[51] In 1929 there was a world-wide credit crisis due to greed, taking risks, gambling and frauds on the financial market in the USA. The credit crisis of 1929 had an enormous negative impact on the whole world. The period after the crisis of 1929 became known as the Great Depression which started in 1930 and ended in the Second World War. In this period people all over the world lost their jobs, the value of the bonds, became very poor and suffered.

finally decided to restrict the actors of the financial system to a less risky behavior. This was accorded by law by the Glass-Steagall act of 1933 by the American Congress. This act restricted the retail banks to a rather safe financial policy and separated them from the business banks which had more freedom to operate. However, after the Second World War, the retail banks wanted to have more freedom in order to make more money. So gradually the rules dictated by the Glass-Steagall act were loosened.
This process became worse with the deregulation of the policy by the Margaret Thatcher (UK), the Ronald Regan and the George Bush senior (USA) administrations in the 1980ties[52]. The government followed the pattern of business management with short term goals which enriched the share- and stock holders and the employees working in the financial systems. Some of them became fabulously rich.
In 1999 the rules were relaxed further. The bubble did not burst suddenly; it was actually more like a balloon that gradually leaked and suddenly floated away as it lost its air. Gradually, in 2006, people in the USA became aware that they were not able to pay the mortgage anymore for their too expensive houses and had to leave their homes. This was the first sign of the start of the credit crisis. The government was not willing to support these people.

The Lehmann Brothers was one of the first business banks in USA which came into serious trouble[53]. This business bank asked for help of the US government, but was not supported. The Lehmann Brothers was declared bankrupt in mid September 2008. This resulted in a downfall of other banks and of the stock markets, not only in the USA but also in Europe and Asia[54]. In October 2008 the seemingly local credit crises of the USA became a world-wide economic crisis due to the intertwined financial system and the enormous reduction of the value of the shares on the stock market. The financial world grew out of control and collapsed (Kragt 2008). This is the start of the global credit crisis of 2008 infecting not only the USA, but other countries in other continents too.

Due to the credit crisis other banks were now in danger of bankruptcy. Could the people, who had put their money in these banks, still get their money back? The people's savings seemed to be no longer assured and certain. This created panic reactions by the governments. The endangered banks asked help from the government. The governments in Europe and USA felt that they had to support the system banks[55] in order to prevent total chaos. The governments[56] were willing to support retail banks, because the money of private persons is involved. The governments loaned billions to support the banks. In some cases the governments did not loan money to the banks but decided to buy the private bank and turn this, temporarily, into a state owned bank[57]. Although the loans must be paid back later on[58], by doing this the government

[52] See Appendix II.
[53] This was in March 2008.
[54] The Banks in Europe and in the USA were already some decades before the credit crisis of 2008 intertwined. When a bank goes bankrupt it means that it can no longer pay the money back it borrowed from other banks and from private persons. Because the banks were intertwined, a world-wide chain of banks were endangered. In fear of bankruptcy the financial institutions started to sell their stocks.
[55] The USA government decided that the so-called systems banks should be supported. Systems banks are banks where people put their savings; banks that basically support the financial exchange between people.
[56] In this paragraph we refer to governments (plural) because in general many governments acted more or less in the same way regarding this issue.
[57] In the USA the mortgage companies Fannie Mae (The Federal National Mortgage Association established in 1938 as part of Roosevelt's New Deal after the 1929 created to secure private mortgages, privatized in 1968) and

put enormous amounts of public money into the hands of obvious incapable managers almost without any guarantees of performance or restrictions on their behavior. Unfortunately, much of this money was raised by reducing spending on education, healthcare, social services and culture. Now the governments, and consequently the people, have to pay for the debts incurred, while most of the employees and managers who caused the trouble still possess the huge amounts of personal money that they had accumulated from their activities. While their former huge profits do not have to be paid back, the same managers can start over again in spite of the near bankruptcy. Many of these high employees still receive their high bonuses. This support by government can be perceived as a reward for the risky behavior of managers of the financial system. People are worried by, and sometimes protested against[59], the way their governments have supported the banks with billions of dollars, Euros, and other currencies with rather vague conditions and guarantees for repayment[60].

In general the financial businesses wanted a free market to be able to gain as much profit as can be without as little interference by the government as possible. However, when things went wrong, the banks, who had made huge profits in the period up to the credit crisis now suddenly wanted to be supported. The governments were not willing to support the business banks as their problems usually do not affect individual people directly. However the government decided to support the retail banks, because being systems banks and thus dealing with private people's money, they could endanger the stability of the state when going bankrupt

Many governments seem to be no longer capable of, or are not willing[61], to protect their own people against the greediness and irresponsible behavior of the global financial actors; gamblers who mostly act within the legal system through their banks and private equities and hedge funds. The governments, with large debts due to the global financial markets, are not capable of protecting their people from job loss, loss of their homes, and the loss of the value of their money. This lack of primary security endangers people, the economy and the stability of the state itself. In every complex societal problem some benefit and many suffer. The benefits are often privatized and the debts are socialized.

