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Regulators' Irrational Rationality and Bankers' Rational Irrationality

Too Big to Fail, Self-Regulation, Moral Hazard and the Global Financial Crisis 2007–2009

Abstract: Regulators' irrational rationality and bankers' rational irrationality. Too big to fail, self-regulation, moral hazard and the global financial crisis 2007–2009. Banks and other financial institutions which were „too-big-to-fail" (TBTF) played a central role in the Global Financial Crisis of 2007–2009. The article lays out how misguided policies enabled banks to grow both in size as well as in complexity and therefore acquire TBTF status, particularly in the 10-year period preceding the crisis. The article then proceeds by detailing how an ill-designed policy framework, relying on supposed market approaches to regulation – including self-regulation and credit rating agencies – enabled TBTF financial institutions to game the system. They were thereby able to exploit the negative externalities which the flawed policy framework – in connection with TBTF status – had granted to large, systemically important financial institutions. The article therefore identifies defective government policies as the chief cause of the financial crisis of 2007–2009, revealing an urgent need for financial sector reform.

Key Words: Too-big-to-fail, Policy Failure, Financial Crisis, Economic Theory of Regulation, Deregulation

Introduction

In 2007, the global financial system was hit by what would turn out to be the worst financial crisis since the Great Depression. The possible causes of the Global Finan-

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cial Crisis of 2007–2009 are well documented, including a „global savings glut“[1], lax monetary policy[2], government subsidies for housing in general[3] and via the two government-sponsored enterprises (GSEs) *Fannie Mae* and *Freddie Mac* in particular[4], deregulation of financial markets[5], securitisation[6] and the compensation structure at financial firms[7] as well as credit rating agencies[8]. Perhaps the most defining aspect of the crisis, however, was the role large financial institutions played. Although these institutions are most commonly referred to as banks which are „too-big-to-fail“ (TBTF), they need not necessarily be banks nor need they be big. Rather, any financial institution may be TBTF owing either to its size, complexity or interconnectedness or a combination thereof, which is reflected in the alternative term „large, complex financial institutions“ (LCFIs). Henceforth, the terms TBTF institutions and LCFI will be used interchangeably, meaning to include all aspects making them systemically important (i.e. size, complexity, interconnectedness). Irrespective of nomenclature, these institutions share one characterising trait: Owing to their perceived systemic importance and the adverse effect their bankruptcy is believed to pose to the financial system and the economy, they are considered too systemically important to let them fail, and they constituted the nexus of the above stated factors.[9] During the course of the Global Financial Crisis, all LCFIs, either directly or indirectly, received or benefited from some sort of government intervention. These government rescues comprised measures ranging from nationalisation (*Fannie Mae* and *Freddie Mac*) to capital injection by the government (e.g. AIG, *Bank of America*, *Citigroup*) as well as generous liquidity support for insolvent institutions by expanding the Federal Reserve's traditionally narrowly defined role as lender-of-last-resort. It is indeed intriguing that, although smaller banks became troubled during the crisis as well, causality is generally seen to be running from large to smaller banks, not vice versa.[10] The purpose of this paper is to evaluate the motivation, design and merit as well as effects and consequences of important financial policies in the 10-year period prior to 2007 which are related to increasing the TBTF problem. In accordance with the general theme of this journal, particular emphasis is placed on identifying the dominant actors, conflicts of interests as well as agency problems which played a role in the lead-up to the financial crisis. While this necessarily entails identifying some of the major actors, the article's aim is not so much finger pointing as exposing the system's weaknesses as well as revealing possibilities for reform. The remainder of the article is structured as follows: Part 1 will analyse two pieces of legislation which vastly increased both the scale and the scope of TBTF. In 1999, the Gramm-Leach-Bliley Act abolished the separation of commercial and investment banks, triggering financial supermarkets. One year later, the Commodity Futures Modernization Act of 2000 codified the existence of over-the-counter derivatives. Both Acts allowed financial institutions to become both too big and too complex to

fail. Part 2 will explore how the shift towards supposedly market-based regulation by policymakers and regulators allowed banks and other financial institutions to exploit their TBTF status. In this context, the Basel framework and the shift towards internal risk models as well as over-reliance on credit rating agencies are analysed. Part 3 will provide a short summary as well as a conclusion and possibilities for future reform.

The Gramm-Leach-Bliley Act and the Advent of Financial Supermarkets

In 1999, the Gramm-Leach-Bliley Act (GLBA) abolished the separation of commercial and investment banking, also known as Glass-Steagall, rewarding decades of lobbying effort by the financial industry. Since the introduction of federal deposit insurance in 1933, the Glass-Steagall Act had separated commercial banking from investment banking in order to confine federal deposit insurance to depository institutions. Generally, two different methods for handling bank failures stood at the disposal of the Federal Deposit Insurance Corporation (FDIC), the government agency that administrates the Deposit Insurance Fund. Under the payoff method, depositors were compensated up to the insurance limit. The proceeds from the liquidation of the bank's assets were then used to reimburse non-insured creditors and depositors with deposits above the insurance limit. Under the purchase and assumption (P&A) transaction, on the other hand, the FDIC tried to find a healthy institution which assumed some or all of the failed bank's assets and some or all of its liabilities. This approach generally granted depositors and other creditors insurance above and beyond the maximum amount set by the law. From 1971 onwards, when handling bank failures, the FDIC exhibited a strong bias towards protecting depositors at large banks. By contrast, small banks were usually subjected to the ordinary resolution process. Between 1971 and 1984, 25 banks with assets in excess of $100m failed. All but one of these were handled by P&A transactions which protected depositors from losses regardless of the insurance limit.[11] Additionally, the Federal Deposit Insurance Act of 1950 enabled the FDIC to provide open-bank assistance (OBA) to prevent banks from failing, conditional on finding „essentiality" („when in the opinion of the Board of Directors the continued operation of such bank is essential to provide adequate banking service in the community").[12] In 1971, a small minority-owned and -catering bank in Boston (*Unity Bank*) was rescued based on this „essentiality" out of fear that its failure would lead to a repetition of the race riots of the preceding years. As a financial journalist commented, the very first bailout had already hollowed out „essentiality" by reinterpreting the word community – „that Congress had in mind for small, isolated rural communities" – in a wider and con-

