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ASSET BUBBLES AND THE IMPACTS OF THE UNITED STATES SUBPRIME MORTGAGE CRISIS ON THE FINANCIAL SECTOR

Abstract
The generation of money is linked to the generation of asset bubbles. The goal of this study is therefore the analysis of the definition of what is an asset bubble, because that definition is not uniformly agreed upon by all authors and also changes with time so specific deviations can be observed in the works of individual experts. The financial crisis has an impact not only on private finances, but on public finances. A partial aim of this study is then to assess the impacts of the bubble burst and the subsequent financial crisis, which originated in the U.S. in 2007, for global economy. It was found out by literary researches that the definition of a bubble burst is not unambigous and that there are many means of appreciating financial assets. Technical, fundamental and psychological analyses were introduced. The consequences of The United States subprime mortgage crisis have deep impacts on the american economy. However, the issue was not confined only to the U.S. but real impacts were observed worldwide. The definition of an asset bubble is not unambigous and such bubbles tend to be described ex-post. The price bubble of the american real estates was financed through a significant expansion of mortgage loans. The indebtedness of households with mortgages since the 1990´s was steadily increasing, from 2000 to the peaking of the price bubble in 2006 it was continuously rising by a double digit pace. The „boom" of providing a still higher number of mortgages enabled a sufficiency or even a surplus of liquidity on financial markets.

Key words: assets, price, bubble, education, globalisation, mortgage crisis

1 INTRODUCTION

We live in turbulent times (Kupec 2018) and we cannot imagine life without money, since it forms an essential part of the life of every individual, although it was not always so, as Bertl (2012) points out. Revenda (2012) even considers money to be the greatest invention of mankind. A disposable income

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is a sum of money about which decisions can be made and which can be divided into consumption and savings. As Soukup states, with the increasing disposable income the marginal tendency to consumption decreases (Soukup et. Al. 2018). Today‘s way of living on debt is modern and people indebt themselves because they want to show their peers that they can afford it, as Janda states (2013). The level of consumption is also influenced by the consumer‘s benefit, which is obtained from a product or a service, and whether the benefit is greater than the second best option (Holman 2005).

With the development of the division of labour, the natural exchange of goods and services became troublesome. That is why a certain kind of goods was partially set aside from consumption and it was transformed into full-fledged money, also called commodity money. This kind of goods was universally accepted and could mediate the flow of other goods and services. In order to accelerate the flow of precious metals, people started to deposit them at goldsmiths in exchange for a certification. The emission of these certifications slowly passed to bankers. Banks quickly understood that they can profit on the emission of such certifications, so they started to provide loans and relied on the probability, that not all creditors would withdraw their savings at the same moment. And that is how unfledged money was created, as Jílek states (2013).

Due to globalisation the impact of economic and financial crises can be felt worldwide. Amongst the advantages of globalisation is the increase of volume of globally traded goods, the speed and complexity of direct investments, economic growths of some former developing countries (South Korea, Taiwan, Malaysia, Hong Kong). These economies became mature, anoter advantage is the waking up of other countries (Indonesia, Mexico, Phillippines). Mezřický sees the disadvantage of globalisation in an unchecked transfer of financial capital, which many times exceeds the volume of traded goods or in the widening of the imaginary scissors in social growth (Mezřický 2003)

With the creation of money comes the creation of price bubbles, as Stroukal states (2019). Our society historically tackled many of these bubbles, but not only financial asset bubbles. A good example is the „tulip fever“, when on the climax of this bubble in 1637 a price for a single Viceroy tulip bulb equalled the price of five dutch houses. A bubble is a term which is used very often in literature and which is not liked very much by theoretical financialists and academic economists. Although historically many bubbles have been described, even nowadays is impossible to find in books how to identify such a bubble, invest in the period when the bubble grows and when it climaxes and bursts, as Kohout points out (2018).

2 METHODS OF ASSET VALUATION

Financial valuation of assets is based on the neoclassical theory of a perfectly functioning capital market and presumes a rationally thinking investor. One of the chief motives why investors enter the capital market is to ensure the growth of their personal wealth. Investors try to find such assets which are called „undervalued" compared to the real (or internal) value and to gain a capital profit. Since the 1970's, financal valuation was influenced by the theory of the efficient market, which based this theory on the assumption that share prices in real time take into account all of the relevant information. Some writers even blame this theory for the extent of the world financial crisis of 2007. Because if the investors, and therefore the creators of the market, believe in the hypothesis of the efficient market dogmatically, there cannot be any overvaluation due to „right" prices (Krabec 2009).