At the beginning of 2010[62] the Obama Administration in the USA, who have loaned at that time already 117 billion dollars of public money to the banks, announced changes to the financial laws which include, roughly speaking, a return to the Glass-Steagall act of 1933 (van Lent 2010). This new plan[63] will separate again the retail banks from the business banks and

---

Freddy Mac ((Federal Home Loan Mortgage Corporation) created by an act of Congress to buy mortgages on the secondary market, pool them, and sell them as mortgage-backed securities to investors on the open market (Wiki Pedia English 2009)) were taken over by the Government in 2008. In October 2008 in The Netherlands the Fortis bank and the ABN Amro bank, which were on the edge of bankruptcy were taken over by the Dutch government in order to guarantee the money of the private people (NRC 2008).

[58] Sometimes after 20 years.

[59] See the protest in March 2009 for the too high bonuses, up to a total of 165 million US $, to the managers of the AIG (American International Group, Inc.), an American insurance corporation. The same managers whose behavior had caused the company's downfall. The AIG was supported by the government with billions of dollars in the 2008 (NRC 2009).

[60] In February 2010 the US government has a 1600 billion US dollar debt (NRC 2010c).

[61] In The Netherlands putting money into the highly risky hedge funds is tax deductible.

[62] January 23 2010 was the first public announcement of these plans (NRC 2010a,b).

[63] This seems to be one step into the right direction, however, because recent elections, this law might not be passed.

restrict the saving and loans banks to less risky financial behavior and prevent the banks from growing larger than 10% of the market. This will be done in order to provide more guarantees for people's private money.

15 The fifth category actors

With the fifth category actors, the actors are indicated who suffered from the credit crisis, after the crisis started, without having had many benefits from it. This is the largest category of actors. In this category are people who lost their job due to bankruptcy, or whose income went down due to the credit crisis. In this category are also institutes like hospitals, museum, libraries which got less support of the state, because the state heavily supported the banks[64]. In paragraph one and two of this article other negative effects of the credit crisis for this category are mentioned.

16 The credit crisis handled by the Compram Methodology continued

The analysis of a complex societal problem as the credit crisis belongs to the field of societal complexity. The claim of this field is that complex societal problems should be handled in accordance to the theoretical model of this field including its methods and tools. Handling means to find out what is going on, finding the causes, indicating possible interventions, implementing interventions and evaluating the process and the outcome of the problem handling process. Each complex societal problem needs a thorough analysis, only then there can be understand what happened and how it could have happen. Analyzing a complex societal problem in a thorough way enlarges the chance to find sustainable interventions. In order to know how the credit crisis started, which effects it has, and what the reactions are, a multi-disciplined approach is needed. This multi-disciplined approach is one of the basic aspects of the Methodology of Societal Complexity.
The Compram Methodology (DeTombe 1994, 2003) is a special approach to handle this kind of complexity. Based on the directions of this methodology the credit crisis can be analyzed, strategies for handling the contemporary credit crisis can be provided, guidelines for prevention of future crises can be found and the effect of the problem handling process can be evaluated afterwards. The Compram Methodology (DeTombe 1994) is a framework methodology for policy making which includes many methods and tools. The Compram Methodology is a specialized methodology to handle complex interdisciplinary world-wide problems and to offer a step-by-step approach of analyzing the problem, finding and implementing sustainable decisions in a transparent way. The Compram Methodology offers a bird's-eye view of the complexity of the problem and provides direction to policy makers for constructing their decisions. The Compram Methodology offers a six step framework to handle complex problems[65]. The problem handlers in the Compram Methodology are the facilitator, the experts and the actors. They all follow the phases of the problem handling process as outlined in Fig. 1. The Compram Methodology emphasizes that every phase of the problem handling process must be given sufficient attention to properly carry out the process.

---

[64] In the Netherlands the state lend 16.3 billion to the ABN Amro bank in the time shortly after the moment of the credit crisis. This is almost the same amount of money (18 billion) that the state wants to diminish from the budget of state supported institutes such as on educational and cultural institutes and activities.
[65] See Fig. 2 for the basic steps in the Compram Methodology.

