

NEXT SOCIAL CONTRACT INITIATIVE POLICY BRIEF

# UNEQUAL AND UNSTABLE: THE RELATIONSHIP BETWEEN INEQUALITY AND FINANCIAL CRISES

ANANT A. THAKER, BOSTON CONSULTING GROUP  
ELIZABETH C. WILLIAMSON, FRONTENAC COMPANY

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## Introduction

Over the past century, the United States has experienced two large-scale financial crises: the Great Depression of 1929 and the recent Great Recession, which began in 2007.\* These periods also represented peaks in the share of U.S. income collected by the top 1 percent of earners.<sup>1</sup> In 1929, the top 1 percent accrued over 22 percent of total national income, including capital gains – a share several percentage points above its historical average, and one that would not be seen again until 2006.<sup>2</sup> Notably, the number of bank failures in the U.S. – a proxy for financial crises – and national income inequality as measured by the Gini Index have followed a strikingly correlated pattern: a steady rise leading up to the Great Depression, followed by a sharp reduction that lasted into the 1970s, and then a steep escalation that peaked prior to the Great Recession (**Exhibit 1, Exhibit 2**). The correlation between income inequality and financial crises raises an important question: could it be that extended periods of increased income inequality help to *cause* financial crises? Evidence suggests this may well be the case, through three primary mechanisms that reinforce each other:

- Sharp increases in debt-to-income ratios among lower- and middle-income households looking to maintain consumption levels as they fall behind in terms of income;
- The creation of large pools of idle wealth, which increase the demand for investment assets, fuel financial innovation, and increase the size of the financial sector;
- And disproportionate political power for elite financial interests which often yields policies that negatively affect the stability of the financial system.

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\*This paper was originally written while the authors were enrolled at Harvard Business School and the views expressed in it do not reflect those of the authors' current affiliations and employers. The authors give special thanks to Professor David A. Moss for his guidance.

Exhibit 1: Historical Correlation between Gini Index and Financial Crises in the U.S., 1913-2010<sup>3</sup>

