The Great Depression(s) of 1929-1933 and 2007-2009?
Parallels, Differences and Policy Lessons

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Abstract

This article provides a comparative analysis of the Great Depression (1929-1933) and the Great Financial Crisis (2007-2009) by contrasting the crises’ main drivers and how they relate to each other with respect to the United States. To this end, causes, consequences and measures undertaken during the crises are evaluated and dissected. The analysis reveals striking parallels between the Great Depression and the Great Financial Crisis. Causal factors in both crisis were a flawed design of the banking system (unit banking, too-big-to-fail), a real estate boom and high debt burdens of both households and financial institutions as well as pronounced economic inequality. Measures taken during the crises differed markedly, however. Whereas politicians’ approach to the Great Depression was long characterised by inaction, responses during the recent crisis proved to be swift and aggressive. The response to the recent crisis prevented a repeat of the Great Depression by attenuating the immediate adverse effects on the economy. However, there exists strong evidence that the response may only have deferred the adjustment process initiated by the crisis of 2007-2009. The paper presents empirical observations supporting the view that the structural problems which led to 2007-2009 are still existent today and continue to threaten financial stability.

Keywords: Global Financial Crisis, financial crisis of 2007-2009, Great Depression of 1929-1933, banking system, real estate boom, subprime boom, inequality, Federal Reserve, too-big-to-fail, deposit insurance, lender-of-last-resort


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The charm of history and its enigmatic lesson consist in the fact that, from age to age, nothing changes and yet everything is completely different.

Aldous Huxley
1. Introduction

The Great Financial Crisis of 2007-2009 was the most severe (financial) crisis in the post-war era. Only the Great Depression seems similar in severity and length. The question remains, however, whether or not the two episodes are comparable. Aiginger (2010) contrasts several indicators and arrives at the conclusion that the Great Depression was significantly more severe by all but one measure (the stock market decline) than the recent crisis. Romer (2009) even claims that the recent crisis "pales in comparison with what our parents and grandparents experienced in the 1930s." Eichengreen and O'Rourke (2009), on the other hand, assert that we are "tracking or doing even worse than the Great Depression", particularly from a global perspective. Finally, Federal Reserve Chairman Ben Bernanke stated to the Financial Crisis Inquiry Commission (2011, p. 354): "As a scholar of the Great Depression, I honestly believe that September and October of 2008 was the worst financial crisis in global history, including the Great Depression."

It is now abundantly clear that the recent crisis has not had similar effects as the Great Depression. From 1929 to 1933, nominal U.S. GDP contracted by 29%, prices declined by 25%, unemployment reached 25%, more than 9,000 banks suspended operation\(^1\) and some areas even experienced a return to barter (King 1933). However, a differing degree of crisis intervention and legislation during and after the two episodes render a direct comparison non-functional and indeed problematic. This paper therefore approaches the problem of comparability from a different angle. We analyse the broad macroeconomic setting, in which the crises were embedded, and assess whether the two crises had the same potential, as distinct from manifestation. In other words, we evaluate whether the overall setting, within which the two crises erupted, was comparable. This approach goes well beyond academic vanity, as it allows us to assess the inherent destructive power of both crises. If the two crises

\(^1\) It should be noted that "suspension" is not synonymous to "failure". Bank management during that time often pre-emptively and voluntarily suspended operation before insolvency occurred.
were to be found comparable in terms of potential severity, the crisis responses and post-crisis legislation deserve special attention. Indeed, Bernanke concluded in hearings before the FCIC (2011) that the Great Financial Crisis would have exceeded the calamity of the Great Depression if left to its own. The notion that the Great Financial Crisis had the potential of being more destructive than the Great Depression is prevalent in government circles, according to which government actions averted another Great Depression. As Jeffrey Shafer, a former Federal Reserve and Treasury official stated: "Arguably the financial shocks of 2008 were bigger than those of 1929. The outcome was not as disastrous because the policy responses were quite different." (as quoted by Egan 2014) In "Stress Test", a particularly one-sided picture of the U.S. government's response to the crisis and its efficacy, former Treasury Secretary Geithner (2014, introductory chapter) subsumes: "And no one I know—neither critics who thought we were foolish nor supporters who thought we might know what we were doing—imagined that we would put out the financial fire so quickly and actually make money on our investments."

The important question arising in this context is, of course, whether the crisis intervention was in fact successful, as purported by government officials. More specifically, it remains to be evaluated whether government actions, such as bailing out banks and other financial institutions, only prevented the crisis from developing into another depression at the cost of future financial instability. In our view, one may not reasonable preclude the possibility that government and central bank actions during the recent crisis will have similar consequences as those taken after dot.com bubble. While the dot.com bubble and the subprime bubble are viewed as distinct phenomena by many scholars, it is instructive to point out that the former laid the groundwork for the latter. In order to prevent deflation after the internet bubble burst, the Federal Reserve aggressively lowered interest rates to boost spending. Deflation, as feared by then-Federal Reserve chairman Alan Greenspan, failed to materialise, but the Fed kept interest rates too low for too long. Artificially
low interest rates boosted housing activity and led to over-building and at the same time induced financial institutions and households to over-leverage (see, for example, Taylor 2009a). Therefore, the Federal Reserve, by attempting to ameliorate the dot.com bubble’s bursting, laid the foundation for the crisis of 2007-2009. The parallels between the post-dot.com and the post-2007-2009 financial crisis era, in our view, are disquieting.

This article does not attempt to provide a complete account on the variety of (possible) reasons for the Great Depression and the Great Financial Crisis. Instead, we focus on the protruding parallels and on the noteworthy differences of 1929-1933 and 2007-2009 as well as on the crisis and post-crisis policy approach. We identify three important base settings which played important roles in causing the crises: (1) Both crises were preceded by a rapid rise of real estate prices and by increasing household indebtedness, as homeowners became increasingly leveraged and mortgages became gradually more risky. (2) Then and now, the time before the crises was accompanied by high inequality and, probably connected, high indebtedness. (3) In both crisis episodes, the bursting of the bubble impinged on a vulnerable banking sector. During the Great Depression, the banking industry adjusted by a high number of bank failures, whereas in the recent crisis, governments resorted to a historically unique bailout of the world’s largest banks. The key difference between the two episodes thus constitutes the government’s and the Federal Reserve’s approach to handling the crises. While during the Great Depression governmental involvement remained minimal up to the end of the crisis, the government’s response to the recent crisis was swift and profound. To the extent that the actions undertaken during 2007-2009 were almost exclusively aimed at providing extraordinary financial assistance to the banking sector, the question remains whether the measures were sufficient.

The remainder of the paper is structured as follows: Chapter 2 will give an overview of the crises parallels, and chapter 3 will describe the major differences between the
Great Depression and the Great Financial Crisis. Chapter 4 will conclude by summarising the main arguments developed in the paper.

2. The Crisis Parallels

2.1. Flawed Financial Sector Design

In both crises, 1929-1933 and 2007-2009, an ill-designed and fragile banking system played a crucial role in causing, prolonging and intensifying the financial turmoil.

When the Great Depression erupted in 1929, the US banking system was markedly different both to the one today and to that of other countries at that time. While in the Western world, banks with branch networks had been the norm, the United States was dominated by a large number of so-called unit banks. Unit banking describes a banking system in which banks are prohibited from operating branch networks. As a result, unit banking leads to a fragmented banking system, dominated by a high number of individual banks with no office networks. As a direct corollary to branching restrictions, banks in the United States were severely impeded in diversifying loan portfolios, which made them susceptible to location-specific shocks (Cherin & Melicher 1988). A growing body of research suggests that the prevalence of unit banking rendered the US banking system particularly vulnerable to the depression of 1929-1933 and precipitated the large number of bank failures (White 1984, Calomiris 1990, 1992, Wheelock 1995, Calomiris & Mason 1997, 2003; Mitchener 2004). Although the early 1900s experienced a weak trend towards more branching, the overall level remained dramatically low. From 1900 to 1929, the percentage of banks which operated branches increased from approximately 1% to 3%. However, the average number of branches operated by branch-operating banks continued to be low, increasing from 1.37 in 1900 to 4.39 in 1929 (Figure 1). International experience corroborates the notion that branch banking systems proved to be more resilient to the shock in the 1920/30s than the U.S. system. Banking systems which allowed
banks to operate branch networks fared significantly better during the Great Depression and prevented a widespread bank collapse comparably to the one witnessed in the United States.