temporary context.[13] Sprague (2000), at that time on the FDIC's Board of Directors, summed up the decision to assist *Unity Bank* as follows: „Now we were in the bailout business, how deeply no one could then tell."[14] Indeed, by bailing out *Unity Bank*, an important precedent for further bailouts had been set. As the problems of *Franklin National Bank* in 1974 revealed, TBTF measures were not confined to the FDIC as its conduit. In order to prevent the bank from failing, the Federal Reserve lent $1.7bn through the discount window. When *Franklin* was merged with another bank in October, the FDIC assumed the bank's debt to the Fed.[15] During the Latin American debt crisis in 1982, international organisations, governments and banks lent to insolvent countries in order to prevent huge write-downs at banks, thereby bailing out the ten largest US money-centre banks, whose exposure to less-developed countries amounted to 222% of capital.[16] The term „too-big-to-fail" came into common use in 1984, when the FDIC bailed out *Continental Illinois,* granting its creditors unlimited protection. *Continental Illinois* was then the seventh largest commercial bank of the United States. At a Congressional hearing, the Comptroller of the Currency conceded that the eleven largest banks of the United States were too big to fail.[17]

The knowledge that large banks cannot be allowed to fail incentivises financial institutions to grow in order to reach the too-big-to-fail threshold. TBTF size, in turn, encourages moral hazard: banks take inordinate risk because they know that they are too-big-to-fail. TBTF institutions are enabled to pursue risky strategies with no proportional increase in funding costs because creditors, too, know that they are too-big-to-fail. Hence they lend such banks at more favourable terms than they would otherwise do. TBTF may also lead to competitive advantages with regard to deposit taking. In return for relative safety, depositors are likely to put their money in banks at lower interest rates when they expect them to survive crises due to government interventions or bailouts. In sum, TBTF status grants banks substantial competitive advantages against smaller institutions. Therefore, once the TBTF threshold is reached, competitive advantages almost automatically lead to further and accelerating growth of these institutions.

Since the 1970s and increasingly since 1984, government rescues had incentivised banks and other financial institutions to grow in size in order to become TBTF and gain the associated benefits.[18] It is not surprising that subsequent to the bailout of *Continental Illinois* and increasingly in the 1990s, the banking sector consolidated significantly. Boyd & Graham (1991) identify attaining TBTF size as an important motive for large bank mergers during that time period.[19] Brewer & Jagtiani (2009) document that in the 1990s and early 2000s, banks paid significant premia in mergers which would take them above the assumed TBTF threshold of $100bn.[20] From 1991 to 1998, 29 „megamergers" occurred between banks with assets of at least

$10bn each.[21] In 1998, four of the nine largest mergers in history occurred in the banking sector, comprising banks with at least $100bn in assets each.[22] The merger wave of the 1990s increased the market share of the ten largest banks from 25.6% in 1990 to 44.8% in 1999, while the 50 largest banks held 68.1% of aggregate assets in 1999.[23] The new megabanks made the TBTF problem even worse. One year before passing the Gramm-Leach-Bliley Act, the TBTF doctrine had even been extended to hedge funds. Under the orchestration of the Federal Reserve, a bank consortium bailed out *Long-Term Capital Management* (LTCM) in 1998 (see below for more details).

Summarising, by 1999, the problem of TBTF had already existed for a long time. Sprague (2000) remarked on that point: „The reality is that nearly all large bank failures are handled by bailout, either in name or its functional equivalent."[24] Already in 1999, large banks posed a severe and growing problem to the economy. However, the Gramm-Leach-Bliley Act exacerbated the problem by allowing cross-sectional mergers. Evidently, the possibility of growing inter-sectionally is bounded by anti-competition concerns. Eliminating the sectional barrier, however, paved the way for even bigger banks. In addition, they also became much more complex. This increased the danger of too-complex-to-fail. As Avraham, Selvaggi & Vickery (2012) show, following the Gramm-Leach-Bliley Act, the size and importance of non-bank subsidiaries increased dramatically.[25] By the mid-2000s, Stern & Feldman (2004) identified 19 US banks to be potentially TBTF.[26] Moreover, the blurring of commercial and investment banking expanded FDIC coverage to non-commercial activities. For example, after the abolishment of Glass-Steagall, brokerage houses used deposit-taking subsidiaries to convert securities transaction accounts into Money Market Deposit Accounts, which were insured by the FDIC.[27] Similarly, *Merrill Lynch* and *Lehman Brothers*, which had the largest of these subsidiaries, financed their mortgage origination with FDIC-insured deposits.[28] After being downgraded in 2011, *Bank of America* moved derivatives from its *Merrill Lynch* unit to a deposit-taking subsidiary, thereby putting the FDIC at risk in case of losses.[29]

The Commodity Futures Modernization Act of 2000

Similar to the Gramm-Leach-Bliley Act, the Commodity Futures Modernization Act (CFMA) of 2000 exacerbated the too-big-to-fail problem by codifying the existence of unregulated over-the-counter (OTC) derivatives for sophisticated participants. This included credit default swaps (CDS), the *corpus delicti* in the corporate suicide of the multinational insurance corporation AIG.[30] The over-the-counter market lacks a central market place; instead, certain finan-