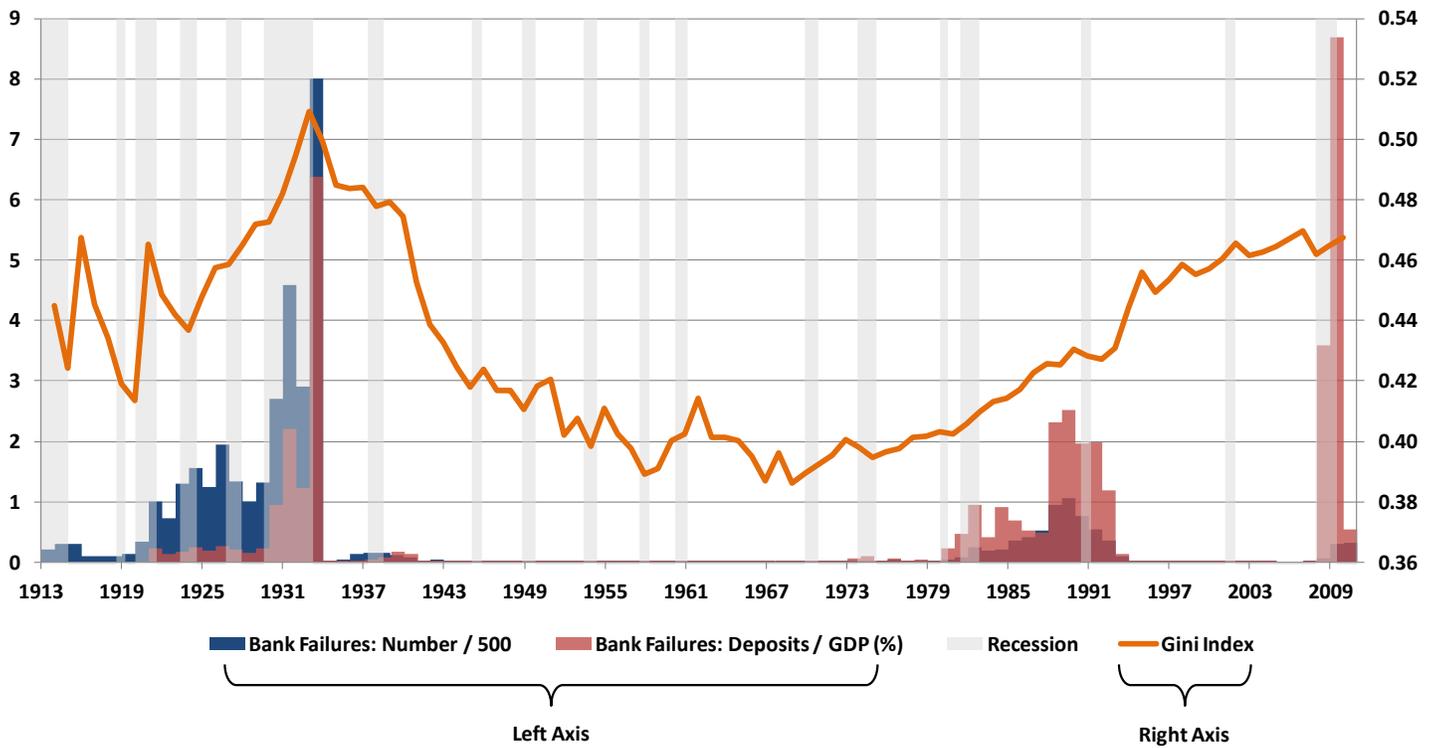