**Figure 1: Branch Banking in the Early 1900s**

![Graph showing the percentage of banks and number of branches from 1900 to 1929.](image)

**Data:** Committee on Branch, Group, and Chain Banking (1932, p. 6); Comptroller of the Currency (1931, p. 3)

The fact that the Canadian economy was closely connected to that of the US and shared many of the latter’s characteristics, but allowed branch banking, invites a comparison of the two systems in order to evaluate the role unit banking played during the 1920s and the Great Depression. The general consensus holds that nationwide branch banking protected the Canadian banking system during the Great Depression. By 1920, more than 30,000 commercial banks existed in the United States, but only 18 in Canada. These 18 Canadian banks operated 4,676 branches, whereas American banks collectively had only 1,281 branch offices. The 1920s agricultural shock led to different adjustment processes in the two countries. Between 1920 and 1929, the United States experienced 6,008 suspensions (including failures and
voluntary liquidations) and 3,963 mergers. In contrast, only one bank failed in Canada during the decade, while the necessary contraction in the banking industry was carried out by the surviving banks which reduced their number of branch offices by 13.2%, comparable to the 9.8% decline in bank offices in the United States. Just as Canada's branch banking system allowed a more adequate response to the 1920s shock, Canada managed to withstand the Great Depression significantly better than the U.S. Despite many similarities with the United States, Canada suffered no bank failures during 1929-1933. Although the number of bank offices fell by 10.4%, this number was significantly below the 34.5% of all bank offices which permanently closed in the United States. Branching had permitted Canadian banks to mobilise funds to meet runs, while at the same time holding only marginal excess reserves (White 1984, p. 131-132). White (p. 131) therefore concludes: "A system of nationwide branching probably could have reduced or eliminated bank failures by establishing intermediaries with loan portfolios that were sufficiently diversified to manage regional risks." Subsequent research arrived at similar findings. Bordo (1985) compares five industrial nations over time and observes that the United States was more susceptible to banking crises and, at the same time, was the only country whose banking system was based on unit banks. Therefore, Bordo (1985) concludes that the lack of branch networks may explain the perennial menace of banking crises in the United States. Grossman (1994) examines the "exceptional stability" of the banking systems in Britain, Canada and ten other countries during the Great Depression in a dataset comprising 25 countries across Europe and North America and finds that the banking structure, together with exchange-rate policies, accounted for banking system stability/instability.
As can be derived from Figure 2, the banks which failed during 1929-1933 tended to be small unit banks. Overall, 46.90% of all banks failed during the Great Depression. These 46.90% of banks, however, held only 20.56% of overall bank deposits, implying a less than average size of failing banks. Indeed, the high bank failure rate in the 1920s affected mainly banks with less than $25,000 capital, located in the towns of 2,500 or less (Friedman & Schwartz 2008, p. 249).

As outlined above, the banking system in existence at the eve of the Great Depression had materially contributed to the banking malaise in the early 1930s. The main policy lesson derived from the 1930s experience was that banking is inherently fragile (see, for example, Friedman & Schwartz 2008). In order to prevent bank panics as well as the self-fulfilling prophecies of bank runs, which seem to have been widely seen as the ultimate reason for banking fragility, the Banking Acts of the 1930s introduced deposit insurance through the creation of the Federal Deposit Insurance Corporation (FDIC). Insuring deposits and thereby reducing the incentive for bank customers to
trigger or participate in bank runs provided banks with a stable source of funds which, it was hoped, would prevent a repetition of the high number of bank failures during the Great Depression.

Policymakers approach to the financial sector prior to the recent crisis suffered from similar shortcomings, albeit of almost diametrically opposed nature. As discussed above, post-Depression legislation had introduced deposit insurance. As the accompanying danger of moral hazard was well-known from previous bank-obligation insurance experiments in several states, lawmakers simultaneously attempted to minimise competition in the banking industry, for example by limiting interest rate competition, separation of commercial and investment banking and imposition of geographical restrictions and restrictive bank chartering. Less competition had increased bank charter values and, as a corollary, decreased banks' propensity for risk-taking, as failure would lead to the loss of valuable bank charters and the economic rents accompanying them. Over time, however, bank charter values successively decreased, as post-Depression era restrictions fell victim to the passage of time. The link between government-provided safety nets for the financial sector, deregulation and financial instability is well-researched and empirically confirmed around the world (Demirgüç-Kunt & Detragiache 1999; Kaminsky & Reinhart 1999; Mehrez & Kaufman 2000). As the frequency of banking crises and bank failures increased, authorities resorted to punctual relief by picking winners and losers. One of the most striking phenomena during the past decades, often characterised as "laissez-faire", has been the propensity of governments, central banks and other government agencies to extend generous emergency support to failing banks – and occasionally the banking system in general – whose bankruptcy was believed to jeopardise the economy: the too-big-to-fail (TBTF) doctrine. The most widely used indicator for measuring the too-big-to-fail phenomenon is size. By this indication, the TBTF problem has risen significantly during the past decades. From 1970 to 2010, the top five banks in the United States increased their market
share from just 17% to 52% (Rosenblum 2010, p. 6). After the bailout of Continental Illinois in 1984, which had given birth to the term "too-big-to-fail", Charles Schumer (1984) of the House Banking Committee asked:

If the Government believes that some institutions are so important that it must step in to guarantee all deposits, is it wise for us to further destabilize the system by allowing banks to enter the securities, insurance and real estate businesses? The banks most interested and capable of getting into these volatile businesses are those, like Continental, that we have determined are too important to fail. Combining high-risk activities and complete Federal insurance will prove to be explosive.

Despite such warnings, regulators and the government aggravated the TBTF problem by successively eroding long-standing restrictions from the post-Great Depression era, aimed at confining federal insurance of deposits. As discussed in Umlauft (2015), particularly the Gramm-Leach-Bliley Act of 1999 and the Commodity Futures Modernization Act of 2000 provided banks with the opportunity to grow in size as well as complexity. As a direct corollary, the TBTF problem had materially increased in scale and scope until the crisis broke in 2007. Between 2001 and 2007, the largest five US banks had increased their share of industry assets by 50% from about 30.00% to more than 45% (Figure 3).
Focussing on size alone, however, misses out important other aspects. As it turned out during the recent crisis, financial institutions’ complexity played a key role in compounding the crisis. Indeed, all bailout measures were justified on the notion that the complex nature of banking made necessary an unprecedented degree of government intervention into the private sector. By many indications, the complexity of financial institutions had increased significantly until immediately before the crisis. For example, the largest five banks dominated the derivatives market and collectively held 97% of all derivatives by year end-2007 (OCC 2008). Moreover, subsequent to the elimination of the Gramm-Leach-Bliley Act, the size and importance of non-bank subsidiaries increased dramatically, making bank holding companies more complex and thus more difficult to wind down (Avraham, Selvaggi & Vickery 2012).

DATA: Board of Governors of the Federal Reserve System

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2 Complexity played a determining role in deciding on government bailouts, and policymakers repeatedly based their decision to extend government assistance for troubled institutions on the complexity of their respective business model and the risk the failure of these institutions would pose to the economic system.
In addition to the exacerbated problem of TBTF, large, complex financial institutions were given wide discretionary authority to measure risk and determine adequate capital ratios under Basel’s internal ratings-based approach. In combination with short-term compensation practices, which fostered short-termism, large banks took inordinate risk, inadequately backed by capital.

As Wilmarth (2009) points out, a leading group of seventeen large complex financial institutions (LCFIs), mostly universal banks, dominated the securitisation market. Those LCFIs originated consumer and corporate loans, packaged loans into ABSs and CDOs, created over-the-counter (OTC) derivatives based on these loans and distributed these securities to other market participants and often retained significant amounts for themselves. Pinto (2010, p. 29) provides evidence for a strong positive relationship of bank size and share of non-performing loans. Whereas the share of non-performing loans of banks with assets below $5bn amounted to approximately 3%, the share of the very largest banks with a balance sheet size of at least $1tr accounted for 17.36% (Figure 4).

