Too Big To Fail!

Conceptual disputation with Leopold Kohr

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Contents

1 INTRODUCTION .............................................................................................................................. 1
2 FINANCIAL SERVICE SYSTEM COMPONENTS AND THEIR IMPORTANCE ..................................... 5
3 HISTORIC DEVELOPMENT OF FINANCIAL SAFETY NETS AND REGULATORY FRAMEWORK ........... 8
4 INTERNATIONALIZATION, MODERNIZATION AND CONSOLIDATION OF THE FINANCIAL INDUSTRY— THE WAY TO THE LATEST FINANCIAL CRISIS .................................................................................. 16
   4.1 FINANCIAL INTERNATIONALIZATION AND POLICIES .................................................................. 17
   4.2 FINANCIAL INNOVATION ............................................................................................................. 18
      4.2.1 Originate and distribute model – Credit Securitization (Mortgage-backed securities,
               Collateralized debt obligations and Credit default swaps) ....................................................... 18
      4.2.2 Rating agencies ....................................................................................................................... 23
      4.2.3 Short-term financing ................................................................................................................. 24
   4.3 CONSOLIDATION OF FINANCIAL INDUSTRY AND MEGAMERGERS – THE GENESIS OF TBTF
       INSTITUTIONS .............................................................................................................................. 26
5 BOOM AND BUST – THE HOUSING BUBBLE .................................................................................. 29
   5.1 THE BOOM .................................................................................................................................. 29
   5.2 PONZI SCHEME ............................................................................................................................ 31
   5.3 THE BUST ...................................................................................................................................... 34
      5.3.1 Bear Sterns ................................................................................................................................. 36
      5.3.2 Lehman Brothers ....................................................................................................................... 37
      5.3.3 AIG 38
6 FINANCIAL CRISIS (2008–) – THE BAILOUT OF THE FINANCIAL SYSTEM ........................................ 40
   6.1 RECAPITALIZATIONS .................................................................................................................... 42
   6.2 DEBT GUARANTEES ...................................................................................................................... 43
   6.3 ASSET PURCHASES OR GUARANTEES ....................................................................................... 44
7 WHY TO INTERVENE? – SYSTEMIC RISK .................................................................................... 45
   7.1 TRIGGERING EVENT ..................................................................................................................... 47
7.2 PROPAGATION MECHANISM ........................................................................................................................................49
  7.2.1 Counterparty contagion ........................................................................................................................................49
  7.2.2 Information contagion ........................................................................................................................................50
7.3 EFFECT ON THE MACROECONOMY ..........................................................................................................................52
8 THE HAZARDS OF MORAL HAZARD ..........................................................................................................................53
  8.1 MORAL HAZARD AND GOVERNMENT OFFICIALS .................................................................................................53
  8.2 MORAL HAZARD AND RISK-TAKING ........................................................................................................................55
    8.2.1 Moral Hazard and Creditors ................................................................................................................................55
    8.2.2 Moral Hazard and Shareholders ..........................................................................................................................57
    8.2.3 Moral Hazard and financial firms executives ....................................................................................................58
    8.2.4 Moral Hazard and private investors ................................................................................................................60
9 DISTORTION OF COMPETITION ................................................................................................................................61
10 TOO BIG ........................................................................................................................................................................64
11 THE SIZE THEORY TEACHINGS ................................................................................................................................68
    11.1 DEALING WITH MORAL HAZARD ..........................................................................................................................68
    11.2 THE PHYSICS OF THE FINANCIAL SYSTEM ........................................................................................................70
12 CONCLUSION ..................................................................................................................................................................73
13 REFERENCES ..................................................................................................................................................................76
The global economy is experiencing the worst financial crisis since the Great Depression. During the financial crisis that started in the mid-2007 it became apparent what the deficiencies of modern global financial system are. Weak market discipline is not able to curb risk-taking. The misallocated resources create bubbles and inflation of asset prices. The financial system is dominated by too-big-to-fail institutions (TBTF) and regulators do not have capacity to control efficiently and properly resolve them. These institutions are complex and interconnected and regulators can hardly measure systemic risk impact of their operations. They are undercapitalized and rely on short-term funding of their operations, and use high leverage, what make them extremely sensitive to liquidity shocks.

As a result of the financial crisis the economic condition is weak, characterized by uncertainty and lack of confidence. The response of regulators has been to expand and extend access of large and systematically important financial institutions to explicit or implicit government-provided or sponsored safety nets, including explicit deposit insurance and implicit government guarantees, such as TBTF, that may protect de jure uninsured depositors and other institution stakeholders against some or all of the loss (Kaufman and Seelig 2001).

The term TBTF is applied especially in finance sector to describe how bank regulators may deal with severely financially troubled large banks (Kaufman 2003). When dealing with resolution of large financial institutions regulators usually find appropriate to prevent its failure by means of state support. Thus, the term refers to the practice followed by bank regulators of protecting large financial institution creditors from loss in the event of failure (Hetzel 1991).

Characterized as being “too big to fail” are very large or systemically important institutions, whose failure cannot be tolerated. Although the systemic relevance of an institution tends to increase with its size, the exceptional size is not the only indicator of systemic relevance. Interconnectedness and the extent of substitutability of company’s services are also criterion of systemic importance (Ennis and Malek 2005). It means that these institutions perform an essential activity in the smooth functioning of financial markets and payment system. Therefore regulators assist TBTF institutions in trouble giving them access to government safety nets. Although the deposit insurance was first to be introduced, government safety net
also includes lending from the central bank to troubled institutions as part of the central bank’s lender of last resort role or exceptional, direct government infusion of cash into TBTF institutions in form of too-big-to-fail policy (Mishkin 2005).

The extension of government safety net is an indicator that TBTF problem has grown. Today TBTF have gained many variations in the literature that reflect different aspects of the problem: “too-big-to-liquidate,” “too-big-to-unwind,” “too-connected-to-fail,” “too-systemic-to-fail,” “too-complex-to-fail,” “too-big-to-discipline-adequately,” “too-big-to-regulate,” “too-big-to-manage,” “too-political-to-fail,” among others. Each of these aspects reflects particular set of problems that arise in dealing with large, systemically important financial institutions.

This policy is often justified by the fact that these institutions are too connected or too systemic to fail. Such a failure could have ramifications for other financial institutions and therefore the risk to the financial system and economy would be enormous (Helwege 2010). The regulators try to prevent pervasive financial fragility that occurs because the failure of one firm leads to the failure of other firms which cascades through the system, or when a number of financial firms fail simultaneously. These mechanisms termed systemic risk are usually the motive that propels regulators toward intervention.

However, policymakers may also intervene in order to maximize personal welfare or because they view government influence over the allocation of credit as increasing society’s long-run welfare (Stern and Feldman 2004) meaning that these institutions are too-political-to-fail. Also the national prestige plays an important role by making the decision to rescue a company. In general, the financial crisis and government intervention have shown that nationalism and protectionism have received upswing.

Whatever the intervention incentives are, there are always adverse implications that it leads to. If they decide to rescue the financial firm, what is usually characterized as “bailout”, regulators impose a range of negative effects that are qualified as efficiency costs and resource misallocation (Stern and Feldman 2004). Beside the fiscal costs of a government intervention that are financed with taxpayer money, there are also some indirect effects. First, the intervention may distort competition in the market. The favoring of large institutions leads to their higher ratings, lower costs of capital, better stock performance and higher profitability. Second, TBTF guarantee attenuate market discipline, which leads to impaired incentives of market actors, resulting in moral hazard problems and inducing excessive risk-taking. Financial institutions also tend to become larger and riskier in order to obtain TBTF status.

Essentially, the appropriate policy response weights the trade-off between preventing systemic risk and moral hazard problems (Helwege 2010). That trade-off depends critically on
costs and benefits of an intervention. Although the regulators, at least theoretically, are able to distinguish costs and benefits, in practice this is usually not so easy given the available information about costs and benefits and its exceedingly complex nature. Moreover, there are several key aspects of the matter that require special analysis, where too much or too little of a measure can have disastrous consequences. This set of problems requires closer illustration.

Economic action in free market economy requires a framework which allows and protects as possible free action of market participants, and thus as possible undistorted functioning of the market. The actual terms of this framework depends on the functional conditions of the market. The financial markets are characterized through high degree of uncertainty. The demand for maximum safety in the financial market would not only disrupt them, but also constrain investments and with it the growth of the real economy. Therefore, it applies exactly to financial markets that the government regulation should not restrict individual freedom of market participant to assume risks.

On the other hand, the greatest possible freedom of market participants to choose their actions related to investment opportunities also means that they have to be prepared to bear the consequences of their risky actions. Not the government, but the market determines the success of a business ideas or companies. Therefore, the company that is not able to sustain in the market, should also be allowed to resign. The shifting of the negative implications to the general public would also be a substantial limitation of its freedom, as the taxpayers are requested to finance the bailouts regardless of their willingness to do so, leading to social unrest.

The question of the responsibility is of special concern exactly in financial sector because of its wide extent of risk-taking possibilities. Hence, accepting the responsibility in the financial sector has a disciplinary role. Currently, “too big to fail” market participants get opposed incentives. Their failure could have adverse effects on other financial institutions in chain reaction and may also lead to substantial impairment of the financial markets. Knowing that they are of systemic relevance and that the government would bail them out in the case of failure would give them incentives to assume excessive risks more than they are able to bear. TBTF institutions assume more risk in an attempt to take advantage of this preferential status in a short-run. This problem, better known as “moral hazard”, means that financial institutions knowing that they are “too big to fail” will change their behavior and by taking risky bets they could increase the systemic instability.

The problem is that the mechanisms responsible for effectively preventing moral hazard and undesirable risk-taking are impaired. The undesirable behavior of large, complex financial institutions is neither restrained effectively by supervision and regulation nor by the market place (Stern 2009). The deficiencies of supervision and regulation are expressed in the fact that these institutions are too big to regulate effectively, but also the deregulation of financial
industry plays an important role. Moreover, market discipline is also not the credible check on the risk-taking of these firms. When the creditors of the failing TBTF institutions expect government protection, they have fewer incentives to monitor and respond to the activities of these institutions, which represent another materialization of “moral hazard”. As a result of the reduced control the systemically important institutions may take excessive risk, making risky loans and other bets.

Additionally, policymakers and regulators confront difficult choice by deciding to which of the two objectives of the macroeconomic policy they give priority, preserving system stability or free competition in the market. The policymaker is required to act neutral in terms of effect on competition and to impose clear rules that encourage such a competition. However, by deciding to bail certain market participants out, the policymakers maybe improve financial stability temporarily, but, on the other hand they grant them a preferential status and distort market competition. As a result of the preferential treatment, TBTF financial institutions will dominate the market and squeeze smaller institutions out of the market. In that case, market forces and competition lose purpose of disciplining and balancing the market, and become instruments of both governments and large financial institutions with dominance and guaranteed protection.

Moreover, the realistic threat is that the provision of bailouts may not end the instability of the system at all. It may even amplify inefficiencies and resource misallocation further causing greater instability. This means that TBTF protection does not prevent banks from repeating risky practices, which both increase financial instability and make additional bailouts even more realistic. Furthermore, governments’ commitments to the provision of guarantee have weakened confidence in countries’ long-run solvency. The high fiscal costs of bailouts lead to alarmingly high budget deficit and public debt. It is not surprising that too big to fail problem is rising further threatening to become what experts have already noted as “too big to rescue”.

But what is the alternative? Should the regulators let this institutions fail? Hetzel (1991) noted that the policy of “too big to fail” resulted from a fundamental deficiency of bankruptcy law for banks. It is the problem of timely closure of large financial firms that highlights the features of these institutions as being too-big-to-liquidate or too-big-to-unwind. Therefore, there is a need to close insolvent and nearly insolvent financial institutions promptly. This task is not easy to accomplish not only because of the large size of failing institution, but also given the fact that the institution might be viable if restructured.

In order to summarize the discussion, the conclusion can be made that, by considering each and all of the aspects of TBTF problem, the term includes two main components (Stern and Feldman 2004):
1. The existence of the policy that protects uninsured creditors from the losses they might suffer and

2. The existence of too big financial institutions.

The further discussion of TBTF relies on examination of the effects of these two basic elements’ existence as well as their importance for dealing with TBTF. Important questions are: What made these institutions too big to fail and why did government bail them out? What are the consequences of the bailout? How to prevent TBTF in the future?

Finally, as mention above, too-big-to-fail policy perhaps has positive impact on stability of the financial system in the short-run, but it is not durable solution for the failure of systemically important institutions. This policy generates uncertainty in the market and emphasizes the frustration of the policymaker with the failure and liquidation of such an institution. Too big to fail is only \textit{ad hoc} measure that amplifies moral hazard problem, distorts competition and decrements financial stability in a long-run. It also attenuates civil liberties. It leads to emphasize of even greater imbalances that threaten to materialize in the future with even greater intensity. By using this measure we only bought ourselves a few years, which should be wisely used to introduce comprehensive financial system reform and reassess postulates that our society is build on.

2 FINANCIAL SERVICE SYSTEM COMPONENTS AND THEIR IMPORTANCE

The financial services industry includes several different types of institutions that accommodate different needs – depository institutions, insurance companies, investment banks, finance companies, mutual funds, and hedge funds. All these institutions have a different role in the financial intermediation process, but the depository institutions and investment banks are those that require closer attention.

Instead of keeping their money in cookie jars, individuals rather invest it in financial intermediaries, where their deposits are considered as safe place to save and where they can earn some interest on it. These intermediaries, which include commercial banks, saving and loan associations, credit unions, and other types of institutions, accept money from individuals and hold it in different types of accounts. Customers’ deposits are on the liability side of these institutions and they use them to provide loans that are on their assets side. Loans might be used for personal purposes, such as to purchase cars or homes, or might be intended for commercial use, such as to start or expand a business.

In order stay in business in the long run, the interest these institutions earn on their loans and investments must exceed the total interest they pay to depositors and creditors. It means that
they must be able to make enough on the spread between their assets return and the interest they pay out to their depositors (Kane 1989, 4). The financial firms seek to increase this spread by reinvesting the funds raised from depositors into high yielding assets. As a result of wide extent of risk-taking possibilities and because of the necessity to safeguard the interests of depositors and investors, banks are the main focus of regulatory scrutiny.

Regulatory framework that sets the incentives to hold banks taking of risk within the certain limit is usually concentrated on preserving the sufficient level of capital reserves held by an institution. Capital reserves, denoted as ratio of capital to assets, are required to start and maintain business. When the loans bank made default or when the value of investments banks keep on their balance sheet decline sharply, they should have sufficient capital reserves to continue to operate despite the incurred losses. In addition, when a bank has its own funds at risk as well, it will commit only to reasonable investments.

On the other hand, investment banks, unlike commercial banks, do not provide checking and savings accounts or any of the traditional banking services. Investment banks underwrite and trade securities. Beside stocks and bonds, securities also include derivatives, such as swaps, forwards, options, futures, swap-options, and asset-backed securities. The underwriting of securities involves advisory and marketing services for companies interested in issuing stocks or bonds. Investment banks recommend the price the company should ask for the offering and advice the company on the application to the Security and Exchange Commission (SEC) for permission to offer the security. Marketing services include preparation and distribution of the prospectus that provides the detailed information about the company and the intended security sale. Trade of securities is conducted on an exchange. Investors are allowed to trade securities trough brokerage houses and online discount brokers. Stocks and bond are traded on a stock exchange, for example New York Stock Exchange, and derivatives are traded on the over-the-counter markets (OTC), such as the National Association of Securities Dealers Automated Quotation System (NASDAQ). Many investment firms were engaged in underwriting, advising, and trading of securities, and many were very successful in doing it.

Another important element of the financial service system is central bank. Central banking system of the United States is called Federal Reserve (FED), created in 1913. One of its key objectives is to ensure that the credit system remains stable and functional. The Fed regulates banks that are members of the Federal Reserve. All members of the Federal Reserve System are required to hold a reserve of funds to meet short-term demands, called the reserve requirements. Members benefit is that they are allowed to borrow funds from the Fed and from each other. However, the Fed restricts the types of assets that member banks could hold.

The Federal Reserve is responsible for determining the federal funds target rate, the discount rate, and the reserve requirements, mentioned above. The federal funds rate is the one at which banks can borrow from each other excess reserves. In order to meet reserve
requirements banks lend to each other short term, usually overnight, using interbank funding market. Discount rate, on the other hand, is the rate at which banks are able to borrow from the discount window at the Federal Reserve. The federal funds rate is very important tool for guiding the direction of the economy, because all other interest rates adjust to this rate. By lowering it, Fed is able to provide flow of cheap credit that can be used for consumer spending or expansion and investment of businesses.

Regarding the various functions of different financial institutions, the financial system is at the center of the growth of the economy. Financial institutions encourage, collect, and transfer the savings necessary to finance the nations’ economic growth (Kaufman and Kroszner 1996). Banks and other financial institution are responsible to facilitate uninterrupted functioning of payment system, to provide credit for productive investment opportunities, to monitor private enterprises, and to execute government policy that guide the direction of the economy (Mishkin 2005).

The financial sector mobilizes savings and allocates credit across space and time (Herring and Santomero 1995). The primary role of the financial sector is to bringing together savers and borrowers so as to allocate capital, which is used for most productive investment opportunities, the process which maximizes the risk-adjusted return to savers. In addition to marshallign savings, further function of banks and other financial institutions are to monitor private enterprises. In order to obtain credit from a bank, private enterprises have to satisfy number of requirements, which progress of implementation is tightly controlled by banks. Thus, banks also ensure that the financial resources are effectively and productively invested in order to maximize the profits. Furthermore, financial system is an important conduit through which central bank policy influences prices and economic activity (Kroszner 2010). Financial institutions are the key intermediaries between the governments (central banks) and the rest of the economy in the context of the country’s monetary and credit policy. This function is primarily pursued through their deposit and lending activities as well as their role in nation’s payment system.

Giving regard to the unique function of the financial system and its central place in the economy, problems at banking and financial institutions are widely believed to be more likely to spread quickly throughout the financial sector and then broadly throughout other sectors and the macro-economy as a whole. If a large number of banks fail at the same time, leading to banking panic, the economy’s ability to channel funds to those with productive investment opportunities may be severely impaired, causing a full-scale financial crisis and a large decline in investment and output. Indeed, some of the worst economic downturns are almost always associated with banking panics and financial crisis (Mishkin, 2005). In this regard, regulators are especially devoted to maintain stability in the financial sector and to mitigate potential adverse spillovers. Therefore, the employment of governments’ financial safety net,
and particularly too-big-to-fail policy, is considered to be of substantial importance exactly in the financial sector.

3 HISTORIC DEVELOPMENT OF FINANCIAL SAFETY NETS AND REGULATORY FRAMEWORK

The result of the unique function of the financial service system and its central place in the economy, regulators are especially devoted to maintain stability by preventing runs and panics in financial system and mitigating contagion potential. These concerns have led most governments throughout the world to provide safety net for banking system. Government safety net includes, among other policies, deposit insurance (explicit and implicit), lender of last resort facility and too-big-to-fail policy (TBTF).

Prior to safety net regulations U.S. banks held higher capital to asset ratios (Kaufman and Kroszner 1996). Large banks did not frequently become insolvent, even in times of widespread bank failures and macroeconomic downturns. Similarly, prior to the introduction of the lender of last resort in the US, the failure rate of banks was lower than that of non-financial firms, and losses to depositors and other bank creditors were lower than for creditors of non-financial firms. In addition, the government regulators did not have authority or resource to assist these banks if they had become insolvent (Kaufmann 2002). Banks failed when they were not able to meet depositor claims or when regulator believed that they did not have sufficient capital and they would default. The banks were forced to suspend operations and were either recapitalized or liquidated.

However, then came the Great Depression. In response to stock market downturn and subsequent crash in October, 1929, depositors attempted to convert their deposits into cash. Under this circumstance banks were unable to satisfy all of these demands, what caused them to fail leading to contraction of money supply (Bernake 1983). As a result, many other solvent banks also failed. Around 9000 banks failed during this period (Helwege 2010). The fact that so many financial institutions failed means that both the money supply and the amount of credit in the economy fell as well causing a large drop in economic activity (Friedman and Schwartz 1971).

In an effort to improve the conditions of financial service industry during the Great Depression, Congress enacted the Glass-Steagall Act (GSA) of 1933, which main objective was to separate commercial and investment banking activities. Banks were prohibited from engaging in many types of investment banking transactions, such as to underwrite or trade corporate stocks and bonds (Cohen 1994). Equally, investment banks were prohibited from engaging in activities of commercial banks. It also reduced conflict of interest by restricting investment bank directors, officers, employees, or principals to serve in commercial banks.
GSA also aimed to eliminate competition among banks by introducing an interest-rate ceiling for deposits, under Regulation Q. The wide spread opinion was that interest rate competition among banks contributed to the instability and bank failures of 1930s. General perception was that if the banks have to compete for depositors by offering high interest to attract them they would in turn acquire risky assets that offer higher return in order to uphold their profits. As this scenario may jeopardize the viability of the commercial banks, the GSA set interest ceilings of zero on demand deposits and limit the rates on time and saving deposits. Therefore, the Regulation Q of Glass-Steagall Act limited banks risk-taking.

In addition, GSA established Deposit Insurance Corporation (FDIC), which started its operations in 1934. The FDIC responsibility was to insure bank deposits in the event of failure, and consequently to prevent runs and panics. All member of the Federal Reserve System had to participate in the FDIC program, which was similar to a regular insurance policy. The FDIC charges the bank a premium, and, in the event of failure, depositors are guaranteed the return of their money up to the sum insured. The initially set insured value was $2,500.