The above description is only a shallow depiction of the discussion of the problem by the experts based on the ideas of the theory of societal complexity. In the paragraphs above some of the actors of the credit crisis are described as a hypothetical case of a part of the outcome of the discussion between the experts in step one of the Compram Methodology. This is a partial view; not all actors are described, left out are actors such as the insurance companies and the middlemen. The credit crisis should not be handled as a financial problem but as a complex societal problem, which not only includes the financial situation but all levels and phenomena of society.

The theory of societal complexity indicates that each problem has a knowledge, power and emotional component. By reflecting on a problem all these components should be considered in the analysis of the problem. In the above analysis of the credit crisis some of the power elements, the actors, are described. Some of these actors have a huge amount of power, while others have hardly any power.

In order to demonstrate how the Compram Methodology[66] works we continue the description of the phases of the problem handling process of step one and step two of the Compram Methodology. The description of the credit crisis above can be considered as a part of the discussion of problem handling phases 1.4 to 1.6 (see Fig. 1) of handling the credit crisis as a complex societal problem done by the experts in formulating the conceptual model: defining the problem. They discussed which phenomena are involved and how they are related, what the causes are and which effect the credit crisis has on institutes, companies, states, continents and people. At the end of every problem handling phase a report is made by the facilitator with the results of the problem handling phase, and the way it was reached.
According to the guidelines of the Compram Methodology the experts continue their discussion by reflecting the possibilities for changing the problem. They start the second-sub cycle of the problem handling process, guided by the facilitator, by making an empirical model based on the conceptual model of phase 1.6. This means that the phenomena of the conceptual model are now filled with empirical data (problem handling phase 2.1).
Then the experts discuss the desired goal of the outcome of the problem handling process in view of sustainable changes and benefits for all. Then they discuss the handling space of the problem. The handling space indicates the level on which the problem should be handled (see DeTombe, 1994, chap. 3, p. 128). The first level indicates minor changes in the contemporary situation involving not too many elements. The second level indicates major changes on micro, meso and macro level; changes that often extend the boundaries of a state or of a continent. Because of the world-wide effect of the credit crisis, the many levels it includes, and the many changes it will take to implement acceptable sustainable changes, the credit crisis should be considered as a problem, which should be handled on the second level of the handling space. In this case the question occurs: ‘Has the problem owner, the one who gave the assignment for handling the credit crisis, the power to implement the changes world-wide?’ This is phase 2.2 of the problem handling process done by experts.
Then, in phase 2.3, the experts discuss several scenarios. These scenarios could be the status quo, when nothing really changes and the rules and regulations stays the same; or a situation

[66] The Compram Methodology will not be described extensively here. There are two reasons for this. First it would take up too much space in the article; second the methodology is already described extensively in other publications (DeTombe 1994, 2003) and can be read on the internet: www.complexitycourse.org
.

in which the rules and regulations are made even less restricted, or a situation in which the rules and regulations are more restricted, to mention a few possibilities.
In phase 2.4 the experts discuss possibilities for sustainable changes. The neutral experts are however not able the implement the suggested changes. Not only they lack the power, but also the actors, the ones who have the power, should be consulted first. With this step one of the Compram Methodology ends. At the end of step one there is the seven-layer model of the problem: the definition of the problem by the experts and the discussion reports of the problem handling phases of the experts of phase 1.1-2.4.

In step two the actors involved in the problem are consulted. In the conceptual model of the experts the actors are described; powerful actors and less power full actors, as some of these are indicated in the paragraphs above. The actors differ from the experts in the way that they have desired goals towards the problem and often different definitions of the problem. Each actor has different degree of power and a different position in the problem; some benefit from the problem, while others are the victims of the problem.
The different actor groups are invited to give their view on the problem. The facilitator guides each actor group separately in their problem handling process, in essence in the same way it is done with the experts. The actors start with problem handling phase 1.4 being already aware of the complex societal problem and having already extended the idea of the problem (problem handling phase 1.1-1.2). By according to cooperate in the problem handling process they agreed to put the problem on their agenda (problem handling phase 1.3). Together with the facilitator actors like the business banks, the retail banks, the private equities funds, the hedge funds, the insurance companies, the government, the poor house owners, the institutes make their conceptual model of the problem, each actor group separately with their own group, in order to define the problem. The facilitator uses in the same way, as done with the experts, the seven-layer model. Now to be filled with data of the credit crisis given by the actors. After defining (phase 1.6), the actors groups fill the conceptual model with empirical data, and discuss their desired goals for the changing the problem. Then they discuss the handling space, several scenarios and suggest changes. These are the problem handling phases 2.1-2.4. At the end of step two of the Compram Methodology there are the seven-layer models of the different actor groups and the discussion reports of them as outcome of the discussions with the actor groups.