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3 For an excellent analysis of incentive problems arising from executive remuneration at financial institutions, see Bebchuk & Spamann (2009). For empirical evidence for the positive relationship between risk-taking and incentive compensation, see, for example, Balachandran, Kogut & Harnal (2010) and Guo, Jalal & Khaksari (2014). Bebchuk, Cohen and Spamann (2010) provide an interesting case study of compensation practices at Lehman Brothers and Bear Stearns, demonstrating that the claim that top executives’ wealth of these firms was largely wiped out, as their firms collapsed, is not backed by facts.

4 Umlauft (2015) links the development of aggressive remuneration practices and successively riskier growing funding techniques of large, complex financial institutions to the prevalence of government guarantees for TBTF institutions.
**Figure 4:** Share of Non-Performing Loans by Bank Size Group

![Bar chart showing the share of non-performing loans by bank size group.]

**Data:** Pinto (2010, p. 29)

Consequently, write-downs as a percentage of total assets at TBTF banks were significantly higher than at non-TBTF firms (Bhagat & Bolton 2014). As a direct corollary, the largest group of banks in the US with assets exceeding $10bn were about 50% more likely to have negative net income in 2008 than other size groups (}
Figure 5:.
**FIGURE 5:** Banks with Negative Net Income by Bank Size Group, 1984-2013

![Graph showing banks with negative net income by bank size group, 1984-2013.](image)

**DATA:** FDIC – Quarterly Banking Profile (various years)

As a result of the close relationship between banks’ size and degree of risk-taking, the largest financial institutions required a disproportional share of government bailout funds. Barth, Prabha & Swagel (2012, p. 13) calculate that 94% of the TARP’s $425.4bn Capital Purchase Program went to 35 large, complex financial institutions (32 large banks as well as Fannie Mae, Freddie Mac and AIG), while smaller institutions, numbering 675, received the remaining 6%. According to an OECD study, the world’s largest banks would have required an additional $3.6tr to withstand the crisis without capital injections and other bailout measures (Blundell-Wignall, Atkinson & Roulet 2013).

At variance with the wide-held opinion which portrays the 1920s as a decade of rampant and unbridled laissez-faire capitalism, the policy approach in the early 1900s, at least with regard to the financial industry, was overly restrictive. The policy framework in place at the beginning of the 20th century had impeded the development of an efficient banking sector based on branch banking. Instead, the banking system relied on a countless number of unit banks susceptible to region-specific shocks, which rendered the system vulnerable to the bank failures of the 1920s and early 1930s. By contrast, the financial system’s vulnerability in the early
2000s was a function of an overly permissive approach to financial industry regulation. In this context, it was ignored that the generous financial safety net conferred fiduciary duties upon the government to regulate financial institutions and constrain inordinate risk-taking at taxpayers' cost. Instead, regulators put misplaced trust on the self-regulating powers of financial markets, ignoring the well-known and perennial epiphenomenon of government-provided safety nets: moral hazard.

Although the government approach towards the financial sector in the early 1900s and the early 2000s differed markedly, policymakers' justification was equally and fundamentally shaped by ideological convictions. Until 1933 – and beyond – the United States' population was concerned about an accumulation of power in large financial institutions and a – perceived – undue influence of Wall Street in industrial America. Politicians responded to that distrust by actively restricting the growth and power of financial institutions, fostering a splintered financial system (Roe 1994, Umlauft 2014). A banking system based on small banks was seen as the financial equivalent to the egalitarian United States of self-perception. As we have seen during the recent crisis, excessive concentration in the financial industry may lead to disastrous outcomes. Policies until 1929, however, had led to another extreme: a fragmented, anachronistic and ultimately highly fragile banking system which paved the way for the banking malaise of the 1920s and the early 1930s. Ideology played a key role in shaping the financial and banking system extant as of the outbreak of the recent financial crisis in 2007, as well. Around the mid-1900s, there was a deep and widespread ideological turn towards a belief in market efficiency. Economics as a field became much more defined by mathematical models, rational agents and, by and large, a belief in efficient markets. The universal preponderance of the existence of efficient markets in the social sciences led to a wholly non-reflective application of it on the financial industry. In the latter part of the 20th century and the early 2000s, regulators and policymakers increasingly became enthralled by the financial industry and bought into the premise that the financial industry may best be governed by self-regulation. As Johnson (2009) notes, over time "the American financial industry
gained political power by amassing a kind of cultural capital—a belief system." As a result, "[a] whole generation of policy makers has been mesmerized by Wall Street, always and utterly convinced that whatever the banks said was true." Buiter (2008, p. 106) observes that regulators had fallen 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." The financial industry took advantage of the paradigm shift in order to lobby for less restrictions and an expansion of asset powers. Such was the zeitgeist dominated by the existence of efficient markets, that it was ignored that distinctive government involvement in the financial sector had rendered the banking industry by and large incompatible with fundamental laws and principles of capitalist systems. Deposit insurance, the Federal Reserve's lender-of-last-resort function, the too-big-to-fail doctrine and other measures had severely undercut market discipline and thus necessitated government regulation of the banking sector—particularly of the very largest financial institutions, whose liability side possessed a 100% government guarantee through explicit as well as implicit means.

As described above, a flawed banking sector architecture can be identified as the main culprit leading to 1929 and 2007. The chief difference between the banking system during the Great Depression and the Great Financial Crisis seems to lie in the diverging degree of market discipline in effect during the two episodes. Historically, banks' economic viability had been reflected by their willingness to subordinate risk-taking and profit generation to accommodate risk-intolerant depositors (Calomiris & Mason 1997, 2003; Calomiris & Wilson 2004). On the other hand, the Pecora Investigations (1932-1934) revealed a wide range of abusive practices and conflicts of interest at banks with securities affiliates. In this context, it was widely believed that banks with security affiliates systematically exploited their clients by marketing low-quality securities to the ignorant public. The view that conflicts of interest were a prevalent feature of the combination of commercial and investment banking activities has gained popular support. However, these accusations were later found
to be grossly over-exaggerated (Benston 1990), and subsequent empirical studies demonstrated that commercial banks with securities affiliates, on average, underwrote higher-quality issues with lower default probabilities than specialised investment banks (Kroszner & Rajan 1994, 1995; Puri 1994, 1996; Flandreau, Gaillard & Panizza 2010), proving a significant degree of market discipline. Apart from the Federal Reserve’s lender-of-last-resort function, which may have introduced a moderate degree of moral hazard into the financial system, the regulatory framework of the early 1920s hence did not provide noteworthy incentives for excessive risk-taking due to externalities. In addition to the practically non-existent government safety net for the financial industry, double liability had moderated risk-appetite by shareholders and bank managers (Grossman 2001). By the early 2000s, however, a plethora of measures to stabilise the financial system (deposit insurance, the too-big-to-fail doctrine, lender-of-last-resort, Greenspan put) had led to a diametrical result by greatly diminishing market discipline and at the same time providing strong incentives for inordinate risk-taking owing to moral hazard.

In order to fully account for the deficiencies of the respective banking systems extant in the 1920s and the early 2000s, a short review of Taleb’s (2012) concept of “antifragility” is instructive. According to Taleb, things may be classified as either fragile, robust or antifragile. The fragile is susceptible to damage from external influences, while the robust resists shocks and stays unharmed from external impacts. The antifragile, on the other hand, gains from shocks and gets better. Taleb argues that the property of antifragility stands behind everything that has changed with time, such as nature.\(^5\) It is obvious with regard to the banking system both before the Great Depression and the Great Financial Crisis that policymakers

\(^5\) Besides evolution, Taleb (2012, p. 3-4) identifies "culture, ideas, revolutions, political systems, technological innovation, cultural and economic success, corporate survival, [...] the rise of cities, cultures, legal systems, equatorial forests, bacterial resistance...even our own existence as a species on this planet" as inherently antifragile.
attempted to make a fragile system – prima facie as a result of government interference – resilient by rendering its individual components robust. Before 1929, several states had introduced deposit insurance in order to mitigate the inherent fragility pertinent to a banking system based on unit banks, i.e. vulnerability to regional shocks and susceptibility to bank runs. Likewise, particularly large, complex banks before the Great Financial Crisis have repeatedly been extended extraordinary government assistance in times of crisis out of fear of the repercussions the failure of large, complex financial institutions would have on the financial system and the economy in general.