cial institutions such as large commercial and investment banks act as dealers. In 1974, Congress had amended the Commodity Exchange Act of 1936 so that all futures and options contracts on commodities and financial instruments be traded on regulated exchanges and created the Commodity Futures Trading Commission (CFTC) to regulate and supervise the market.[31] The general aim of the legislation was to ensure transparency by requiring clearing mechanisms to ensure adequate capital and collateral („margin") backing for contractual commitments. However, parallel to the thus created regulated market, the over-the-counter market began to grow rapidly. In contrast to exchange-traded derivatives, off-exchange transaction do not clear via centralised platforms. Instead, the terms of the contract are privately negotiated between the largest financial institutions acting as dealers of over-the-counter derivatives. Therefore, no binding rules such as capital or collateral requirements exist in this market, making undercapitalised transactions possible. In 1994, the General Accounting Office voiced concerns over off-exchange derivatives. The agency warned that the failure of any major over-the-counter derivatives dealer could have catastrophic consequences and may require the government „to intervene to keep the financial system functioning", including „industry loans or a financial bailout paid for by taxpayers." Moreover, the report found that accounting standards for derivatives were insufficient and did not reflect economic reality. [32] In order to mitigate the risks of OTC derivatives, the General Accounting Office recommended that the availability of information and capital requirements be improved.[33] In May 1998, the Commodity Futures Trade Commission under Chairwoman Brooksley Born issued a concept release requesting comments on whether the OTC market required any modification or might be more adequately addressed through self-regulation, possibly in conjunction with some sort of government oversight.[34] Born's foray was met with swift opposition by Federal Reserve chairman Alan Greenspan, SEC chairman Arthur Levitt and Treasury Secretary Robert Rubin. On the very same day, they jointly issued a statement in response to Born:

> „On May 7, the Commodity Futures Trading Commission (`CFTC´) issued a concept release on over-the-counter derivatives. We have grave concerns about this action and its possible consequences. The OTC derivatives market is a large and important global market. We seriously question the scope of the CFTC's jurisdiction in this area […]."[35]

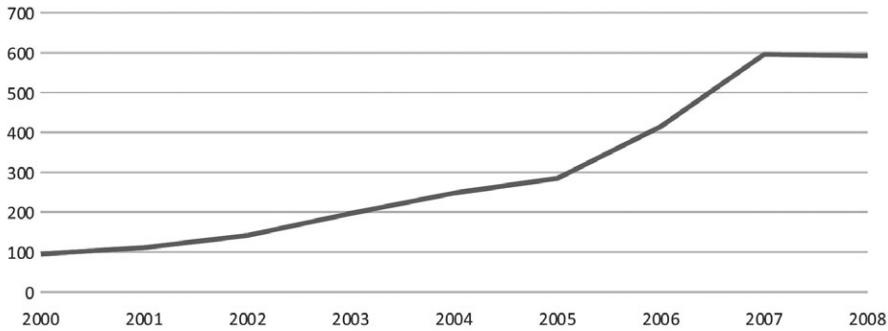
A few months later, in September 1998, *Long-Term Capital Management* (*LTCM*) collapsed. The hedge fund had been run by two Nobel laureates, a former Federal Reserve official, and 25 PhDs. The LTCM incidence highlighted that losses resulting from OTC derivatives are not confined to unsophisticated parties. LTCM had accumulated derivatives with a face value of $1.4tr,

one half of which were over-the-counter. Off-balance sheet and OTC derivatives had allowed LTCM to build up excessive risk to the financial system. The firm had entered into more than 20,000 transactions with over 75 counterparties, making it „perhaps the world's single most active user of interest rate swaps."[36] On grounds of LTCM's interconnectedness, leverage and complexity, the Federal Reserve orchestrated a bailout by banks, remarking that an „abrupt and disorderly close-out of Long-Term Capital's positions would have posed unacceptable risks to the American economy."[37] Half a year later, the President's Working Group on Financial Markets, including Greenspan, Levitt, Rubin and Born, presented an analysis of the LTCM fallout. It stressed the importance of better and more timely information on off-balance sheet liabilities and exposure and limiting excessive leverage. It noted that even banks „did not have a complete understanding of the risk profile […] because they seldom could get information incorporating transactions done with other dealers". The report concluded that „regulators need expanded risk assessment authority for the unregulated affiliates of broker-dealers and futures commission merchants."[38] In response to the LTCM crisis, swaps dealers had formed the Counterparty Risk Management Policy Group. In June 1999, this self-regulation and self-study organisation arrived at a similar conclusion as the President's Working Group, voicing concerns over insufficient documentation of OTC derivatives.[39] Only half a year later, however, the President's Working Group (now without Born, who had been forced to step down) came to a diametrically opposed conclusion. It now recommended that OTC derivatives be exempted from any regulatory oversight.[40] The Commodity Futures Modernization Act of 2000 implemented the recommendations of the latter report and thereby laid the foundations for the subsequent boom of the OTC derivatives market, which grew from about $28tr at the time of the CFTC's concept release to c. $600tr in 2007.[41]

Two years after enacting the CFMA, the *Enron* bankruptcy in 2002 again highlighted the dangers of off-exchange derivatives, which had played a central role in the firm's demise.[42] In 2005, the swaps dealers' self-regulatory organisation issued a report, warning of the industry's „very limited experience with settling large numbers of transactions following a Credit Event".[43] As Greenberger (2009) notes: „This was certainly an internal industry acknowledgement that all was not well with the CDS market at that time."[44] In the same year, Timothy Geithner, then New York Fed President, requested banks to form a clearinghouse for OTC derivative contracts. Until 2008, this had not happened.[45]

Contrary to the Act's title, the Commodity Futures Modernization Act did not modernise financial markets. On the contrary, it re-established pre-Great Depression opacity because it allowed certain derivatives activities to be privately negotiated. This was the undoing of one of the most important accomplishments of post-