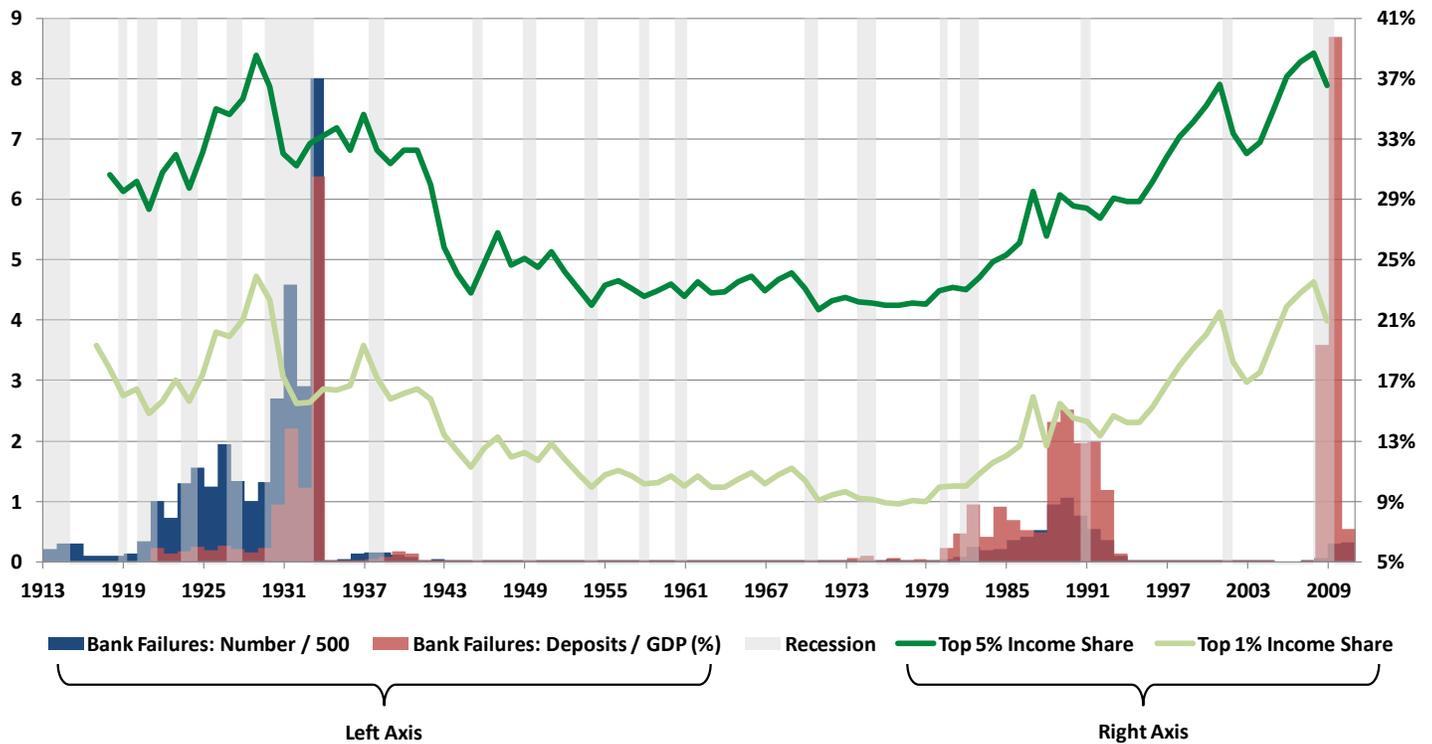