At the beginning FDIC protected depositors holding small accounts (Hetzel 1991). It responsibility was to cover losses of insured depositor of already failed banks. Not to keep insolvent banks in operation. However, in 1950 the authority of FDIC was widened. It was allowed also to prevent a bank from failing if the bank was perceived essential to provide adequate banking service in its community. In 1971, Unity Bank in Boston became the first bank bailed out, which services were considered essentiality for the community. The motive was the fear that the failure of a bank considered to be a black institution would set off riots in black neighborhoods. This precedent rose concerns that doing the first bailout would lead to many more. And exactly this has happened. Shortly afterwards the FDIC rescued large, mismanaged Bank of the Commonwealth in Detroit for the same reason.

Trough the 1970s the FDIC acted to protect all depositors, although not shareholders, at nearly all failed banks. The usual practice of FDIC was to merge the failed banks with the solvent banks, to assume some or all bad loans or to guarantee to repay the losses that assuming bank might incur (Sprague, 1986). This procedure, termed purchase and assumption, was used in resolving the failure of the Franklin National Bank (New York) in 1974, which was the twentieth largest bank in the country at the time. It was essential for the community because of its large size. After becoming insolvent, Federal Reserve supported the bank by the large-scale discount window, which kept it in operation. But, as it failed to restore it to profitability, the bank was subsequently sold. Also the Pennsylvania Bank (Philadelphia) was deemed essential for the community because of its large size. Only this time the shareholders were left intact, although the FDIC made some changes in management and directors.
In the same time period there is an evident aspiration of banks to expend their business, while the Federal Reserve always tried to keep them in check by applying new regulation (Bonnick 2009). Financial institutions were looking for ways to avoid the various regulations and expand their business, because banks considered the existing regulations as hindrance of their competitive ability and limitation of their growth. One such attempt was creation of Bank Holding Companies (BHCs), which allowed banks to pursue both banking and non-banking activities and to escape State laws against branch banking. This legal construction would acquire multiple banks and were referred to as “multi-bank holding companies.”

In order to respond to the need to protect the public from monopoly and concentration of economic power, Congress enacted the Bank Holding Act of 1956 (Hall 1965). According to it states could decide whether they allow BHC to acquire locally operated bank. However, most states did not allow this, and, essentially, BHCs were prohibited from operating banks across state lines. The Act also restricted bank holding companies from engaging in most non-banking activities or to acquire voting securities in companies other than banks, and protected the public from undesirable expansion by holding companies. The Bank Holding Act was one of the several attempts to enable efficient regulation of banks and to limit banking activities to some extent. Regulators feared that, if the banks could operate subsidiary banks in other states, their ability to control these large organizations, which tend to take too much risk in competitive environment, would be substantially crippled. Although Bank Holding Act was well designed to meet the requirement for limiting banks to grow, it also provided a loophole. It stated that holding company may own a non-banking subsidiary that performs services "closely related" to banking activities if they had approval of the Federal Reserve.

Over the time, federal interest rate ceiling, produced by Regulation Q, started to affect banks’ ability to attract deposits. As a result, they could not meet loan demands at this rate and began losing deposits to investment institutions, which were not restricted in such a way. With decrease of banks deposit base, their engagement in provision of loans was also decreasing, affecting their profits, which all resulted in Savings and Loan crisis of 1970s and 1980s. Also the innovations in the financial industry and development of new communication and computer technologies have increased competition for banks. The rise in importance of capital markets followed by financial liberalization and deregulation caused emergence of new competitors, leading to expansion of financial institution into riskier activities.

As a result of continuous problems in depository institution, because banks were losing deposits to investment institutions that were not subject to the interest rate restriction, banks sought to find method to challenge interest rate restriction and increase their competitiveness. In this regard, they developed money market accounts and Negotiable Order of Withdrawal (NOW) accounts (Hetzel 1991). Both measures allowed banks to offer depositors higher rate of return and attract more funds. However, by 1980, the number of failing depository
institutions increased. In order to deal with this issue of disintermediation, withdrawal of funds from traditional depository institution to be put directly into investment firms that offered higher returns, the Depository Institution Deregulation and Monetary Control Act (DIDMCA) was passed in 1980. The main purpose of this act was to remove ceilings on the interest rate banks could offer depositors (Morris 2004). The new legislation introduced healthy competition in financial sector by allowing banks to retain existing depositors and attract new ones.

Despite these regulatory changes, between 1980 and 1982, 118 savings and loan banks failed (Bonnick 2009). In response to the continued and growing problems in the industry, the Garn-St. Germain Depository Institutions Act (GSGDIA) of 1982 was passed. The act was another step in making depository institutions more competitive in comparison with non-depository financial firms. More explicitly, the act was relief measure for thrift industry (Graddy et al. 1994). The legislation also allowed for adjustable rate mortgages, which aimed to encourage home ownership. As a result, the savings and loan banks began to offer a larger number of consumer loans and risky mortgages. Both regulatory changes aimed to help depository institutions to survive by allowing them to expand. These institutions began to increase their firms’ funding base and to invest new funds they raise into a speculative manner. The idea was “to grow out of problem” by undertaking risky bets. If it pays off it will be good, if not, the problem belongs to government as a result of the deposit insurance (Kane 1989).

An additional change was that the Act gave regulatory agencies power to deal with troubled banks and thrifts. The FDIC and FSLIC were empowered to step in and do whatever was necessary to protect an insured institution, which was closed or about to be closed (Cornett and Tehranian 1990). Therefore, the FDIC broadened the scope of it operation and protected not only depositors of already failed banks but also prevented the failure by protecting all depositors and even creditors and shareholders. The FDIC began to view the problem that the protection effectively eliminated incentives for large depositors to monitor and discipline their banks. In order to restore incentives the FDIC experimented in 1983–1984 with allowing banks to fail and not protecting uninsured depositors (FDIC 1997).

Soon afterward the caution overrode experimentation when the insolvency of Continental Illinois in 1984 caught regulators unprepared to deal with such a large institution. At the time Continental Illinois was both the seventh largest bank and the largest correspondent bank having interbank deposit and Fed funds relationships with more than 2,200 other banks. The reason for the failure was the fact that the bank grew rapidly by purchasing $1 billion in oil and gas high-risk loans. Beside the 10 percent of Continental’s insured depositors, the FDIC also protected all other depositors from losses. The intervention consisted of the Federal Reserve Bank of Chicago assistance with discount window loans, which eventually totaled $7.6 billion, and FDIC purchase of $1 billion in preferred stock from Continental’s holding
company. As a result Continental was allowed to remain in operation despite of its irresponsible risk-taking behavior.

The Continental Illinois was the first bank alluded as being “too big to fail”. On the hearing before the Congress, Congressman McKinney uttered the now famous phrase: “Mr. Chairman, we have a new kind of bank. It is called too big to fail, TBTF and it is a wonderful bank” (Morgan and Stiroh 2005). Comptroller of the Currency testified that any of the 11 largest multinational banks were unlikely to permit to fail. The next day Wall Street Journal headlined a lengthy article on the hearings “U.S. Won’t Let 11 Biggest Banks in Nation Fail —Testimony by Comptroller at House Hearing Is First Policy Acknowledgment” (Carrington 1984). And so, TBTF was born.

Following the case of Continental Illinois bank, FDIC tried to narrow the scope of TBTF and to reintroduce market discipline, but the definition of “big” institution was broadened and progressively reduced to eventually include even the US$ 2 billion of National Bank Washington (DC), which was only about the 250th largest bank in the country and, apparently, more “too political to fail” than TBTF (Kaufman 2002). When the National Bank of Washington was closed, FDIC as receiver provided the coverage also for foreign depositors at the bank’s off-shore office in the Bahamas. Prior to the closure, the discount window lending by the Federal Reserve permitted sizable portion of uninsured deposits to be withdrawn, although the bank would have failed earlier.

The following takeover of the Bank of New England and Maine National Bank amplified the problem further and made clear the government safety net was expending, the criteria for bailing out uninsured creditors had broadened, the coverage had been expended and the kinds of protected liabilities increased. Banks relied on deposit insurance as an aid in competing with other financial institutions, because provided a subsidy to banks by lowering their costs of funding (Hetzel 1991). The additional extension of the government guarantee in the form of the policy of too big to fail, as mentioned above, substantially hampered the contraction of banking industry. The massive use of the financial safety net was justified by the fact that banks are inherently fragile and prone to runs and panics. Especially after the Diamond-Dybvig model (1983) this thesis was supported. Because the banks’ assets are being held long-term, and their liabilities short-term, the sudden withdrawal of funds by depositors may result in run on bank leading to failure, although the bank may be solvent. If the repayment for depositors is guaranteed, there is no need to withdraw the funds and run the bank.

However, it seemed that despite of financial market deregulation and expansion of financial safety net, these institutions were not able to survive. During the period between 1980 and 1988, over 500 savings associations failed (Clark et al. 1990). The frequent interventions of the regulators resulted in the failure of the Federal Savings and Loan Insurance Corporation (FSLIC), because it had guaranteed so many failed savings and loan banks. Also the bank
insurance fund was technically insolvent for a brief time. This drew considerable attention on
the fragility of the U.S. deposit insurance funds and emphasized the need for regulatory
reform to restrain the use of TBTF policy. The thesis that rescuing troubled banks leads to
moral hazard and distorts market discipline, which both result in irresponsible behavior and
excessive risk taking, was empirically proven.

This resulted in passage of Financial Institutions Reform, Recovery, and Enforcement Act
(FIRREA) in 1989. The act aimed to recapitalize the deposit insurance fund for saving
associations, to improve resolution of the outstanding and anticipated failures of savings
institutions, and to provide better regulation of these institutions to prevent future insolvencies
(Clark et al. 1990). The FIRREA eliminated FSLIC and created two new insurance funds: the
Savings Association Insurance Fund (SAIF) and the Bank Insurance Fund (BIF), both under
the supervision of FDIC. The contributions of member-banks to these funds were based on
the risk of banks. Banks belonging to the higher risk categories were required to pay higher
premiums (Ennis and Malek 2005).

Another regulatory change that aimed to restrict the use of the financial safety nets came soon
afterward through the implementation of the Federal Deposit Insurance Corporation
Improvement Act (FDICIA) of 1991, which was designed to restore the incentives that
discipline undesirable behavior and prevent moral hazard. The Act introduced prompt
corrective regulatory action (PCA) and least cost resolution (LCR) (Kaufman 2002). The new
law explicitly permitted the FDIC only to protect insured depositors up to the limited
maximum, making an exception only in situation when the failure would cause serious
adverse effects on economic conditions and financial stability. The exception criterion known
as “systemic risk” was conditioned by the necessity of joint approval of FDIC, the Federal
Reserve, and the Treasury Secretary in consultation with the President. In addition, the
legislation limited Federal Reserve discount window advances, made the process of failed
bank resolution more efficient, and reduced chances for system-wide spillover following the
bank failure. The regulatory reform made it more difficult for FDIC to protect uninsured
depositors and creditors at large failing banking organizations and TBTF banking
organizations. TBTF policy was forgotten for some time, surrounded by mystery that was
personified in the notion of systemic risk, which everyone heard the stories about and secretly
believed in its existence.

In addition to the limitation of the financial safety net in the late 1980s, regulators started to
evoke the idea that banks needed to expand their business models in order to survive without
government aid. In the same time, section 20 of the Glass-Steagall Act that prohibited
commercial banks from affiliating with investment firm, came under stronger criticism from
the banks. As a result of the mounting pressure, the Fed permitted in 1986 securities
subsidiaries of bank holding companies to underwrite and deal in certain bank ineligible
securities, under the condition that revenues from such underwritings constituted less than 5 percent of the subsidiary’s gross revenue (Roten and Mullineaux 2002). This move was the first indicator for appeal of GSA and removal of commercial and investment banks separation. In 1989, J.P. Morgan was the first bank permitted to underwrite corporate debt securities, and in 1990, the company acquired permission to sell stocks through a subsidiary. The same year the amount of total revenues that non-banking subsidiary of a bank holding company is permitted to derive from underwriting and dealing in securities was increased to 10 percent.

Furthermore, in 1990 Citibank also challenged the Fed’s interpretation of section 20 of the GSA. In December 1996 the Fed accommodated banks and announced that it was increasing raised the revenue ceiling on ineligible underwritings, from 10 to 25 percent. This allowed banks to expand their securities business even further without violating the Glass-Steagall Act. During 1998, for example, three of the top 10 underwriters of US stocks and bonds by dollar volume were affiliated with bank holding companies (Salomon Smith Barney, JP Mogan, and Chase).

The final step in abolishing of Glass-Steagall Act was the enactment of the Gramm-Leach-Bliley Act (GLBA) in November 1999, also known as the Financial Modernization Act. This act repealed provisions of the Bank Holding Company Act (BHCA) of 1956 that provided for the separation of commercial banking from insurance activities. These modifications of the existing federal banking law introduced the financial modernization in the United States by establishing a legal structure that allows for the integration of banking, securities and insurance activities within a single organization (Barth and Jahera 2006). The law allowed new Financial Holding Companies to own subsidiary corporations involved in any activity that is financial in nature. Therefore, the act promoted consolidation within the financial service industry.

The Gramm-Leach-Bliley Act merely formalized what had already been happening in the financial marketplace, this being affiliation between Federal member banks and institutions involved in securities business. The act also repealed the prohibition of officials of securities firms serving in supervisory positions in member banks.

Another key feature of the new financial service legislation is a shift toward functional regulation of financial institutions, changing the allocation of authority among regulators. According to the new regulatory system, authority is allocated based on the nature of the activity being performed (Barth et al. 2002). The functional regulation has meant that banking regulators regulate bank activities, securities regulators regulate securities activities, and insurance regulators regulate insurance activities.
Since the Gramm-Leach-Bliley Act, the financial industry has changed substantially. The deregulation of the financial industry has paved the way for innovation and introduction of new products and practices, internationalization, and consolidation of the financial sector. The deregulation together with other transformations of the industry is considered responsible for setting the stage for the latest financial crisis.

This period was characterized by the further innovations in the financial industry and development of the model of securitization that use structured financial products to easily produce and exchange risk. Further internationalization, deregulation and domestic and international liberalization made financial industry as a global game, which shifted from traditional banks to the capital markets and off-balance sheet activities. These changes have increased the competition resulting in a merger boom from 1990-2005 and market consolidation (Jones and Oshinsky 2006). The system became detrimentally complex and interconnected with low density and faster execution of operations.

Prior to the financial crisis that started in mid-2007 and extended into 2009, there were debates about whether the TBTF policy was completely eliminated by the FDICIA reform. However, the question of whether some institutions, even after FDICIA, may still be TBTF has become trivial in light of the dollars the federal government has recently poured into bailing out those banking organizations considered TBTF and/or too interconnected (e.g., Bear Stearns, American International Group [AIG], Citigroup, and Bank of America) (Brewer and Jagtiani 2009). It is evident that the TBTF policy is at work in the financial crisis, since these large financial organizations have been receiving special treatment and support.

There is also the argument that FDICIA reform of 1991 has actually formalized the process for bailing out TBTF institutions by specifically allowing a TBTF bailout when the banking organization’s failure would have serious adverse effects on the economy or financial stability. It indicated the way how to become TBTF and collect protection.

TBTF policy has recently been extended beyond banking institutions to cover nonbank financial institutions as well. The rescue of Bear Stearns and AIG and the various new lending programs that currently allow nonbank institutions (such as primary dealers) to have access to the discount window mark a vast expansion of the government’s financial safety net beyond depository institutions. More nonbanking institutions have come under the umbrella of TBTF banking institutions through the mergers supported by the federal government and bank regulators, for example, the regulator-assisted acquisitions of Merrill Lynch by Bank of America and Bear Stearns by JP Morgan Chase and Company (JPMC). For the first time in the history of the Federal Reserve System, discount window access was extended to investment banks. Beside commercial and investment banks TBTF policy is also expanded to include insurance and even car companies (Stiglitz 2009a).
4 INTERNATIONALIZATION, MODERNIZATION AND CONSOLIDATION OF THE FINANCIAL INDUSTRY–THE WAY TO THE LATEST FINANCIAL CRISIS

The most basic cause of the subprime crisis is the tendency of financial normalization and innovation to run ahead of financial regulation (Eichengreen 2008b). Deregulation and policies of domestic and international liberalization have been the trend not only outside, but also within the financial markets. By comparing the present economic crisis with the Great Depression, Eichengreen points out that the deregulation, as one of the major causes of the financial crisis, has offset the separation of commercial- and investment-banking arms of large financial conglomerates. The elimination of the Glass-Steagall Act brought about the tendency for the investment-banking division run by individuals with high risk tolerance to gamble the funds of small retail depositors once again. Without having access to retail deposits and with money market instruments closely regulated, investment banks would use their partners’ capital for funding and would not need access to financial safety net.

Beside the removal of the Glass-Steagall Act in 1990s, also the deregulation of commissions for stock trading in the 1970s and removal of ceilings on interest on retail deposits in 1980s that raised competition in the financial markets have led to increase in dimensionality, complexity and international interconnectedness of the financial sector. For investment banks and other financial institutions this was the clear signal for the financial innovation that has introduced new business models and riskier operations. The “originate and distribute” activities, development of “mortgage-backed” securities, “collateralized debt obligation” and “credit default swaps”, but also improved financial infrastructure, which increased the connectivity of financial firms and complexity of the system, are only part of the problem.

Furthermore, greater competition and ambition to increase profitability have also propelled the financial institutions to pursue these new lines of business. The investment banks were encouraged to use more leverage and to fund themselves through the money market. The commercial banks responded on this request by placing their overnight deposit money at the disposal.

As a consequence a fragmented regulatory regime suitable for segmented financial-service industry was not adequate to keep pace with these radical changes in the financial industry. The new financial system has become global, interconnected and complex what goes beyond the policy makers’ and regulators’ ability for supervision and control. The regulatory policies were not adopted to the new environment, what left no other choice but to make ad hoc decisions in managing the crisis.

All changes in the regulatory framework already described have led to excessive lending and spending boom. Credit has become cheaper and widely available. Lending standards eroded.
The major financial institutions even pushed the use of credit by subsiding mortgage loans. This in turn created artificial demand for housing and has driven the housing prices up leading to the bubble.

4.1 FINANCIAL INTERNATIONALIZATION AND POLICIES

The financial internationalization was responsible for the large capital inflows in the US. Beside that it led to division of investment and commercial banks, the Great Depression similarly imposed restrictions on international capital flows. From the 1970s, these restrictions have been relaxed step by step.

On the other hand, previous financial crises that occurred in the emerging markets in the 1990s also brought some changes. The collapse of East Asian economies, Russia’s default, and severe stresses in Argentina, Brazil, and Turkey propelled these counties toward less borrowing, costs and consumption reduction and subsequently more saving. This made more financial capital available, which was used to finance credit boom in the US.

Foreign funds mostly came from Asia. Chinese savings of nearly 50 per cent of its GNP together with the decline of investment in Asia following the 1997-1998 currency crisis has created surplus funds that were channeled into US Treasury securities and the obligations of the Federal Home Loan Banks (FHLB), Fannie Mae and Freddy Mac (Schneider and Kirchgässner 2009). These capital inflows upheld the dollar. The outcome was the reduction of the costs of borrowing in the US on some estimates by as much as 100 basis points, encouraging them to live far beyond their financial means (Eichengreen 2008b).

The internationalization and foreign financing of the US economy was only partially the reason that the interest rates were low for such a long time (2003 - 2006). Other reasons for the lax interest-rate policy lie in the 2001 recession. In response to the burst of Internet bubble, the Federal Reserve reduced interest rates and did not counteract the build-up of the housing bubble (Brunnenmeier 2009). Taylor (2009) suggests that solely the departure from interest rate policy historically followed might be sufficient foundation for the subprime crisis. Furthermore, the Bush administration cut taxes. That led to large budget deficit meaning that the government was not saving. Also the measured household savings declined into negative territory. The result of these developments was the increased consumer spending between from 2002 and 2007, which has introduced domestic and international imbalances.

However, for all mistakes were not only the policies and regulators responsible. The successful Chinese formula for growth was to export manufactures in return for high-quality financial assets. Money became cheap available for everyone. The American dream came true. An opportunistic market that believes in easy earnings was created. The demand for
“high quality” securities was there and the financial institutions only needed to produce them. “Originate and distribute” model looks as a logical choice.

At present, foreign central banks are enduring capital losses on their US treasury and agency securities. They are reasonably beginning to reconsider the role of the US as a supplier of high-quality securities and might decide to reduce its volume. Capital flows toward US will reduce and American will have to start saving again.

4.2 FINANCIAL INNOVATION

The financial crisis, which was followed by economic one, brought out with the burst of the housing bubble (Brunnenmeier 2009). Boom and bust of the housing market led to financial turmoil in the United States and consequently in other countries. As the housing bubble burst, financial institutions were forced to write down several hundred billion dollars in bad loans as a consequence of mortgage delinquencies. In the mean time, the stock market capitalization of the major banks dropped by more than twice as much. Considering the loss of the U.S. stock market wealth of $8 trillion between October 2007, when the stock market reached an all-time high, and October 2008, the mortgage losses look relatively modest.

The lending boom was fueled by radical changes in the financial industry. First, the financial innovations led to the transformation of the traditional banking model, in which the issuing banks hold loans on their balance sheet until they are repaid, to “originate and distribute” banking model, in which loans are pooled, tranched and then resold via securitization. Second, banks and other financial market participants financed their asset holdings on the short-term basis using shorter maturity instruments and high leverage ratios. This made them vulnerable to a dry-up in funding liquidity (Schneider and Kirchgässner 2009).

4.2.1 Originate and distribute model – Credit Securitization (Mortgage-backed securities, Collateralized debt obligations and Credit default swaps)

An originate-to-distribute (OTD) model of lending, which was a popular method of mortgage lending before the onset of the subprime mortgage crisis, means that the originator of a loan sells it to various third parties. Because the bank and other financial institutions intend to sell the mortgage loan, they tend to originated excessively poor quality mortgages (Purnanandam 2010). As banks do not intend to keep a mortgage loan on their balance sheet until it is repaid, banks that sell loans would also have a reduced incentive to engage in costly screening and monitoring of the borrowers (Berndt and Gupta 2009).