Great Depression legislation. The loss of confidence during the 1920s and 1930s had triggered the enactment of the Securities Act of 1933 and the Securities Exchange Act of 1934, which aimed at improving the availability of information. The Securities Act of 1933 required that all public offerings of securities be registered and all material information be fully disclosed so as to allow potential investors to judge the merit of the offering and make informed investment decisions.[46] The Act was thus based on the modern notion „that investors are adequately protected if all aspects of the securities being marketed are fully and fairly disclosed".[47] The Securities Exchange Act of 1934 expanded the scope from new securities offerings to virtually all listed securities. It stipulated periodic reporting and disclosure requirements (annual reports and quarterly earnings) for all corporations with listed securities.[48] By the end of the millennium, however, the provisions of the Securities Act and the Securities Exchange Act had been hollowed out as financial innovation had enabled large, complex financial institutions to take risks unbeknownst to regulators and investors alike. Kane (1996) had already stressed that in order to control risk-shifting of large institutions as a result of derivatives, a paradigm shift in accounting transparency was needed.[49] By exempting OTC derivatives from regulatory oversight, policymakers, however, chose the opposite. The CFMA laid the foundation of a complex and intricate web of mutual exposure of large financial institutions, increasing systemic risk. The lack of information on these exposures helped make them too interconnected to fail, amounting to a subsidy for complexity. Indeed, the unprecedented degree of financial firms' complexity and interconnectedness was to play an important role in the years 2007–2009. Probably most revealing in this regard is the near-failure of AIG due to credit default swaps (CDS). AIG had insured a plethora of counterparties against default of securities via credit default swaps of a notional amount of more than $500bn backed insufficiently by capital. As losses mounted, AIG's failure was averted by an $180bn bailout on grounds of global banks' and investment banks' exposure to AIG. The firm's survival was therefore considered to be of systemic importance.[50] Indeed, considerations about systemic importance due to interconnectedness and complexity provided the main reasons for all bailouts during the Global Financial Crisis. Bair (2010), for example, attributes the different resolution method of the otherwise similar banks *Washington Mutual*, which was allowed to fail, and *Wachovia*, which was attempted to be bailed out, to their varying degree of complexity.[51] Meanwhile, even former SEC chairman Levitt and Federal Reserve chairman Greenspan, both of whom had fervently supported the Commodity Futures Modernization Act, concede that the Act contributed to the financial crisis.[52]



Graph 1: Global OTC Derivatives Outstanding (Notional Amount, in $ Trillion)
Data: Bank for International Settlement

Self-Regulation

Concurrent with the legislations and interventions detailed above, regulators in the 1990s increasingly began to rely on the financial sector's assumed ability to regulate itself. However, as Greenspan conceded in 2008, „[t]hose of us who have looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief."[53] In February 2009, Greenspan elaborated on his ideological failure:

> „All of the sophisticated mathematics and computer wizardry essentially rested on one central premise: that enlightened self interest of owners and managers of financial institutions would lead them to maintain a sufficient buffer against insolvency by actively monitoring and managing their firms' capital and risk positions. When in the summer of 2007 that premise failed, I was deeply dismayed."[54]

Why didn't self-regulation in the financial sector work, while in other sectors it did and does? This question is of particular interest, since risk managers at financial firms were generally aware of the looming dangers well before 2007. Perhaps surprisingly, the excessive build-up of risk had been recognised by a large number of risk managers in the years prior to 2007. However, according to Sorkin (2010), objections expressed by risk managers at the very largest banks were systematically ignored. For example, *Lehman Brothers*' Chief Risk Manager Madelyn Antoncic was routinely asked to leave the room at executive committee meetings when the issue of risk came up. In 2007, Antoncic was removed from the committee altogether.[55] McLean & Nocura (2011) document how John Breit, one of the most tal-

ented risk managers at *Merrill Lynch*, was relegated to the back office and deprived of the required information to efficiently assess the firm's risk. Following Breit's banishment from the trading floor, *Merrill Lynch* increased its subprime portfolio of collateralised debt obligations from $15 to $55bn unbeknownst to Breit.[56] Similarly, in 2004 *Washington Mutual*'s CRO Jim Vanasek had internally warned about an unsustainable housing price bubble and loosening lending standards. Although *WaMu*'s CEO Kerry Killinger shared Vanasek's concerns, he chose to increase the firm's risk by implementing *WaMu*'s High Risk Lending Strategy shortly afterwards.[57] As early as 2004, *Freddie Mac*'s Chief Risk Manager David Andrukonis had warned the firm's CEO about the rising amount of increasingly risky loans which posed a threat to *Freddie*'s financial health. Alas, Andrukonis' concerns were also ignored.[58] At *Fannie Mae*, Chief Risk Officer Enrico Dallavecchia expressed concerns over budgetary cuts in his division and the firm's weak risk management infrastructure in general, earning him but the derisive nickname Dr. Doom and derogatory comments from *Fannie Mae*'s top management.[59]

The above stated examples illustrate that the crisis was not unanticipated. In fact, risk managers generally had done a good job in identifying risks, repeatedly cautioning against them. Their warnings, however, were mostly ignored. In this respect it is instructive to note that risk management functions are distinctively less respected than risk-taking functions. The subordinate role of chief risk officers to other top executives is reflected in the difference in compensation. For example, the Financial Crisis Inquiry Commission reports that *Bear Stearn's* chief risk manager was paid less than one tenth of other top executives in 2006.[60] Why did financial institutions systematically act against the self-interest Greenspan so heavily relied upon? The answer to the question rests on the fact that self-regulation was not in the best interest of banks. Kaufman (1995) rightly observes that self-regulation, in general, is an important regulatory factor: „[M]ost industries in the United States are not regulated by the government. But their performance is regulated. It is regulated by the private marketplace."[61] Self-regulation in the financial sector, however, is fraught with problems. It is indicative and, as soon as the implications are considered, indeed startling, that in the non-financial sector, self-regulation is omnipresent. Yet, the term self-regulation is generally not associated with the non-financial sector. This is due to the fact that self-regulation is in the best interest of most firms. Hence regulators and the industry do not have to reiterate its viability in a mantra-like chorus. For self-regulation to work, certain conditions need to be fulfilled. In the financial sector, however, there existed three important factors which prevented self-regulation from being a viable option:

First, policies in the years before 2007 greatly increased externalities. In other words, financial firms were allowed to profit from the upside while being shielded

from the downside. The Gramm-Leach-Bliley Act and the Commodities Futures Modernization Act both contributed greatly to expanding the financial safety net for TBTF institutions. The government safety net for the financial sector had been large even before. Walter & Weinberg (2002) conservatively estimated that in 1999, 45% of all liabilities of US financial institutions were either explicitly or implicitly guaranteed by the government.[62] After the Gramm-Leach-Bliley and the Commodities Futures Modernization Act had been passed in 1999 and 2000, respectively, the share of total liabilities guaranteed increased by 14 percentage points to 59% of total liabilities during the next decade.[63] Of course, large financial institutions, owing to the TBTF doctrine, were equipped with a 100% guarantee.