Exhibit 2: Historical Correlation between Top Income Shares and Financial Crises in the U.S., 1913-2010<sup>4</sup>

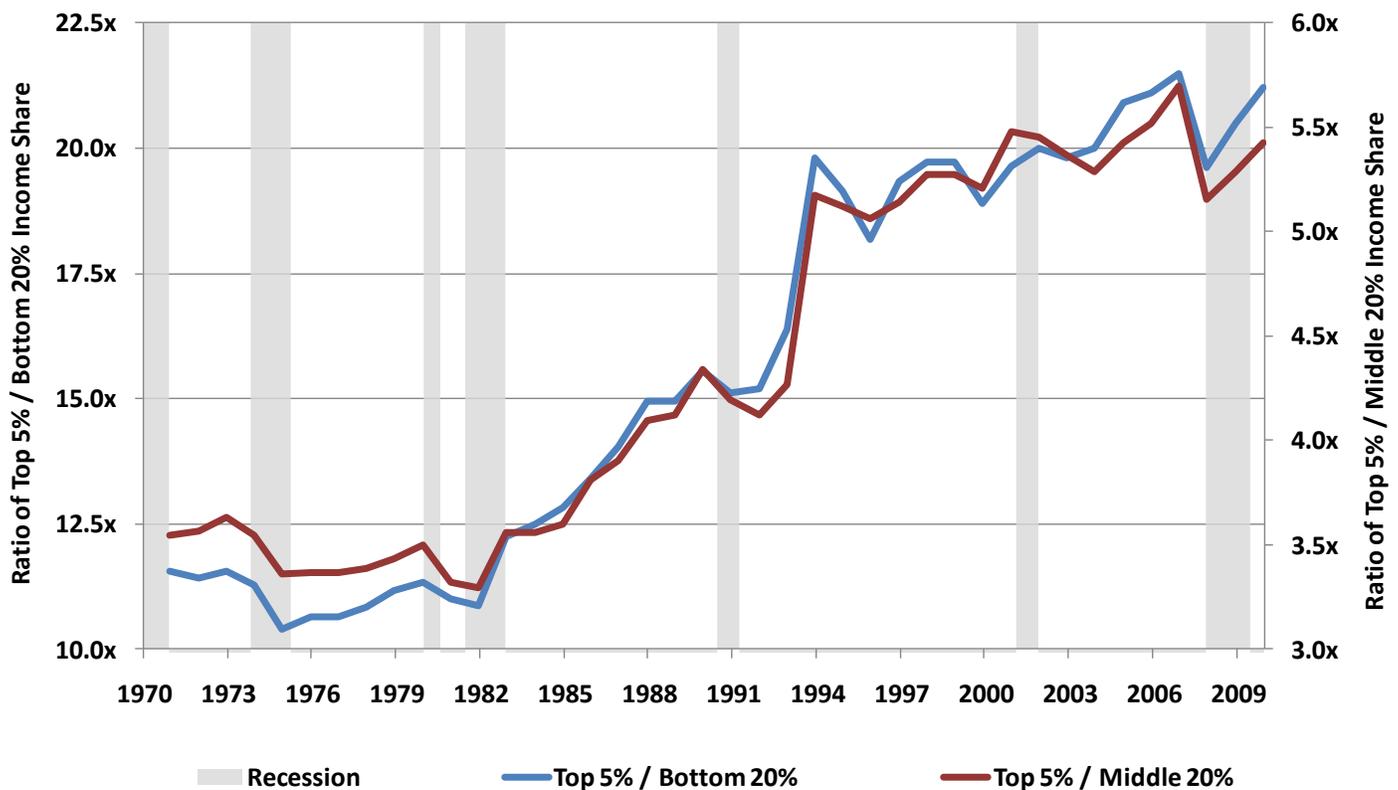


## Income Inequality Trends in the U.S.

The U.S. Gini index, which measures the inequality of an economic distribution, increased 23 percent between 1919 and 1932 as income became significantly more concentrated at the top of the earnings distribution.<sup>5</sup> However, as the country emerged from the Great Depression and Second World War, income inequality declined through the late 1960s. The Gini index fell 24 percent between 1932 and 1968, at which point the income shares of the top 10, 5, and 1 percent had fallen to 32, 21, and 8 percent, respectively.<sup>6</sup> Where the top of the distribution saw its share decline, the middle and bottom experienced gains, leading to a compression among income groups: the ratio of income shares of the top 5 percent to the middle 20 percent and bottom 20 percent dropped 14 percent and 18 percent, respectively, from 1947 to 1970.<sup>7</sup>

This compression began its reversal in the 1970s. Between 1970 and 2009, the Gini index rose 19 percent, and the income shares of the top 10, 5, and 1 percent rose to 46, 33, and 18 percent by 2008 – levels nearly identical to those of 1932.<sup>8</sup> Meanwhile, the ratio of income shares of the top 5 percent to the middle 20 percent and bottom 20 percent sharply increased 53 percent and 84 percent, respectively, between 1970 and 2009 (Exhibit 3).

Exhibit 3: Ratio of Top 5% Income Shares to Middle 20% and Bottom 20%, 1970-2009<sup>9</sup>



## The Polarization of Incomes

The first way in which this trend of steep income inequality leads to crisis is through borrowing and lending. Credit has offered working and middle-class families a means to maintain or increase their level of consumption at times when their real earnings have stagnated or declined relative to high earners. From 1970 to 2008, earnings of the top 1 percent grew, on average, by 3 percent per year, while the Compounded Annual Growth Rate (CAGR) for the rest was relatively stagnant at 0.3 percent.<sup>10</sup>

Historically the cumulative share of growth captured by the highest income brackets during times of crisis is striking (**Exhibit 4**). Additionally, Heathcote et al. (2010) found that real annual earnings for the middle and bottom decile dropped by 7 percent and 60 percent, respectively, from 1967 through the early 1980s, after which they essentially stagnated. By comparison, real annual earnings of the top decile steadily increased through 2005 to reach a level 73 percent higher than that of 1967.<sup>11</sup>