2.1 Technical analysis

The pioneer of this analysis was Charles H. Dow, whose share in the creation of this approach is significant. Technical analysis is used mainly in order to predict the future development of a share title or the analysis of the whole share market. Technical analysis does not deal with the fundamental factors which do not have influence on the price and internal value of shares (Gladiš 2005). It is based on the interaction of supply and demand on the basis of price and volume of trades. It is built on the basis of historical evolution of prices which will likely repeat in the future.

Technical analysis uses mathematical, statistical-mathematical and other algorithmized methods for a quantitative elaboration of data and the subsequent evaluation from the economic point of view. Technical analysis is applicable to shares, Forex, futures, commodities, indexes or financial instruments, whose price is influenced by supply and demand. It is based on the assumption, that investor's behaviour does not change with time. The result is that the price changes of shares continuously repeat with time. Analysts thus try to find various formations in time rows which already appeared in the past. With the help of these formations they try to predict the future development of share prices or the development of the market (Stibor 2017).

2.2 Fundamental analysis

Benjamin Graham, who is considered to be the founder of fundamental analysis, in his work Security analysis from the year 1934 laid down the basics of this approach for the analysis of securities. Fundamental analysis can be labelled as the most complex kind of share analysis. It assumes that every financial instrument has its internal value. The aim of this analysis is therefore the search for undervalued (long) and overvalued (short) assets of purchase. This analysis is based on the knowledge of mutual circumstances between economic and non-economic processes (Růčková 2019).

Fundamental analysis can be done on various levels. The first level is a valuation of the indvidual titles, second level is a valuation on the level of separate sectors. This level measures the sensitivity of the sector to the economic cycle due to the influence of government regulations and innovations. Third level is global and examines long-term and short-term influences of economic markers on the prices of individual instruments. It is usable mainly with investments of a long-term nature, when the investor tries to estimate the future development of an asset on the basis of a complex and rational approach (Hartman 2018).

This analysis is based on the assumption that the internal value of an asset differs from its market price, which is set by the clash of supply and demand on the market. This internal value can be calculated and it is the function of the expected risks and profits. The problem of the analysis is the setting of the „right" internal value, because every investor assings different importance to different factors, uses different methods of calculation and also, due to the asymmetry of information, not all participants of the market possess the same information. Because of these factors the internal value of an asset is different for every investor. Fundamental analysis therefore provides an answer for investors to the question „what to trade".

2.3 Psychological analysis

Psychological analysis is a compound of various activities, which observe the sociological environment of a given asset in order to determine all potential influences which affect its price. This kind of analysis is a combination of fundamental analysis and sense and intuition at the same time. The key part is to determine the factors which influence society's investment decision making (Štýbr – Klepetko – Ondráčková 2011). Psychological analysis differs from the prevailing analytical approaches, such as fundamental and technical analysis. The main difference can be seen in the object of observation which the individual analyses set as their target. In technical or fundamental analysis the object of observation is always a security, either from the perspective of its „right price" or from the perspective of price-creating movements. Contrary to this, the object of observation in psychological analysis is a man – investor, therefore a human factor in the process of investing. Psychologically oriented traders focus their attention on the behaviour of investors on stock markets. They assume the idea, that the movement of prices is the consequence of behaviour, activities of the investors, while the decisive determinant is the behaviour of human psyche (Veselá 2019)

The main aim is to understand potential influences which can have impact on investors and indirectly on the prices of securities. Psychological analysis is, due to its orientation, entirely different from fundamental and technical analysis. In order to reveal these impulses, analysts get help from a whole scale of activities, from observing social environment, through the analysis of trade activities on the market, to the mood of investors or observation of such factors like the purchasing managers index etc. Many theoretical concepts are considered to be a part of psychological analysis. History of the oldest dates back to 1895, when Gustav Le Bon laid down the foundations of this analysis in his work The Crowd: A Study of the Popular Mind. He was followed by economists and investors, as some of them wrote down their findings and experience and thus contributed to the expansion of psychological analysis as an investment instrument. The most known theories are by Keynes, Kostalany and Drasnar - Drasnar´s investment psychology or the theory of speculation bubbles (Havlíček 2013).