Second, consider a company that is financed by equity and debt. Certainly, both parties are in danger of losing their investment. However, equityholders are the residual claimants, and therefore debtholders only lose if all equity is wiped out. Hence, without information asymmetries, equityholders have an interest in conducting business in a way that seeks opportunities (and hence takes risk) but only moderately so. In other words, the company will take a socially optimal amount of risk. However, given information asymmetries, i.e. if equityholders have more knowledge than creditors, then equityholders have an incentive to extract value at the expense of debtholders (moral hazard). Consequently, equityholders may take excessive risk at the cost of debtholders. Since debtholders are entitled only to a fixed repayment sum, any gain above the interest on debt will accrue to equityholders. However, losses that exceed equity capital will have to be borne by debtholders. Summarising, it is well established that debt changes the incentives and subsequently the behaviour of residual claimholders (shareholders). Particularly highly leveraged firms, such as financial institutions, may be regarded as a call option[64] by residual claimants.[65] Consequently, holders of such levered equity claims have an incentive to increase risk and to take on even more debt at the expense of debtholders in order to increase the value of their claim. It is therefore in the interest of debtholders to constrain both risk-taking as well as leverage in order to reduce the possibility of insolvency. If a third party insures liabilities (as is the case with TBTF institutions), then the onus of disciplining owners to profit from the implicit call options falls on the guarantor of said liabilities. Hence the government and its regulatory agencies would have had good reasons to enforce strict oversight. Relying on self-regulation was misguided and shifted potential losses from financial institutions to the government.

Third, related to the points above, the compensation structure in the financial sector significantly contributed to excessive risk-taking. As one of the first, a study by the Counterparty Risk Management Policy Group (2008) identified the compensation system in the financial sector as among the top five primary driving forces

leading to the financial crisis. Hence, the organisation stressed the need for a better alignment of long-term interests and short-term incentives.[66] Generally, executive compensation in the financial industry is comprised of a base salary plus bonus payments (common shares and options), the latter of which may be significantly higher than the former. For example, Dow Kim, former *Merrill Lynch*'s head of Global Markets and Investment Banking, received bonuses of $35m in 2006, which was one hundred times his base salary.[67] Therefore, bank executives participate in any gains to shareholders, but at the same time are insulated from the consequences of extreme risk-taking resulting in losses for debtholders. Debtholders of TBTF institutions, however, had little incentive to closely monitor risk, since they possessed an implicit government guarantee. The asymmetric pay-off profile rendered excessive risk-taking rational. As Bebchuck & Spamann (2010) point out, the prevailing reward system not only incentivised bank executives to take on excessive risk, but even made bets with negative expected value a privately optimal decision.[68] Often, such strategies included taking on tail-risk, that is, strategies which yield a constant positive return with a small probability of extremely large losses.[69] As long as losses do not materialise, the associated cash-flows may be confused with alpha (low risk but high returns) while, in fact, they only compensate for the underlying risk (or, in the case of negative expected value strategies, not even for the risk taken). If capital is insufficient to cover the losses when they materialise, these strategies promise a skewed payoff, i.e. profits in good times but limited losses in bad times. Tail-risk strategies are promising, as true alpha is often only identifiable in the long-run. In combination with the prevailing reward structure, such strategies promised large bonus payments as long as tail-risk did not materialise, but also implied losses that exceed capital, possibly by a large factor. The example of AIG is instructive in this context. In the lead-up to the crisis, AIG *Financial Products* became the most important seller of credit default swaps, insuring counterparties against default of mortgage-backed securities, collateralised debt obligations and other credit risk with a notional value of more than $500bn. AIG profited heftily by collecting fees as long as the underlying instruments did not default. When they did, losses exceeded AIG capital by a multiple, requiring a government bailout of $180bn. From 2002 to 2007, AIG *Financial Products* CEO Joseph Cassano, however, earned a minimum of $38m annually.[70] As Rajan (2008) puts it:

> „True alpha can be measured only in the long run and with the benefit of hindsight – in the same way as the acumen of someone writing earthquake insurance can be measured only over a period long enough for earthquakes to have occurred. Compensation structures that reward managers annually for profits, but do not claw these rewards back when losses materialise, encourage the creation of fake alpha. Significant portions of compensation

should be held in escrow to be paid only long after the activities that generated that compensation occur."[71]