In step three of the Compram Methodology the actors and experts come together to find mutual accepted changes. The starting points of the discussion are the seven-layer models and the reports of the experts and that of the different actor groups. Then, by comparing the outcomes, one can see the similarities and the differences in the seven-layer models and the discussion reports. This makes it easier to focus the discussion and to see where the possibilities are for a mutual agreement for changing the problem. There does not have to be a consensus, some actors can be persuaded by rewarding or punishment. At the end of step three a report is made that indicates the possible interventions on the problem and the limitations of these interventions.

Analyzing a complex societal problem as is described here with the Compram Methodology in step one to three has its limitations. One of the limitations is that a selection of the phenomena of the problem is made in which probably not all the phenomena are included.

There are always blind spots[67], the phenomena one oversees and white spots, the phenomena one knows that are involved, but because of several reasons, one does not take the effort to include them. Another limitation of the problem handling process is that of the amount of people. A limited amount of people: the problem owner, facilitator, experts and actor groups, are involved in the problem handling process. Although these persons are selected by their authorities in their field, it is still a limited amount of people. Therefore it is advisable to publish and discuss the results of the outcome of the problem handling process in step three, in casu, the suggested changes to the public first, before it will be implemented and maybe not accepted. This is step four of the Compram Methodology in which the societal reactions are anticipated. This process might lead to the necessity of adapting the suggested changes.

When there is a feeling, that the changes are accepted by the large public, one can start implementing the suggested interventions of the problem. The implementation is guided and controlled by a team of experts and actors together. This is step five of the Compram Methodology.

Then, directly after the implementations in step six, the last step of the Compram Methodology, the problem handing process will be evaluated. The interventions of the complex societal problem are evaluated, as well as the problem handling process itself. After some years, the interventions of the problem will be evaluated again in the view of the possible changed desired goal and circumstances of the problem. There might be a chance that the problem handling process has to be done over again, now within the changed situation.

These six steps of the Compram Methodology represent the main guidelines for handling a complex societal problem. Within the steps there is room for applying all kind of methods and tools, qualitative and quantitative methods of social science and operational research, like gaming and simulation, group decision support, multi criteria analyses, scenario making and methods and tools from other disciplines.

17 Conclusions

Given the description in paragraph one and two in this article as a start for handling the credit crisis, the problem owner, perhaps established by the G20 group, could ask a facilitator, or group of facilitators to handle the credit crises according to the prescriptions of the Compram Methodology. In order to understand what is going on in the credit crisis, the insights of different scientific fields are needed. What is going on in the financial system can be explained by using the theories of economics. To understand how the credit crisis could happen theories of policy and law can be referred, while psychology learns about a person's jealousy, greed, and drives. Group and copying behavior, can be explained by sociology. To understand the effects and emotions of the crisis on a person's life, one can look at novels and art[68]. The facilitator invites experts who have knowledge of a part of the problem to join the

[67] See DeTombe (1994) chapter 2, p 58. In recent literature of Operational Research the term 'blind spot' is called 'deep uncertainty' (Kwakkel, 2010).

[68] In novels: A Dutch book with combined text and pictures titled: De bovenbazen (Marten Toonder, 1963; titled translated is called: The super bosses) describes in a satirical way very well the feelings of the ruthless rich people towards the other people, the 'nobodies', the 'have-nots'. In order to understand the effects of the credit crisis there is the book of the Nobel Prize winner of literature of 1962 John Steinbeck, *The Grapes of Wrath*

problem handling process. Experts such as experts in economy, psychology, sociology, international law, national law, stock market, insurance, retail banks, business banks, shareholders. They are invited to construct the conceptual model together by combining the knowledge of the different fields. With this they define the problem, going from describing the problem in words to making a simulation model, in about six meetings of exchanging information with each other (problem handling phase 1.4-1.6 of step one). Then the experts discuss the model further filling it with empirical data, discussing the desired goal, the handling space, construct scenarios and suggest interventions (problem handling phase 2.1-2.4 of step one). After this, step two of the Compram Methodology can be performed by inviting groups of actors and let them define the problem each with their own group, describe their desired goals, handling space and possible interventions (problem handling phase 1.4-2.4 of step two). These actors can be the kinds that are described in the above paragraphs. Then, in a general meeting of the multi-disciplinary team of experts and the main actors mutual accepted interventions can be find. Then the interventions should be discussed with 'the society' in the steps four of the methodology. In step five (problem handling phase 2.5) the interventions are implemented. In step six (problem handling phase 2.6) the interventions are evaluated and the problem handling process itself is also evaluated. Handling a complex societal problem this way gives a better insight into the problem and a better chance to find and implement sustainable changes.