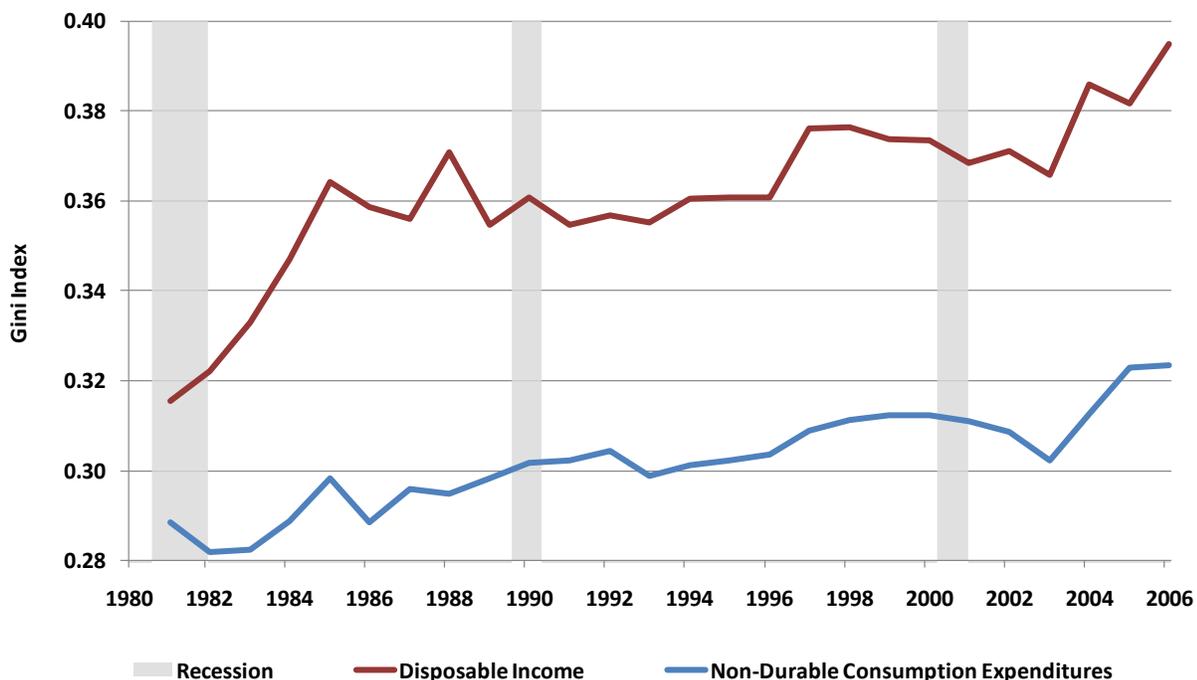
**Exhibit 4: Percentile Share and Average Income Growth in the United States, 1920-2008<sup>12</sup>**

Period	Average Income Real Annual Growth	Top 1% Incomes Real Annual Growth	Bottom 99% Incomes Real Annual Growth	Fraction of total growth (or loss) captured by top 1%
1920-1929	2.7%	7.4%	1.6%	38.0%
1929-1970	2.2%	(0.0%)	2.6%	1.9%
1970-2008	0.7%	2.9%	0.3%	44.8%

### Income Inequality vs. Consumption Inequality

We may initially expect that those falling behind in income would curtail their consumption commensurately. However, based on data from the Bureau of Labor Statistics' Consumer Expenditures Survey (CEX), Heathcote et al. (2010) show that, since 1980, "the rise in consumption inequality is much smaller than the rise in disposable income inequality."<sup>13</sup> For example, the 11 percent rise in the Gini coefficient of non-discretionary consumer expenditures from 1980 to 2006 was roughly half the increase in that of disposable income (**Exhibit 5**). Over the same period, the ratio of earnings of the fiftieth percentile of the income distribution to the tenth percentile, as well as the ratio of the ninetieth percentile to the fiftieth percentile, outgrew the ratio of consumption by factors of nearly three times.<sup>14</sup> In other words, differences in consumption patterns across income did not grow nearly as wide as did the gap in income levels did themselves.<sup>15</sup>