Here arises the principal problem with the policy approaches to the banking system: Nature, as other antifragile systems, gains its antifragile quality from its subsystems’ fragility. Nature's individual parts exhibit pronounced susceptibility to adverse impacts, such as climatic, faunal or floral change. However, fragility on the sub-level is a necessary requirement for ensuring the total system’s adaptability. By allowing sub-systems’ fragility to proliferate, nature ensures its antifragile property in the aggregate. A similar concept is generally accepted with regard to the economic system in general. Schumpeter's "creative destruction" stipulates that innovation destroys and subsequently replaces obsolete parts of the economic system and thus "revolutionizes the economic structure from within". Yet, the idea of Schumpeter's "creative destruction" is blatantly absent with regard to the banking system.

Not surprisingly, various government interferences, by targeting specific identified problems, have rendered the banking system as a whole less resilient and hence prone to unanticipated developments by prohibiting a process of creative destruction. Deposit insurance, for example, was seen as a viable solution to prevent liability-side problems of banks in the wake of the Great Depression. However, deposit insurance had already been tried in two waves in individual states in the US since the 1830s. All of these bank-obligation insurance systems eventually collapsed or were suspended. Although bank-obligation insurance was seen as a remedy for the unit banking system's fragility, it further destabilised the financial system by two
factors. First, deposit insurance increased moral hazard by inducing banks to hold less capital and take on more risk than without deposit insurance. Calomiris (1990), Alston, Grove & Wheelock (1994) and Chung & Richardson (2006) show that deposit insurance states experienced more bank failures than states without in the 1920s. Second, by providing banks with a relatively stable funding source, deposit insurance contributed to overbanking, or an excess capacity of banks per capita (Wheelock 1993). Overbanking as an influential factor for the high number of bank failures during the 1920s was often cited by contemporary observers (see, for example, Federal Reserve 1937). Wheelock (1993) provides empirical evidence that states with the highest number of banks per capita in 1920 experienced the highest bank failure rates subsequently. Hence, measures undertaken until 1929, although aimed at stabilising the banking system, proved to have the opposite – a destabilising effect.

Similarly, before the recent crisis, the financial and particularly the banking system's "health" relied to a significant degree on explicit and implicit government guarantees. Thus, external factors (government safety net), instead of internal factors (capital, accounting transparency, etc.), played an important role in stabilising the system. While the largest banks' business model had never been riskier than before 2007 (e.g. off-balance sheet activities), their capital ratios were at all-time-lows. In 2007, the average leverage ratio of the world’s largest financial institutions was well in excess of 30, which corresponds to an equity ratio of below 3%. Recurrent bailouts of the largest financial institutions (TBTF doctrine) gave the system a stable appearance, as long as the government had upheld the commitment to the TBTF doctrine. When market participants had reason to question that assumption’s validity (that TBTF

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6 Studies examining intrastate variance of bank failures confirm that banks with deposit insurance fared significantly worse than banks whose deposits were not insured. See Hooks & Robinson (2002) for the Texas experience and Wheelock & Wilson (1994, 1995).

7 Umlauft (2014) argues that the establishment of the Federal Deposit Insurance Corporation (FDIC) proved to be an important driver for establishing the too-big-to-fail doctrine.
banks would not be subjected to bankruptcy), uncertainty and ultimately chaos ensued.

Lehman Brothers forcefully illustrates the important role of government guarantees with regard to "stabilising" the financial sector in contemporary banking. When Lehman Brothers, contrary to market expectations, was allowed to fail in September 2008, it precipitated a dramatic deterioration in the interbank market. From September to October, the TED spread, a banking stress indicator measuring the difference between interbank interest rates and 3-month Treasury bills, tripled from 135bps to 464bps. This worsening was not, however, the result of Lehman Brothers' failure per se, but rather the consequence of the commotion of TBTF beliefs and market participants' subsequent readjustment of probabilities of TBTF bailouts (Afonso, Kovner & Schoar 2011). The recent crisis profoundly challenges the validity of ad-hoc attempts by governments and regulators in an effort to shield market participants from market forces, a prevalent phenomenon during the past decades, dubbed the "Soviet-Harvard delusion" conducted by "Harvard-Fragilistas" and identified as "an insult to the antifragility of systems" by Taleb (2012, p. 5). Although to some this may seem overly Darwinistic, it should now be beyond doubt that government interferences to insulate large, complex banks from market discipline introduced a substantive degree of moral hazard into the system. The fact that the crisis affected mainly those institutions which decreed over the most pronounced insulation from market forces may be seen as a confirmation to that assertion. Instead of providing a functioning and working regulatory framework, it seems that regulators often relied on morality to ensure the working of the financial system. Ex post, this turned out to be a costly misassumption. As Posner (2010, pos. 20) aptly remarks:

*If the regulatory framework is defective, it must be changed, because competition will not permit businessmen to subordinate profit maximization to concern for the welfare of society as a whole, and ethics can’t take the place of regulation.*

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Although the notion that banking is inherently fragile is now widely accepted, it would be well worth to reconsider the factors rendering banking fragile in light of recent experiences, i.e. whether measures intended to stabilise the banking system may ultimately further debilitate it. As White (2013, p. 473) notes, the idea that banking is naturally fragile is "implausible anti-Darwinian [and] defies the Darwinian principle of natural selection". More importantly, White points out that, were financial institutions inherently fragile and prone to collapse, financial institutions should be expected to have collapsed and consequently disappeared over time. The inherent-fragility view is therefore hard-pressed to explain how modern banking survived over the past 700 years and much more how it flourished and spread across the world since its ascent in 12th-century Italy until the emergence of government safety nets in the 20th century.

Summarising, during both periods, ideology played a key role in shaping the financial architecture and in creating a non-optimal banking system. During both periods, non-optimal banking legislation and the resulting defective banking structure contributed materially to the crisis. Although ideology-induced banking legislation underwent a material change between the two crises, banks proved to be the main crisis catalyst during 1929-1933 as well as 2007-2009.

2.2. Real Estate Bubbles and Excessive Debt

Another parallel between 1929-1933 and 2007-2009 concerns the accumulation of private debt before both crises which is most profoundly reflected in the accumulation of mortgage debt. Both episodes leading to the crises were accompanied by rapidly rising house prices and a rising degree of financial leverage which fuelled the boom.

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8 Already in 1936, Vera C. Smith (p. 7) pointed out: "It is not unlikely that the bolstering up of banking systems by their Governments is a factor which makes for instability."
The Roaring Twenties are well-known for their achievements in literature, theatre and art. The 1920s are also commonly associated with economic prosperity as well as fraud. At least with regard to the United States, a prolonged real estate boom is also commonly associated with the 1920s. Particularly the Florida land boom of the 1920s – and the Ponzi schemes accompanying it – remains in the cultural memory. Alas, not even for Florida exists a housing price index. That Florida experienced a massive real estate boom is indicated by the value of building permits, however. Between January 1919 and September 1925, the nominal average value of building permits in Miami increased by 8,881% from $89,000 to $7,993,500 (Vanderblue 1927). Recent research confirms that the real estate boom was not confined to Florida. Nicholas and Scherbina (2009) developed a real estate price index for Manhattan for the period 1920-1939 which showing that real housing prices increased by 54% between the fourth quarter of 1922, after the post-war recession had ended, and its peak in mid-1926. The fact remains, however, that reliable nation-wide real estate data is not available for the 1920s, which would enable us to meaningfully compare it to the recent boom. Unfortunately, the widely-used Case-Shiller index shows a strong deflationary bias in the early years. In order to obtain comparable datasets for both periods, we follow White (2009) by constructing a house price index using housing unit starts and values of newly constructed home units. The data obtained shows that the 1920s experienced a significant appreciation of house prices during the 1920s. According to this measure, real house prices increased by more than 40% from 1921 to 1926. This is in line with estimated rises in house prices in Washington (median asking price of single family homes), a region which is not considered to

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9 The very term Ponzi schemes derives its name from Charles Ponzi who operated a fraudulent business scheme in the 1920s, supposedly based on arbitrage involving international reply coupons and postage stamps. Another example is Ivar Kreuger, who built an international conglomerate based on accounting fraud in the midst of the Great Depression, until the scheme collapsed in 1932. For an excellent historical account on Ivar Kreuger, see Partnoy (2010).