According to the Compram Methodology the credit crisis should be reflected in a multi-disciplined way first with experts from different disciplines and then with actors in order to formulate the hypotheses, to find causes and implement the interventions. The experts and the actor groups should perform this problem handling process by following the phases and steps of the Compram Methodology strictly. In this process is it not advised to jump to conclusions.

We like to conclude this article by taking the freedom to formulate some of the research questions the experts could have stated in the problem handling phase 1.4 of step one of the Compram Methodology: 'Could this credit crisis have been avoided?' and 'Are there persons and/or institutions to blame? And if so who are they?' Reflecting on these questions based on the material described above, we could formulate a start of a hypotheses. 'Could the credit crisis have been avoided?'
Yes, we think the credit crisis certainly could have been avoided. The credit crisis is a manmade crisis, and as such, it could have been avoided. The gradual loosening by the government of the regulations provided by the Glas-Steagall Act of 1933 seems to have given firms and their employees opportunities to earn enormous amounts of money by participating in financially risky activities. This created a huge financial bubble in a world that was dealing in stocks, bonds, short selling, derivates and real estate no longer based on the real value of the assets. Loosening gradually the regulations was strongly advocated by the managers of the financial system. They wanted to have more freedom to speculate with other people's money in order to become richer than they already were. This might indicate that the credit crisis could have been avoided by maintaining the Glas-Steagall Act of 1933 by the government.

(1939) or to see the emotions one can look at the photograph of Florence Owens Thompson who made a photo of Dorothea Lange (1936) named as 'Migrant Mother'. This picture of a woman with her young children in despair in 1933 became known as 'the anonymous face of the Great Depression' that followed the stock exchange down fall of 1929.

That connects us right away to the next question: 'Are there persons and/or institutions to blame? And if so who are they?'
There are persons who are responsible for at least part of the causes of creating the crisis: the actors of category one and most of that of category two, three and four as indicated above. Excepted from direct blame are that actors of what is in this article called, the fifth category of actors. However, not all actors are alike. Managers of the large financial firms like the business and retail banks, and those of the private equity and hedge funds are to blame. Many of them were very greedy managers, fond of their high salaries and bonuses. They are known by name and should be punished for their actions of putting other people's money at risk, while beneficiating themselves.
Then, is the government also to blame? Yes, the government is to blame. Given, that there are unfortunately many greedy, ruthless, gambling and risk taking persons in each society, who like to take all opportunities there are to get rich, regardless of the pain and trouble for other people, it is the task of a democratic government to mitigate the potential damage these people can do to others. This means that governments should have created and enforced laws to control and prevent this risk taken behavior, both within the state and internationally. So yes, it seems that Thatcher, Regan and George Bush senior for instance, are just as much to blame as Alan Greenspan of the Federal Reserve or Nout Wellink of the Dutch Bank of The Netherlands (DNB). They are to blame as a person in function.
The government as an actor is to blame like the institutes as the Federal Reserve System and the Dutch Bank of The Netherlands is, as well as the JP Morgan Bank and the Goldman Sachs bank is. Also people, who borrowed too much money, than they could afford, the people of category three, must take some of the blame, although they were often strongly mislead. Nevertheless each person has its own responsibility for their own decisions. However there is a difference between the seducers and the seduced.
Given that many of the activities by the financial managers leading to the crisis were performed within the (stretched) boundaries of the law, with the exception of people like Madoff with his pyramid game[69], it seems unlikely that the above mentioned people will be punished.

Are there possibilities to avoid these kinds of financial crisis? Yes there are. Some persons pleaded for cutting or decreasing the bonuses of the already well-paid bank and fund managers, or let them pay 80% of tax to the bonus or to press the banks to reserve a larger amount of own capital in case a new credit crisis emerges[70]. However we think that stronger and world-wide regulations are needed. More and more one hears a plea for a world-wide institute which can control the financial markets in favor of the majority of the people. The growing international connections of the economies of most countries have brought the world to the point where no country is isolated anymore. We are all players in a greater world economy. A world-wide financial regulation system is highly needed because the national governments have no means any more to control the financial system. We have to create a world-wide operating legitimated institute, which can, by law and by active controlling,

[69] Madoff gambled with huge amounts of other people's money via the so-called Ponzi scheme, which does not invest money, but pays out the (high) interest with contributions of new comers. Madoff was convicted and sent to prison for life in 2009.
[70] The so-called Solvency-II-directions (NRC 2011, P25).

diminish the unlimited greed of some firms and their employees, who, in their risk taken behavior, threaten the quality of living of many others[71].