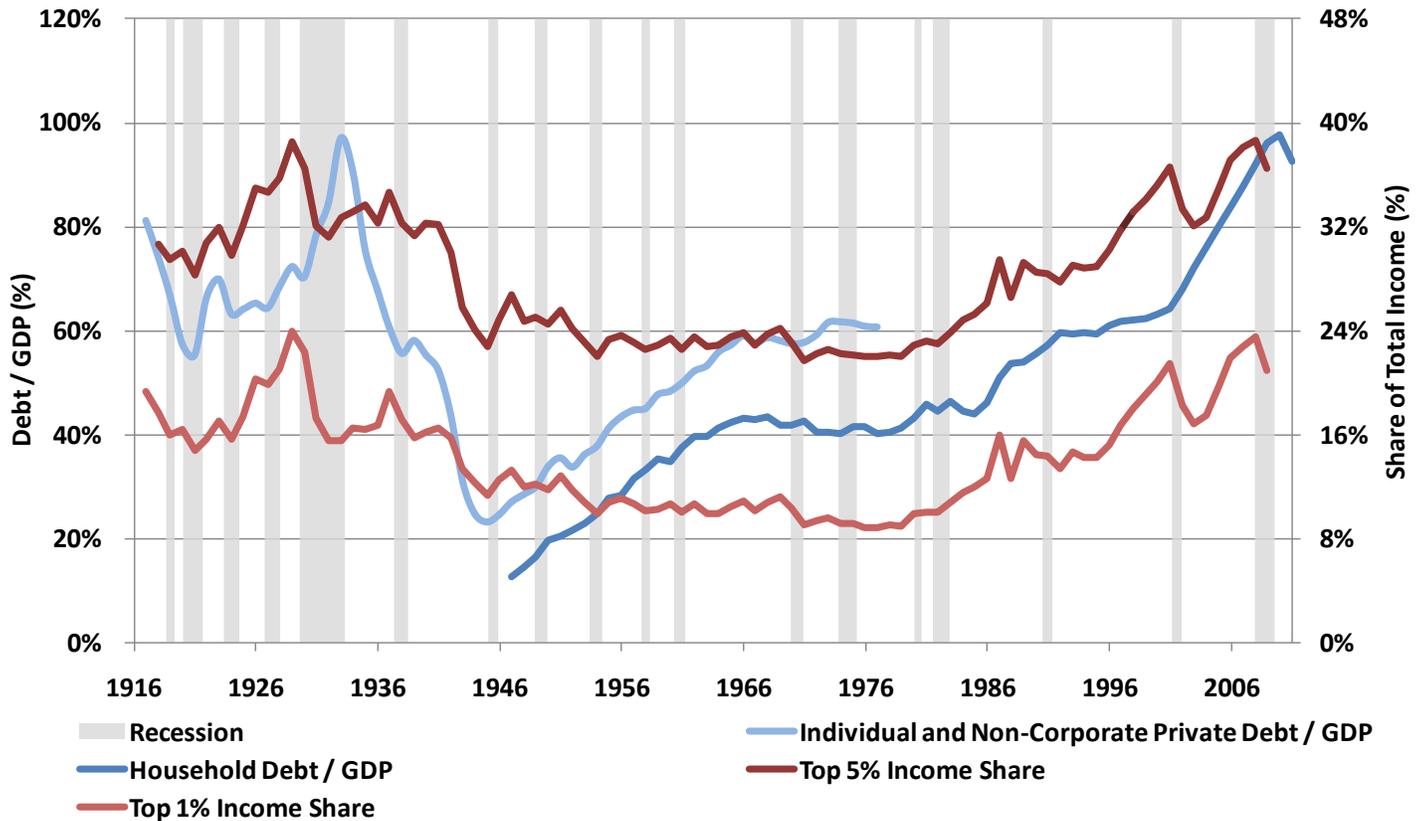
**Exhibit 5: Income Inequality versus Consumption Inequality, 1980-2006<sup>16</sup>**