10 See White (2009, p. 8-9) for a short discussion on the shortcomings of Shiller’s data pertaining to the early 1900s.
having experienced a boom, but where real house prices rose 38% from 1920 to the peak (White 2009, p. 9). It cannot, however, a priori be ruled out that the boom may have been a catching-up after World War I and thus may have been the result of a crowding-out, as resources transferred to the government during war time may have led to a decrease in non-essential investment and consumption. White (2009) provides a simple examination of what would have happened without World War I and what actually happened by forecasting both housing starts as well as real values of newly-constructed residential constructions by regressing on real GDP figures and comparing the results with actual housing starts and values thereof. White’s (p. 14) findings suggest that “there was more to the boom than a simple postwar recovery.” All in all, the 1920s can safely be identified as a real estate boom. A look at mortgage debt indicates that the population was more than willing to buy into booming house prices and to participate in the bubble. Compared to the pre-World War 1 period, mortgage financing increased in significance from 40% to 60% in the 1920s. While mortgage debt had increased by an annual average of 6.73% in the decade preceding the twenties boom, the pace increased to 13.92% in the decade 1920-1929. During the 1920s, the ratio of residential mortgage debt to disposable income more than doubled from about one eight to two fifths, and the ratio of nonfarm residential mortgage debt to nonfarm residential wealth (aggregate loan-to-value ratio) increased from about 10% to approximately 30% (Grebler, Blank & Winnick 1956, p. 165 and 168). The rapid increase in household mortgage debt and the rising aggregate loan-to-value ratio “offers indirect evidence of a fundamental revision in home owners’ and probably lenders’ attitudes concerning mortgage indebtedness during the twenties.” (Grebler, Blank & Winnick 1956, p. 164) Mortgage debt was so prevalent at the onset of the Great Depression that then-Secretary of the Treasury Mellon observed that “[t]here is a mighty lot of real estate lying around the United States which does not know who owns it.” (as quoted by Hoover 1952, p. 39) That mortgage debt played a critical role in the Great Depression is further corroborated by the fact that federal measures during and beyond the Great Depression to ameliorate the adverse effects
of the crisis on the population directly or indirectly affected the housing market (Wheelock 2008, p. 140).

Several points substantiate the notion that the real estate boom of the 1920s contributed to the Great Depression. First, as declining real estate prices precipitate mortgage refinancing and repayment problems, mortgage defaults impair balance sheets of financial intermediaries, stifling credit supply. Declining house prices also impede lending due to less qualitative and less valuable collateral (Bernanke 1983). This is of particular importance as bubbles preceding downturns are fuelled by eroding lending standards. In the face of rising uncertainty and financial problems, financial intermediaries suddenly reverse lending practices and again resort to restrictive credit extension, amounting to a negative credit shock. Finally, declining house prices may lead to reduced consumer spending and other outlays owing to the "wealth effect". Several studies suggest a positive relationship between housing wealth and consumption (Case, Quigley & Shiller 2005; Klyuev & Mills 2006; Greenspan & Kennedy 2005, 2008; Case and Quigley 2008; Zhou & Carroll 2012).

Early research jointly treated the 1920s boom and the Great Depression or at least held that the business cycle depression of 1929-1933 was exacerbated by declining real estate prices. Subsequent research, however, has tended to treat the 1920s real estate boom and the Great Depression as two distinct and separate phenomena. Continuously rising aggregate output and declining unemployment after the housing peak in 1925 lent, at first glance, validation to this approach. Despite the fact that the fall in house prices predated the onset of the Great Depression by several years, a connection between the end of the housing boom and the Great Depression may well be possible, especially since real estate values during the recent boom cycle peaked in early 2006, while the crisis only started about two years later. Recent research corroborates the notion that the boom in the Roaring Twenties and the Great Depression may not reasonably be analysed separately, but instead ought to be seen as mutually reinforcing aspects of the crisis. In this context, Brocker & Hanes (2013)
show that cities which experienced the most pronounced house construction booms and largest increases in house values and homeownership rates in the 1920s suffered the worst downturns in housing prices and homeownership rates and experienced the highest mortgage foreclosure rates in the early 1930s. Thus, the data demonstrates that the effects of the 1920s' housing boom were still prevalent in 1929 when the Great Depression started, which suggest that "in the post-1929 downturn of the Great Depression, house prices fell more and there were more foreclosures because the 1920s boom had taken place." (p. 4-5)

We do not suggest that the credit-boom view replace other explanations of the Great Depression – such as the gold standard, monetary policy and those briefly touched upon in this article. Instead, we subscribe to Eichengreen & Mitchener’s (2003) opinion that "[t]he Depression was a complex and multifaceted event. The perspective provided by the credit-boom view is a useful supplement to these more conventional interpretations."

A similar pattern as that of the 1920s emerges with respect to the time preceding the recent crisis. In the five-year period preceding the housing peak in 2006, real house prices increased by approximately 31% in real terms (Figure 7). As was the case with regard to the boom in the 1920s, in the ten-year period preceding 1997-2007, mortgage debt had increased by 6.57% and almost doubled to 11.46% in the ten-year period preceding the recent crisis. In contrast to the 1920s, however, the only point pertaining to the housing boom which is subject to any noteworthy degree of controversy is the question whether or not mortgage lenders acted fraudulently. That house prices had risen too far, too rapidly is a matter of no serious debate. House prices almost doubled from the mid-1990s to the mid-2000s. As was the case in the 1920s boom, an influential driver of home price increases was the gradual erosion of lending standards to successively less creditworthy borrowers (Mian & Sufi 2009; Keys, Mukherjee, Seru & Vig 2010; Demyanyk & Van Hemert 2011; Purnanandam 2011). Unconventional terms, such as interest-only and low or no-doc, increased
significantly in the period 2001-2005 from 0% to 37.80% and 28.5% to 50.70%, respectively (Freddie Mac, as quoted by the Joint Economic Committee 2008, p. 21). Another influential driver of housing starts was the Federal Reserve's deviation from the Taylor rule which artificially increased housing starts in the years before 2007 (Taylor 2009b).

As Case & Quigley (2008) persuasively argue, reversals of housing market booms exhibit destructive inherent properties due to a combination of mutually reinforcing mechanisms: the wealth effect, the income effect and the financial market effect. The end of housing booms feeds into the general economy via three distinct channels. First, as household asset values increase due to rising house prices, households spend more by extracting equity from their assets or save less. Alas, the converse is true when asset values decline. In an environment of falling house prices, people will increase their saving rate and thus consumer spending will fall. Second, as increasing house prices during the boom propel the economy, total income will rise. When the trend reverses, sales of existing homes will decline, reducing fees earned by brokers, building inspectors, appraisers and mortgage lenders. At the same time, exchange-induced expenditures associated with purchasing a new home will also decline. Even more important, the end of real estate bubbles will materially impair the construction industry, as demand for new homes falls. New housing units peaked at 937,000 in 1925 and fell by 90% to 93,000 until 1933. The fall in new housing starts was less pronounced in the 2000s, but house building starts nevertheless declined by 73% from its peak in 2005 at 2,068,300 to 554,000 in 2009 (Figure 6). Third, as home prices fall and the number of foreclosures rises, financial markets are adversely affected, as was the case in 1929-1933 and 2007-2009.
It is interesting to note that not only the recent housing boom rested in no small part on the availability of money due to financial innovation, but that also the real estate boom in the 1920s relied heavily on new financial products. As described in Snowden (2010) and Goetzmann & Newman (2010), early forms of securitisation involved bundling commercial and residential mortgage loans and creating pass-through securities. Similarly, the role securitisation played in the recent crisis is hard to overestimate. Thus, the parallels between the crises are conspicuous and run along the line that financial innovation had increased demand by broadening the base of prospective buyers. In the 1920s, individual investors played an increasingly important role in financing the real estate construction boom (Snowden 2010, p. 11), whereas the possibility to create triple-A-rated securities from pools of less qualitative assets provided new classes of investors – such as pension fund, which are prevented from holding fixed income assets not rated AAA and had thus excluded from the mortgage market – access to the real estate market.