The Basel Accord

The failure of two globally active banks in 1974 – the US *Franklin National Bank,* which was bailed out, and Germany's *Bankhaus Herstatt* – revealed the need for international coordination of bank regulation. The international cooperation culminated in the Basel Accord in 1988, which set forth international best practice standards of bank regulation and aimed at reversing the international trend of decreasing capital ratios as well as harmonising global bank regulation. Most importantly, Basel I introduced a minimum capital ratio of 8% of risk-weighted assets (RWA). Risk-weights were applied based on predefined asset buckets, the multiplication factor of which corresponded to their assumed risk. For example, cash and claims on OECD governments had a risk-weighting of 0%, mortgages had a risk-weighting of 50% and private sector claims of 100%.[72] However, the Basel Accord drew heavy criticism, partly due to its crude measurement of risk. Particularly large banks argued for the use of internal models to calculate risk. The Basel Committee responded to the pressure with the 1996 amendment: it permitted banks to determine market risk using internal value-at-risk (VaR) models, a step that foreshadowed Basel II.[73] The Basel II framework extended the use of the internal ratings-based (IRB) approach from market risk to credit risk. Banks were now allowed to fully rely on internal models when determining capital requirements. Underlying this method was not only the Basel Committee's and regulators' belief that banks knew better how to measure the risk of their banks but also, and perhaps more importantly, that they had an interest in doing so. At the same time, the Basel Committee was increasingly shaped by external factors in the development of Basel II. On the one hand, large financial institutions provided technical input as the Committee became aware that it had insufficient expertise, and on the other hand, the Basel II framework repeatedly made concessions to accommodate the demands of member countries which, in turn, were pressurised by domestic banks.[74] As a corollary, it is not surprising that the Basel Committee was winning over large banks, which increasingly viewed Basel II as an opportunity for lower capital requirements.[75] In 2003, Federal Reserve Vice Chairman Ferguson (2003) announced that the United States would take a bifurcated approach to the implementation of Basel II. Specifically, the US would adopt the Advanced Internal Ratings-Based (A-IRB) Approach[76] for the ten largest banks with assets above $250bn or large foreign exposure.[77] Under heavy pressure from firms like *Lehman Brothers*, the SEC, too, adopted a Basel II IRB-like approach in its Consolidated Supervised Entity (CSE) programme for broker-dealers in 2004.[78] The

alternative net capital rule changed the way net capital was calculated and expanded the definition of capital, „includ[ing] securities for which there is no ready market",[79] the net effect of which was to increase broker-dealers' leverage ratios. By the end of 2008, none of the participating broker-dealers existed in their original form. *Lehman Brothers* had filed for bankruptcy, *Bear Stearns* and *Merrill Lynch* had to be merged with *JPMorgan* and *Bank of America*, respectively, while *Goldman Sachs* and *Morgan Stanley* had applied for bank holding status.

Ironically, while one of the goals of Basel II had been to solve the widening discrepancy between capital and actual risk owing to off-balance sheet exposure and securitisation, it greatly increased the opportunity set of large banks to take on risk without a corresponding increase in capital. During the final stage of the bubble from 2004 to 2007, the assets of the ten largest financial institutions doubled, while risk-weighted assets increased only insignificantly.[80] By 2007, the world's 15 largest, most complex and interconnected banks were operating on an extremely thin capital cushion of 2.85%.[81] Acharya (2012) shows that banks with a significant discrepancy between risk-weighted assets and un-weighted assets suffered the worst market capitalisation declines during the crisis, suggesting regulatory arbitrage.[82] In this context, transferring mortgages off-balance sheet via securitisation often proved less costly than keeping loans on the balance sheet.[83] Not surprisingly, a study by the Joint Forum (2011) identifies regulatory arbitrage as a major driver for securitisation until 2007.[84] This observation is supported by the fact that issuers generally retained the credit risk associated with securitised assets,[85] allowing them to generate fees from servicing off-balance sheet entities, and thereby refuting securitisation's supposed main purpose of risk transfer. As Barth, Caprio & Levine (2012) point out, one of the paradoxes of securitisation due to Basel was that banks were required to hold more capital for originating loans to borrowers they knew well and holding them in their portfolio until maturity. On the other hand, if they bought securitised loans from borrowers whose creditworthiness they did not know, they were required to hold only a fraction of capital.[86]

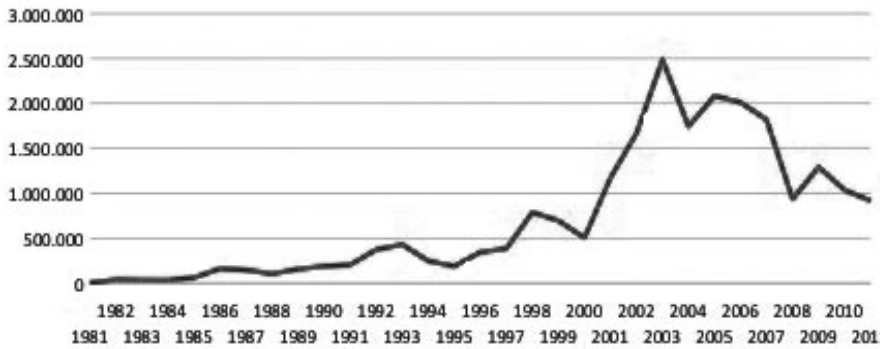
Credit Rating Agencies

Credit rating agencies (CRAs) constitute an important factor in the Global Financial Crisis due to their central role in the securitisation process – the epicentre of the financial crisis. In the years and decades before 2007, the rate of US homeownership had steadily increased as loan origination standards had been successively eroded. The availability of credit rested in no small part on the so-called process of „securitisation" which in turn depended on favourable ratings by credit rating agencies.

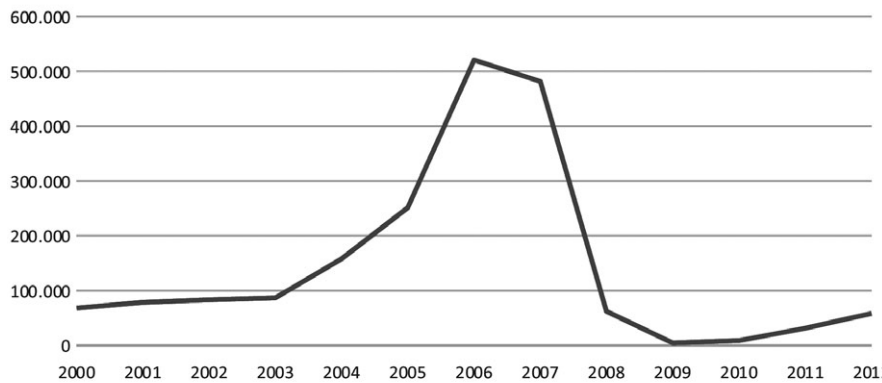
By securitisation, cash-flow generating assets, like mortgages, are pooled and subsequently transferred to a so-called special purpose vehicle and hence off the balance sheet. The special purpose vehicle then issues securities to financial markets, using the proceeds to pay for the assets received from the issuing bank. While mortgage-backed securities (MBSs) entitle investors to a pro-rata share on cash-flows from the mortgage pool, collateralised debt obligations (CDOs) are sliced into different tranches with varying seniority, compensating investors on a sequential basis. In other words, the most senior tranches receive the first cash-flows from the special purpose vehicle until their claim is fully satisfied. Subsequent cash-flows are then allocated to the next-senior tranche, the most junior one absorbing the first losses. In order to issue mortgage-backed securities and collateralised debt obligations, banks needed credit rating agencies to give favourable ratings, which, for a variety of reasons, they were happy to supply.