The “originate and distribute” model was possible with the development and advances in the credit securitization process. The practice of securitization has simply set the stage for financial crisis (Eichengreen 2008a). Over the past twenty years, financial institutions have
upgraded strategies of securitizing credit. However, whereas the securitization spread risks, it also has tendency to raise it.

The securitization of loans is a complex process that involves several different players. It enabled large and complex financial institutions to earn large amounts of fee income (Wilmuth 2010). Mortgage brokers, commercial banks, investment banks and other financial institutions offered exclusively one part of the services in loan transition and transformation process on its way to be sold and resold to the global financial world.

At the first instance are mortgage brokers that deal with the homeowners or future homeowner. As they collect fee from both the borrowers and lenders for their services, mortgage brokers tend to mediate in as much as possible mortgage contracts (Ashcraft and Schuermann 2008). Because a 30-year contract with borrower does not involve brokers directly, they have less incentive to provide the best possible information and advice related to borrower. By outsourcing the assessment of loan applications banks have lost the ability to maintain loan documentation standards. This also meant the loss of responsibility for the quality of mortgages. Under some estimates nearly two-thirds of subprime mortgages in 2006 were originated by brokers (Joint Economic Committee 2007). This resulted in an explosion of inadequately documented and ultimately unsustainable subprime loans.

Banks pooled these mortgages but also other types of loans and debts, which they originated or purchased from specialized brokers, and transferred them to a “special purpose vehicle” (SPV), which then packaged them into a diversified portfolio. Structured financial products are then created by slicing these portfolios into different “tranches” that typically included senior, mezzanine and junior or equity tranche (“toxic waste”). These tranches represented the hierarchy of rights to receive the cash flow generated from the portfolio of pooled loans. The collection of principal and interest cash flows from the underlying assets is the responsibility of special purpose vehicle that forward them to the owners of the various tranches.

Credit rating agencies granted every tranche its own rating that reflects the risk embodied. The tranches are typically cut off so to ensure a specific rating for each tranche. A top tranche usually have AAA rating. This has enabled certain money market and pension funds, which were allowed to invest only in AAA-rated fixed-income securities, to invest also in an AAA-rated senior tranche of a portfolio constructed from BBB-rated securities. Therefore, all tranches were marketed to satisfy the demand of various investors according to their risk appetite. They had multiple owners, as many investors own pieces of the bundle mortgages.

Structured financial securities were usually classified by the type of assets that backed the securities. There are asset-backed securities (ABSs), which represented interests in pools of credit card, car and student loans, but also other forms of debt, i.e. corporate bonds. A special type of ABSs includes mortgage-backed securities (MBSs), which represented interests in
pools of residential or commercial mortgages. MBSs were backed by both prime (good solid mortgages) and subprime (shaky and questionable) mortgages.

Financial institutions also created “second level securitization” by bundling tranches of ABSs and MBSs into collateralized debt obligations (CDOs), in the similar process that underlines the creation of MBSs. Especially MBSs and mortgage-backed CDOs are important for the build-up of the housing bubble.

But why are these structured financial products so problematic? The main problem creates the fact that the banks do not bear the risk of these loans which leads to adverse selection and moral hazard problems (Berndt and Gupta 2009). First, the loan buyers who do not have a lending relationship with the borrowers are likely to be at an information disadvantage when buying a loan originated by a relationship bank or mortgage broker. Second, the banks that intend to sell the loan would have less incentive to engage in costly screening and monitoring of the borrowers. Furthermore, they would have an incentive to sell the loans of the borrowers about whom they have negative private information.

Also the credits rating agencies have little information on the homeowners, such as their credit score and the loan-to-value ratio, and were forced to ignore the detailed soft information when rating these securities (Brunnermeier 2009). Therefore, end-investors in these instruments were no more likely to know the quality of underlying assets than the name of the cow or pig in their exotic hot dog (Haldane 2009). Although it is true that loan originators would be blamed for default of the borrower, however they have nothing to worry about as house prices were rising steadily. This would give the homeowner the “equity” with which he could finance loan repayment. As it appears nobody was ultimately responsible for the quality of the underlying assets of structured products as all elements of the “originate and distribute” machine had not to bear the risk burden.

Another issue is the fact that the mortgages were sold on the secondary mortgage market what encouraged risk-taking. As the purchasing institutions took over the risk of the loans, it meant that the original mortgage lender has been repaid. As a result they had the resources to lend again, and the cycle continues. However banks and other financial institutions have not resold all loans. Surprising is the fact that they held on to so many of the MBSs in their own portfolios, as they must have understood the deterioration of the underlying quality of mortgages. In their portfolio banks and other financial institutions had not only the low-rated equity portions that signaled their faith in the performance of these securities, but also the high-rated tranches that could have been easily sold in the market around the world. The reason lies in the fact that bankers thought these securities were worthwhile investments, despite their risk (Diamond and Rajan 2009). Investment in the structured financial products seemed to be part of a culture of excessive risk-taking that had overtaken banks, other financial institutions, and investors. The rise in popularity of the structured financial products
is best justified by the fact that the issuance of CDO jumped from $157 billion in 2004 to $550 billion in 2006 (Connor 2007). Interestingly the CDOs were virtually nonexistent about a bit more than a decade ago.

With the mortgage-backed securities and collateralized debt obligations an investor takes the gamble that there would be no default on the underlying mortgage. Because in the period prior to financial crisis there had been low number of mortgage defaults and diligences, these investments were perceived to be quite safe. However, just in case, investors often hedged their position. It meant that investors insured their investment against possibility of loss, what gave them additional confidence. This was possible with the development of credit default swaps (CDSs). If an investor, for example, purchases CDS and protects herself against the default of an AAA tranche of a CDO, she thought to be hedged and secure, as the probability of the CDS counterparty defaulting was assumed as very low.

Credit default swaps\(^1\) are credit derivatives, which provide insurance against default events that might occur with reference to loans in securitized pools or tranches of ABSs, MBSs and CDOs (Wilmarth 2010). They are privately held negotiable bilateral contracts, traded on Over-the-Counter market, that allow users to manage their exposure to credit risk of an entity, to put in other words, to transfer risk from one to another party without having to trade in a credit asset such as a loan or a bond. Buying credit protection has similar credit risk position to selling a bond short or “going short risk.” On the other hand, selling protection has similar credit risk position to owning a bond or a loan or “going long risk.” If the credit of the reference entity worsens (in the case of bankruptcy or refinancing) it means that the credit event occurred and the contingent payment will be triggered.

While CDSs could be used for hedging purposes, meaning that lenders acquire protection for on-balance sheet assets (e.g. corporate bonds or asset-backed securities) in order to mitigate credit losses on the underlying asset or to reduce counterparty risk, financial institutions increasingly used CDS for to speculate on the default risk of securitized loans and structured financial products. They allow a counterpart to acquire long/short credit position by selling/buying credit protection.

CDSs represented 98 percent of credit derivatives and have had unique, endemic and destructive function in the current financial crisis. At the beginning of the crisis in mid 2007 the gross notional value of CDS market amounted to explosive $58 trillion (Markose et al. 2010). The problem represents the fact that the CDS market is very concentrated, which is best illustrated on the example that top 25 US banks, which are involved in CDS activity, accounted for $16 trillion of 34 trillion gross national value of CDSs reported by Bank for International Settlement (BIS) and Depository Trust and Clearing Corporation (DTCC). The

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\(^1\) Explanation of CDSs is mostly based on ECB Financial Stability Report 2009
dominant role of few key players in the chain for insurance and reinsurance of credit risk through CDS contracts, have emphasized the “too interconnected to fail” problem. This dominance has created paradigm that the biggest companies in the market are not allowed to fail, because otherwise the occurrence of a credit event can possibly bring down the whole CDS pyramid and consequently the financial system.

CDSs have become so attractive because the leverage they embedded offered a higher return on equity than acquiring the credit assets. Responsible for the popularity of CDS contracts was also Basel II. It introduced synthetic securitization as the instrument for managing risks from credit exposures, which was widely adopted before comprehensive analysis of its potential for posing systemic risk. Under this regime, default risk of banks assets has been substituted with the counterparty risk of protection providers. The Basel II allowed banks to hold CDS contract instead of reserves. For those assets secured through CDS contract banks were able to reduce their reserves. This in turn legalized excessive risk-taking of financial institutions. They just needed to present a CDS contract, which confirmed that their credit risks are “fully” insured, and further taking of risk could take place. As a consequence banks profited from CDS contracts as by using them they were able to exchange poor rating of a borrower for AAA rating of protection seller and consequently relief the regulatory reserve required for that credit risk. The public disclosures of AIG Financial Products following its rescue and the subsequent reduction of the risk exposure of AIG and its counterparties revealed some important information. AIG Financial Products was a large seller of CDSs for the above purposes. AIG has claimed in its public financial statements that 72 percent of the notional amounts of CDSs sold by AIG Financial Products was used by European and other banks for capital relief (ECB 2009).

However, this is only one part of the problem as banks were subjected to any wise capital adequacy regulation. The rest of the institutions in credit risk transfer system, some 50 percent, which operated as insurance sellers in form of insufficiently capitalized hedge funds and monolines, were out of the regulatory framework. The credit protection in case of default relied only on the ratings of these institutions and they were not obligated to present any collateral. The failure to monitor and regulate the CDS market or to prevent financial institution to write cheap and inadequate credit insurance was responsible for propagation of the crisis outside of financial markets.

The attractiveness of securitization was additionally amplified by the executive compensation. The performance of financial institutions’ CEOs was evaluated based in part on the earnings they generated, relative to those of their competitors. As some leading financial institutions generated high returns, this put pressure on others to keep up and to outweigh their earnings. The result was that followers had incentives to enter risky bets to boost various observable measures of performance. Although they possibly might have recognized that this type of
strategy is not truly value-creating, the desire to pump up their stock prices and their personal reputations prompted them nevertheless pursue it further (Diamond and Rajan 2009). In order to increase short term risk-adjusted performance, managers of financial institutions took risks that were not recognized by the system, so they could generate income that appeared to stem from their superior abilities and subsequently get high bonuses. This practice gave incentives for writing insurance on infrequent events such as default, taking on what is refer to as “tail” risk. According to this practice they boosted bonuses by treating the insurance premium as an income, instead of setting aside a significant fraction as a reserve for an eventual payout. Such behavior was hard to control because tail risks are rare by their nature, and therefore hard to quantify with precision before they occur, and until the risk materializes their assumption is very profitable.

The best example that illustrates such risk-taking behavior is when Citigroup Chairman, Chuck Prince, by describing why his bank continued to use this practice despite mounting risks, said: “When the music stops, in terms of liquidity, things will be complicated. But, as long as the music is playing, you’ve got to get up and dance. We’re still dancing.” (Financial Times 7/9/2007). But the music has really stopped. The CEOs sacrificed only their reputation in order to get higher compensation. The outcome was that the stability of credit markets depended on investors’ decisions and judgments whose specialized expertise needed to undertake such scrutiny of creditworthiness was inadequate.

Now it is clear how destructive the securitization had been for the global financial markets. These products have been already dubbed ‘weapons of mass destruction’ by Warren Buffet in 2002. They effectively substituted, via the use of credit derivatives, the default risk of bank assets with counterparty risk of protection providers. This meant that once the mortgage market started declining, the major protection providers such as AIG, Lehman Brothers, and Bear Stearns, arranged for to bring the whole system down.

### 4.2.2 Rating agencies

The purpose of rating agencies is to provide publicly-available ratings, which serve investors to price opaque securities. The subprime crisis suggests that they failed to execute this function. The major issue of concern is the conflict of interest of rating agencies, because they operate on behalf of financial firms that sell the securities. Other part of rating agencies’ business includes advising the financial institutions on how to structure bonds and derivatives so that these receive the desired rating. For this service they earn fees and therefore have subtle devotion to rate those issues as promised (Eichengreen 2008a).

Another problem is that the structured products are very complex securities that are not so easy to value. When house prices were rising and defaults were few, the problems in valuing these securities were not obvious (Diamond and Rajan 2009). But as the house prices stopped
rising and defaults increased, the valuation of these securities have become very complicated. Thus, ratings seem to be lagging rather than leading indicator (Eichengreen 2009). The rating agencies persist in issuing upgrades even after a market or economy confirms clear signs of problems. They then issue downgrades only after conditions have deteriorated.

The rating agencies did not succeed to adequately distinguish between the riskiness of different securities. As mentioned before, rating agency did not have detailed information regarding the assets that backed structured securities. As they worked for financial institutions that sell these securities, they exhibited too generous behavior in providing AAA ratings. They did not downgraded mortgage-backed securities as the housing market and hence the value of the underlying mortgage obligations deteriorated. But once the market collapsed the rating agencies made it worse by downgrading them.

One of the reasons why rating agencies provided so overly optimistic forecast lies in the fact that statistical models used for this assessment were based on historically low mortgage default and delinquency rates (Brunnenmeier 2009). By estimating the default probabilities of new assets they used only data from good times, as this complex products haven’t existed in the times of market turbulence. Also the regulators were encouraged, through Basel II to use bond ratings to determine the range of permissible investments and capital requirements for banks and other financial institutions. As a consequence banks applied subtle pressure on rating agencies to upgrade the entire spectrum of bonds a couple of notches, in order to wide their investment opportunities and reduce funding costs (Eichengreen 2008a).

4.2.3 Short-term financing

An important trend was also the increase in the short-term financing of the financial institution, creating maturity mismatch between long-term assets and short-term liabilities. The result is that any reduction in funding liquidity could lead to significant stress to the financial system. The maturity mismatch was also present in the traditional banking model, where banks financed long-term investments, measured in years or even decades, with short-term deposits, which can be withdrawn at any time (Diamond and Dybvig 1983). This trend was maintained as most investors prefer assets with short maturities, such as short-term money market funds, that allow them to withdraw funds at short notice in order to exit, if the bank appeared to be getting into trouble, or to accommodate their own funding needs.

Therefore, investors demanded lower premia for holding short-term secured debt, what, in turn, have made short-term financing for banks to be much more attractive. As it is evident banks should have been worried about the possibility that they could become illiquid and incapable of rolling over financing, but they had high degree of confidence that any troubles were far away because global savings were pouring in and the Federal Reserve has shown willingness to pump in liquidity and cut interest rates dramatically in case of a sharp
downturn. This has encouraged financial institutions to take liquidity risk and subsequently increase maturity mismatch of their balance sheets.

The modern banking model only transferred the maturity mismatch to a “shadow” banking system consisting of off-balance-sheet investment vehicles and conduits that are not properly monitored and regulated (Brunnenmeier 2009). The purpose of the structured investment vehicles is to raise funds by selling short-term asset backed commercial paper (ABCP) with an average maturity of 90 day and medium-term notes with the maturity of just over one year. If these off-balance-sheet vehicles run into liquidity difficulties as investors suddenly stop buying asset backed commercial paper, the sponsoring bank step in and support the vehicle by providing a credit line, called a “liquidity backstop”. This practice expose banks to the liquidity risk as well, only with the difference that it does not appear on the banks balance sheet compared to the traditional banking model practice. For the Citigroup, JP Morgan Chase, and Bank of America in 2003Q3, the first quarter for which data are available, the amount of assets held in off-balance-sheet conduits financed by commercial paper and in which the banks retained explicit residual risk came to $94 billion (Hetzel 2009). In 2007Q2, the amount came to $267 billion. The sponsored conduits sold ABCP to investors and used the proceeds to buy structured-finance securities originated by the sponsoring banks (Wilmarth 2010). Therefore, the conduits faced a potentially dangerous funding mismatch between their longer-term, structured-finance assets and their shorter-term, asset backed commercial paper liabilities. By the start of 2006 asset-backed commercial paper had become the dominant form of outstanding commercial paper. It was the largest U.S. short-term debt instrument at the beginning of 2007, with more than $1.97 trillion outstanding (Kacperczyk and Schnabl 2010).

Further, investment banks also increased maturity mismatch on their balance sheet (Brunnenmeier 2009). This was result of financing their balance sheets with short-term repurchase agreements, or “repos”. In a repo contract, a financial firm borrows funds by selling a collateral asset today and obligates to repurchase it at a later date. The increase in financing by repos was mostly due to an increase of overnight repos. The increase in overnight financing made investment banks susceptible to liquidity shocks as they are dependable on daily basis funding. Repo markets have doubled in size since 2002. The gross amounts outstanding were at end of 2007 roughly $10 trillion in each of the US and euro repo markets, and another $1 trillion in the UK repo market (Hördahl and King 2008).

Reliance on short term funding and incurring maturity mismatch were justified by use of the mathematical models that didn’t capture the possibility of the rare events of major disruptions and liquidity dry-ups, such as a sharp drop in housing prices would be (Schneider and Kirchgässner 2009). In addition, estimations were based on historic data of periods of low volatility, typically, relatively short intervals, since the instruments whose returns were being
modeled had existed only for a few years (Eichengreen 2008a). Also the regulators were persuaded to use such models when deciding how much capital must be held as a provision against risk. These models encouraged banks and other financial institutions to bear liquidity risk. As a consequence institutions held inadequate liquidity to guard against disruptions to the supply of short-term funding.

The further reverberations of liquidity problems are due to excessive leverage. The dynamic developments of the financial market allowed commercial and investment banks and hedge funds to use more leverage in their bets. Also their creditors were inspired to finance their operations by the development of mathematical models and methods to quantify and hedge risks. These models induce them to believe that additional leverage is safe.

With the beginning of the crisis, the majority of the largest financial institutions were affected by the worst-case scenario. They were highly leveraged non-depository institutions that rely heavily on short term funding, such as overnight “repurchase” agreements, short-term asset backed commercial paper, etc. When the funders lost confidence and stopped buying these securities, the financial institutions find difficult to finance their operation and were forced to sale their earning assets, because their cash holdings were exhausted quickly (Kroszner 2010). As the earning assets are not traded in the highly liquid markets, such sale is referred to as “firesale” and it can be compared to “run” on depository institutions. The firesale only depressed the prices further making the downward spiral.

4.3 CONSOLIDATION OF FINANCIAL INDUSTRY AND MEGAMERGERS – THE GENESIS OF TBTF INSTITUTIONS

The decline in the number of banking institutions started in 1980s and early 1990s, when the industry encountered hard times (Mishkin 1998). Between 1980 and 1992, the number of commercial banks went from over 14,400 to below 11,500 whereas the number of thrift institutions declined from over 4,300 to 2,400. The main reason for banking consolidation in this phase was the low profitability of the industry. The second phase in the decline in the number of banking institutions occurred from 1992 until 1997. In this time period the number of commercial banks fell from 11,500 to 9,200 while the number of thrifts decreased from 2,400 to below 2,000. In 2004 the number of commercial banks was 7,623.

Simultaneously with the drop in the number of banking institutions, individual banking organization was becoming larger and the banking system was getting more concentrated: between 1980 and 2003 the share of industry assets held by the ten largest commercial banking organizations (ranked by assets) rose from 22 percent to 46 percent, and the share of industry deposits held by the ten largest (ranked by deposits) rose from 19 percent to 41 percent (Pilloff 2004). In 2004, the share of the ten largest banking organizations in the United States increased to 48.1 percent (Carstensen and Farmer 2008)
During this period, several hundreds of mergers and acquisitions (M&A) occurred each year. At that time, “megamergers” between institutions with assets over $1 billion became common, most of them occurred between institutions in different states. In the 1998, nine of ten largest ever M&A in U.S. history, at the time of occurrence, had happened creating institutions with assets over $100 billion (Moore and Siems 1998). Four of these mergers involved U.S. commercial banking organizations where “super-megamergers” include Citicorp and Travelers, BankAmerica and NationsBank, Banc One and First Chicago, Norwest and Wells Fargo. Also the “super-megamerger” between UBS and Swiss Bank Corp. created the largest European bank.

These U.S. mergers essentially pushed the passage of the Gramm-Leach-Bliley Act in the following year, which repealed Glass-Steagall Act and prohibition of affiliation of commercial and investment banks (Bonnick 2009). Prior to the enactment of the GLBA, the newly merged Citicorp/Travelers institution had to divest its insurance underwriting business within five years in order to conform to the law. However, opponents suspected that the company had never intended to divest, but rather, to force the law to change. The power conglomerate succeeded creating the opportunity for other financial superpowers to develop. Therefore, it have helped creating too big to fail institutions, what put the pressure on Federal Reserve to ensure that they do not fail leading to moral hazard.

The reason for consolidation of financial markets and mergers in financial industry can be to maximize value of the particular financial firm both by increasing its market power and its efficiency (Berger et al. 1999). Desire to increase market power in setting prices for retail services provided certainly part of the motivation. On the other hand, there are several ways in which M&A can improve efficiency. It not only leads to the spread of the fix costs over a larger base reducing average costs, but also allows exploitation of economy of scope by allowing merging parties to enter new markets and cross-sell their products to a wider customer base (Amel et al. 2004). Furthermore, efficiency is also improved if M&A helps institutions to diversify their portfolio.

Another motive may be found in desire of financial institutions to increase the value of their access to the government’s financial safety net (including deposit insurance, discount window access, payments system guarantees) through consolidation. These institutions seek to become TBTF, which means that explicit or implicit guarantee will protect their debt-holders or shareholders, in order to lower their costs of funding and increase the value of their shares. Using data from the merger boom of 1991-2004, Brewer and Jagtiani (2009) find that banking organizations were willing to pay an added premium for mergers that would put them over the asset sizes that are commonly viewed as the thresholds for being TBTF.