3 THE DEFINITION OF A PRICE BUBBLE

A bubble concerning an asset price can be defined as an asymmetrically created deviation between the market price of an asset and its fundamental value, which can change significantly with time (Gevorgyan 2015). Stiglitz defines price bubbles as a high expectation of investors, which is not supported by fundamental factors (Stiglitz 1990). On the real estate market a bubble is driven by the demand of buyers, who are willing to pay high prices today, because they expect a very high appreciation in the future, as stated by Case and Shiller (2004).

Shiller presents an explanation of price bubbles with the help of twelve catalytic factors. With the introduction of new information technologies connected to the boom of internet and the development of online trading, pension programmes and share funds, the decrease of inflation, rise of hazard and increase of the volume of trading, a rise of the share market was observed. Also according to Shiller, there has been a rise of materialism in society, explosion of capitalism and owner society are other reasons of the formation of a price bubble. Private ownership is not a domain exclusive to wealthy capitalists, but it is available to a wider public. The possibility of ownership gives the owners a feeling of security, which in the world of finances, however, has a bigger significance for creditors. According to this theory the above mentioned catalytic factors are responsible for the growth of the share market and also the real estate market even despite the fact that the prices on the share market started to grow in the beginning of the 1980‘s and the growth of prices on the real estate market happened even later, in the end of 1990‘s, since price bubbles blended after certain period. This blending is also explained by the transfer of assets from the security market to the real estate market, because the decline of the share market caused resistance in investors and they left for „quality" which they saw in real assets, like real estates for example (Shiller 2005).

The definition of an asset price bubble is not unambigous and certain deviations can be observed with individual authors. According to Kubicová and Komárek, an asset price bubble is something, what can be generally defined as an explosive and asymmetrical deviation of the market price of an asset from its basic value, with the possibility of a sudden and significant reverse correction. Developing countries are usually prone to a higher growth and also to a volatility of asset prices, which emerge mostly from insufficiently developed segments of the financial market. That is why we claim, that for the final evaluation of any price bubble risks, we have to take into account the specifics of the market and countries (Komárek 2011).

Closely linked to the term „bubble", is the term „mania". A mania can be defined as a disorder in emotivity, but in the opposite pole than depression. Typical signs of mania are excessively cheerful mood, accompanied by faster psychomotorics. That is manifested by an excess of garrulity and general hyperactivity (Kučerová 2013). Manias are from their nature periods, when people lose sense and cease to behave rationally. That does not concern only investors, but also politicians, regulators, central bankers, academists and employees of the Ministry of Treasury, as Boeckh points out in his book (2012). The basic idea, on which economy is based, is this very assumption of rational behaviour of men. Rationality however does not reside in the choice of goals, but rather in the choice of means of getting to them (Holman 2005).

Mania is also connected to greed, which arises from human nature, the wish of men to own something. This desire never disappears, but rather multiplies with the accumulating wealth. The effort to achieve high profits from investments, which is supported by greed, stimulates the demand for shares, which then leads to a growth of the value of their prices. This trend, when the prices of shares are being appreciated, lasts until the moment, when the greed of investors is suddenly replaced by the fear of losing the obtained wealth. This fear is usually accompanied by seeds of panic, that together with the fear of investors spread through the whole crowd which, as a result, commences the sale of basically all owned shares. The following excess of supply then causes the origin of a declining trend (Rejnuš 2011).

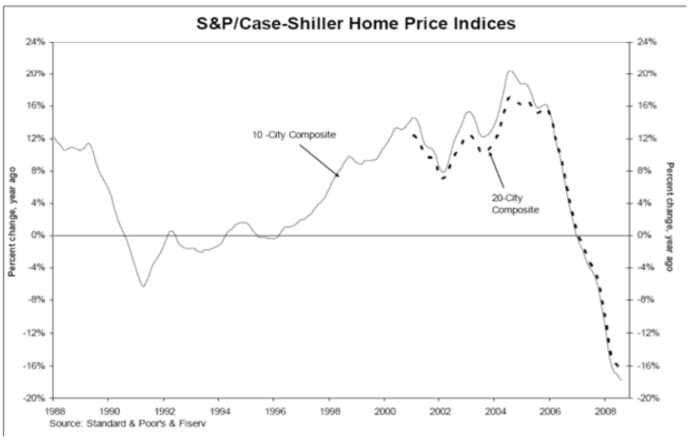
4 THE UNITED STATES SUBPRIME MORTGAGE CRISIS

The United States subprime mortgage crisis started on the american market with residential real estates, where until the year 2006 a big price bubble was forming, which then subsequently burst. Prices of flats and their explosive growth in combinaton with bad valuation of subprime mortgage loans proved to be important factors of the financial crisis (Hláváček – Komárek 2011). Due to globalisation the collapse of a price bubble on the american market and the formation of a mortgage crisis is an issue not only in the U.S. This mortgage crisis influenced the rest of the world through the domino effect and grew into a worldwide financial cirsis (Gevorgyan 2015).