However, these speculations provide only possible ideas of how experts and actor groups can search for analyzing questions, hypotheses and interventions. Handling a complicated and complex issue such as the credit crisis requires a methodology from the field of Methodology of Societal Complexity. The Compram Methodology is especially created to handle these kinds of problems in a multi-expert, multi-actor, multi-disciplined, multi-level and multi-continent way. Elements prescribed by this methodology are used by politicians; however, it is very important that the methodology is correctly used in order to get the benefit of it. The Compram Methodology must be used as prescribed by following each step and each phase of the problem handling process on the right level of handling space, which is with a world-wide problem as the credit crisis on a global level[72], and with the right problem handlers in order to establish world-wide acceptable and sustainable interventions.
Only after a thorough problem handling process based on the Compram Methodology hypotheses can be formulated, sustainable interventions found and suggestions for implementing given in a transparent and democratic way and maybe then future credit crises can be prevented.

18 References

Cooper G (2008) The origin of financial crises: central banks, credit bubbles and the efficient market fallacy. Random House Inc., New York

DeTombe DJ (1992) Chaos en epidemiologische scenario's: het aids scenario. Onzekerheden in de voorspelling van de Aids epidemie (Dutch). In: van Dijkum C, & de Tombe DJ (ed) Gamma Chaos. Onzekerheid en orde in de menswetenschappen. Bloemendaal: Aramith uitgevers. ISBN: 90-68341057

DeTombe DJ (1994) Defining complex interdisciplinary societal problems. A theoretical study for constructing a co-operative problem analyzing method: the method Compram. Thesis publishers Amsterdam, Amsterdam (thesis), 439 pp. ISBN: 90 5170 302-3

DeTombe DJ (1997) Using the seven-layer model of the method Compram for analyzing complex technical policy problems. Connecting Groupware Groupsystems V with the conceptual modelling software Cope. Eur J of Oper Res, Bruges Belgium. http://infolab.kub.nl/eurogdss/97dorien.htm

DeTombe D J (1999) Facilitating complex technical policy problems. In: Stuhler E. & D.J. DeTombe (eds) Volume 5, Research on Cases and Theories. Rainer Hampp Verlag, Munchen und Mering, pp 119-127. ISBN: 3-87988-355 -6; ISSN: 0940-2829

DeTombe DJ (2000a) Anticipating and avoiding opposition in large technological projects, Int J Technol Manag 19(3/4/5):301-312.

DeTombe DJ (2000b) A new method for handling complex spatial problems. In: Reggiani A. (ed.). Spatial economic science: new frontiers in theory and methodology. Springer Berlin, pp 212-240

[71] One should be aware that the credit crisis can be taken as an opportunity to provoke the frustration of common people toward the government. Some of these people may want to lead other people to react in an unpleasant way endangering the world by riots and rightwing votes (Van den Dunk 2009). This might lead to the same disaster as in the thirties of the last century (Fascism/Nazism).

[72] This should be at least on the level of the G20 countries with agreement of the other countries.

DeTombe DJ (2001) Compram, a Method for Handling Complex Societal Problems, Eur J of Oper Res 129(2)
DeTombe D (2003) Handling complex societal problems. In: Becker H, Vanclay F. International handbook of social impact assessment. Conceptual and methodological advances. Edward Elgar Publishers, Australia
DeTombe DJ (2004) Causality in complexity. In: Proceedings of the RC33 sixth international conference on social science methodology, cd. http://www.siswo.uva.nl/rc33/, Siswo, Amsterdam
DeTombe D (2008) Towards sustainable development: a complex process. Int J Environ Sustain Dev 7 (1): 49–62
DeTombe D (2010) Global safety. Special Issue of the J Braz OR Society on Soft OR and Complex Soci Probl. Pesquisa Operacional 30 (2): 387-404
FEM Business (2009) Het piramide spel van de Hema. (The pyramid game of the Hema)
Fennema M, Heemskerk E (2008) Nieuwe netwerken. De elite en de ondergang van de nv Nederland (New networks. The elite and the downfall of The Netherlands as a firm), Bert Bakker, Amsterdam
Frijda NH (1986) The emotions. Cambridge University Press, Cambridge
Galbraith JK (1954) The great crash, 1929. New edition 1997. Houghton Mifflin Company, New York
Goodhart C Hofmann B (2007) House prices and the macro economy. Oxford University Press, New York
Het Financieele Dagblad (2008) De Hema zucht onder schuld. (The Hema sighs because of debts) 6th August 2008 (Dutch Financial Daily News Paper) FN.NL
Intermediair weekblad (2009) Hoe gevaarlijk is een private equity. Een zwerm sprinkhanen. (Dutch weekly journal: How dangerous is a private equity. A swarm of grasshoppers) VNU Media BV Haarlem
Kalse E, Wester J (2010) Nout Wellink komt in beeld als mogelijke prooi. (Nout Wellink come in the picture as possible prey) NRC Nieuwe Rotterdamse Courant (Dutch Daily Quality Journal), 23 January 2010 p.15
Kets de Vries M FR (2009) Reflections on character and leadership: on the couch with Manfred Kets de Vries. Wiley, New York
Kragt JC (2008) De kredietcrisis: de implosie op de financiële markten van binnenuit bekeken. (The credit crisis: the implosion on the financial market seen from inside). SMO, Den Haag
Kunneman H (2005) Voorbij het dikke-ik: bouwstenen voor een kritisch humanisme. (Beyond the fat ego: building blocks for a critical humanism). Humanistics University Press, Amsterdam (SWP uitgeverij BV Amsterdam)
Kwakkel JH (2010) The treatment of uncertainty in airport strategic planning. TRAIL Thesis series nr. T2010/13, The Netherlands TRAIL Research School, Delft
Lange D (1936) Migrant mother: a photo of Florence Owens Thompson republished in Oud-Utrecht nr 5, Utrecht tijdens de grote depressie, 2009, p120 (82 jaargang). ISSN: 1380-7137
Lux (2010) De rots in de branding (The rock in the tide) citating McKinsey Global Institute report 2010. NRC. Nieuwe Rotterdamse Courant (Dutch daily quality journal). 10 February 2010, p 13
Morris CR (2008) The trillion dollar meltdown: easy money, high rollers, and the great credit crash. Public Affairs TM member of Perseus Book Group, USA