However, there are also some personal motives that favor mergers. One such example is managerial objective to build empire. This intention is based on the fact that the executive
compensation tent to increase with the institution size. However, also the government may encourage consolidation as to provide assistance and resolve problems of systemically important troubled financial institutions. Recently the regulator assisted acquisitions of Merrill Lynch by Bank of America and Bear Stearns by JPMorgan Chase and Company (JPMC).

Beside the incentives that encouraged consolidation, there are also some other changes in the economic environment that alter the consolidation constraints faced by financial service firms. The loosening of constraints allows consolidation that increases shareholder value or makes it easier for managers to pursue their own goals through consolidation. These changes are divided into two key components, those being technological progress and deregulation (Moore and Siems 1998). The development of new technologies has increased scale economies in producing financial services creating opportunities to improve efficiency and increase value through consolidation (Berger et al. 1999). Technological progress includes new tools of financial engineering, such as derivative contracts, off-balance-sheet guarantees, and risk management that are explained in previous section, but also new delivery methods for depositor services, such as phone centers, ATMs, and online banking. These innovations have drastically changed the competitive and strategic conditions faced by financial firms (DeYoung et al. 2009)

On the other hand, deregulation has significantly contributed to the change of environment in which banks conduct business today. The relaxation of restrictions on banks’ securities activities, such as the enactment of already mentioned GLBA was a move toward expanded powers, blurring the traditional distinction with investment banking. But also the elimination of branching restrictions that created vast geographic expansion possibilities promoted consolidation. Restrictions on banks’ ability to expand geographically in the U.S. were relaxed in the 1980s and early 1990s. Finally, the restrictions against interstate and intrastate banking were removed with the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 (Morris 2004).

Finally it can be concluded that the consolidation in the U.S. economy created large and complex financial institutions, which are in the latest crisis considered to be too big to fail. They have imposed considerable costs to the financial system by expanding financial safety net. These institutions contributed to the increase of systemic fragility, because their failure is more severe and spread problems to more counterparties, and thus have systemic consequences.
5 BOOM AND BUST – THE HOUSING BUBBLE

The 500 companies of the S&P Index have $631 billion reserves available. A survey of McKinsey estimates $80,000 billion of the capital that looks for to be invested. In order to be reproduced and to grow, the capital reverts more and more rarely to the goods production and turns more and more frequently to the financial industry, which produces nothing: it creates money with the aid of money, by purchasing and selling financial assets and creating speculative bubbles (Gorz 2009). Each and all bubbles burst sooner or later transforming banks’ balance sheet financial assets, which do not have real basis, into debts. If it is not replaced with a new, even larger bubble, the bursting of a bubble usually result in a series of bankruptcies and ultimately in the collapse of the global banking system.

The bubbles are usually created by credit over-expansion to specific sector, regions etc. (Minsky 1977). The reason for excessive lending to certain industries or regions can lie in the government ambition to promote these industries and regions by channeling credit into them (Stern and Feldman 2005). Another explanation is that in good times agents tend to invest more as to generate more income. However, bubbles can also have speculative or even “Ponzi scheme” character, comprising euphoric and hearing behavior (De Bandt and Hartman 2000).

The housing bubble that caused subprime crisis has attributes of all these elements. There are five stages that accurately illustrate the real estate bubble (Graham 2010). First, there was a change in economic circumstances that created new, profitable opportunities. This stage, referred to as displacement, include very low interest rates and large capital inflows that resulted in rising home prices. Second phase started when euphoria or overtrading occurred as news about profits from rising home prices, especially when purchased with high leverage, drew more buyers to the market and created a feedback loop driving prices up even more. The high point described as mania or bubble was reached when the prospect of easy gains attracted first-time investors. The distress, which was the beginning of the end, came after more knowledgeable or better informed investors began to sell and take profits. This was especially amplified with the rise of interest rates, re-pricing of adjustable rate loans, higher loan defaults, and the first failures of subprime lenders. That represented the pin that burst the bubble. Finally, as prices started to fall everyone stamped for the exits, causing the further prices depreciation in a fashion as an old Serbian saying goes: who flies high falls deep.

5.1 THE BOOM

One of the major public policy priorities of the United States is to increase home ownership (Hetzel 2009). In this regard housing programs worked to make housing affordable by encouraging homeowners to leverage their home purchases with high loan-to-value ratios. These programs included government subsidies that fueled the housing bubble. In this process, two government sponsored entities (GSEs), Fannie Mae (Federal National Mortgage
Association) and Freddie Mac (Federal Home Loan Mortgage Association) played an important role. These institutions were privately owned and chartered by Congress, meaning they were not government agencies, but they had the “aura” that the government guarantees their financial stability (Bonnick 2009). They operated behind the scenes, in the secondary mortgage market, by expending lending to individuals and supporting mortgage lenders.

Between 1990 and 1997 U.S. residential mortgage debt owned by Freddie Mac and Fannie Mae rose from 4.7 percent to 11.4 percent of total mortgage debt amount. That figure began to increase sharply in 1998, and it reached 20.4 percent in 2002. The figure is 46 percent including mortgage debt guaranteed for payment of principal and interest.

In early 2000s, the GSEs channeled increased foreign demand for riskless dollar-denominated debt into the housing market. When the interest rate on U.S. government securities fell to low levels, they encouraged foreign investors to shift from Treasuries to agency debt securities. In doing so, investors could take advantage of somewhat higher yields on debt with an implicit government guarantee. In March 2000, foreigners owned 7.3 percent of the total outstanding GSE debt ($261 billion), in June 2007, this figure rose to 21.4 percent of the total $1.3 trillion. Foreign central banks and other official institutions owned almost $1 trillion of GSE debt in 2008. Another policy change that helped building up of the housing bubble was elimination of capital gain taxes on profits of $500,000 or less on sales of homes, in 1997.

The Federal Home Loan Banks (FHLBs) also encouraged the increase in home mortgage lending. The purpose of the FHLBs given by law, is to subsidize housing and community lending (12 U.S.C. § 1430(a) (2)). For example, from 1997 through 2000 their advances rose from $100 to $200 billion and then accelerated. In third quarter of 2008, the system had advanced $911 billion to banks and thrifts. Starting from December 2007, they advanced $102 billion only to Citibank. By September 30 2007, five large banks (Citigroup, Inc., Washington, Mutual, Inc., Countrywide Financial Corp., Wachovia Corporation, and Royal Bank of Scotland, through its US Citizens Bank unit) represented over 33 percent of all FHLB advances (Brewer and Klingenhagen 2010). Moreover, when the Office of Thrift Supervision (OTS) closed IndyMac Bancorp in July 2008, the FDIC estimated a cost at about $9 billion (Wall Street Journal 8/27/08). From December 2001 to June 2008, the assets of IndyMac increased from $7.4 billion to $30.7 billion. As of the latter date, it financed 51 percent of its assets with FHLB advances and brokered deposits.

However, government policies were not solely responsible for the creation of housing bubble. Beside regulators, financial institutions as well succumbed to a “bubble mentality” (Graham 2010, 136). Large and complex financial institutions, by making use of large-scale securitization of credit, helped to create enormous credit boom in the U.S. financial market between 1991 and 2007 (Wilmarth 2010). During that period nominal domestic private-sector debt nearly tripled, growing from $10.3 trillion to $29.6 trillion. The largest increase was due
to rise in debt of the financial and household sector. Financial sector debt accounted for $13 trillion and household debt for $10 trillion of that amount. As a percentage of gross domestic product (GDP) total domestic private-sector debt grew from 150 percent in 1987 to almost 300 percent in 2007. Debt of the financial sector as a percentage of GDP increased from 40 percent in 1988 to 70 percent in 1998 and 120 percent in 2008. At the same time, household sector debt rose from two thirds of GDP in the early 1990s to 100 percent of GDP in 2008.

As the bubble and credit grew further, the profits and employees compensation also increased relative to other sectors of the economy. Profits at financial companies rose between 1996 and 2006 on average 13.8 percent per year, compared to 8.6 percent in nonfinancial sector. From 1980 to 2007 financial sector earnings doubled rising from 13 percent to 27 percent of total corporate pre-tax profits (Lahart 2008). The compensation gap between financial sector employees and other workers grew during this period from 10 percent to 50 percent.

As a result of public policies and financial institutions that pushed the use of credit by subsidizing mortgage loan, credit has become cheaper and widely available. Lending standards eroded leading to excessive lending and consumer spending boom. This in turn created artificial demand for housing and has driven the housing prices up leading to the bubble. Home prices and stock prices both rose at an unusually brisk pace from early 2004 until 2007 (Congleton 2009). Real median house prices rose 50 percent in value and the Dow Jones Average rose 34 percent in the 2.5 years running from the first quarter of 2004 through the third quarter of 2007, well above their average annual real growth rates (2.75%/year and 4.42%/year) from 1950 to 2000.

The homeownership rate shows the same trend. In 1986 it was at 64 percent, where it remained through 1995. Starting in 1996 homeownership rates began to rise peaking in 2005 at 69 percent (Hetzel 2009). Also the ratio of house prices to household incomes remained at its longer-run historical average of somewhat less than 1.9 until 2001. It then climbed sharply and reached 2.4 in 2006 (Corkery and Hagerty 2008). All mentioned has led to the oversupply of homes causing prices also to fell at an unusually brisk rate. Falling prices brought more foreclosures, as homeowners have difficulty refinancing their mortgages or selling their houses.

5.2 PONZI SCHEME

The housing bubble can also be explained as a Ponzi-scheme. The credit boom was sustained by this “confidence game” operated by leading financial institutions (Wilmarth 2010). The game could continue only as long as investors were willing to keep buying new debt instruments that enabled overstretched borrowers to expand their consumption and service their debt.
Ponzi scheme is named after Charles A. Ponzi, who invented it in Boston in June 1919. The money-making machine, as it is sometimes referred to, was elegant in its simplicity. It had three significant features. First, Ponzi convinced a group of people about an investment idea: coupons issued by the International Postal Union seemingly violated the law of one prices and, thus, offered an arbitrage opportunity. Second, a high return was offered on the investments: a 50 per cent interest every ninety days. And final, Ponzi built credibility by initially delivering on the promise: interest and principal of the initial investments was paid by money invested by later participants in the scheme. As his reputation spread by word-of-mouth people became euphoric, and he collected about $200,000 a day. The fraud was finally discovered when the Boston globe exposed him in August 1920.

However, the Ponzi’s scheme is not the only example. Some of the biggest Ponzi schemes in history occurred in France (1719), Britan (1720), Russia (1994), and Albania (1997). The paper of Bhattacharya (2003) formalizes the particular political economy where a Ponzi schemes might happen. There should be a large public sector (the proportion of national wealth held by the state is above a lower bound), ambiguous laws governing the transfer of property rights from the state to the citizen (victims of failed Ponzi scheme may organize to use the state’s assets for a bailout), weak law enforcement (the probability of early termination of Ponzi scheme by the state is below an upper bound), an inexpensive access to citizens through mass media, and lastly little punishment for the promoter of the scheme.

The U.S. political economy possesses similar attributes, which have been the prerequisites for Ponzi scheme occurrence. There is a large public sector in U.S., ambiguity laws regarding the bailout (official policy in U.S. related to bailout is “creative ambiguity”, which means there is no bailout until it happens), political connections that prevent an early termination of the Ponzi scheme (lack of regulatory control can prevent early termination as well), an access to citizens through mass media (financial news attract attention of general public), and low penalty for the promoter (we are able to observe ex post that nobody bear legal consequences, except for few hearings in front of the Senate, which are usually organize to suppress court proceeding). Therefore, all conditions of the political economy necessary for development of the Ponzi scheme were existent.

The scheme in the housing market was created in the similar manner as the original one. The promoter presented a perfect investment opportunity – “high quality”, almost “risk-free” financial securities. These included structured financial products such as Residential Mortgage Backed Securities, Collateralized Mortgage/Debt Obligations and Credit Default Swaps, which all worked to establish system wide Ponzi scheme (Markose et al. 2010). The investors were convinced that the risk is diversified, but it was only spread among them.

Financial institutions used the structured financial products as a tool to finance Ponzi scheme. Ponzi finance means always borrowing at least as much as is required to service the debt
(interest plus repayment of principal). The growth rate of the debt will be at least as high as the (average effective) interest rate on the debt (De Bandt and Hartman 2000). Banks borrowed by issuing asset backed securities and increasing their leverage. Banks were raising funds by selling short-term asset backed commercial paper with an average maturity of 90 day and medium-term notes with the maturity of just over one year. By the start of 2006 asset-backed commercial paper had become the dominant form of outstanding commercial paper (Brunnenmeier 2009). On the other hand, investment banks used short-term repurchase agreements, or “repos”. Both instruments constitute the substitute for depositors’ funds.

These investments were perceived to be relatively risk free. First, because the structured products stemmed from a diversified portfolio, they were perceived to have low risk of failure. And, if the portfolio still fails, the investors bought insurance, in form of credit default swap, to protect against the failure of their counterparty. It seemed like perfect hedge. The investors’ confidence and trust were rising further as yields were coming regularly. As the reputation of the scheme spread by word-of-mouth or click-of-mouse, masses were seduced into entering the scheme, and they queued to take part. That extended the scheme, which gained wider customer base. The greed was awakened. What the promoter only needed was more of the structured products, which were easy to produce by extending credit and eroding lending standards further.

The excessive risky lending of financial institutions created inflation of asset prices. The overpricing of assets was sustained by uncontrolled increase of risky landing that drove up the prices of risky assets in a circular process, which made financial condition of the financial intermediaries seem stronger and sounder than it was. This fueled demand for housing stocks, leading to rise in homeownership rate to unsustainable level, and, as a result of a relatively inelastic supply of housing due to land constraints, contributed to a sharp growth in housing prices, creating the housing bubble (Hetzel 2009). As a result of rising prices of real estate, very few were concerned about the mounting of risks. Almost everyone could afford a house – the American dream came true.

However, the scheme was deemed to fail. As it ceased gaining new customers, or as the amount of funds in the scheme stopped growing, the housing prices began to decline. And, the bubble burst. The mechanism of crisis involved the same circular process, only in reverse: Falling asset prices made the insolvency of intermediaries visible, forcing them to cease operations, leading to further asset deflation. “The system wide Ponzi scheme collapsed, serially engulfing the Wall Street investment banks” starting with Bear Stearns in March 2008 and followed by Lehman Brothers as the largest ever corporate failure in September 2008 (Markose et al. 2010, 3).

As the scheme is deemed to fail at some point, the later investors would have less incentive to participate, because the possibility that they lose invested money increases with each new
round. But, when there is a possibility of government bailout, the incentives are opposite. Bhattacharya (2003, 4) argues in his model, that “If the agents correctly believe in the possibility of partial bailout when a gigantic Ponzi scheme collapses, and they recognize that a bailout is tantamount to a redistribution of wealth from non-participants to participants, it may be rational for agents to participate, even if they know that it is the last round.”

However, the question was how to impel government to intervene and bail out Ponzi participants? And here comes the creativity of the high finance art to expression. The Credit Default Swaps assured that the government has no choice but to bail them out. By making use of these contracts, financial firms increased interconnectedness in the market. It is not surprising anymore that the notional amount of CDS contracts grew from a notional value of around $630 billion in the second half of 2001 to $58 trillion in 2008, when it peaked (Commodity Futures Trading Commission, 2010). In addition, concentration of CDS market also increased. The fact that top 25 U.S. banks involved in CDS activity account for $16 trillion of 34 trillion gross national value of CDSs emphasize the too-interconnected-to-fail problem. The large financial firms developed the strategy: Either the entire system is going down or each one will be rescued. Their motto has become: *Unus pro omnibus, omnes pro uno*.²

Finally, we conclude that bailing out citizens who have lost their money in Ponzi scheme denote the compensation for peoples’ foolish decisions and frivolity. It represents the pure moral hazard that institutionalizes foolish behavior. Besides, since the scheme is really a cynical exploitation of the “too big to fail” doctrine by those who usurp the powers of the state, bailouts certainly encourage such people.

5.3 THE BUST

In 2006–2007, the bubble warnings finally proved to be correct and it has become evident that the global system of mortgage finance had become overextended, and that the risks associated with mortgage-backed securities and their derivatives were underpriced. Given the high bank holdings of mortgage-backed securities, financed with a capital structure heavily on short-term debt, the crisis had a certain degree of inevitability (Diamond and Rajan 2009). As the housing prices began to fall for the first time in more than a decade, the subprime mortgage defaults increased as well. Refinancing to ease borrower cash-flow problems was no longer possible, because the asset values of the houses supporting the mortgages were in many cases less than the values of the outstanding mortgages. This represented the beginning of the liquidity crisis.

As a result of these large price deteriorations, average U.S. home prices fell between 2006 and 2008 by about 18 percent, the costs of insuring against default increased. In consequence to

² "*Unus pro omnibus, omnes pro uno*" is a Latin phrase that means "One for all, all for one"
these dramatic developments, in July 2007, major U.S. home loan lenders announced drop of earnings and an index from the National Association of Home Builders disclosed that new home sales had declined 6.6 percent year-on-year. Also the largest U.S. homebuilder reported a loss in that quarter.

As a result the rating agencies downgraded several tranches related to subprime mortgage market causing a further deterioration of the prices of mortgage-related products, uncertainty, loss of confidence and fear in the credit markets (Brunnenmeier 2008). This introduced problems in valuation of structured products and an erosion of confidence in the reliability of ratings. As a result the market for short-term asset-backed commercial paper began to dry up. The entire money market was experiencing difficulties that set financial institutions under the pressure to roll-over their financing. A variety of market signals showed that money market participants had become reluctant to lend to each other. For example, the average quoted interest rate on ABCP jumped from 5.39 percent to 6.14 percent between 8 and 10 of August 2007. Also the spread (TED spread) between the risky LIBOR rate, which is interbank rate for short term unsecured loans, and the risk-free U.S. Treasury bill rate rose further signaling the loss of confidence. Also the spread between the repo rates one has to pay using mortgage-backed securities as collateral compared to the repo rate using Treasury bonds as collateral (MBS-GC repo spread) widened. As a result funding costs increased further and created necessity for financial institutions to provide more collateral for their liabilities. Therefore, they were forced to liquidate long term assets what led to fire sales depressing the prices further.

The EU and US central banks responded by injecting capital into the interbank market in order to ease liquidity shortages, but they also cut the discount rate and broadened the type of collateral that banks could post. It became clear that an earlier estimate of the total loss in the mortgage markets, around $200 billion, had to be revised upward as banks were required to take additional, larger write downs.

The primary worry of the investment community in January and early February 2008 was the potential downgrading of monoline insurers. Because the complex structured products was designed to only just meet AAA rating standards, even small changes in risk would decrease the credit ratings of most mortgage-backed securities (Congleton 2009). This change would have had substantial repercussions, as the downgrade of hundreds of municipal bonds, corporate bonds, and structured products with a face value of $2.4 trillion would have led to severe sell-off of these securities. On January 19 2008, the rating agency Fitch downgraded one of the monoline insurers, Ambac, disrupting worldwide financial markets. Share prices dropped sharply worldwide. Emerging markets in Asia lost about 15 percent, and Japanese and European markets were down around 5 percent. Dow Jones and NASDAQ futures were down 5 to 6 percent, indicating a large drop in the U.S. equity market.
5.3.1 Bear Sterns

As of the beginning of March 2008, the investment bank Bear Stern came under the pressure. First, the credit spreads between agency bonds (issued by Freddie Mac and Fannie Mae) and Treasury bonds widen again. This afflicted Carlyle Capital, an Amsterdam-listed hedge fund, which was heavily invested in agency bonds. Because Carlyle was not able to meet margin calls, its collateral assets were seized and partially liquidated. As a result agency bonds price was depressed further. This affected Bear Stern not only because it held large amount of agency paper on its own, but also because it was one of the Carlyle’s creditors.

The second problem for Bear Stern came after the Federal Reserve announced $200 billion Term Securities Lending Facility on March 11th 2008. This program allowed investment banks to exchange troubled agency and other mortgage related securities for Treasury bonds. As the participants of this program were to be kept secret, market participants perceived it as a signal that the Fed knew that some investment bank might be in difficulty. They pointed out Bear Stern, the smallest, most leveraged investment bank with large mortgage exposure.

The fact that Bear Stearns had 150 million trades among different counterparties contributed to its consideration as being too interconnected to fail. As a result the Federal Reserve Bank of New York had to find a buyer that would help minimize counterparty credit risk. The outcome was that JPMorgan Chase has acquired Bear Stearns for $236 million, or $2 per share. The price was extremely low compared to Bear Stearns share price of $150 less than a year before. The New York Fed also agreed to grant a $30 billion loan to JPMorgan Chase. The deal was valued positively for JPMorgan Chase and its shares gained 2.7 percent the Monday after the deal was announced. However, under the deal, Bear Stearns’s equity-holders lost almost everything, while its debt-holders did not lose anything. Since the deal encountered political opposition and the hostility among many equity-holders was questioned, JPMorgan Chase decided to increase its offer to $10 per share and also agreed to assume the first $1 billion in losses from the loan. Another positive event was that the Fed opened the discount window to investment banks for the first time, via the new Primary Dealer Credit Facility (PDCF), an overnight funding facility for investment banks. The financial community thought that once and for all the liquidity problems of the other investment banks, including Lehman Brothers, had been solved and that they can breathe again.

However, in the following months, mortgage delinquency rates continued to increase amplifying problems in the mortgage market. By mid-June 2008, the interest rate spread between agency bonds of the government-sponsored enterprises Fannie Mae and Freddie Mac and Treasury bonds had widened again signaling further uncertainty and flight to safety. At that time Fannie Mae and Freddie Mac were two publicly traded and government sponsored institutions, which securitized a large fraction of U.S. mortgages and had about $1.5 trillion in bonds outstanding. Following the conservatorship of IndyMac, a large private mortgage

36
broker, that was announced on Friday, July 11, problems at Fannie and Freddie escalated, prompting Treasury Secretary Henry Paulson on the evening of Sunday, July 13, to announce plans to make their implicit government guarantee explicit. Despite this support, the stock prices of Fannie and Freddie tumbled further in the subsequent weeks, ultimately forcing government officials to declare their conservatorship on September 7. This measure represented a credit event for a large number of outstanding credit default swaps, triggering large payments.