The main attraction of securitisation lay in the possibility of using diversification effects to create securities that were rated better than the average of underlying loans. Mortgages of low quality were pooled together and thus converted into triple A-rated mortgage-backed securities. This allowed for example pension funds, which had formerly been excluded from holding assets like mortgages, to expand their investment universe. Whereas banks had traditionally originated loans and held them to maturity, they now shifted to the originate-to-distribute model: loans were sold to investment banks, which securitised them to mortgage-backed securities and collateralised debt obligations. With this business strategy, loan originators had little incentive to screen mortgage borrowers, which contributed to decreasing lending standards.[87] As graph 2 reveals, the issuance of mortgage-backed securities dramatically increased in importance in the early 2000s, when loan quality decreased and loose lending standards made mortgages repayments increasingly unlikely. As collateralised debt obligations allow the creation of high-rated tranches out of qualitatively less good mortgage-backed securities, their increasing importance towards the end of the housing boom is particularly instructive (graph 3). Although credit rating agencies should have acted as a counterweight to decreasing lending standards before 2007, they wantonly neglected their pivotal role as gatekeepers by fuelling the housing bubble with inflated ratings. This, too, is attributable to an ill-designed policy framework.

Credit rating agencies (CRAs) act as important gatekeepers to the capital markets by assessing companies' creditworthiness and hence their ability to service debt and their probability of default. Historically, credit rating agencies had charged investors for their rating services. Beginning in the early 1970s, however, important agencies switched their business model to charging issuers instead of investors.[88] As issuers of securities have a vital interest in obtaining favourable rat-



Graph 2: MBS Issuance in the US, 1981–2011 (in $ Million)
Data: Securities Industry and Financial Markets Association



Graph 3: Global CDO Issuance, 2000–2012 (in $ Million)
Data: Securities Industry and Financial Markets Association

ings, and rating agencies seek to make profit by selling ratings, the new business model deeply undermined credit rating agencies' objectivity. Moreover, credit rating agencies began offering consulting services to their customers. This kind of ancillary service introduced yet another conflict of interest, as credit rating agencies which advise clients with regard to ratings may feel pressured to give more favourable ratings than they would otherwise do.[89] Despite these conflicts of interests, the Securities Exchange Commission (SEC) introduced the Nationally Recognized Statistical Rating Organization (NRSRO) designation in 1973 for the most important credit rating agencies.[90] The elevation of their status gave the three firms a de facto oligopoly over credit ratings, which in itself is disturbing. The deci-

sion gets even more incomprehensible in the light of empirical evidence that even then, credit ratings seriously lacked informational value. Between 1950 and 1972, credit rating changes had merely reflected information already incorporated into bond prices and had lagged bond price changes by an average of 15 months.[91] Notwithstanding the severe short-comings of credit rating agencies, the NRSRO designation triggered a cascade of regulatory bodies making NRSRO ratings obligatory for securities dealings. Certain entities like pension funds were also mandated to use NRSRO ratings as a criterion for investable assets.[92] Furthermore, the Basel Accord relied heavily on credit ratings for the purpose of determining capital requirements. Paradoxically, the increasing prosperity and influence of credit rating agencies went hand in hand with the declining informational value of credit ratings.[93] The paradox ceases to be a paradox, however, as soon as the underlying economics of credit rating agencies are explored. The NRSRO designation gave a small number of credit rating agencies a governmental housekeeping seal of approval. This more than compensated for these institutions' inability to accurately assess risk. Mandated NRSRO ratings made demand for ratings inelastic to their quality because virtually any security emission requires a rating by one of these firms. Even if the quality of ratings was perceived to be of no value, securities still had to be rated in order to comply with regulation. Thus, NRSROs became influential gatekeepers, not because of their good reputations or accurate credit ratings, but because regulations gave them the power to sell „regulatory licences, i.e., the right to be in compliance with regulation."[94] Indeed, studies suggest that competition and market share considerations led to a „race to the bottom".[95] That NRSRO ratings did not accurately reflect the associated risk is confirmed by irrefutable empirical evidence. For example, by 2010, 93% and 91% of all triple A-rated subprime loans issued in 2006 and 2007, respectively, had been downgraded to junk status.[96] In 2005, collateralised debt obligations were ten times riskier than similar-rated corporate debt, despite the credit rating agencies' claimed uniformity of rating scales.[97] Moreover, congressional hearings and internal communication indicate that the agencies knew about the dangers of unrealistic ratings of securities at least since 2003, but continued to issue inflated ratings.[98]

That credit rating agencies are plagued by conflicts of interest had repeatedly been pointed out before 2007,[99] yet regulators like Greenspan did not heed these warnings. Instead, they relied on rating agencies as a supposedly market-based supplement to self-regulation. The government-sponsored cartel, however, rendered demand for NRSRO ratings non-responsive to ratings quality and therefore made prudential conduct of business costly. The three big rating agencies thus exploited their oligopoly powers by colluding with issuers and investors by providing overly optimistic ratings.[100]