*FIGURE 6: New Residential Housing Units Started, 1921-1931 and 2001-2011 (in thousands)*

**DATA:** Economic Report of the President (2013), table B-55 and B-56 and Carter et al. (2006), table Dc510
As Goetzmann & Newman (2010) observe: "By nearly every measure, real estate securities were as toxic in the 1930s as they are now." The fact that securitised assets almost utterly ceased to be traded after 1929 (Goetzmann 2010) and after 2007\textsuperscript{11} (Beltran, Cordell & Thomas 2013) is another parallel between the two crises, emphasising the toxic nature of financial innovation in combination with "irrational exuberance" in financial markets.

Summarising, the rapid increase in building activity, house price appreciation and accumulation of mortgage debt during the 1920s and the 1990/2000s look eerily similar. In the time preceding both crisis, real estate markets experienced a pronounced booms, as housing prices strongly and steadily increased. Both episodes were accompanied by rapidly increasing mortgage debt levels. Figure 8 shows that the aggregate loan-to-value ratio more than tripled from 10.20% in 1920 to its peak in 1932 at 34.10%. The debt-to-value increase in the early 2000s was less pronounced, albeit from an already high level. The ratio of mortgage debt outstanding to real estate value had steadily increased since bottoming out at the end of the Second World War at about 20%. Until 2005, the level had increased to 40%, from where it rose markedly to more than 60% by 2009. Then and now, the credit quality of mortgages decreased, as people grew increasingly risk-seeking and anticipated continuously rising home prices. Morton (1956, p. 101-102) shows that non-amortising and high loan-to-value loans were important determinants for the probability of foreclosure in the 1930s. Likewise, subprime loans, characterised by high loan-to-value ratios and risky financing conditions were the main reason for the high foreclosure and delinquency rates in the early 2000s. As house prices failed to rise after 1926 and 2006, respectively, many borrowers ran into troubles paying back or refinancing their loans. As a direct consequence, the rate of delinquencies and

\textsuperscript{11} In fact, the Federal Reserve now constitutes the main demand factor for MBSs. As of year-end 2013, the Federal Reserve held 25\% of all Agency mortgage-backed securities (Elamin and Bednar 2014).
foreclosures rose to unprecedentedly high levels during 1929-1933 as well as 2007-2009.

**Figure 7:** Real Values of a Newly Constructed Houses, 1921-1927 and 2001-2007 (1921/2001=100)

![Graph showing the real values of newly constructed houses, 1921-1927 and 2001-2007.](image)

**Data:** Economic Report of the President 2013, Table B-55 and B-56 and for 1921-1927 from Carter et al. (2006), Table Dc510 and Dc257

**Figure 8:** Household Mortgage Debt to Real Estate Wealth, 1896-2013

![Graph showing the mortgage debt to real estate wealth, 1896-2013.](image)

**Data** for 1896 to 1952 (non-farm) is taken from Grebler, Blank Winnick (1956), Table L6 and data for 1945 to 2013 (including farms) is taken from the Flow of Funds, B.100 Balance Sheet of Households and Nonprofit Organisations, Line 4 and 33.
2.3. Inequality

The role of inequality in the financial crisis of 2007-2009 had been briefly mentioned by many earlier accounts on the crisis (see, for example, Morris 2008, p. 139-147; Rajan 2010; Stiglitz 2012) and was recently put into the spotlight by Piketty's bestselling book "Capital in the 21st Century". On the other hand, inequality as a contributing factor to the Great Depression has not found mention in the influential treatises on the subject (Wiseman 2014). Economic inequality, as measured by the distribution of income and wealth, has been steadily widening prior to both crisis. 

*Figure 9* displays inequality, as measured by the share of total income, including capital gains, going to the top 10% in the United States from 1917-2007. As can be seen, high levels of inequality were characterising features of the time preceding 1929 as well as 2007.

*Figure 9: Top 10% Income Share in the US Including Capital Gains, 1917-2007*

*Data: Tony Atkinson & Thomas Piketty – The World Top Incomes Database*

While the time-series data clearly purports major trends of inequality over the past 100 years, the available data on income, particularly for the early 1900s, may not be entirely accurate due to measurement inconsistencies and therefore difficult to
interpret. As a result, there certainly exist issues of comparability. Thus, we do not know whether the situation before 1929 and 2007 was exactly as the data suggests. While inequality during the early 1900s has received relatively little attention, there exists a general consensus, based on a variety of reliable datasets, that income and wealth polarisation has been a prevalent phenomenon since the early 1980s. The phenomenon, it seems, has been particularly pronounced in the United States (Morelli, Smeeding & Thompson 2014).

However, neither is under-consumption as the obvious result of rising inequality easily reconcilable with the Roaring Twenties nor the early 2000s. In response the conundrum of rising inequality and continuously strong consumption spending, Kumhof & Rancière (2010) develop a model based on inequality which leads to bubbles, explaining the Great Depression as well as the recent crisis. Both crises were preceded by a sharp increase in income and wealth inequality as well as a substantial rise in debt-to-income ratios amongst lower- and middle-income households. The key mechanism which allowed income and wealth inequality to proliferate, according to the model, is that investors used a share of their increased income to purchase financial assets backed by loans to workers. Increased credit intermediation allowed workers to compensate real declining incomes, the consequence of which was that consumption inequality increased less than income inequality. However, the continuous rise of workers’ debt-to-income ratios generates financial fragility which eventually culminates in a financial crisis. Similarly, Smith & Gjerstad (2009) hypothesise "that a financial crisis that originates in consumer debt, especially consumer debt concentrated at the low end of the wealth and income distribution, can be transmitted quickly and forcefully into the financial system. It appears that

12 A noteworthy exception is Wisman (2009, 2014).

13 It should be noted that this explanation closely resembles the Austrian School business cycle theory, according to which stability creates instability, as economic booms lead to unsustainable credit expansions.
we're witnessing the second great consumer debt crash, the end of a massive consumption binge."

As can be seen from Figure 9, the top decile's share of total income increased from approximately 39% to just below 50% during the course of the 1920s. During the same decade, consumer debt as a fraction of income had increased from 4.7% to 9.3% (Olney 1999, p. 321). By 1930, instalment credit had dramatically increased in importance, financing 65-75% of automobiles, 80-90% of furniture, 75% of washing machines, 65% of vacuum cleaners, 18-25% of jewellery, 75 percent of radio sets and 80 percent of phonographs (Calder 1999, p. 19, as quoted by Wisman 2014, p. 384). The rising importance of credit-financed consumption during that time prompts Olney (1999, p. 320) to observe: "The 1920s mark the crucial turning point in the history of consumer credit."

A similar pattern is observable with regard to the early 2000s. The top decile's share of total income increased from approximately 35% in 1980 to almost 50% by 2007. "Yet this long term downward trend in the relative size of the middle class has ironically been paralleled by a consumption boom," as Holt and Greenwood (2012, p. 364) observe. Besides adding a second worker or job, many households maintained or increased income levels by decreasing the savings rate from approximately 10% in the early 1980s to less than 4% in the late 1990s. By 2005-2006, the savings rate had turned negative for the first time since the Depression years 1932-1933 (Wisman 2009). In addition, deregulation in combination with the financial safety net as well as monetary policy contributed to rapidly increasing levels of debt to finance consumption. Household debt rose from 41% of GDP in 1960 to 45% in 1973 and 100% in 2007 (Holt and Greenwood 2012, p. 364). As home equity extractions allowed to maintain current consumption levels even in the face of stagnating or declining real incomes, average household debt had increased from 99.19% in 1999 to 136.40% of gross disposable income at the eve of the recent crisis in 2007 (OECD 2013).
Indeed, the available data suggests that mortgages were often used as a means of upholding current spending in the face of declining real income levels in the early 2000s. Before the housing market peaked in 2006, soaring house prices allowed homeowners to borrow against high house values to boost spending capacity. Cash-out refinancing allowed homeowners to draw on home equity and extract wealth by refinancing mortgages on homes whose value had risen in value. According to Greenspan & Kennedy (2005), such re-financings and home-equity withdrawals amounted to 9% of disposable income – around $840bn per annum at the peak. In the 2002-2005 period, home-equity withdrawals increased consumption by about 3%, equivalent to an annual amount of $300bn.