5.3.2 Lehman Brothers

Although Lehman Brothers unlike Bear Stearns had survived the events of March 2008, this was only for a short period of time. Even though it made heavy use of the Fed’s new Primary Dealer Credit Facility, Lehman Brothers did not issue enough new securities to strengthen its balance sheet. This is because Lehman was afraid that the new issue would signal that it is in desperate position and it would dilute the position of previous investors.

The dramatic share price plunge came after the state-controlled Korea Development Bank had announced that it would not buy the firm. As a result of these negative developments, Timothy Geithner, president of the Federal Reserve Bank of New York, convened a weekend meeting with all major banks’ most senior executives on September 12-14 to secure Lehman’s future. The outcome was that Barclays and Bank of America were named as potential buyers. However, they agreed to take over Lehman only with a government guarantee. Eventually, Treasury and Fed officials decided not to offer a guarantee funded by taxpayers because Lehman Brothers, its clients and counterparties had enough time to prepare for the liquidity shortage. This was a clear sign that the government officials would not bail them out and consequently Lehman was forced to declare bankruptcy. In the mean time, as Merrill Lynch had known that they are the next weakest link, it announced that it sold itself to Bank of America for $50 billion.

The contagion effects of Lehman bankruptcy came as a result of its interconnectedness, because it had counterparties all across the globe. First, the failure has caused many money market funds to suffered losses. Some “broke the buck”, meaning that their share price dropped below $1, while others supported their funds via cash injections. To prevent a run on money market funds, the U.S. Treasury set aside $80 billion to guarantee brokers’ money market funds. Second, the consequence of Lehman’s bankruptcy was that the price for credit default insurance soared as each financial institution tried to protect itself against counterparty credit risk – that is, the risk that other banks would default. This has led to increase of the borrowing costs, what only amplified the liquidity problems. Third, financial non asset-backed commercial paper suffered a sharp fall, which prompted the Fed to introduce the Commercial Paper Funding Facility.
As it can be seen credit markets deteriorated significantly. Washington Mutual suffered a “silent” bank run as customers and fund managers withdrew funds electronically. As a result Washington Mutual was placed in receivership by the FDIC, and soon afterwards sold to JPMorgan Chase. The FDIC also prompted Wachovia to announce selling of its banking operation to Citibank on September 29. However after a bidding contest, Wachovia was ultimately bought by Wells Fargo.

In this short period of time stock market lost about $8 trillion in the year after its peak in October 2007. But what is more important is that the Wall Street’s problems spilled over to Main Street. The consequence was that the credit for firms and local and state governments tightened, affecting the global economy. It became obvious that a proactive, coordinated action across all solvent banks had to be introduced. This resulted in the announcement on September 19th 2008, that the Treasury Secretary would propose a $700 billion bailout plan, which included foreclosure-mitigation elements for homeowners, provisions to purchase troubled mortgage assets, and a coordinated forced recapitalization of banks. The Fed was enabled to buy commercial paper and almost any type of asset-backed security and agency paper. As a result its balance sheet roughly doubled from about $1.2 trillion in November 2007 to about $2.3 trillion in December 2008 (Brunnenmeier 2008). On December 16th 2008 the Fed set its target interest rate range between zero and a quarter percent.

5.3.3 AIG

The AIG just like many other financial institutions invested heavily in subprime mortgages by using its non-insurance operations. AIG is a huge, global financial services holding company with more than $1 trillion in assets that does business in 130 countries and has 116,000 employees and 74 million customers. It is the largest commercial and industrial insurance company in the U.S. and one of U.S.’s and the world’s largest life insurance company.

The subsidiary AIG Financial Products (AIGFP), a non-insurance company, was the primary source of AIG’s problems. Mainly in the period 2003-2005 AIG Financial Products was the main net seller of CDS protection of AAA-rated CDO tranches (ECB 2009). In an interview with the New York Times, Governor Paterson called CDSs “gambling” and appointed them as a major cause of AIG’s problems. However, AIG’s Financial Products Division wasn’t even regulated although the OTS was in fact responsible for looking at the activities in this unit.

The business model of AIGFP led to concerns regarding financial stability for two main reasons. First, as it was main seller of CDS protection, AIGFP was exposed only in one direction absorbing too much risk in derivative market. This banking subsidiary of the insurance conglomerate wrote CDS, derivative and future contracts with a notional value of around $2.7 trillion, including around $440 billion of credit default swaps. Second, these
exposures were not collateralized as it was not obligated to present any guarantee for the credit protection provided. Its ability to keep the promise to deliver in case of a credit event was mainly based on its AAA rating as the sole and unconditional guarantor.

AIG’s crisis resulted from the enormous sums of liquidity required to meet collateral calls triggered by one of the following three events: A rating agency downgrade of the company; a rating agency downgrade of the underlying CDO; or a reduction in the market value of the underlying CDO (Testimony Polakoff 2009, 18).

When the AIG was forced to adjust the value of its securities to the current market price, it had to announce losses that kept growing. AIG disclosed large losses amounting $13 billion for the fourth quarter of 2007 and the first quarter of 2008 owing to write-downs and losses related to US sub-prime mortgage market exposures (ECB 2008). As a result of enormous losses announcements AIG was requested to post more collateral as investors become concerned about whether the company is capable of dealing with its problems.

On 15 September 2008 it came to the turning point when S&P decided to downgrade AIG’s long-term debt rating by three notches, and both Moody’s and Fitch Ratings downgraded AIG’s long-term debt rating by two notches. Following the rating downgrades, AIG Financial Products had to fund approximately $32 billion of collateral calls, reflecting not only the effect of the downgrades, but also changes in market values and other factors (ECB 2009).

AIG’s security lending program lent securities from the State insurance companies to third parties who provided cash collateral in return. Because the cash collateral was invested in residential mortgage-backed securities, sharp declines in their value created unprecedented liquidity pressure for the company, when it had to return cash collateral to the counterparty (Testimony Polakoff 2009). Between 12th and 30th of September 2008, borrowers demanded the return of around $24 billion in cash.

The credit rating downgrade deteriorated not only AIG’s liquidity position, but also its credit position regarding the firm’s need to raise capital in a strained liquidity environment. This combination of factors led to a liquidity drain which prompted the US Treasury to intervene. Prior to the bailout of AIG, Chairman Bernanke said: “We are not doing this to bail out AIG or their shareholders certainly. We are doing this to protect our financial system and to avoid a much more severe crisis in our global economy. We know that the failure of major financial firms can be disastrous for the economy. We really had no choice” (Testimony Ario 2009, 19).

After the government rescue, the American tax payers became owners of 80 percent of the company (Testimony Garrett 2009). While the current cost to the US taxpayer of the AIG bailout stands at $180 billion the initial $85 billion payment to AIG was geared toward
honoring its CDS obligations totaling over $66.2 billion. These include payouts to Goldman Sachs $12.9 billion, Merrill Lynch $6.8 billion, Bank of America $5.2 billion, Citigroup $2.3 billion, and Wachovia $1.5 billion. Foreign banks were also beneficiaries including Societe Generale of France and Deutsche Bank of Germany, which each received nearly $12 billion; Barclays of Britain $8.5 billion; and UBS of Switzerland $5 billion (Markose et al. 2010).

Short after the rescue of AIG, its management approved $93.3 million bonus compensation. They had contracts by which they were rewarded for any gain the company generated, but when the company made losses, that had limited effects on bonus pool. Rewarded with bonuses were also the members of the very Financial Products Division that contributed to AIG’s demise. Afterwards there is a rage because the taxpayer knows that they are the ultimate sucker on the list of who pays for all of the greed that has been going on in the marketplace for years and years (Testimony Ackerman 2009).

6 FINANCIAL CRISIS (2008- ) – THE BAILOUT OF THE FINANCIAL SYSTEM

The financial crisis has caused governments and central banks around the world to spend more than $11 trillion to support the financial sector and about $6 trillion for fiscal stimulus programs (Wilmarth 2010). The greatest financial support and economic stimulus programs have been applied by the U.S., the U.K., and other EU nations, where the financial crisis has caused the greatest harm. The U.S. provided about $6 trillion to support and strengthen its domestic financial sector. In addition, the U.S. Congress passed an $825 billion economic stimulus bill in 2009. Similar programs have also been adopted by other nations. All these programs and stimuli massively transferred resources from the taxpayers to the banking sector with the goal to restore confidence to the financial system (Veronesi and Zingales 2010). Federal banking regulators responded on an ad hoc basis and have employed a TBTF policy to prevent what Federal Reserve Chairman Ben Bernanke saw as potential for the “second Great Depression” (Graham 2010).

This financial support has been characterized and usually criticized as bailout, which refers to transfers from the government, made to private firms (sometimes also other governments) or their creditors aiming to avert insolvency or mitigate its effects (Green 2010). The latest bailout of the financial system includes assisted transactions that involve several TBTF entities. On March 16th 2008, investment bank Bear Stearns was purchased by JP Morgan Chase in a federally brokered transaction. On July 11th the same year major subprime lender IndyMac was placed in conservatorship, with deposits and assets later sold at a discount to OneWest Bank, FSB. Government Sponsored Entities (GSEs) Fannie Mae and Freddie Mac were placed in conservatorship by the Federal Housing Finance Agency on September 7. AIG received assistance in exchange for government ownership of equity stake on September 17,
two days after Lehman Brothers’s similar requests were denied and Lehman forced into bankruptcy. One-time fourth-largest U.S. bank Wachovia heavily involved in subprime lending was purchased by Wells Fargo on October 10, after initially being approved as an assisted purchase by Citigroup. Investment bank Merrill Lynch was acquired by Bank of America in a deal announced on September 15th 2008, and closed at year-end 2008, later yielding litigation over executive bonuses paid to Merrill executives and not disclosed to Bank of America shareholders. Once the world’s largest financial institution by market value Citigroup received repeated bailouts during autumn 2008 and spring 2009.

Following the collapse of Lehman Brothers and the full violence of the financial crisis, which erupted in mid-September 2008, governments in virtually all advanced industrial economies have stepped in to provide support to banks and financial institutions. Beside standalone actions directed at individual distressed institutions, they began introducing more system-wide measures or even multi-program packages (Panetta et al. 2009). The managing of the crisis introduced reinforcement of deposit insurance to help prevent bank runs – deposit insurance was raised from $100,000 to $250,000 per depositor, capital injections to strengthen banks’ capital base, explicit guarantees on liabilities to help banks retain access to wholesale funding, and purchases or guarantees of impaired assets to help reduce the exposure of banks to large losses in their asset portfolios.

The timeline of both system-wide support programs and bank-specific standalone actions can be divided into five distinct phases (Panetta et al. 2009). Phase one in September 2008 included standalone support actions for large institutions such as AIG in US, Fortis and Dexia in Europe. Phase two (1–16 October 2008) introduced comprehensive support packages which involved some combination of recapitalizations, debt guarantees and asset purchases. Phase three (November–December 2008) was characterized by fewer programs and more standalone actions when further problems for AIG and Citigroup emerged. Phase four (January–April 2009) introduced new packages with more emphasis on the assets side. The new US administration announced the Financial Stability Plan on 10 February, which outlined a new capital injection program (Capital Assistance Program – CAP) and a legacy asset purchase program (Public-Private Investment Program – PPIP). Phase five (May–10 June 2009) denoted exiting the crisis for some, just getting started for others. U.S. regulators released the results of the stress test, which required 10 institutions to raise a total of $74.6 billion in capital. On the other hand, the improved conditions of equity market allowed number of institutions to raise a substantial amount of equity from the market and to repay funds previously received.

In contrast to these government-assisted transactions involving TBTF entities, banking regulators refused to rescue some other entities that appeared to be TBTF (Graham 2010). First such example is the Lehman Brothers, one of the five largest U.S. investment banks filed
for bankruptcy on September 15th 2008, which has been the largest Chapter 11 bankruptcy filing in U.S. history. Second include Washington Mutual, another giant financial institution that was closed by the Office of Thrift Supervision (OTS) on September 25th 2008, after a failed attempt to get a bailout. Its assets were subsequently sold by the FDIC as Receiver to JP Morgan Chase. This category also includes CIT Group, the nation’s largest small business lender, which may demonstrate the break point for “not too big to fail”. All these examples illustrate the arbitrary nature of TBTF and the market uncertainty regarding the institutions that are to bail or not to bail (McKinley and Gegenheimer 2009).

In addition to the open market operations, the Fed also provided liquidity by lending to individual banks through its discount window. Discount lending provides support to particular banks with a need for liquidity and it is collateralized by using a broader range of assets. In its response to worsening financial conditions, the Fed announced on August 10th 2007, a 50 basis point cut in discount rate. Banks hesitated to use discount borrowing because it signals to the market that they have liquidity problems. Therefore, the Fed introduced new method for providing liquidity, the Term Auction Facility (TAF) (Jickling 2008). Since December 2007, TAF has conducted a series of auctions of short-term loans to banks for period of 28 to 35 days. The initial amount of funds provided was $40 billion, but in the end of October 2008 the total amount of loans outstanding was about $200 billion. In November, completed and planed auctions totaled $600 billion. Besides, the Fed also took very unusual step on March 11th 2008. It expanded access to the discount window to primary dealers in U.S. Treasury Securities that include large securities firms, which the Fed did not regulate.

Although there are few exceptions, the TBTF policy has been the major force driving each bailout listed above. These facts about TBTF costs prove that the bailout philosophy has grown to “unprecedented scope, scale, and complexity” (SIGTARP 2009, 3). Therefore, maintaining the status quo with regard to TBTF is unacceptable. The substantial costs that it causes are the burden for taxpayers and simply cannot be afforded.

6.1 RECAPITALIZATIONS

In order to improve capital base of banks and other financial institutions governments injected capital in the form of common shares, preferred shares, warrants, subordinated debt, mandatory convertible notes or silent participations (Panetta et al. 2009). The aim of the infusions was to increase their capacity to absorb further losses, strengthen protection for banks’ creditors, but it also contributed to reducing the cost of financing on debt markets. By relieving balance sheet constraints, capital injections have also sustained banks capacity to lend. The disadvantages are dilution of shareholders rights and depression of stock prices.
As of June 2009 the US introduced recapitalization program (Capital Assistance Program – CAP), which introduced support mainly for banks and credit institutions in need of additional capital that are not able to raise it from private sources.

In addition to recapitalization programs, there were also recapitalization stand alone actions. They have been taken in favor of AIG, Citigroup and Bank of America, in addition to the government-sponsored agencies Fannie Mae and Freddie Mac in early September 2008. There were three rounds of interventions only for AIG. On 16\textsuperscript{th} September 2008, the day after the Lehman bankruptcy, the Federal Reserve Bank of New York provided the company an $85 billion 24-month credit facility. In return, the US government received a 79.9 percent of AIG’s equity capital. In the second intervention in November 2008 AIG received a $40 billion investment by the Treasury in new preferred shares and two asset purchases (see below). In return, the original credit facility was reduced to $60 billion, but with better terms. In the third intervention in March 2009, the $40 billion preferred shares issued in November were converted to new preferred shares that more closely resemble common shares and a new equity capital facility of up to $30 billion was introduced.

Following the receipt of $25 billion each under the CCP, both Citigroup and Bank of America were granted $20 billion capital injection in November 2008 and January 2009, respectively. The Treasury invested these funds under the so-called Targeted Investment Program (TARP) and the action also included asset guarantees for both companies.

Standalone recapitalization actions have also taken place in the Europe. UBS received a CHF 6 billion injection. France participated in a concerted intervention with Belgium and Luxembourg to support Dexia, which totaled €6.4 billion. The Netherlands intervened, also with Belgium and Luxembourg, in Fortis, a Benelux insurance-banking group. The injection in common equity amounted €11.2 billion. The capital injection of the Dutch state was later replaced with the complete purchase of all of Fortis’s Dutch operations (both banking and insurance) for €16.8 billion.

### 6.2 DEBT GUARANTEES

Explicit guarantees against default on bank debt and other non-deposit liabilities have been also provided by governments. By giving access to medium-term funding at reasonable costs, allowing alternative ways of funding through securitization and decreasing credit spreads, governments reduced liquidity risk and overall borrowing costs (Panetta et al. 2009).

The debt guarantee programs were adopted by almost all advanced economies. The size of the programs is usually predetermined with limits set for each participant on how much debt it can issue under guarantee. The US has agreed to guarantee up to the $2,250bn of foreign and
domestic banks’ debt, Germany €400bn, France €265bn and Great Britain £250bn, just to name the largest guarantees programs.

We also sow two standalone debt guarantee actions. The first has been taken in favor of Dexia (France, in concert with Belgium and Luxembourg), which guarantees up to €150 billion of its senior unsecured non-complex debt, including money market transactions. The second one for Hypo Real Estate (Germany) included a state guarantee of €20 billion and a SoFFin\(^3\)-guaranteed HRE note of €15 billion eligible for Euro-system refinancing. The aim was to support these troubled institutions.

6.3 ASSET PURCHASES OR GUARANTEES

By purchases or guarantees of assets governments take over part or all risk of a portfolio that consists of distressed or illiquid assets. Asset guarantees remove the downside risk of insured portfolios from banks’ balance sheets and asset purchases improve bank liquidity (Panetta et al. 2009).

The measure of assets purchases has not been widely adopted. More countries have engaged in asset purchases from selected mortgage or housing-related credit markets in order to support market-based (as opposed to bank-based) credit extension. These include purchase of GSE guaranteed MBS by US Treasury, FED financed Commercial Paper Funding Facility. Also the US Term Asset-Backed Securities Loan Facility (TALF) aimed at restoring the securitization market for consumer credit.

Almost all asset purchase programs and stand alone actions have included real estate assets. The first legacy asset purchase plan to be announced was the US Troubled Asset Relief Program (TARP) on October 3 2008, but it has subsequently been used more as a recapitalization fund. A true U.S. asset purchase program did not emerge until the announcement of the Public-Private Investment Program (PPIP) in February 2009. The PPIP was intended to free banks’ balance sheet from the troubled assets and thus to reduce their exposure to the market risk and hence financial stability. It has two components: the Legacy Loan Program (LLP) and the Legacy Securities Program (LSP). Purchases has been financed 50-50 by private and public capital. This fund has purchased or insured about $500bn.

The first asset purchase in the U.S. was from AIG via two Federal Reserve-financed limited liability companies (LLCs), Maiden Lane II and III. The former is for purchasing up to $22.5 billion of RMBSs from AIG’s securities lending collateral portfolio. The latter is for purchasing up to $30 billion of CDOs on which AIG Financial Products had written CDS contracts. The Federal Reserve Bank of New York (FRBNY) provided financing to the LLCs.

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\(^3\) The SoFFin (Sonderfonds Finanzmarktstabilisierung) was adopted on October 17 2008 under the German Financial Market Stabilization Act. It was adopted by the “Bundestag” and the “Bundesrat” and signed by the President on the same day in an emergency procedure.
with a six-year loan, while AIG provided $6 billion in subordinated loans as capital to cover the first loss. The LLCs pay interest to the FRBNY on the loans. AIG can share in residual cash flows after the loans are repaid. The first tranche of CDOs – $20.1 billion – was bought in November 2008, while $20.8 billion of RMBS were bought one month later.

There have also been guarantees of assets related to real estate. The US Treasury and the FDIC provided protection to Citigroup against large losses on $301 billion in real estate and other illiquid assets. In January 2009, a similar package was offered to Bank of America (BoA). The insurance element covers a $118 billion portfolio of real estate assets and derivatives that BoA had acquired from Merrill Lynch.

Outside of the US, the measure of asset guarantees has been conducted in the UK, where under Asset Protection Scheme (APS) £325 billion of RBS assets and £260 billion of Lloyds Banking Group have been insured. Further, Netherlands has guaranteed 80 percent of the risk from a $35.1 billion portfolio of Alt-A mortgage securities at ING Direct USA and ING Insurance Americas. In addition, France extended a guarantee with Belgium to cover a $16.98 billion asset portfolio of Financial Security Assurance (FSA), a US monoline insurer and a subsidiary of Dexia SA.

Although these measures maybe have helped restoring market stability and confidence in short-run, they caused massive fiscal costs and their long-run repercussions are to be seen. TBTF coverage is extremely costly because it leads to a wasting of resources and a reduction in the welfare of the citizenry (Stern and Feldman 2004). However, the costs of too big to fail should not focus only on fiscal and accounting costs of a government-financed bailout, although these represent substantial part of wasted resources. The wasted resources also arise as an indirect effect of TBTF policy and can be referred to as its economic costs. They are reflected in the tendency of TBTF banks to take on too much risk, which can be classified as wasted investments or costs of lost output. Furthermore banks expecting government guarantee are more likely to operate inefficiently than those without such protection. All the costs of a bailout, additional risk taking and reduced efficiency represent poor allocation of resources that lead to additional amplification of the underlying imbalances and introduce even greater instability.

7 WHY TO INTERVENE? – SYSTEMIC RISK

By deciding to intervene, policymakers as rational and systematical decision makers, believe that the benefits of such support outweigh the costs, or that the consequences of a lack of support cannot simply be tolerated at any costs. In their decision to intervene the regulators and policymakers are guided by three major sets of incentives (Stern and Feldman 2004). First, they intervene to rescue a large financial institution because of the possibility that their
failure can spill over and have negative implications for other financial institutions, for the stability of the entire financial system and, given the special role of the financial sector to the real economy, this failure may have substantial adverse effects on macroeconomic stability. Second, policymakers may intervene on the basis of some personal reasons, such as maximization of personal welfare, through advance in career or other sort of gains. And finally, they may view government influence over the economy and central planning as a long-term welfare of the society.