Nesvetailova A (2007) Fragil finance. Debt, speculation and crisis in the age of global credit. Palgrave Macmillan Studies, Hampshire

NRC (2008) Fortis Bank overgenomen. (Fortis Bank taken over) (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal)), October 2008, p1

NRC (2009) The AIG bonus affair. March 2009. (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal))

NRC (2010a) Obama's plan. (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal)) 24, 25 January 2010

NRC (2010b) Obama: op de pof leven kan niet meer (Obama: one cannot longer life on credit cards) http://www.whitehouse.gov/omb/budget: presidents budget for the fiscal year of 2011. (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal)).

NRC (2010c) 2 February p 2. (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal))

NRC (2011) 28 April p 25. Cees Banning, Verzekeraar en overheid tot elkaar veroordeeld. (Insurance company and government are dependent on each other. (NRC = Nieuwe Rotterdamse Courant (Dutch daily quality journal))

Schinkel M (2010) Eurolanden vrezen besmetting (European countries are afraid of contagion) NRC Nieuwe Rotterdamse Courant (Dutch daily quality journal)), 15 February 2010, p 11

Schubert A (1991) The Credit-Anstalt crisis of 1931. Cambridge University Press, Cambridge

Sennett R (1998) The corrosion of character - the personal consequences of work in the new capitalism, New York

Smit J (2009) De prooi. blinde trots breekt ABN Amro. (The target. Blind proud ruins ABN Amro) Amsterdam Prometheus

Smit W (2009) Reflections on the credit crisis. Han university Arnhem, The Netherlands

Steinbeck J (1939) The grapes of wrath. Reprinted f.i. Pinguin Books, 2000

The New York Times (2010) 700 billion dollars support. 12 January 2010

Toonder M (1963) De bovenbazen. (The super bosses) (MA 104,4955-5055). Reprint 1996 De Bezige Bij, Amsterdam. ISBN: 90 234 6158 4 CIP Nugi 300

Van den Dunk T (2009) De krediet crisis brengt de stabiliteit van de staat in gevaar. (Credit crisis endangers the state stability). NRC (Nieuwe Rotterdamse Courant (Dutch daily quality journal)) November 2009

Van Lent D (2010) Amerika maakt het banken veel moeilijker dan Europa (USA makes it banks more difficult than Europe) NRC 23 January, p13

Van Lent D, Tamminga M (2008) Nergens zo slecht bestand tegen speculanten. Activistische belegger. Nederland is een land vol bedrijven waar best wat meer rendement uit geperst kan worden (Nowhere so vulnerable for speculations as in The Netherlands). NRC. Nieuwe Rotterdamse Courant (Dutch daily quality journal) 25 mei 2008, p 1

Van Seters P, de Jong P (1998) De jacht op het grote geld. (The hunt for the big money) Siswo, Amsterdam

Van Uffelen X (2008) Het grote graaien. 25 jaar topsalarissen in Nederland (The big grabbing. 25 years of top salaries in The Netherlands) Meulenhof, Amsterdam