3. The Crisis Response

The key difference between 1929-1933 and 2007-2009 relates to the diverging crisis response taken by the government and its administrative bodies. Doan (1997, p. 33) divides the Depression into two distinctive periods: During the first period from 1929 to 1932, deflation was allowed to develop unimpededly and the government took a passive stance to the crisis. The period from 1933 to 1941 witnessed a heightened government commitment to revive the economy and provide assistance to the population and financial markets. At the outset of the Great Depression, the government's attitude was aptly summarised by Secretary of the Treasury Andrew W. Mellon who, according to Hoover (1952, p. 30), demanded: "Liquidate labor, liquidate stocks, liquidate the farmers, liquidate real estate. It will purge the rottenness out of the system." According to Anderson (1949, p. 222-223), leading Federal Reserve officials in December 1929 shared Mellon's view by evincing to "let the money market 'sweat it out' and reach monetary ease by the wholesome process of liquidation." In 1930, when the first banking panic set in, the governments' disposition began to change, and over the course of the next years, several programmes were started which were aimed at combatting the slump. In 1932, for example, President Hoover signed the Reconstruction Finance Corporation Act
which conferred authority to the newly established Reconstruction Finance Corporation (RFC) to lend to banks, trusts and railroads in order to extend financial aid to agriculture, commerce and industry. In the following years, Congress expanded the RFC’s lending authority and broadened the Corporation’s mandate to include direct purchases of capital stock of banks, insurance companies and other financial institutions (Treasury 1959, p. 1-2). As described in Wheelock (2008), a number of measures were undertaken towards the end of the Great Depression and in subsequent years on the federal, state and local level to provide crisis relief for the population. For example, 33 states enacted legislation which to some degree provided relief for delinquent mortgages, including 28 states which passed laws imposing moratoria on home foreclosures (Poteat 1938). On the federal level, the government established a temporary programme by enacting the National Industrial Recovery Act of 1933 to provide low-cost housing. The programme was replaced in 1937 by the Housing Act which provided federal subsidies for housing projects undertaken by local governments (Doan 1997, p. 39-42, as quoted by Wheelock 2008, p. 140). In addition to these immediate relief measures for mortgage debtors aimed at providing affordable housing, the federal government took steps to alleviate distress in the mortgage markets by establishing several agencies to provide liquidity for lenders and to reform the mortgage markets.14 Authorities’ response to the recent crisis differed in two important points from that during the Great Depression. First, the actions taken were immediate, swift and, by historical measures, unorthodox. Second, in sharp contrast to the Great Depression, policy measures were primarily aimed at supporting the ailing banking sector. During and after the recent crisis, government actions were mainly comprised of monetary as well as fiscal measures in connection to bailing out large banks and

14 For a detailed list of agencies created and a discussion thereupon, see Wheelock (2008).
other major financial institutions. In early 2008, Congress enacted the Troubled Asset Relief Program which authorised the government to purchase $700bn of toxic assets from the financial industry. The funds were subsequently used to directly inject capital into troubled institutions. Under the Capital Purchase Program (CCP), created in October 2008, a total of $194bn was infused into financial institutions, 64% of which went to eight large banks – Bank of America, Citigroup, JPMorgan Chase, Morgan Stanley, Goldman Sachs, PNC Financial Services, U.S. Bancorp, and Wells Fargo. In addition, under the Systemically Significant Failing Institutions Program (SSFI Program), American Insurance Group obtained funds, and under the Target Investment Program (TIP), Citigroup received a second infusion of TARP funds. At the same time, the Fed reduced the federal funds rate to near zero. In addition to that, the Federal Reserve committed $7.77tr until March 2009 to rescuing the financial system (Ivry, Keoun & Kuntz 2011). Moreover, the US government and the Federal Reserve established themselves as dealmakers in shot-gun marriages during which the government and the Fed played an important role as guarantors of toxic asset pools in order to facilitate mergers (e.g. Bank of America/Merrill Lynch, JPMorgan Chase/Bear Stearns).

Weighing heavier, though, is the fact that the Federal Reserve deviated dramatically from the lender-of-last-resort (LOLR) principles, as laid out by Walter Bagehot, during the crisis of 2007-2009, "honor[ing] the classical doctrine more in breach than in observance," as former Federal Reserve economist Humphrey (2000, p. 353) notes. During the Great Depression, the Federal Reserve failed to act according to the Bagehot doctrine as well, by failing to lend to solvent but illiquid banks, and in 1936-1937 by deliberately reducing solvent banks' liquid reserves (Humphrey 2009, p.

15 Congress did, in fact, take measures aimed at ameliorating homeowners' hardship in the recent crisis, for example by enacting the Helping Families Save Their Homes Act of 2009. These measures don’t belie the fact that the financial sector took a disproportionate share of government efforts during the crisis. A summary of the Act is available on the US Senate Committee on Banking, Housing, and Urban Affairs website at: http://www.banking.senate.gov/public/_files/050609_HelpingFamiliesSummary.pdf.
"Since then," however, as Selgin, Lastrapes and White 2010 (p. 27) note, "it [the Federal Reserve] has tended to err in the opposite direction, by extending credit to insolvent institutions." During the recent crisis, Humphrey observes, "the Fed has deviated from the classical model in so many ways as to make a mockery of the notion that it is an LLR." During 2008 and 2009, the Federal Reserve violated repeatedly the full set of Bagehot’s recommendations. First, instead of charging penalty rates for emergency loans, the Federal Reserve opened its discount window at below-market rates which gave financial institutions a hidden subsidy (Ivry, Keoun and Kuntz 2011). Second, the Federal Reserve departed from the classical model when it violated Bagehot’s doctrine to lend only on sound security and, instead, accepted hard-to-value collateral of dubious quality. The Fed deviated a third time from the classical doctrine when it ignored the classical counsel never to accommodate unsound borrowers when it lent to insolvent financial institutions solely on grounds of these institutions being identified as too-big-to-fail. Relief measures for distressed mortgage debtors, as during the Great Depression, were largely absent.

Something which has been widely overlooked with respect to the recent crisis is the possibility that it was an, although painful, yet necessary adjustment mechanism to prior maldevelopments. For example, high inequality, as it had existed in the 1920s, declined sharply after 1933 and remained at historical lows for several decades. Moreover, the large number of bank failures hit those states hardest where deposit insurance enacted on the state-level had led to overbanking by encouraging and enabling an economically non-viable number of banks. All in all, the self-healing mechanisms of crises were allowed to play out rather unimpeded during the Great Depression. It was only in 1932/33 that significant government interventions occurred, aimed at reviving the economy by providing assistance to homeowners and strengthening the scale and scope of mortgage markets. It should, however, also be pointed out, that policymakers failed to acknowledge – or accurately account for –
the fact that unit banking had contributed materially to the banking crisis of 1929-1933. Instead of reforming the banking system, various measures were undertaken to allow unit banking to proliferate over the subsequent decades.

In sharp contrast to the Great Depression, the aggressive and unconventional response to the recent crisis prevented any possible adjustments necessary to prior dislocations. This stood in stark contrast to some market commentators’ recommendations. Emmons (2008) of the Federal Reserve Bank of St. Louis argued that markets should have sorted themselves out in order to maximise long-run economic growth. Instead of intervening in the workings of the markets, Emmons, based on Stiglitz (1988, ch. 4), urged for the so-called compensation principle. Referring to Stiglitz, the compensation principle can be seen as a "policymaking corollary to the economic rule of laissez-faire in markets", "stat[ing] that a portion of the economic gains achieved by allowing markets to work unimpeded can and should be used to compensate the losers – individuals who are harmed by the adjustment process itself." Not only did the crisis response of 2007-2009 prevent an adjustment process, it increased several of the problems which constituted driving factors leading to the crisis in the first place.

First, the government's and particularly the Federal Reserve's actions amounted to a bailout of a dominant share of the United States' and the world’s largest and most complex financial institutions. The crisis response thus aggravated the TBTF problem by confirming and strengthening market participants’ bailout expectations, a fact which even the Federal Reserve (2012, p. 595) now recognises:

As a result of the imprudent risk taking of major financial companies and the severe consequences to the financial system and the economy associated with the disorderly failure of these interconnected companies, the U.S. government (and many foreign governments in their home countries) intervened on an unprecedented scale to reduce the impact of, or prevent, the failure of these companies and the attendant consequences for the broader financial system. Market participants before the crisis had assumed some probability that major financial companies would receive
government assistance if they became troubled. But the actions taken by the government in response to the crisis, although necessary, have solidified that market view.”