Although all three sets of incentives play at least some role in explaining large bank creditors protection, intervention is mostly justified by prevention of spillovers, which may lead to a systemic crisis that poses enormous risk to the economy. The fear of systemic crisis prompts regulators and their governments to, at least temporarily, support systemically important companies. The notion of systemic risk was designated through the Federal Deposit Insurance Corporation Improvement Act (FDICIA), which aimed to put an end to “too big to fail” doctrine by introducing least cost resolution. However, the big exception for systemic risk meant that the compliance with the least cost test would have serious adverse effects on economic conditions or financial stability (Graham 2010). But, the law has not provided clear definition of adverse effects on economic condition nor financial stability or guidelines for its measuring.

Even today, when it has become clear that in the present crisis the exception for systemic risk has completely displaced the least cost resolution, there is, however, no generally accepted definition of systemic risk (Summer 2003; Schwarcz 2008). In the literature systemic risk is used to describe several different phenomena, such as crisis related to the payment and settlement system, bank runs and panics, spillover effect between individual firms and financial markets up to the financial driven macroeconomic crisis.

However, finding a clear and widely accepted definition of systemic risk is the important task for everyone interested in reducing government bailouts. Only such a definition would set boundaries and limits on bailouts. Those financial institutions that not satisfy criteria set by the definition would not be rescued. In that case firms and their creditors could not blame systemic risk just to get government funds. If the definition is precise and restrictive and if the policy makers stick to it credibly there would be less rescue actions (Taylor 2009). Accordingly there would be less confusion after a systemic event and also the moral hazard problem would be of much less importance. Otherwise the term is only used to scare the people and their governments retaining or even fueling bailout mentality. Kaufman and Scott (2003) compare it to “the fear of a cry of fire in a crowded theater”.

Anyhow, systemic risk has been understood as the basic concept for the study of financial instability and possible policy responses (De Bandt and Hartmann 2000). Without proper analysis of systemic risk financial crises could not be comprehensively analyzed and therefore
appropriate policymaker responses in form of financial regulation, prudential supervision and crisis management could not be found.

In this regard, financial sector consolidation report by the Group of Ten (2001) defines systemic risk as “the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainty about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects on the real economy.”

Some argue that even damage to the real sector is not sufficient for an episode to qualify as systemic. In this regard, systemic risk represents the movement from one stable, positive to another stable, but negative equilibrium for the economy and financial system. By this view systemic risk is stabilizing natural shift that allows an economy to transition to an inferior but stable equilibrium (Kambhu et al. 2007). Accordingly the systemic risk would be the result of problems that can build up over an extended period of time before a crisis occurs (De Band and Hartmann 2000). It is only the effect of a more fundamental underlying problem, which has been hidden from policymakers or the general public for some time.

An exogenous change in the economic environment, such as the change of the regulatory framework and policies that encourage homeownership, leads to new profit opportunities in certain assets that attract capital (structured financial products backed by mortgages), and if the investments in these assets are excessive, it leads to an asset price bubble, which is vulnerable to a change in investor confidence. This results in stock market prices to stay overvalued for an extended period until specific news that represent systemic event make the bubble burst and trigger the collapse of asset prices. There is a risk of a broader contraction if the normal self-correcting features of markets fail to work. Absent those self-corrections, the flight to quality by investors seeking safe assets could become a self-sustaining transition to a state with lower levels of credit and real economic activity.

Therefore, it can be concluded that the systemic crisis occurs as a result of some fundamental imbalances that build up over an extended period of time until an event, characterized as systemic, triggers loss of economic value and confidence, which propagates to the system, severally impairing the whole economy. According to this concept, systemic risk includes three components: large triggering event, propagation mechanism, and macroeconomic effects (Taylor 2009).

7.1 TRIGGERING EVENT

The first concept for defining systemic event consider it as a macro shock that exercise almost simultaneous, broad, adverse effect on entire system and overall economy. Thus, systemic refers to “an event having effects on the entire banking, financial, or economic system, rather than just one or a few institutions” (Bartholomew and Whalen 1995, 4). However, this
definition of systemic event can be qualified as political because it legitimates the intervention of central banks (Loretan 1996). Systemic event cannot be simplified as event that is too big to be absorbed by market participants alone and require intervention from outside the system in order to be resolved.

Generally, three sources of systemic event can be distinguished (Taylor 2009). First, triggering events can come from public sector in a situation when the central bank suddenly contracts liquidity. Second, it can be an external shock, such as a natural disaster or terrorist attack. And third, systemic event is produced by the financial markets themselves, such as the failure of large financial firm or large asset price fluctuation.

Based on the type of the risk that affects financial markets initial shock can emanate from idiosyncratic or systematic risk (De Bandt and Hartmann 2000). The main difference between these two is in the range and the intensity of the impact on others. The idiosyncratic shocks are specific to an individual firm or industry and can be solved by diversification. They affect a very specific group of securities or an individual security. An example of an idiosyncratic shock to a national financial system is the failure of a single regional bank due to internal fraud. On the other hand systematic risks affect several institutions or markets simultaneously and usually have adverse effects on a system as whole or on overall economy. These risks, which are inherent to the aggregate market or entire market segment, are also called market or un-diversifiable risks, because they can be mitigated only by being hedged. Examples here are wars, recession, cyclical movements, interest rates movements, energy prices fluctuations etc.

As a result of an idiosyncratic shock one institution might fail or not, but if it fails, it does not mean that it is a systemic event, because there are no implications for the system and thus lacking systemic element. In order to gain attention as systemic event, the failure of the institution needs to exercise pressure on some other single institution or market, several different institutions or markets, or system as a whole. If those infected in the second round also fail as a result, even so otherwise it/they would be perfectly solvent, only then we can speak of a systemic event. In that case the systemic event could be qualified as contagion. On the other hand, if the systemic event has systematic nature, than a considerable number of financial institutions or markets are simultaneously affected by a common source, meaning that those institutions fail and/or those markets crash, which would otherwise, ex ante, be stable.

Both idiosyncratic shocks that risk causing contagion and aggregate (systematic) shocks that have coincidental destabilization effects are systemic events, which perfect separation is the situation exclusively represented in the theory. In practice they are commonly strongly intertwined. Macroeconomic downturns might impair financial institutions, making contagion of single failures more likely. Equally, it might be necessary for contagion effect to actualize that several financial institution are weakened.
In the current crisis there is considerable debate about which event might be characterized as systemic. Taylor (2009) considers a series of government actions and interventions as the most plausible triggering event, including a monetary policy that kept interest rates too low for too long and an *ad hoc* bailout policy that led to fear and panic. But others point to the failure of certain markets, such as the collapse of the asset-backed commercial paper market in July and August 2007, or failure of private financial institutions, most commonly Lehman Brothers, as the main triggering event (ECB 2010b).

### 7.2 PROPAGATION MECHANISM

Propagation mechanism explains the transmission of an initial shock from one institution, segment, market, or part of a system to the other. It explains the way by which negative effects of an initial shock may spill over to cause a wide systemic crisis. De Bandt and Hartmann (2000) distinguish between the exposure channel and information channel. The former constitutes the potential for “domino effects” through real exposures in the interbank markets and/or in payment systems. The information channel relates to contagion as a result of imperfectly informed participants about the type of shock hitting financial institutions (idiosyncratic or systematic) and about their physical exposures to each other (asymmetric information).

The similar classification of propagation mechanisms by which a triggering event could cause an economy-wide collapse is also given by Helwege (2010). He focused on two types of contagion that might lead to systemic risk problems: (1) counterparty contagion, where one important financial institution’s collapse leads directly to troubles at other creditor firms whose troubles snowball and drive other firms into distress; or (2) information contagion, where the information that one financial firm is troubled is associated with negative shocks at other financial institutions largely because the firms share common risk factors.

#### 7.2.1 Counterparty contagion

In the case of counterparty contagion, the initial institution gets into trouble and the other institutions become distressed as a result. In order that the initial firm losses or its failure starts a cascade of additional failures, the strong direct interconnections and linkages between institutions and/or markets are required (Kaufmann and Scott 2003). If the first domino fails, there is a danger that it will fail on others, causing them also to fail provoking a chain reaction. This happens “through the direct financial exposures which tie firms together like mountaineers, so that if one falls off the rock face others are pulled off too” (George E. A. J. 1998).

However, a failure of one bank could only cause the financial distress of other banks and therefore a systemic crisis under a number of conditions (Helwege 2010). First, the initial
bank must be large enough, and hence TBTF. Second, it must have experienced a large decline in the value of its assets, meaning that the losses imposed on others are substantial. Third, the losses imposed on creditors must be a large fraction of their assets, so to bring down the next bank in the chain. This implies that the creditors of this large bank are quite undiversified, what is at odds with bank regulations and good business practices. And finally, the crisis has to originate at the initial bank, as a consequence of distress by something idiosyncratic in its nature. Therefore, only the banks that have strong ties to the initial bank are likely to be distress. Other banks that are not creditors of the initial bank will not require assistance.

The empirical evidence whether the domino effect will take place or not are quite limited as regulators rarely abandoned TBTF policy. In this regard, good example of “chain reaction” systemic risk represents AIG, but in this case the government decided to bail it out. However, certainly there was the fear that AIG would default on its CDS and securities lending contracts with a number of major U.S. and foreign large connected financial institutions (Wilmarth 2010). Similarly, on March 24 2009, in testifying to the Committee on Financial Services of the House of Representatives about the bailout of AIG, Bernanke said:

“…it was well known in the market that many major financial institutions had large exposures to AIG. Its failure would likely have led financial market participants to pull back even more from commercial and investment banks, and those institutions perceived as weaker would have faced escalating pressure… it is unlikely that the failure of additional major firms could have been prevented in the wake of the failure of AIG… its failure could have resulted in a 1930s-style global financial and economic meltdown…”

The solely representative case related to the counterparty risk, when the actual effects may be observed, seems to be the failure of Lehman Brothers. There is a wide accepted opinion that Lehman’s collapse caused disaster in the financial markets, but if it did the mechanism by which it spread through the system was not through Lehman’s counterparties (Helwege 2010). When the Lehman filed for bankruptcy at the holding company level, it had $600 billion in liabilities and its creditors received pennies on the dollar, indicating that the impact on creditor firm could be enormous. However, its largest single creditor, Aozora Bank, estimated its loss at only $25 million, because the bank had offset much of the exposure. Measured in the percentage of the market value equity, the largest exposure is only 2.39 percent, which signals that financial companies diversified their portfolios.

7.2.2 Information contagion

The information contagion occurs when there are no direct financial connections between troubled institutions (Taylor 2009). The connections between involved parties are weaker and
the transmission takes place more indirectly (Kaufmann and Scott 2003). Regarding the degree of the information availability and expectation of economic agents, financial crises may range from situations where we observe dozens of distressed firms in the same time period because the firms have a common factor causing simultaneous incidences of financial distress, to situations where institutions are distressed as a result of expectations regardless of their fundamental economic condition – “sunspot” (Cass and Shell 1983).

Related to asymmetric information and expectations, three potential causes of systemic events can be distinguished (De Bandt and Hartmann 2000). First, when new information about the financial institutions health is fully revealed to the public, meaning that market participants are able to distinguish firms that share the same common factor. Second, the public receive only imperfect information or “noisy signal” because the exposures are not released in full. And finally, the occurrence of a signal coordinates the expectations of the public without being actually related to the health of financial institutions, creating self-fulfilling panic or “pure” contagion.

In the credit crisis starting in 2007, financial firms, such as Merrill Lynch, UBS, Bear Stearns, Lehman, Washington Mutual, Countrywide, AIG, Fannie Mae, Freddie Mac, and Indy Mac, incurred major losses and/or failed because they all shared a common exposure to the subprime mortgage market (Helwege 2010). When several different units revealed that they incurred severe losses on their mortgage related portfolios, uncertainty was created about the values of other units potentially also subject to adverse effects from the subprime mortgage market. In order to minimize additional losses, market participants began to examine other institutions, in which they had economic interests to see whether and to what extent they are at risk as well. Kaufmann and Scott (2003) refer to this pattern, where there is correlation without direct causation, as a “common shock” or “reassessment shock”. It results in the withdrawal of funds from these institutions leading to liquidity or even more fundamental solvency problems.

Because the information either on the magnitude of losses or on the potential exposure of each institution to the risk is not generally available immediately and accurately or without costs, and because the analysis of information is not immediate and free, market participants require time and resources to sort out other units at risk and identify magnitudes of their losses. During the period of confusion and sorting out, market participants as risk-averse agents transfer their funds, at least temporarily, to safer units, usually government securities. Therefore, there is likely that an immediate flight or “run to quality” will take place, away from all firms that appear to be potentially at risk. This phenomenon of the loss of confidence seems to affect all parties, solvent as well as insolvent. Because it is wide spread, such behavior by investors is often referred to as “herding” behavior.
As a consequence of the rational fear of loss on subprime and subprime related securities and subprime-linked derivatives, holders of short term liabilities, such as commercial papers and repurchase agreements, refused to finance issuing institutions causing run on off-balance sheet vehicles and dry-up of liquidity in repo markets. In addition, also counterparties called collateral and refused to lend (Gorton 2008). The liquidity problems forced financial institutions to liquidate their long-term investments at fire sale prices, depressing them even further (Diamond and Rajan 2010).

Also the fact that financial institutions are highly leveraged amplifies the problems creating downward spirals that are self-sustaining. Decline in asset values erodes institutions’ net worth (because of leverage) and the amount that they can borrow falls. As margin rise, they have to sell even more to reduce their leverage ratio (Brunnenmeier 2008).

Although some institutions may be solvent ex ante, if the creditors quickly withdraw the funds or refuse to finance them on the capital markets, it creates liquidity problems that lead to “self-fulfilling prophecy”, meaning that they eventually become insolvent. When the “pure” or irrational runs are added to the point, we have the situations, which are likely to lead the whole financial system to break down with the lightning speed.

7.3 EFFECT ON THE MACROECONOMY

The failure of a large bank or pervasive failures of several financial institutions, first, have direct implication on the economy, in terms of high labor force redundancy of a large bank, and interruption in provision of operations decisively important for smooth market functioning. Just to name few aspects of bank operations, the undesirable outcome in this context would be the freeze up of lending, payment processing, short-term funding, and cash management. Second, multiple failures have indirect economic effects as well. They cause entire financial market instability, which spills over and depress real economic activity. Because the financial institutions are perceived to have very important role in the functioning of real economy, their failure is perceived to represent a disaster.

The most cited undesirable effect of systemic financial crisis is that the availability of credit shrinks, as banks may respond to failures in the system and their own deteriorating position by curtailing the supply of new loans to businesses and households, calling in existing loans where possible, and generally tightening the terms and conditions of credit (Stern and Feldman 2004). The reduction in credit availability leads to suspension of investments and expansion and subsequently general decrease in economic activity, which outcome is lower production and employment that may lead to political turbulences and social unrest.
8 THE HAZARDS OF MORAL HAZARD

Moral Hazard is the problem that arises when responsibility is uncoupled from control (Baker and Moss 2009). Those in control of loss do not have same incentives to prevent it if they are aware that others will be held financially responsible. Whenever they do not need to bear the full consequences of their actions, economic agents will behave irresponsibly in the sense that they take more risk than they would do otherwise (Chang 2000). Every time when there is hidden information, hidden action and/or conflict of interests between single individuals and/or interest groups, moral hazard can occur.

Every insurance policy and some form of risk shifting have to bear the problem of moral hazard (Kroszner 2010). Someone who has an insurance policy have less incentive to monitor risks than she would have in the absence of coverage. Consider a driver with full insurance against car damage. With the car fully insured, driver might take a bit less care at least by reverse parking if she knows that the insurance company will pay for the damaged vehicle, than someone who has to bear the whole costs of the repair. Federal deposit insurance and “too big to fail” policy are both forms of insurance which have potential to create moral hazard. Deposit insurance explicitly protects depositors from bank failures, and TBTF policy provides a form of implicit government protection for other creditors. Both forms of insurance give rise to moral hazard.

Related to the existence of TBTF policy there are several points that require closer look for moral hazard. It might occur on the part of government officials, large financial firms’ managers, their creditors and shareholders as well as investors.

8.1 MORAL HAZARD AND GOVERNMENT OFFICIALS

Government actions may also be a source of moral hazard. Government officials, policymakers and regulators are responsible to determine the framework in which companies operate. The framework that involves the state guarantee through regulatory policy is not necessarily bad, because it may also encourage investments, research and development, and other knowledge-generating investments, or prevent capital market failure that makes long term financing more expensive than what is socially desirable. On the other hand, government may implement regulatory policy that promotes their favored industries and explicitly and implicitly underwrite investments in them, which naturally encourage lax management and excessive risk-taking (Chang 2000). Therefore, the moral hazard can arise.

Another problem is that government officials are in position to decide which company will be bailed out and based on what circumstances and conditions. Solely the fact that by providing the protection government officials do not put their own money at risk, but that of taxpayers, is sufficient to create moral hazard. Additionally, the decision to bail out certain institutions might be motivated by maximization of personal welfare – economic benefits and advance in
Moreover, officials may provide guarantees in order to promote the interests of their political allies. Such political alliance usually derives from the exchange of economic favors for political funding, but can also be characterized as nepotism. Favoring of individuals and companies based on personal conditions and political patronage is referred to as cronyism or “crony capitalism”. Krugman (1998) names this phenomenon “minister’s nephew” syndrome and models the way it leads to overpricing and creation of bubbles.

There is de facto corruption of supervisory incentives that poorly monitored safety-net subsidies create and sustain (Kane 2009). This fact is the best represented on the example that TARP recipients paid out $76.7 million on lobbying and $37 million on federal campaign contributions in 2008 and received access to $295.2 billion in TARP funds. Bank of America including Merrill Lynch paid $8.8 million for politicking and received $45 billion of TARP funds. Citigroup paid $7.6 million and received $50 billion. AIG paid $9.7 million to receive $40 billion, just to name few largest lobbying expenses.

The possible existence of cronyism can be also derived from the fact that number of government officials, policymakers and regulators had formerly been high ranked representatives or CEOs of significant financial institutions, but the staff also flowed in opposite direction. Treasury Secretary Henry Paulson had formerly been CEO of Goldman Sachs. Each of Paulson's three immediate predecessors as CEO of Goldman Sachs — Jon Corzine, Stephen Friedman, and Robert Rubin — left the company to serve in government: Corzine as a U.S. Senator (later Governor of New Jersey), Friedman as chairman of the National Economic Council (later chairman of the President's Foreign Intelligence Advisory Board), and Rubin as both chairman of the NEC and later Treasury Secretary under President Bill Clinton. In the ninety- five- year history of Federal Reserve, eight men have served as president of the Federal Reserve Bank of New York, and every one of them had worked on Wall Street either as a banker, a lawyer, or an economist (Sorkin 2009). In this regard, Sorkin also noted that high finance was in general a very small world, though nobody realized just how small it had become.

However, government officials have never implicitly committed to TBTF policy, at least not officially. Moreover, regulators seem to follow the prescription to keep the market guessing via “creative ambiguity”. Because they will not rescue all banks, regulators try to maintain uncertainty whether they will support a given bank or not (Morgan and Stiroh 2005). The regulators reserve the right to intervene to preserve stability but give no assurances, explicit or implicit, to individual institutions.

Considering the strategy of creative ambiguity that bank regulators seem to pursue, we assume that market participants are not certain which financial institution is TBTF and which will be bailed out. They are only aware of existence of TBTF policy. However, only the assumption that a bank might be bailed out if it fails amplifies the risk-taking, because the
management of large banks seek to grow in order to reach TBTF status. Management knows that in that case the government would be unwilling and/or unable to let them go bankrupt for fear of knock-on effects on the rest of the economy.

8.2 MORAL HAZARD AND RISK-TAKING

Although moral hazard can also appear as government policy or crony capitalism, when discussed as the effect of the TBTF policy on market behavior, it mostly interpreted as risk-taking behavior. The perception that an institution will be rescued, as an additional source of moral hazard, only creates distorted incentives and amplifies risk-taking further. On one side, creditors of large banks by expecting government protection for their funds have little incentive to monitor bank behavior or to select relationships with banks that are prudent in their decisions. Consequently, knowing that it faces reduced monitoring from creditors, bank tends to take increase risk.

On the other side, as a result of banks’ management compensation scheme, where they are paid according to the bank performance, they have incentives to take additional risk in order to maximize their own wealth. Also the fact that financial firms tend to be highly leveraged additionally amplifies risk-taking. Owners of a highly leveraged financial firm have relatively little to lose compared with the size of its highly-leveraged operations. And, if they still lose the taxpayers would take the costs. Shareholders enjoy the upside of any bet that turn out well but does not have to take the full extent of the losses if the bets don’t turn out well – their losses will be shifted to taxpayers.

All these aspects introduce generally less responsibly behavior of banks’ management, creditor and shareholders than it would be if they had to stand the full consequences of their behavior. The TBTF banks know that they can gamble with impunity – and, with the Federal Reserve making funds available at near-zero interest rates, there are ample funds to do so (Stiglitz 2009a).

The outcome of all mentioned examples of moral hazard is distortion of incentives, reduced market discipline and competition, misallocated resources and wasted investments, and more of the behavior that leads to bank failures in the first place, namely excessive risk-taking. The more extensive the protection that government offers to uninsured creditors, the more massive the moral hazard problem it creates (Stern and Feldman 2004).

8.2.1 Moral Hazard and Creditors

The excessive risk-taking is costly due to resource misallocation and increases vulnerability of the banking system making its failure more likely. After August 2007 distress in financial markets, everyone asserted the necessity for more regulation of risk taking. However, what was the deficiency of existing regulation? Usually stated reasons are the private greed of
bankers and the absence of control due to deregulation. But what happened with the creditors, do they care about losing money? Shouldn’t they monitor bank risk taking? The major deregulation was related to expansion of financial safety net that has undercut the market regulation of risk-taking by banks (Hetzel 2009).