Wiki Pedia English (2009) Hedge fund; private equity; mutual fund; AIG bonus, Subprime crisis impact timeline

Appendix I Definition of a Complex Societal Problem

A complex societal problem is a real life problem, which has a large however often different impact on different groups in the society. The problem has often an impact on all the levels of the society, on micro, meso and macro level. Often it seems that the problem suddenly 'pops-up'. The problem is dynamic, it changes during its development. The future development of the problem is uncertain. It is often difficult to become aware of the problem and difficult to put it on the political agenda. It is difficult to get grip on the problem and to handle the problem. Only changes are possible, no 'solutions'. The problem has a knowledge, a power and an emotional component. The problem consist of many phenomena which are complicated intertwined with each other. Often there is a lack of knowledge, the data are incomplete, uncertain or in contradiction with each other. The problem is interdisciplinary and it takes theories from different fields to explain what is happening. There are many parties involved. Each party has a different view on the problem, a different definition of the problem, and has different goal and desires. The parties often have different 'solutions' for the problem. The different parties involved have different power over the problem. The problem often provokes much emotion in society.

Appendix II Financial legislations in USA between 1938-1995

In the below cited act it is clearly shown how the US Government facilitated the possibilities that led to the credit crisis of 2008

http://en.wikipedia.org/wiki/Subprime_crisis_impact_timeline (citation Wiki Pedia English 2009)

"**1938**: The Federal National Mortgage Association, commonly known as Fannie Mae, is established (as part of Franklin Delano Roosevelt's New Deal) to purchase and securitize mortgages to ensure that funds are consistently available to the institutions that lend money to home buyers.

1968: Fannie Mae is converted from a federal government entity to a stand-alone government sponsored enterprise (GSE) which purchases and securitizes mortgages to facilitate liquidity in the primary mortgage market. The move takes the debt of Fannie Mae off of the books of the government.

1970: Federal Home Loan Mortgage Corporation (Freddie Mac) is created by an act of Congress, as a government sponsored enterprise, to buy mortgages on the secondary market, pool them, and sell them as mortgage-backed securities to investors on the open market; 1971 it issues its first Mortgage Participation Certificate security.

1970s: Private equities begin mortgage asset securitization with the creation of private mortgage pools in the 1970s.

1974: Equal Credit Opportunity Act imposes heavy sanctions for financial institutions found guilty of discrimination on the basis of race, color, religion, national origin, sex, marital status, or age.

1977: Community Reinvestment Act is enacted to address historical discrimination in lending. The Act encourages commercial banks and savings associations to meet the needs of borrowers in all segments of their communities, including low- and moderate-income neighborhoods.

1980: The Depository Institutions Deregulation and Monetary Control Act (DIDMCA) of 1980 granted all thrifts, including savings and loan associations, the power to make consumer and commercial loans and to issue transaction accounts and exempted federally chartered savings banks, installment plan sellers and chartered loan companies from state usury (unlimited interest rates) limits.

1981: Each of the 12 Federal Reserve banks establishes a Community Affairs Office to offer public and private guidance in accordance with the Community Reinvestment Act.

1982: Alternative Mortgage Transaction Parity Act of 1982 (AMTPA) preempts state laws allows lenders to originate mortgages with features such as adjustable-rate mortgages, balloon payments, and negative amortization and "allows lenders to make loans with terms that may obscure the total cost of a loan".

1986: Tax Reform Act of 1986 (TRA) ended prohibited taxpayers from deducting interest on consumer loans, such as credit cards and auto loans, while allowing them to deduct interest paid on mortgage loans, providing an incentive for homeowners to take out home equity loans to pay off consumer debt. Household debt would grow from $705 billion at year end 1974, 60% of disposable personal income, to $7.4 trillion at year end 2000, and finally to $14.5 trillion in midyear 2008, 134% of disposable personal income.

1985–1989: The effects of Tax Reform Act of 1986, the elimination of Regulation Q which had capped interest rates banks were allowed to pay, imprudent lending during the late 1970s inflationary period, as well as other causes, led to asset-liability mismatch for many Savings and Loans. This defacto insolvency led to the Savings and Loan Crisis and the failure and/or closure of half of all federally insured savings and loans. The number declined from 3,234 to 1,645.

1989-1995: Financial Institutions Reform, Recovery and Enforcement Act ("FIRREA") established the Resolution Trust Corporation (RTC) which closed hundreds of insolvent savings and loans holding $519 billion in assets and moved regulatory authority to the Office of Thrift Supervision (OTS). The U.S. government ultimately appropriated 105 billion dollars to resolve the crisis. After banks repaid loans through various procedures, there was a net loss to taxpayers of 40 billion dollars by the end of 1999.