In addition to fuelling the housing bubble by inflated ratings, credit rating agencies further compounded the TBTF problem. According to Hau, Langfield & Marqués-Ibañez (2012), NRSROs contributed significantly to the exponential growth of TBTF institutions. As too-big-to-fail institutions became „too-big-to-downgrade", large financial institutions profited from rating favours, which provided them with ratings that were not justified by their fundamentals.[101] The notion that large financial institutions were granted special treatment by credit rating agencies is substantiated by the findings of Efing & Hau (2013). They provide empirical evidence that between 1999 and 2011, credit rating agencies granted substantial rating favours for structured products to their largest and most important clients. This practice suggests that considerations related to market share and follow-up business are likely motives for this preferential treatment.[102] This suspicion is reinforced by Congressional investigations which demonstrated that investment banks actively (and successfully) exerted pressure on rating agencies to obtain undeservedly favourable ratings.[103] Despite the fact that large institutions knew that the ratings were overly optimistic, TBTF institutions constituted the most active buyers of the most risky securities, again indicating regulatory arbitrage. Pinto (2010) points out that the institutions' size and their share of non-performing loans closely correlated. The largest four banks with assets above $1tr each had accumulated a disproportional share of risky mortgages, whose share of non-performing loans averaged 17.36%.[104]

Conclusion

The empirical evidence supports the conclusion that a mix of ill-designed policies substantially contributed to the financial crisis of 2007–2009. During the decade preceding the crisis of 2007–2009, a large number of policies with huge societal costs had been enacted, legislated and maintained which were directly related to the crisis. First, policies in the decade before 2007 compounded the TBTF problem. The TBTF problem, of course, was not new but rather a predictable consequence of government actions since the 1970s. Recurrent bailouts of large financial institutions had allowed banks and other financial firms to grow beyond what a market free of TBTF interventions would deem healthy and at the same time incentivised financial institutions to achieve TBTF size. However, both the Gramm-Leach-Bliley Act of 1999 and the Commodity Futures Modernization Act of 2000 compounded the TBTF problem by allowing banks and other financial institutions to grow in size and, perhaps more importantly, to grow in complexity. Hence, TBTF status for many of the large financial institutions had created huge externalities. In other words, failure of these firms would lead to large costs that would have to be borne by society

as opposed to the firms taking the risk. Second, and analogously to helping financial institutions achieve TBTF status, governments provided the very same with legislations which allowed them to exploit their status. In this context, regulators increasingly relied on a supposed market approach to regulate the financial system, including internal risk models and credit rating agencies. Regulators therefore bought into the premise that self-regulation was the best means of regulating the financial sector. Besides being influenced by financial firms' lobbying efforts, Buiter (2008) argues that regulators fell victim to „cognitive regulatory capture" by internalising „the objectives, interests and perception of reality of the vested interest they are meant to regulate and supervise in the public interest."[105] The observation that regulators' perception with regard to the financial sector was severely distorted is consistent with regulators' disparate approach to the financial sector vis-à-vis other industries. For example, when *Chrysler* was bailed out (for the first time, in 1979) by the government, Greenspan remarked that he feared the bailout's success more than its failure, as a successful bailout would smooth the way for even more government rescues.[106] Yet, Greenspan and other regulators ignored the perverse incentives recurrent bailouts in the financial sector had created. Given the existing externalities resulting from TBTF, self-regulation was determined to fail. With high leverage, the burden of disciplining risky behaviour shifts to debtholders. However, if financial institutions are too-big-to-fail, debtholders have little incentive to discipline inordinate risk-taking. If the government implicitly guarantees TBTF institutions' liability side, then the government needs to reign in excessive risk-taking. Without the danger of failing, risk management and hence self-regulation whose very purpose is minimising the risk of failure is, of course, an extreme luxury and hence a wasteful and costly endeavour. Internal risk models enabled banks and other financial institutions to mathematically justify the shift to increasingly risky business models. Policymakers therefore fell victim to irrational rationality, relying on the financial industry's self-interest in regulating itself. This stance allowed financial institutions to increase risk, looting their firms in a predictable strategy of rational irrationality. In fact, it is difficult to envision firms not acting as they did given the existing externalities due to the financial safety net. Reliance on credit rating agencies suffered from similar problems. Given the oligopoly powers misguided policies had conferred on the largest credit rating agencies, rating agencies were more concerned with gaining market share than accurately assessing the risk of financial instruments. NRSROs' privileged status made colluding with issuers and investors by extending overly optimistic ratings a privately optimal decision and therefore fuelled the housing bubble.

By laying out the main policy failures in the decade preceding the Global Financial Crisis of 2007–2009, this article has attempted to raise awareness of the factors which influence policy-making and that neither deregulation nor regulation

necessarily advocate the public interest. In particular, both regulation and deregulation may have effects diametrically opposed to their intention in a pre-existing policy mix. In this context, „deregulation" may amplify given policies rather than contribute to liberalised markets, and „regulation" may accentuate problems rather than solve them. „Deregulation" in the form of the Gramm-Leach-Bliley and the Commodity Futures Modernization Act constituted a grave case of fraudulent labelling and did not contribute to more liberalised markets. Instead, they expanded and extended the government's safety net for large financial institutions. These legislations were enacted in response to demand and lobbying efforts by the financial sector and were not in the public interest. The shift towards self-regulation, again deregulatory only on a superficial level, allowed financial institutions to game the system by exploiting their TBTF status. Regulation of credit rating agencies also failed spectacularly, particularly as credit ratings were increasingly seen to be a market-based supplementary to self-regulation, ignoring the fact that oligopoly powers had obliterated any market characteristics of credit rating agencies. To summarise, virtually all policies which affected the financial system in the decade leading to 2007 seem to have catered, consciously or unconsciously, to the financial sector and provided fertile grounds for government-subsidised risk-taking. Policymakers, lawmakers and regulators seem to have systematically – and in many cases knowingly – chosen to pass and maintain legislation which was costly from a societal standpoint. By exempting large, complex financial institutions from the main pillar of capitalism – failure – enormous costs have been incurred on taxpayers and the economy. While reforming the system may not be entirely easy, dismantling institutions that are both too large and too complex to exist may be a good point to start.

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