With the financial safety net provided by deposit insurance, TBTF policy, the Federal Home Loan Banks, and the Fed’s discount window, banks have access to funds whose cost does not rise with increases in the riskiness of their asset portfolio. As a result banks balance sheet tend to become riskier. These policies subsidize risk-taking and thereby increasing the vulnerability of the banking system to disturbances (Boyd and Gertler 1994). The market discipline is eliminated by distortion of incentives.

Since creditors of big financial institutions do not take the full cost of its failure, they lose incentives to monitor and assess its riskiness. Risk assessment influences not only the prices creditors require for provision of funds, but also the quantity of funds that they provide a financial institution (Stern and Feldman 2004). The price for the provision of funds that creditors expect directly influence decisions of financial institutions, as creditors demand higher prices for higher-risk institutions. Projects that might not have made sense if funding were expensive may be implemented with lower capital costs.

The quantity of funds has similar disciplinary effect. A creditor believing the possibility of a financial institution failure is high may provide less funding or, perhaps, no funding at all. The price for fund creditors require and its quantity they provide are both market self-regulating mechanisms that aim to sanction financial institutions’ bad decisions and may curb their excessive risk-taking, as lack of funding directly limits their ability to carry out their operations.

However, this self-regulated market mechanism that previously would have constrained banks activities is distorted if creditors expect TBTF protection. Creditors of a TBTF bank on the brink of failure would pull more of their funds from the bank or at least restrict the inflows of the funds and charge higher prices. But if they get signals that the bank is protected by government because of it large size or systemic importance, creditors do not take such remedial steps. The more confident creditors are about receiving protection and the greater is the level of protection they expect, the less incentive they have to monitor and supervise banks’ operations. This means that price for fund creditors require and quantity they provide do not reflect real conditions of an institution. The price and quantities signals are muted. As a result, creditors are ready to fund even the most risky TBTF institutions and funds continue to flow into the most risky projects, because the government provides the implicit support that signals institution is safe. These projects are usually characterized by highest prospective short-term return and highest risk.
8.2.2 Moral Hazard and Shareholders

Another market disciplining force that should curtail banks riskiness – shareholders, was distorted because the bank had been allowed to raise the funds at more favorable terms. As the shareholders seek to increase their wealth, they have incentives to increase bank risk. These incentives derive from shareholders’ limited liability and the amount of leverage bank takes. Shareholders’ limited liability can refer to an investment that has limited downside risk, with which the investor can lose no more than his or her initial investment. This legal form, Ireland (2010) argues, is not an economic necessity but a political construct developed to further the interests of particular groups. Not only that it has been ruthlessly manipulated in ways that are highly questionable but it has institutionalized irresponsibility. Shareholders enjoy income rights without needing to worry about how the dividends are generated. They are not legally responsible for bank misbehavior and in the event of failure only their initial investments are at risk. If the bank is rescued by the government, they might lose nothing. Not having the downside risk, they have incentives to involve in risk-taking after collecting funds from bondholders and depositors (Galai and Masulis 1976). They attempt to maximize short term return as long as the bank continues to operate.

Similarly as with the resolving of moral hazard in the insurance industry, regulators ambition to deals with the incentive problem provides exactly the same rationale for minimum capital requirements banks need to have: by adjusting the minimum amount capital owners have to lose, banks may not simply take too much risk that can lead to the failure, since the owners have invested substantial capital (Kroszner 2010).

The key policy question is how much capital needs to get the incentives right and avoid excessive risk taking? However, the answer is not so easy. The reduced monitoring of creditors, which influence prices and quantities of funds they provide, have the similar effect in controlling risk taking by banks as decrease of regulatory capital, because within some limits they are viewed as substitutes and complements. It means that under the circumstances of reduced monitoring of creditors, the effective amount of regulatory capital need to be substantially higher in order to assure that the shareholder than have sufficient incentives to counteract mounting of risk.

However, taking also this aspect into account, by determining optimal level of regulatory capital, would be still insufficient that the risk-control prevails over excessive risk taking. Furthermore leverage additionally enforces incentives to assume more risk, which means to invest in assets that yield higher return. Although the generally accepted principle of the financial theory is that greater financial leverage will cause the risk faced by shareholders to rise (Galai and Masulis 1976), if the debt ratio, leverage, exceed some level, it reduces the shareholder risk, which can be explained by the impact of limited liability (Karma and Sander 2006). Having downside risk nonexistent, because of the financial safety net and limited
liability, downside losses of equity holders are limited without limiting their upside returns (Hetzel 2009). Therefore investors are only interested to boost risk premium and the leverage seem to be appropriate tool.

Through the use of leverage that involved borrowing short-term, low-cost funds to fund long-term, illiquid, risky assets, financial institutions took on excessive risk, in the period from 2003 to the summer of 2007. Because leverage magnifies both gains and losses (Galloway et al. 1997), it functions as multiplier of invested funds. But when the losses are limited, leverage can only multiply gain.

Especially investment banks relied heavily on leverage to achieve the high returns on equity. At the end of the first quarter in 2008, the leverage ratios at Morgan Stanley, Lehman Brothers, Merrill Lynch, and Goldman Sachs were 31.8, 30.7, 27.5, and 26.9, respectively, compared with an average of 8.8 for all U.S. commercial banks and savings institutions (Sorkin 2009). Because financial firms are highly leveraged institutions, there is a disproportion of what they invest, compared to what they can achieve. They sacrifice so little in order to achieve large profits and that only if they are not bailed out, otherwise they scarify nothing.

8.2.3 Moral Hazard and financial firms executives

Executives are also interested to take part in the lucrative business of high finance. They have been widely criticized as being greedy and solely concerned to maximize short-term return. In this regard, since the outbreak of financial crisis, executive compensation has been the synonym for arrogant and ragged behavior. Recent scandals linked to CEO compensation have brought executive compensation scheme to the forefront of debate about constraining risk taking and re-establishing incentives.

Most executive compensation packages consist of four major components: base fixed salary, annual bonus, stock options and restricted stock grants, and long-term incentive plan (Matsumura and Shin 2005). Base salaries for executives are often determined by benchmarking salaries of peers in the same industry. An annual bonus is usually paid based on a specific year’s accounting performance, such as earnings per share or return on equity. Companies use stock options to gives the executives the right to buy the firm’s shares at a pre-specified exercise price for a pre-specified term. Firms sometimes grant “restricted” shares that are forfeited under specific conditions. Finally, unlike the annual bonus that rewards a single year’s performance, many companies offer a long-term incentive plan based on rolling-average three- or five-year cumulative performance.

Executive compensation is designed to match managerial incentives with the interests of shareholders. As the level of effort exerted by their managers is not observable by the owners,
they therefore link part of the remuneration to firm’s performance (Papa and Speciale 2006). Problems may arise when in order to boost short-term accounting performance, and in turn, increase their compensation, shortsighted CEOs may reduce long-term investment. Second, compensation is paid for short term risk-adjusted performance. This gave traders an incentive to take risks that were not recognized by the system, so they could generate income that appeared to stem from their superior abilities, even though it was in fact only a market-risk premium.

However, Bebchuk and Fried (2003; 2004) highlight the role of managerial power in the executive pay-setting process. They argue that the CEO exercises significant “power” over the Board through influencing the director nomination process and director compensation. Bebchuk and Fried (2004) state:”Directors have relatively few reasons to oppose higher CEO pays as long as it falls within the range of what is considered conventional and acceptable.” As one commentator has observed, the shareholders in corporations have little financial incentive to ensure that the managers involved behave legally, ethically, or decently because in law, they are personally untouchable.

CEOs’ holdings in their firms’ stocks provide a strong link between stock price and CEO wealth. Because the U.S. capital market rewards firms’ meeting or beating analysts’ forecasted earnings, CEOs have incentives to engage in unethical “management of earnings” and to collude with the analyst community to reduce earnings forecasts in exchange for potential underwriting business (Matsumura and Shin 2005).

On the hearing on the committee on the financial services, the chairmen Barney Frank said that the problem with executive compensation is not the dollar amount, but the incentive structure. “It’s a head they win, tails they break even” (Testimony 2009, 5).

Also the accounting gimmicks allowed paying out of bonuses. Creasy accounting was possible with the double-entry bookkeeping rules. It means that the day before firms go bankrupt is the most profitable day in their history, because they will say all the debt was worthless and they get to call it revenue. And, literally they pay bonuses off this (Sorkin 2009).

Before the subprime crisis in 2006, executives of the largest investment banks were generating record revenues and bonuses (Connor 2007). These revenues and subsequent bonuses were mostly related to work with subprime-related securities. Goldman Sachs CEO Lloyd Blankfein: $53.4 million. Morgan Stanley CEO John Mack: $40 million. Merrill Lynch CEO Stanley O’Neal: $47.3 million. Lehman Brothers CEO Richard Fuld: $10.9 million. Bear Stearns CEO James Cayne: $14.8 million.

The reason for such high compensations lies in the fact that in the modern societies the correlation between ones personal contribution and his or her personal property is separated
(Sloterdijk 2005). Where such separation exists, there is no connection from what one does to what he or her has: The owner-subject, either as a lucky speculator on stock exchange or manager, which grants himself compensation with plundering character, profits from an absolutely disproportionate relief: Then one just has and does not know how.

8.2.4 Moral Hazard and private investors

At the height of the financial crisis, Goldman Sachs, which desperately needed to raise funds to survive the panic, sold Warren Buffett’s Berkshire Hathaway $5 billion of perpetual preferred stock. The package gave Berkshire a return of more than 15 percent in exchange for its money and Buffett’s endorsement. By entering the deal, Buffett rented out his reputation in a way that subject him to moral hazard (Schroeder 2010). Simply by associating with the company he could cure its ills, because his reputation gives the company insurance, as many other investors simply follow the steps of Buffett trying simply to imitate his investment strategy.

Although the preferred is an extremely expensive form of capital, it helped Goldman avert failure in a liquidity crunch. Since then Buffett has been defending investment banks and saying flattering things about Goldman, such as that he invested out of belief in not just Goldman strength but its integrity, although only three days later the Security and Exchange Commission filed civil fraud accusations against it for allegedly creating and marketing a CDO that was designed to lose money. Therefore, the deal is the example how the behavior of large, authoritative investors may mislead the investment community.

Considering all said the proposal to restrain moral hazard and excessive risk-taking would be to reduce financial institutions’ leverage, to increase their regulatory capital and to strengthen regulation. Another would include the reform of compensation scheme for managers. But, these measures seem to represent only the extinguishing of fire. The moral hazard is the result of certain deep-rooted institutional deficiencies that led to inefficient investments and/or excessive risk-taking.

Evidently, the complex deposit insurance system—in combination with the potential for TBTF coverage—creates an intricate set of incentives that influences the decisions of U.S. banks (Ennis and Malek 2005). Not only may banks take riskier actions, but they also may assume excessive risk by growing faster than they would otherwise. In particular, the TBTF policy creates not only a risk distortion but also a size distortion, and that one distortion tends to increase the value of the other (and vice versa), creating a perverse amplification effect. If the resource misallocation to lower-value uses is done on a larger scale can retard current and future economic growth.
9 DISTORTION OF COMPETITION

The impact of TBTF policy on competition in the financial system is very complex and ambiguous. Greater competition may be good for efficiency, but bad for financial stability (Allen and Gale 2004). Increasing competition might reduce economic stability. Moreover, the inherent fragility of the financial system was attributed to the competition. Less competitive banking systems are more stable, as profits provide a buffer against fragility and provide incentives against excessive risk taking (Beck et al. 2010). Increased competition leads to reduction of monopoly rent that reduces the firms “charter value”, which is company’s future value. As the future value is reduced, owners and managers have less to lose upon the failure. As a result, they try to exploit funds guaranteed with TBTF policies, and therefore, have increased incentives to take on extra risk (Keeley 1990). Furthermore, in the state of hard competition among banks, excessive risk-taking may generate herding behavior: when some banks invest in one type of product (say in subprime loans) that generates high profits, other banks are forced to imitate them, as otherwise their shareholders will hold them responsible for the lower profitability of the institution (Beck et al. 2010).

Thus, the policymakers have long tradition of restricting competition in the financial industry. After the Great Depression several policies were introduced to restrict functional and geographical competing of financial firms. Glass-Steagall Act that separated banking and security industries, the Banking Act of 1933 that prohibited the payment of interest on demand deposits, the Regulation Q that limited the interest banks could pay on time and savings deposits, the 1956 Bank Holding Company Act that restricted the ability of banks to operate nationally through multibank holding companies, and Justice Department antitrust guidelines that restricted competition by limiting the ability of banks to acquire other banks, are all policies that could be mentioned in this context (Hetzel 1991).

The bailout of one institution can have direct positive effects on its competitors by reducing contagion effects (depositor run, market run, interbank claims, payment system etc.) or indirect ones by reversing adverse price trends through support of financial and collateral markets. However, the extent of negative trade-off between competition and stability can be questioned. Although the costs of the financial crisis are certainly high, the reduced competition is not necessary to avoid these costs. Second, there are considerable efficiency costs from concentration that need to be compared with a high efficiency gain from greater competition. Third, the crises occur perhaps every decade or every few decades, while the inefficiency costs of reduce competition are continuous. Therefore, saying that the concentration increases financial stability is shortsighted. It concentrates on short-term positive effects of reduced competition, but ignores the very core principle of the free market economy – competition.
TBTF policy distorts competition in several ways, by favoring TBTF financial institutions over their competitors. TBTF policy provides valuable benefits for bank owners and creditors (Stern and Feldman 2004). First, there are direct effects of TBTF policy for owners and creditors of large institutions compared to their smaller competitors. By receiving the coverage shareholders of TBTF institutions benefit because their wealth is increased as a result of state funds transfer, and creditors also have the advantage because government prevents the institutions failure and subsequent creditors’ losses.

Veronesi and Zingales (2008) examine Paulson’s plan (TARP) of injecting capital into the largest banking organizations and find that there was $25-$47 billions wealth redistribution from taxpayers to debt-holders of the original ten banking organizations that “accepted” the invitation to receive government support to help restore confidence in the banking system and encourage credit creation. The intervention also increased the value of banks’ financial claims by $131 billion, especially those of the three former investment banks (Merrill Lynch, Morgan Stanley, Goldman Sachs) and of Citigroup (Veronesi and Zingales 2008).

Second, the possibility that an institution receives protection causes reduction in screening and monitoring of their creditor and shareholders, which means that the price and quantities for their funds do not reflect the institutions financial condition. The institution is allowed to raise funds at more favorable terms than their smaller competitors with same amount of risk. Access to the federal government’s safety net allows TBTF institutions to operate with less capital and a lower funding cost relative to other institutions (Brewer and Jagtiani 2009).

Penas and Unal (2004) study changes in the returns of nonconvertible bond issued by merging banks during the 1991–1997 period. They also compare credit spreads (difference between the bond yield at issue and the yield on comparable U.S. Treasury securities) on bonds issued before and after the merger. They find insignificant change in either bond returns or credit spreads when the acquiring banks are either small or already TBTF. However, when banks between these two extremes acquire another bank, the credit spreads decline significantly after the merger. They attribute this pattern to the benefits banks derive from reaching or getting closer to the TBTF status. These results thus provide evidence that bondholders attach a value to banks becoming TBTF through mergers, and they are willing to accept lower prices for their capital.

The difference between what it should pay for uninsured credit for borrowed funds and what it really pays because of the additional access to the government safety net creates a subsidy for the organization (Brewer and Klingenhagen 2010). Thus, access to future government support and guarantees, under these circumstances, is an asset of the bank. Being an asset of the bank, there should be a positive reaction of the market after announcement that an institution is TBTF. Brewer and Klingenhagen (2010) examine the reaction of the stock prices of banking organizations of different sizes surrounding the October 14th 2008 announcement
that TARP funds would be injected in the major US banks. They find that TBTF status benefited larger banks relative to smaller banks in terms of relative inter-day stock price performance. Market reaction was relatively more positive for the very largest banks, implying that they are TBTF and investors were willing to pay a premium for that status. Furthermore, Brewer and Jagtiani (2009) examine the abnormal stock return reactions of a portfolio of investment banking organizations (Morgan Stanley, Merrill Lynch, Lehman Brothers, and Goldman Sachs) in response to the Federal Reserve’s extension of discount window access to investment banks. They find positive and significant abnormal returns of 17.79 percent to these investment banks on March 14th 2009, when the Federal Reserve announced that it would lend to Bear Stearns through JPMC. Not only are large firms being favored over small firms, but investment banks are getting for free a better government bailout than commercial banks receive, only after paying insurance premiums to the FDIC.

Besides, not only that the lower costs of capital and implied protection for TBTF institutions influence the return on stock, it also reduces the possibility of failure and therefore the institution’s credit risk, leading to higher ratings. Rime (2005) finds that the TBTF status of a bank has a significant, positive impact on the bank’s credit rating. The largest banks in the sample get a rating “bonus” of several notches for being TBTF. Moreover, Morgan and Stiroh (2005) show that the ratings for the banks named as TBTF in 1984 improved by about a notch relative to other banks. The relationship between spreads and ratings for the TBTF banks also flattened after those banks were named, implying that the TBTF announcement made investors even more optimistic.

Taking all the competitive advantages that TBTF policy creates into the account, it would be very desirable to reach that status. Not only that it provides guarantee and protection in the case of failure, moreover, it includes lower capital costs, higher credit rating, better stock performance, and prestige effects of being large and dominant. It follows that financial institutions are willing to pay additional funds to reach this preferred status. In this regard, Brewer and Jagtiani (2007) examined how much it might be worth to banks to become TBTF, and whether this is a motivation for banks to expand through mergers and acquisitions in order to attain that status. The study finds that “banking organizations are willing to pay an added premium for mergers that will put them over the asset sizes that are commonly viewed as the thresholds for being TBTF.” They estimate at least $14 billion in added premiums for the eight merger deals that brought the organizations to over $100 billion in assets.

Therefore, by applying TBTF policy, policymakers face charge of unfairness if they support extraordinary coverage for creditors of large banks and not for those of smaller institutions. This means that the government protection for big institutions put those smaller banks at a competitive disadvantage. Small community banks are facing growing liquidity problems and funding pressures as they lose deposits to too-big-to-fail banks.
Hakenesa and Schnabel (2004) analyze the competitive effects of government bail-out policies. The main result is that bail-outs lead to higher risk-taking among the protected bank’s competitors. The reason is that the prospect of a bailout induces the protected bank to expand, which intensifies competition in the deposit market, depresses other banks’ margins, and thereby increases risk-taking incentives. The growth makes the banking system seem strong, which appears to be stable and grows despite of certain failure. At the same time, competitor banks are crowded out. The result is the increase of return of large banks, which means that they pool even more capital. Therefore, government policy, like potential TBTF support, circumvents market forces by allowing a bank to attract funds and grow even as it heads toward insolvency. The greater a bank is the higher return it yields. As a result, TBTF banks act as gravity center, which pools all the capital around them and grow beyond all boundaries, what in the end must burst out.

Finally, regulators need to decide, whether to restrict competition in the financial system and to prevent the failure of TBTF companies or to allow full competition and to apply the same rules for all participants. If regulators decide to provide preferred status for TBTF firm, it would imply a stricter supervision. The current situation, in which rules of free market are applied until losses occur where profits are privatized and losses socialized and switched to taxpayers, is not sustainable.

10 TOO BIG

The state regulators declared numerous of times, the federal government support for “systemically important financial institutions” (SIFIs) was necessary to prevent a systematic collapse of the financial markets and an economic depression (Bernanke on March 10th 2009). FRB Chairman Bernanke also admitted that the too-big-to-fail is a “pernicious” problem (Reuters 3/20/2010). In March 2009, he nicely outlined all negative effects of TBTF policy:

…it reduces market discipline and encourages excessive risk-taking... provides an artificial incentive for firms to grow, in order to be perceived as too big to fail. And it creates an unlevel playing field with smaller firms, which may not be regarded as having implicit government support. Moreover, government rescues of too-big-to-fail firms can be costly to taxpayers, as we have seen recently.

As it is true that TBTF subsidies create significant economic distortions and promote moral hazard, the question is what is to do now? Currently too-big-to-fail does not present a mystery anymore. The federal regulators, by requiring nineteen banks to participate in the Supervisory Capital Assessment Program (SCAP) or “stress-testing”, which was conducted between February and April 2009, have appointed these specific financial institutions (Graham 2010). Reported list include: J.P. Morgan Chase & Company, Citigroup, Bank of America

As the Federal Reserve Report acknowledges, “These 19 firms collectively hold two-thirds of the assets and more than one-half of the loans in the U.S. banking system, and support a very significant portion of the credit intermediation done by the banking sector” (SCAP 2009, 3). Therefore, federal regulators would not impose regulatory sanctions on these institutions under the “prompt-corrective-action” (PCA) regime established by Congress in 1991 (Wilmarth 2010).

Today, after emergency acquisitions organized by U.S. regulators, the largest institutions hold even greater dominance in U.S. financial market. The four largest U.S. banks (BofA, Chase, Citigroup and Wells Fargo) now control 56 percent of domestic banking assets, up from 35 percent in 2000 (Eavis 2009). The six largest U.S. banks now have total assets in excess of 63 percent of GDP, up from 55 percent in 2006 (Boone and Johnson 2010). The four largest banks also control a majority of the product markets for home mortgages, home equity loans, and credit card loans. Together with Goldman, the same four banks account for 97 percent of the aggregate notional values of OTC derivatives contracts written by U.S. banks (Wilmarth 2010).