## Rising Household Indebtedness

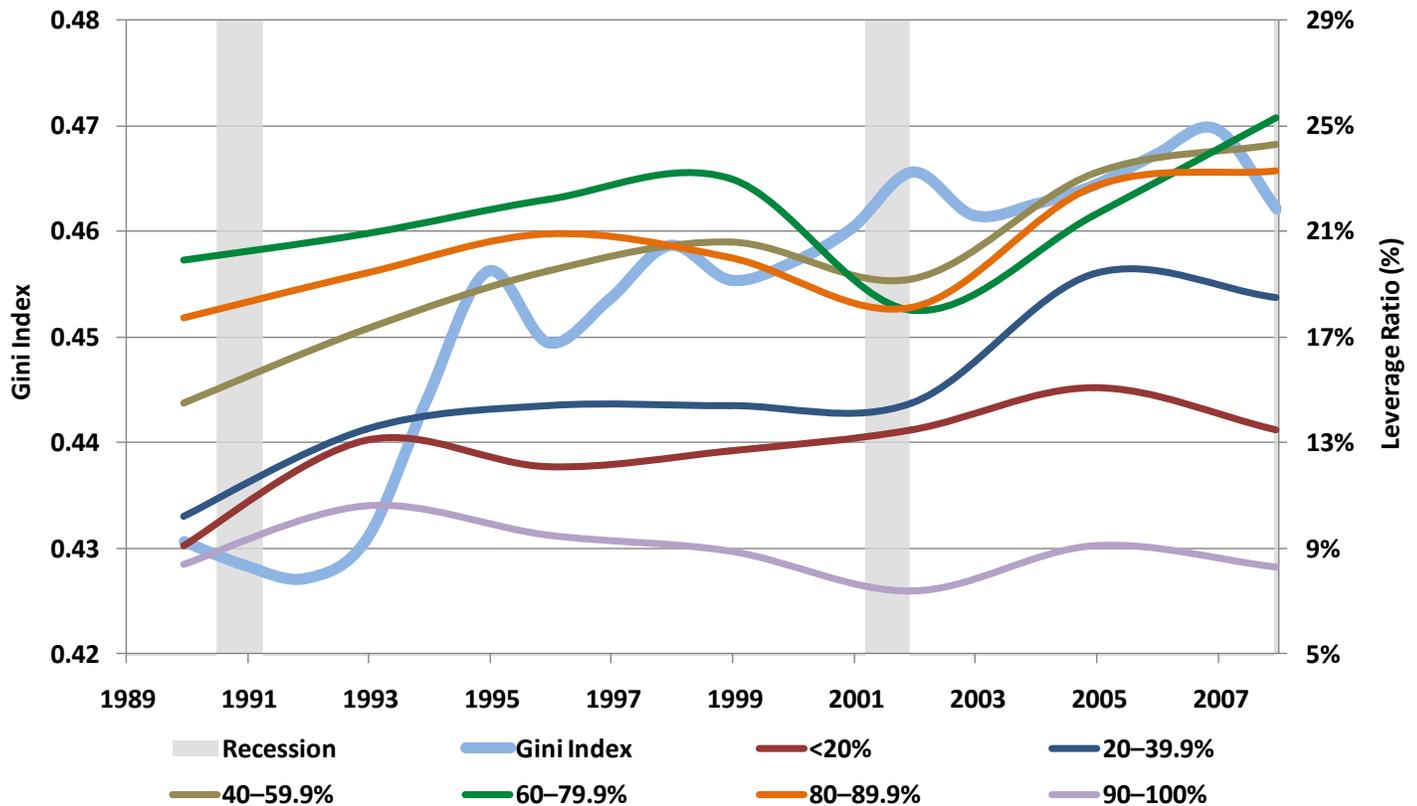
The steadiness of comparative consumption levels implies that working and middle-class families become more indebted as income inequality rises. Indeed, historically the ratio of individual and non-corporate private debt to GDP has tracked increased income inequality, similarly spiking around the Great Depression and the Great Recession (**Exhibit 6**)

**Exhibit 6: Income Inequality and Household Leverage, 1916-2010** <sup>17</sup>



Notably, household indebtedness has varied across the income distribution, based on data from the Federal Reserve’s Survey of Consumer Finances (SCF) – a triennial survey of the balance sheet, income, and other characteristics of American families. From 1989 to 2007, as the Gini index rose 7 percent, household leverage ratios for 40<sup>th</sup> through 90<sup>th</sup> percentiles of the income distribution rose in a correlated fashion by an average of more than 40 percent over the period. Similarly, the bottom two-fifths saw their leverage ratios increase by 48 and 81 percent, respectively. The top decile, on the other hand, decreased its leverage ratio by slightly more than 1 percent (**Exhibit 7**). This data supports the notion that leverage allows low- and middle-income families to smooth earnings fluctuations and roughly maintain consumption levels.