Ueda & Weder die Mauro (2012) provide statistical evidence that the structural government subsidy for systemically important banks increased substantially from year end-2007 to year end-2009, as the extraordinary measures undertaken globally both by governments and central banks in response to the crisis forcefully confirmed bailout expectations of market participants. The authors estimate that the credit rating bonus amounted to 1.8-3.4 at year end-2007, implying an average funding cost advantage of 60bp. At the end of 2009, the credit rating bonus had increased to 2.5-4.2, widening the funding cost advantage of big banks to 80bp. Besides strengthening TBTF expectations and increasing TBTF institutions' structural subsidies, the years 2007-2009 saw a marked increase in the largest banks' market share. As described above, countless government interventions prevented an orderly exit of insolvent banks, which would have affected primarily large banks. In addition to that, the government often promoted takeovers of troubled banks by less troubled institutions. As a consequence to these actions, too-big-to-fail banks during the Great Financial Crisis grew even larger by inhibiting failing institutions from exiting the market.

Second, post-crisis policies aimed at sheltering banks' fragile balance sheets as well as at inducing banks to lend by ultra-low interest rates have propelled stock and bond markets, amounting to an upward distribution of wealth.
The Federal Reserve’s highly accommodative monetary policy has transferred wealth from low-income to high-income individuals. According to Coibion, Gorodnichenko, Kueng and Silvia (2012) several channels transmit such low to high-income household wealth transfer. The income composition channel rests on the reasonable assumption that the composition of household incomes is heterogeneous. Incomes thus will react differently to exogenous shocks. For instance, if expansionary monetary policy, as pursued by the major central banks since the financial crisis, causes profits to rise more than wages, households with ownership claims of firms will benefit disproportionately. As households with a high share of ownership claims of total income tend to be high-net worth households (Coibion, Gorodnichenko, Kueng and Silvia 2012), accommodative monetary policy raises income inequality. Similar mechanics are underlying the portfolio channel hypothesis which is concerned with households’ wealth instead of income composition. Given that low-income households tend to hold relatively larger share of wealth in currency than households at the other end of the wealth spectrum (Erosa and Ventura 2002;
Albanesi 2007), inflationary monetary policies will cause a wealth transfer from low towards high-income households, again increasing inequality.

Concluding, ultra-accommodative interest rate policies pursued by the Federal Reserve and other central banks since the crisis have boosted stock and bond markets globally. To the extent that the amount of stock and bond holdings increases with individuals' wealth, the main beneficiary of low interest rates have been high-income households. Saez (2013) looks at income development since the end of the crisis in 2009 and finds that the average real income per family grew by about 6.0%. The gains, however, were unevenly distributed. While the top 1% incomes grew by 31.4%, the bottom 99% incomes increased only marginally by 0.4% from 2009 to 2012. While the share of the top 10% of total income (including capital gains) fell sharply during the crisis, it has since recovered and now stands above 50% – a level not seen since 1917 when data starts to be available (Figure 11). In addition, unconventional central bank policies led to a de facto recapitalisation of financial intermediaries via monetary policy (Chodorow-Reich 2014), benefitting the financial elite at the expense of lower-income households.

**FIGURE 11:** Top 10% Income Share in the US Including Capital Gains, 1917-2012

![Graph showing income share of top 10% in the US including capital gains, 1917-2012.](image)

*DATA: Tony Atkinson & Thomas Piketty – The World Top Incomes Database*
4. Conclusion

This paper presented empirical observations on the salient parallels and differences pertaining to the two defining crises of the last century: the Great Depression of 1929–1933 and the Great Financial Crisis of 2007-2009. The information presented is tentative and suggestive, yet it is not statistically tested, instead requiring good judgement on the side of the readers.

We’ll conclude by providing some stylised facts on the key parallels and differences between the two crises: Both booms and ensuing crises were firmly grounded in asset price bubbles in the real estate sector. When house prices contracted and borrowers started to defaulted, the problem got transmitted to a vulnerable banking sector. The cause of that vulnerability was different during the two episodes, the results, however, were similarly devastating. Until 1929 – and beyond –, the legal framework had fostered a banking system based on small, undiversified unit banks, which was known to be susceptible to shocks. Before 2007, large, complex financial institutions deemed too-big-to-fail were allowed to set capital almost unimpededly by regulators. Equipped with implicit and explicit government guarantees, which had eliminated market discipline from those institutions, took inordinate risk, while at the same time they had low capital ratios and relied on highly volatile and dangerous funding sources. Despite the different manifestation, then and now the approach to financial sector design was fundamentally determined by the prevailing ideology. In the 1920s, lawmakers attempted to preserve the United States’ unique unit banking system owing to a deep-grounded distrust towards large financial institutions. In the past several decades, the belief in market efficiency triggered significant deregulatory measures which granted financial institutions increasingly more and broader asset powers, in spite of a continuously generous – and increasing – safety net. The result then and now was similar inherently. While it is evident that the recent crisis did not experience the large number of bank failures and panics which characterised the Great Depression, the potential danger was real and
tangible. Bernanke corroborated the notion that the danger of repeating 1929-1933 were substantial in FCIC (2011, p. 354) hearings, noting that "out of maybe the 13 […] most important financial institutions in the United States, 12 were at risk of failure within a period of a week or two."

The only factor which prevented a repeat of 1929-1933 in terms of bank failures was the prevalence of governments and central banks as stabiliser, under negligence of what a lender-of-last-resort function is supposed to be and an appalling misinterpretation of how capitalist systems work. The Federal Reserve’s attempt to mitigate the immediate adverse effects of the housing crash on the financial system has led to a series of interventions in the economy which can be described as quantitative and qualitative easing (QQE) and an expansion of the historically narrowly defined role of the Federal Reserve as lender-of-last-resort (LOLR). During the financial crisis, the Federal Reserve expanded access to its discount window to insolvent banks and for that purpose accepted formerly not eligible risky securities. The Federal Reserve also opened credit facilities to non-banks for the first time since the 1930s (AIG, Fannie Mae, Freddie Mac), all of which were unable to secure funding in the market place due to their presumable insolvency. As an auxiliary measure, the Fed reduced the federal funds rate to near zero and then intervened in the allocation of credit in an unprecedented fashion by expanding the Federal Reserve’s balance sheet through the purchase of long-term assets such as mortgage-backed securities (MBS) and thereby reducing mid and long-term interest rates.

Yet, the result of these extraordinary measures have proven to be of limited effect and can be described as negligent at best. Growth has remained sluggish in the aftermath of the crisis at both sides of the Atlantic. To the contrary, the evidence

16 We acknowledge that acting differently during the crisis would have been economically difficult and politically challenging. This highlights the importance of providing a functioning regulatory framework before crises erupt, preventing conditions from manifesting which leave little opportunity to take actions promising immediate relief but which have adverse long-term effects.
mounts that bailing out large financial institutions has aggravated the too-big-to-fail problem. In addition, ultra-low interest rates have fostered policymakers’ complacency of, while at the same time inducing market participants to successively riskier asset classes. Much more importantly, the Federal Reserve has been politicized, compromising its independence and undermining its ability to efficiently conduct monetary policy (Goodfriend 2009; Hubbard, Scott and Thornton 2009; Bordo 2010).

The key difference between the two episodes thus relates to central authorities’ responses to the crises. While the crisis was allowed to play out rather unimpeded during 1929-1933, the government took aggressive measures to bolster the financial sector during the recent crisis. Various programmes recapitalised banks and other financial intermediaries. The latter approach has been applauded by many economists and observers. "The good news, of course, is that the policy response is very different" Eichengreen & O'Rourke (2009) remark, "the question now is whether that policy response will work." Indeed, the crisis and the government's inability to meaningfully reform the financial sector, has rendered the Federal Reserve into a de facto government agency, as central banks' independence globally is now strongly undermined. Given the points raised in this paper, caution is certainly warranted. Whether or not the policy response was effective will only be clear in the long-run. We tend to believe that it was not. Instead, the policies enacted seem to have fostered complacency and prevented necessary reforms.
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