Taking this into consideration, it seems that not much has changed as a result of the financial crisis. Problems that plagued financial system before the crisis still remain. Systemic risk and moral hazard are a principal immediate cause of the existence of too-big-to-fail institutions. While larger banks might be better able to diversify risks and even exploit scale or scope economies, thus explaining a positive relationship between size and stability in normal times, this relationship might be reversed during tail events like those occurring recently (Beck et al. 2010). Secondly, growth in bank size increases the moral-hazard risk of becoming too-big-to-fail, a risk which will only become obvious in times of crisis.

The purely physical element is the primary cause of all troubles plaguing the financial system as well as of all other social miseries. The moral hazard occurs when the critical volume of power is accumulated and it can be accumulated only in the entities of a given size. In the financial market consisting of relatively small companies “the critical quantity of power can only rarely accumulate since…the cohesive force of… [smaller institutions] is easily immobilized by the self-balancing centrifugal trends represented by the numerous competitive pursuits of… [other market participants]” (Kohr 1957, 53). In TBTF companies, on the other
hand, the coordinating pressure of larger size tends to suppress the competitive forces, and the danger of fusion to the critical point is ever present.

In addition the systemic instability seems to be the problem that derives from the markets structure determined by TBTF entities. Since the oversized institutions disturb the balance between different interest groups and distort their incentives, the system needs a regulator to take care of what previously arranged itself automatically. However, as “the social problems have the tendency to grow at a geometric ratio with the growth of the organism of which they are part, while the ability of man to cope with them, if it can be extended at all, grows only at an arithmetic ratio” (Kohr 1957, 22), the regulators’ supervision efforts could never compensate for disturbed, self-balancing, market mechanism. The recent monstrous 100km stretching traffic jam in China, which captives were trapped in for two weeks, is a very good example for previous statement (Financial Times 8/27/2010). Because freight traffic in China has grown a third faster than gross domestic product since 2003 – a 13.3 percent annual rate, the jam is remainder that China’s infrastructure has struggled to keep pace with its growth. With a growth of China’s GDP, the traffic that supports such growth increase in a geometric ratio, while the development of convenient infrastructure move arithmetically.

Therefore, if the institutions grow beyond their optimum size and become TBTF, their problems will always outrun the ability of regulators to cope with them, assuming there is a political will to do so in the first place. As a result of their large size and corrupting power that stems from it, the TBTF firms are in position to throw the entire financial system, or even the global economy, off its balance if mood or ambition counsels such a course.

Moreover, TBTF companies contribute to systemic risk since everything that grows beyond certain size collapses eventually. However, as these institutions dominate the system, they both share the same destiny. The inherent instability of large entities seems to be applicable in the universe as a whole as in special fields such as biology, technology, or physics, and why should not it be applicable for social science? Large cells are cancer in the human body and they appear to be cancer also in the financial system. And if our physical universe demands destruction of overgrown bodies – supernovae, why also natural forces of our economic system would not demand destruction of oversized institutions?

However, in evaluating the critical size that leads to systemic risk, it is not sufficient to consider only the size of a particular institution. Probability of systemic collapses is additionally influenced by density, reflecting market consolidation, concentration, and interconnectedness, and velocity, reflecting the extent of administrative integration and technological progress (Kohr 1957). Thus, density, velocity, as well as social integration which they necessitate, are not separate elements but consequences as well as determinants of the physical concept of social size. For if institutions in a given financial market grow in their size, this market becomes automatically more dense. As it becomes denser, it requires an
increasing measure of integration, which will increase links to the key institutions leading to the multiple spokes. And the increasing links will be possible only with a faster execution of transactions which, in turn, will grow in proportion to the technological progress, which increases the optimal size of financial institutions. Therefore, this creates a perverse spiral amplification effect.

In this regard, Haldane (2009) explains dynamics of recent crisis by considering two structural features of financial networks, namely complexity and homogeneity. The financial networks have become more complex and less diverse. The evolution of financial networks was seen as an inevitable by-product of technical progress in finance. The development of complex structured financial products and improvement of diversification strategies have led to the consideration of risk as a commodity, which passed between market participants, lengthened the network chain generating heightened uncertainty across the system as a whole. Therefore, innovation in securitization of credit through the “originate and distribute” model made the system more interconnected increasing its dimensionality, and thus financial network complexity. But this model also decreased system diversity, because financial firms imitated each other’s business strategies in a return-on-equity race, which at the height of the credit boom have turned into near-cloning.

Whereas the complexity strengthen self-regulatory and self-repairing forces in the system, so improving its robustness, when faced with big shocks (potential failure of TBTF institutions), the financial system becomes increasingly fragile and non-renewable. The reason for this lies in the “robust-yet-fragile” property of connected networks. While within the certain range connections serve as a shock absorber, which disperse and dissipate disturbances, beyond a certain range interconnections serve as shock-amplifiers. An additional characteristic of the financial networks is that they have “long-tailed distribution”, meaning that larger institutions have more than average links to other institutions, while smaller institutions have lower number of such links. Such networks have been shown to be more robust to random disturbances, but more susceptible to targeted attacks, meaning that if a large or much interconnected financial institution is subject to stress, it is very likely that adverse system-wide network dynamics will be revealed. The third characteristic of connected financial networks is “small world” property. Connected networks have the average path length (number of links) between two entities around six – hence “six degree of separation”. However, certain key nodes, for example TBTF institutions, can introduce short-cuts, connecting otherwise detached local markets. Therefore they tend to increase the likelihood of local disturbances having global effects.

Finally, it can be concluded that global financial system is concentrated around few key markets characterized by TBTF institutions that ballooned over that past two decades increasing roughly 14-fold and having multiple spokes. Second, global financial system has
become markedly denser, with more frequent links between these key markets: links increased roughly 6-fold. There are also fewer than 1.4 degrees of separation between the largest nation states. And also taking into consideration the globally accepted financial regulation standards and faster execution of financial transactions, this have an explosively destructive effect on systemic stability.

11 THE SIZE THEORY TEACHINGS

11.1 DEALING WITH MORAL HAZARD

As we have discussed previously, the main problem which caused the financial crisis was the reckless lending and risk-taking behavior that were part of the bubble mentality and easy earnings. Most commentators today have argued that such a behavior is immoral, and they are trying to attack the problem on a moral plane. Such statements seem somewhat surprising given the fact that in contemporary theoretic models the behavior of economic agents is explained by the utility maximization theory. According to this theory, economic agents are seen as rational decision makers that always behave in a way to maximize their own profit. Even Adam Smith perceived the capitalistic businessman as a cunning schemer with nothing in mind except his own interest, and who conspires whenever he can to enrich himself at the expenses of other. The accent in this statement should be placed on the fact that he can do it. The logic of this reasoning is expressed in meaningful quotation of Francis Bacon: Opportunity makes thieves. This indicates that it is the opportunity that tempts us to misbehave, not our immorality. And the opportunity is, of course, nothing but another word for the seemingly critical volume of power. Even a confirmed thief will not steal if he knows that there is no chance of getting away with it. On the other hand, even an honest man will misbehave if he has the opportunity, the power to do so. Hence Sloterdijk (2005, 376) states that every “ability” has a specific “intention” inherent to it, and that we can do nothing else but to obey the paths of power, which has fallen into our hands.

This also explains why all of us, the good even more than the bad, pray to the Lord not to lead us into temptation. The only safeguard against misbehavior is not moral stature or threat of punishment, but the lack of opportunity. But, does it mean that everyone holding power must necessary make evil use of it? Although it is true that some may develop an extraordinary will power and stay good, the fact that they, too, have to fight hard battles with temptations explains its elementary character. However, the crucial is not the power itself, but the size of power. Not any quantity of power will lead to its brutal abuse, but only the critical quantity. When the critical mass of power is reached, abuse will result spontaneously (Kohr, 1957). But what is the critical magnitude that leads to abuse? The critical volume of power is reached whenever a possessor of power believes that there is no other existing larger accumulation of power to confront him, meaning the volume of power that ensures immunity from retaliation.
Depending on the nature of different individuals or groups, the critical volume implies different magnitude in each different case. Equal as the boiling point is low for some substances and high for others, also the volume of power leading to abuse is low for some individuals and groups and high for the others. But the rising mass of power will, in the end, corrupt even the most virtue and honest from us.

We all recall the film “Lord of the rings”, when even the little Hobbit Frodo Baggins had difficulties separating from all-mighty ring that lures his lord. And, if he did not have his fellow Sam by the side that was not familiar with the powers of the ring, Frodo would rather die than destroy it.

Whether we are individuals or groups, once the power we possess reaches its critical point, we exhibit undesirable behavior almost in spite of ourselves. The fact that prison guards and soldiers have such a universal record of brutality is not because they are worse than other man but because in their relationship with their captives they are nearly always equipped with the critical quantity of power. This reminds of, in 1971 conducted “Stanford prison experiment”, the study of psychological effects of becoming a prisoner or prison guard led by Psychology Professor Dr. Philip Zimbardo, Ph.D. at Stanford University. Twenty-four undergraduates were selected out to play the roles of both guards and prisoners, which were assigned randomly. Only six days later the entire experiment was abruptly stopped after it quickly grew out of hand. Although participants were chosen on the criterion of psychological stability and health, one third of guards exercised sadistic behavior humiliating and harassing prisoners and was upset when the experiment concluded early. This demonstrates how the acquisition of an uncheckable power, which gives the feeling of immunity, leads to a spontaneous abuse.

Therefore, there is no policy that might turn us all into good and decent fellows that will never exercise excessive risk-taking behavior. Such misbehavior is direct cause of the possession of critical power and its absence is only element that ensures our virtue. Thus, the problem has to be solved considering its physical aspect, not the moral one. But, we cannot simply disempower all executives, because not having the power they could not govern their companies. And, the greed reflected in excessive risk-taking is what actually introduced the development of the financial system, economy and capitalistic societies.

Maybe this is true, but no one said that we should disempower them, but to disable them to acquire the critical power, which is uncheckable. In addition, the critical volume of power is itself dependent on yet another physical element – a size of social organism within which it is accumulated. In other words, it is not the power of managers of importance, but the size of the company within this power is accumulated. In a small company for example, the critical quantity of power can rarely accumulate as to imperil market stability. In larger companies, on the other hand, the self-balancing trends are replaced with fusion of power to the critical point where it manifests its disruptive nature. That is the reason why the exclusive way of
preventing undesirable and fraudulent behavior and excessive risk-taking of banks’ managers is to prevent the organization of companies so large that they can accumulate the critical mass of power, which cannot be checked by any policy or regulator, and which is sufficient to destabilize the entire financial system.

Why is it happening that also the small companies exercise undesirable or fraudulent behavior? Although reducing the size of the financial firms may discourage such behavior, because it would be easily controlled, there is nothing that can prevent company’s fraud or making of wrong decisions. The chances for such incidents exist in every company and each company may sometimes exercise such a behavior. The only difference lies in the magnitude of their disruptiveness, which depends once more on the size of the misbehaving entities. This means that neither the problems of excessive risk-taking nor fraud disappear in a small-companies financial market; they are merely reduced to bearable proportions, where it can do no harm.

Therefore, we should establish the system of social units of such small sizes that accumulation and condensation of collective power to the danger point can simply not occur. The answer lies in reduction of the size of companies and the split-off of those units of the society that have become too big.

11.2 THE PHYSICS OF THE FINANCIAL SYSTEM

“Below a certain size, everything fuses, joins, or accumulates. But beyond a certain size, everything collapses or explodes” (Kohr 1957, 98). This seems to be the universal principle. Things can be too little as they can be too large, with instability adhering to both developmental stages. The universe consists not only of atoms and quanta, but from the variety of forms and substances created through self-regulating device of countless aggregations, combinations, and fusions of these smallest particles until a proper and stable size is reached, until their function-determined form is fulfilled. However, the things sometimes grow beyond the stabile size. In the astronomy, there are heavenly bodies that are called supergiants. From the moment they reach such a size, they are on the way of destruction. In the end they collapse breaking up in the fantastic spectacle of explosion called supernovae. Whenever giant size objects develop, they are destroyed in violence and disaster.

The instability of too large is destructive one. Instead of being stabilized by growth, its instability is empathized by it. The process of growing, so beneficial to certain size, leads no longer to maturity but disintegration. Therefore, the universal principle is one by which the stability and soundness is achieved in middle size, entities that are relatively small. It means that the companies’ proper size should be determined by their function and benefit for the society – the size relative to company’s function.
Instead of being composed of a small number of near-infinite large entities which could be kept stable only through the periodic assistance of government by means of financial safety net and considerable supervision, the financial system should consist of an infinite number of finite little banks which need neither special effort nor a genius to remain in equilibrium. And what holds them stable, are they themselves. They accomplish this by balance – the balance of opposed interests, incentives, forces, powers, or whatever one might call it.

There are two ways to achieve this equilibrium and stability. One is through a stable and the other through a mobile balance. The stable balance is the balance of the stagnant and huge. It creates equilibrium by bringing two objects into a fixed and unchanging relationship with each other as a house with its ground, or a mountain with its plain. But such an equilibrium being the balance of fix and inflexible, could only be implemented if the markets were still, non-moving, lifeless. Then the existence of only a few large institutions would make sense, or even the existence of a single one. Instead of creating harmony, the stable balance moulds the interests of diverse groups of economic agents into unity.

Since the economic and financial system consists of numerous agents that represent different and usually opposed interests, it cannot be based on the stable balance of dead, but mobile balance of living. That is the reason that Haldane (2009) considers financial system as a complex adaptive network and Hendricks et al. (2009) as a nonlinear complex adaptive system. Therefore, the financial system cannot maintain stability and order by unity of all interests, but by harmony. In contrast to the stable balance, this balance is self-regulating, not because of fixity of relationships between executives, shareholders, creditors, competitors, consumers, investors, government, and general public, but because of the coexistence of these interest groups of which no one should be ever allowed to accumulate enough power to impose its interests and disturb the harmony of the whole system. Therefore, a graceful harmonious existence of relatively small companies is the basis of stability and sustainable development which maintenance needs no master or financial dose.

This is what Adam Smith thought when he spoke of invisible hand that leads to general welfare. Therefore, he saw no reason to attack the freedom of capitalistic individualists that pursue their own profit maximizing interest, but he was its staunchest defender. He knew that selfish individual interests are checked by the self-correcting device of competition, which is nothing other than a mechanism to keep the businessman’s power down to proportion within it can do no damage.

Today, as Stiglitz (2009b) noted, the reason that the invisible hand often seems invisible is that is not there. However, in my opinion it still exists, but as it once brought glory and success of capitalistic society, it is now the same invisible hand that threatens to destroy it. And, as once the not-balancing divided power between state and individuals broke socialist societies at their beginning, it is again not-balancing divided power which threatens through
the creation of monopolies to break up capitalist society at their end (Kohr 1957). The near end, as Kohr (2006) names it late-capitalism, is represented by the development of fusion-friendly, cancer-prone, monopoly-dominated last phase large companies. Also the Marx indicated that increasing competition brought with the progress of capitalism leads to the end of competition of any kind (Kohr 2006). As soon as the state based on free market has grown beyond certain bounds, it began to age. Therefore, the government is brought in as a doctor; but it could not hold the aging process, but rather merely alleviates pain related to it, by means of government intervention through financial safety net and other stimulus programs. Government has become the principal customer, main employer, major provider and at the same time major economic power in the whole economy (Kohr 2006). Also the Sloterdijk (2005, 338f) states that it is obvious that there is a firm, even though increasingly nervous tie between capital economy and “public authority” – with the rate of public expenditure in the GNP of over 50 percent, it is obvious who is the major winner of the capitalism. Whom it is not going well, the legal Fortuna has to come to the aid of him.

Because the aging casts aside the self-regulatory system of balances, the financial system now needs the special effort of stabilizer, a genius, a regulator who must consciously hold stable what previously arranged itself automatically. That is why the supervisory and regulatory regime of the financial sector is, to some degree, seen as substitute for weak market mechanisms and market discipline (Soussa 2000). However, an integrated, global, homogenous, yet complex financial system is immune to any supervision and regulation, not because large and complex financial institutions would not accept it, although they would try to encounter it by any mean, but because of its dimensionality such a system defies any human control. That is why Hetzel (2009) noted that the government regulation of risk-taking has not substituted for the market regulation.

Furthermore, there is also other reason why the increased regulation of the financial system, which almost all theorists and researchers advocate, could not satisfactory replace market discipline in a long run. In order to be in balance, a system consisted of large units, besides the need for supervision of an external controlling agent, also needs to be inanimate, non-moving. However, even rigidified system composed of TBTF institutions is still changing and moving though, as an old men, at a very reduced speed. This implies that the regulatory regime would have to be periodically adapted to the changed environment, because economic agents will innovate and improve their practices in an attempt to evade regulatory restrictions. But, as it can be observed, the process of financial regulatory reform has already lasted too long and also in the future regulators would not be able to make a timely agreement about the needed adoptions of regulatory framework design.

Therefore, instead of badly balanced financial system characterized by TBTF institutions that need a conscious regulatory authority to interfere every time the arrangement changes, we
need the financial system balanced by self-regulatory forces derived from independent
existence of a great number of small institutions, which are hold together in elastic harmony.
We need a financial system in which financial institutions are every day established and
liquidated without to make headlines; the system whose correcting movements re-establish a
new equilibrium as a result of its very disequilibrium.

Finally, in spite of all said, the theorists should extend their research as to find the proper
balance between different interest groups and size of institutions that fits their purpose. The
improvement should be achieved through the process of division of TBTF institutions. And
the regulators should seek that no company ever becomes too big. Instead of hopelessly trying
to blow up man’s limited talents to a magnitude that could cope with hugeness, hugeness is
cut down to a size where it can be managed even with man’s limited talents. In miniature,
problems become weaker in intensity and lose their disruptiveness. This is all we can hope
for. The choice seems therefore not between the instability and stability, but between
pervasive systemic instability and self-balancing instability that once it occurs is immediately
corrected.

12 CONCLUSION

From all previously said, we can conclude that there is a certain critical value, beyond which
an additional growth does not lead anymore to cost savings through economy of scale and
scope. There is a certain limit from which manageable becomes unmanageable, controllable
becomes uncontrollable, and from which further development does not lead to progress, but to
collapse. Thus, the problem of modern economic and, in particular, financial system is not the
way how to stimulate growth, which became itself own purpose, but how to avert it (Kohr
2006). The main problem represents the oversized institutions, the excessive growth, the
concentration of power, and too large markets. While when the financial markets are
integrated, the destructive impact, which they sometimes might exhibit, increases in the huge
scale, the solution cannot be found in the geographical extension of markets, or even bigger
financial conglomerates, but in reduction of political and economic dimensions, which have to
be adapted to man’s small dimension and his limited abilities. While, in order to quote
philosopher Protagoras, the man is the measure of all things.

But, the question is what should be done? When someone at once arrives on the brink of
abyss, the reasonable is only to step back. Thus, the only solution to restore stability is to
break up those too big; and to ensure that nothing ever grows so big to endanger the whole
system.

But, the problem is how to achieve that? Once Paracelsus noted that all things are poison,
what matters is only the dose. Similarly the size of financial institutions has to be appropriate,
we have to find the proper “dose”, because everything improper is either too big or too small, too connected or too detached, too regulated or too deregulated. And the proper size of the financial institutions is the one that supports the exercise of their function in the society in the best possible manner.\(^4\)

In my opinion, the financial market structure should be divided into three interrelated tiers. The first one should include the local commercial banks, which would perform all traditional financial operations in the local and regional geographical area. These banks should have the following three constraints: 1) in respect to the assets size, 2) geographical reach of their operations, and 3) no entering into any investment banking activities. There should be an open and freely competition among them so they should do their best in order to reach the second tier.

The second tier banks would be formed from the first tier banks, which would represent something similar as shareholders. First tier banks would delegate management and control the second tier bank, which will be referred as state bank. For each geographical area, it will be decided on the number of required state banks. Only 7 to 10 of the best ranked first tier banks from specific geographical area would qualify for each second tier bank. The bank ranking would be defined, for example, according to the criteria: ratio of performing loans to total loans, return on investments, return on income, return on assets \(\text{etc.}\) This would impel stronger competition which would lead to the efficiency costs decrease. The second tier banks would participate into the state inter-banking market and would be responsible for averting the liquidity shortages in certain areas, and would also have broader scope of permitted activities that could also include some of the investment banking operations. State banks would perform these activities for all local banks from that area, also for those banks not part of state bank. This would give them incentives to try hard and to compete with those banks involved in the state bank operations. Also, the size of second tier banks should be limited in respect to the assets size.

The third tier banks would be referred as national banks and would be derived from the second tier banks in the same manner as the second tier banks are derived from the first tier banks. They would be responsible for the settling transactions at the national level and performing international banking activities. An optimal number of these banks in U.S. would be about 7-10. The third tier banks would also be limited by size.

Since each tier would be limited by the size, then if a bank exceed predetermined limit for that tier, it will be excluded from that tier, subjected to special supervision and control program, and some other bank from lower tier will take its place. This program will last for two years in which these overgrown banks would be spun-off and prepared to re-enter the free market.

\(^4\) For the study regarding optimal bank size see, for example, Boyd and Gertler 1994, Berger et al. 1999, Ennis and Malek 2005.
competition after expiration of that period. Such financial market would be organized similarly as today, where one bank holding company owns large number of smaller banks, only in opposite direction – large number of smaller banks would own a state or national bank.

The division of TBTF institutions that have outgrown manageable proportions would represent not only the cure for current systemic instability, but also the progress, because the improvement is everywhere achieved not by unification but division. The books are improved by dividing into many chapters. The day is broken into hours for many different pursuits. The utilization of living space is increased by erection of walls. And languages are improved by division of sounds until every nuance is expressed by a different word. “Only the primitive is content with a vocabulary consisting of a single Tarzan’s yell” (Kohr 1957). Therefore, the stability would be achieved in the large number of small coexisting banks, which are confederative organized. We must cut down the TBTF institutions that have outgrown their natural limits, because the problem is not to grow but to stop growing; the answer: not the union but division.
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