In the middle of the 1990‘s, the prices of american family houses started to grow steeply up. Even double digit paces of growth were not exceptional. There were many circumstances that contributed to the growth of these prices. During the collapse of the dot.com bubble on share markets in 2000 and after the terrorist attacks of September 9, 2001, the american central bank, out of fear of negative impacts of these events on the american economy, significantly decreased its loan rate (Rejnuš 2014).

The bubble was inflating also due to political reasons because of the „american dream“, meaning the idea that every american can own a house. A major issue, which influenced the situation a lot, was the unverified credit worthiness of clients, which meant that almost everyone who applied for a mortgage loan eventually got it. Clients were sure that when the loan was approved, they met all the necessary requirements for its obtaining and that the ability to repay them was correctly estimated by the bank (Bush 2003).

In total, the prices of real estates between the years 2000 and 2006 increased by unbelievable 90%, which can be seen in picture no. 1.



Source: Standard&Poor´s, 2008

The effort to support the economy, exerted by FED through the means of low loan rates, lasted rather long. Low basic loans of FED and subsequent low loans on the interbank lending market resulted in a higher willingness of banks to provide loans to businesses and to citizens. Banks and other finacial institutions tried to achieve attractive profits through increased loan activities. Providers of loans therefore started a massive loan expansion while not a small part of financial means went to the real estate market. The prices of home loans reached a long time minimum.

4.1 Freddie Mac and Fannie Mae

In 1938, a company called the Federal National Mortgage Association, commonly known as Fannie Mae was established in the U.S. A second state organisation was founded in 1970, the Federal Home Loan Mortgage Corporation, known under the name Freddie Mac. Both of these agencies were established in order to support the ownership housing in the U.S. The idea behind these companies was simple. Freddie and Fannie were supposed to provide guarantees to commercial banks for provided mortgage loans. Commercial banks therefore did not carry any risks, since any possible unrepaid mortgage was covered by these state agencies. The logical outcome was a massive and unprecedented development of the mortgage market (About Fannie Mae and Freddie Mac).

The volume of unrepaid loans began to be so large, that these agencies started to accumulate huge losses. Commercial banks were transferring a large amount of risky loans to them and in 2008, Fredde Mac reported losses of 50,1 billion USD. The situation reached such an extent, that in 2008 Freddie and Fannie were buying up to 80% of newly granted mortgage loans. In the U.S., the number of real estates that became property of the banks, rapidly increased. Banks wanted to get rid of these assets as fast as possible, so there was an evergrowing supply of real estates on the market, which subsequently led to a steep fall of prices and a radical collapse of the housing bubble.

4.2 Securitization of mortgage loans

Securitization was created already in the 1970‘s, when securities were backed by mortgages (so called mortgage backed securities) when mortgage institutions supported by the government emitted the first tranche of securities derived from the residency mortgage loans. These mortgage institutions were Fannie Mae and Freddie Mac. They were supposed to help the housing market and improve the availability of ownership housing by buying mortgages from banks and then by securitizating them.

Securitization did not pose any threat to the system at first, because it concerned quality mortgages only, the applicants paid part of the finances for a mortgage loan in cash and they also had sufficient income to repay it without any issues. One of the main arguments for introducing securitization was the lowering of the risk of individual banks by transferring the loan risk to final investors. This diversification was supposed to help to lower the risk of the banking sector to a minimum.

In the 1990's, during the presidential term of Bill Clinton, the american Congress passed a legislation, which enabled risky loans to be securitized. Concerning the securitization of loans an important term of „morale hazard" is also involved. Morale hazard is considered to be a situation, when an individual is aware that he will not suffer the full consequences of his actions and therefore behaves differently, usually with more risk than if he had full responsibility for his actions. Morale hazard in the process of securitization of loans consists of the intention to later sell the provided loans, the bank loses an interest in verifying the credit worthiness of its clients (Anon. 2010).

Securitization can also be described as a process, in which assets are being transformed into different assets. The basic image consists of gathering homogenous loans, selling these loans to another object and from the emission of securities against the gathered assets by that object. Financial institutions, which provide loans and stand at the beginning of the process, are called the originators of accounts receivable. These financial institutions then trasnfer accounts receivable to the newly established company labelled as the unit for special purpose (or Special Purpose Vehicle, Special Purpose Entity). This entity is established solely for a strictly defined purpose of fulfilling specific operations. This entity has a simple balance sheet, with its property in the assets, and obligations to financial institutions in liabilities. Legally it can be a corporation, a trust or a partnership (Jílek 2006).

Securitization of non-quality mortgage loans eventually led to the collapse of the american investment bank Lehman Brothers on September 15, 2008 and thus starting a chain reaction, first on banking markets, then the domino effect spread to the whole world. It led to a freezing of interbank lending market with liquidity which was the first step to the transformation of a financial crisis into a crisis of real economy. Thanks to this method banks could provide still riskier mortgage loans which were available even to clients with a very high degree of loan risk. Theoretically, securitization should have worked in a way, that the risk spreading around the whole world would have less dramatic impacts, than a risk concentrated to a small number of banks. In the end of July 2007 a first wave of panic concerning the mortgage crisis emerged. No one knew, where bad loans could be present and because of the mutual distrust on the level of commercial and investment banks, the financial crisis began (Kohout 2006).

4.3 Collapse of the bubble

The formation of speculative bubbles is a highly undesirable phenomenon, which has influence not only on the decrease of asset prices, but often has even real economic impacts. These impacts, through various channels, can be seen in a limited consumption and investment activities. Indirectly also in the growth of unemployment and decline of the wellbeing of citizens. And that is because real estates are the most important part of the financial porfolio of a household. That is why shifts on the real estate markets have such macroeconomic impacts, as Fairchild states (2015).

Considering that speculative bubbles are formed on different markets, the strength of their impact on real economy can be different as well. However, certain common consequences can be determined, such as the loss of trust in the financial market. Considering that financial markets are based on trust, this impact is one of the gravest. Mainly small investors after deducting their losses as a result of the bubble collapse often grow bitter of the share market and withdraw from it. The market thus loses a part of its liquidity and original volumes, this situation being especially visible on smaller stock markets.

After the burst of the price bubble on the american market with residential real estates, somewhere after the middle of 2006, a number of Americans got into existential troubles. Firstly, they irresponsibly applied for mortgage loans in large numbers for family houses of their own, only to find out later, that they cannot afford to repay them. Whereas until 2006 prices of immovables were steeply growing, it was easy for them to refinance the original mortgage loans with other mortgage loans, or getting a completely new mortgage loan, backed by the increased value of the house. Another motive was the speculation about the growth of the real estate prices and the conditions which enabled loans of values higher than 100% of the estimated prices of houses. After 2006, when the prices of residential immovables started to fall down fast, they suddenly found out they are over-indebted and that the value of the house does not reach the price of the indebted mortgage loan.

The collapse of the speculation bubble on the american real estate market did not have negative impacts only on this sector, but the crisis with american mortgage loans transformed into a global financial crisis, which could have led into a worldwide economic recession. First the crisis appeared on the real estate and mortgage market. When the real estate boom ended, supplies of businesses and sellers started to pile up,the demand for self-owned living grew significantly weaker and the prices of immovables fell steeply to the ground. Construction of new houses became notably weak.

4.4 Outcomes

Mortgage banks and other providers of mortgage loans, after the problems with unrepaid, mostly risky mortgages and then subsequent excessive losses and after some of them going bankrupt, made conditions for providing new loans significantly stricter. The crisis then spread to the whole american financial sector. Large financial institutions were, despite the securitization of mortgages, connected to the problems of the real estate market. World-famous finacial institutions of Wall Street in connection to being involved in the secondary mortgage market and with investments in securities linked to risky mortgages suffered losses of hundreds of billions of Dollars. The financial sector was suddenly hit by a wave of insecurity and panic.

From the absolute loss height point of view, the biggest victim of the american housing crisis is the financial sector. And not only the american one, but financial sector as a whole, globally connected international financial system. And a number of its participants rightly so, since it was mainly them who financed the whole speculative bubble on the american real estate market. The providers of risky mortgages were the ones who first got into trouble. Since the middle of the 1990‘s they greedily profited on the quickly growing mortgage market, but since the middle of the year 2006 started to feel the negative consequences of their own mistakes caused by their reckless providing of risky mortgages.

It lasted a little bit longer until problems connected to the collapsing of the american real estate market began to be felt also by investment banks, investment funds, hedge funds, insurance companies and other financial institutions, which poorly invested their finacial means in risky american mortgages or in other way took part in their securitization. Losses and problems of financial institutons were so great, that it caused panic on the financial market. Distrust and insecurity ruled the market, banks ceased to lend money to each other, people were afraid about their savings and so even a number of institutions, which had hardly anything in common with the american mortgages directly, got into troubles. They were being towed by the problems of a global financial crisis.

The United States subprime mortgage crisis had serious negative consequences also on the field of american investment banking. This area of financial sector paid for the participation of its banks during the securitization, which however should have been the proper instrument for risky management, as Hrnčíř points out (2009). Out of the five biggest american investment banks, icons of Wall street, three did not survive the crisis, Lehman Brothers went bankrupt, Bear Sterns and Merill Lynch were taken over by other banks and the remaining two, Goldman Sachs and Morgan Stanley, were transformed into a „more stable form of organisation“ which should respond to a universal bank.

Another consequence is the loss of efficient allocation of sources, meaning the withdrawal of investors, which can lower the efficient allocation of sources in the whole ecenomy and cause real economic impacts as a result. The problem of speculative bubbles is that during the purchase of shares in a bubble investors calculate with a certain expected wealth. When the bubble bursts investors lose a part of their wealth and they adjust their expenses in a downward direction. A speculative bubble then, despite this mechanism, has real impacts on the economy, when investments and consumption are limited.

After the collapse of the bubble which is moreover visible in the decrease of a real economic effectivity, a legislative change has been made, which should prevent similar situations in the future. After this collapse, the regulation of rating agencies and insurance companies in the area of calculating capital adequacy became much stricter from the part of the European Comission. The regulation of unfair practics on financial markets increased significantly since the middle of the 1990's but what is staggering is that insufficent attention was paid to rating agencies and their unfair practics, as Hampl – Loužek points out (2009).

In the U.S. the first regulation concerning rating agencies was already created before the crisis. In 2006 the Congress passed the Credit Rating Agency Reform Act. This Act imposed the Security Exchange Commission (SEC) with the drafting of a directive which would determine whether the given company falls in the category of Nationally Recognized Statistical Rating Organisations – NSRO. Amongst the powers of the Commission was the management of information about these agencies and NSRO would also have to prove, that their market actions are not in a clash of interests. The Commission could not, however, set and regulate processes of loan risks valuations and the processes of issuing the final mark (PUBLIC LAW 109-291-SEPT. 29, 2006)

CONCLUSION

A price bubble does not have an unambigous definition and the description of price bubbles is in reality happening ex-post, although the creation of bubbles is dated into the same time as the creation of money. The american housing price bubble, which started to inflate in the beginning of the millenium, was financed by a significant expansion of mortgage loans. Given the excess of liquidity and too optimistic views of the future development on the real estate market, providers of mortgage loans did not hesitate to provide money to an increasing number of people, more than before started to enable home loans even to riskier clients, whose subsequent inability to repay mortgage loans later proved to be a major issue.

There was therefore not a single cause of this mortgage crisis, but rather a number of them that happened together. Maybe it was this very concurrence of factors that enabled such an extensive crisis situation. The favorable state of the US economy before the outbreak of the crisis was hampered by growing and unsustainable macroeconomic imbalances. The US economy has suffered and is still suffers from the so-called double deficit - the fiscal deficit and the current account deficit. The growing debt of the United States and some other advanced economies, on the one hand, and the growing surpluses of budget countries, especially China, on the other global macroeconomic imbalances (Obstfeld – Rogoff 2009).

The american housing price bubble was financed through a significant expansion of mortgage loans. The indebtness of households with mortgage loans grew steadily since the 1990‘s, from 2000 until the peaking of the price bubble in 2006 increased continuously by a double digit pace of growth. Boom in providing a still bigger number of mortgage loans enabled a sufficient or even excessive liquidity on the financial markets.

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