Exhibit 7: Leverage Ratios by Income Percentile, 1989-2007<sup>18</sup>



## Asset Growth and Demand for Financial Innovation

As income inequality surged over the past 30 to 40 years, new classes of wealth emerged. By some estimates, the number of millionaires in the U.S. increased by 168 percent between 1983 and 2004, while over this same period the number of “pentamillionaires” (net worth of \$5 million or more) increased three and a half times, and the number of “decamillionaires” (\$10 million or more) grew more than 400 percent.<sup>19</sup> With greater concentration of wealth comes a growing surplus of investable funds held by these individuals. While comprehensive statistics for the top 1 percent and 0.1 percent of wealth are difficult to come by, in 2007, 48 percent of the top decile of income earners held stocks, 36 percent held pooled investment funds, and 90 percent held retirement accounts. This contrasts to 14 percent of the middle tercile of income earners that held stock, 7 percent that held pooled investment funds, and 55 percent that held retirement accounts.<sup>20</sup> From 2002 through 2007, wealth at households with over \$5 million in assets grew at a CAGR of 15.7 percent to a total of \$20.9 trillion, while average annual real income growth was 3 percent.<sup>21</sup>

Wealth holders must find a way to invest this growing pool of assets and they rationally search for the highest risk-adjusted returns. While it is difficult to gather investment allocation data for the highest earners, top endowments can serve as a proxy for the attentions of wealthy investors given their “focal point for public opinion” and investors’ sentiment that elite endowments “have been the best investors, bar none, over the past 20 years.”<sup>22</sup> Thus it is telling that the share of Ivy League allocations devoted to alternative assets has been twice that of the median school: 9.3 percent versus 4.2 percent in 1993 and 38 percent versus 12 percent in 2005.<sup>23</sup> Over the past twenty years, for example, Harvard University has dramatically increased its

investment in real assets such as real estate and commodities as well as alternatives (absolute return, e.g. hedge funds; **Exhibit 8**). It is likely that over the same time period, the portfolios of the top income earners in the U.S. followed a similar pattern by reallocating their surplus of funds away from traditional products such as domestic equities and fixed income securities into in a number of other products and strategies.

**Exhibit 8: Harvard Endowment Historical Investment Asset Allocation, 1980-2010<sup>24</sup>**

<b>Asset Class</b>	<b>1980</b>	<b>1984</b>	<b>1988</b>	<b>1995</b>	<b>1999</b>	<b>2002</b>	<b>2005</b>	<b>2010</b>
Domestic Equity	66%	47%	46%	38%	24%	15%	15%	11%
Foreign Equity	0%	0%	0%	20%	24%	15%	15%	22%
Private Equity	0%	7%	12%	12%	12%	13%	13%	13%
Real Assets	0%	3%	5%	15%	17%	29%	23%	23%
Fixed Income	34%	43%	37%	17%	17%	16%	22%	15%
Alternative	0%	0%	0%	0%	6%	12%	12%	16%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>102%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Note: Real assets include real estate and commodities; Fixed income includes cash; Alternative includes absolute return

As income inequality grew from the 1970s into the 21<sup>st</sup> century and high-income individuals amassed large pools of wealth, the financial sector responded with innovations in investment products: the money market fund in the late 1970s, followed by private equity, venture capital, and hedge funds in the 1980s through the 2000s. By 2005 there were over eight thousand hedge funds in the United States.<sup>25</sup>

In the late 1990s and early 2000s, the financial industry continued its rapid pace of innovation, developing structured products, derivatives, and risk-transfer products to further satisfy wealthy investor appetites for opportunity and returns.<sup>26</sup> Collateralized debt obligations (CDOs) – securities backed by the expected repayment of loans on the part of borrowers– became one of the most rapidly growing financial products ever when they were popularized in the early 2000s.<sup>27</sup> Thanks in part to the expansion of credit to lower and middle income households, CDOs appeared to yield higher returns to institutional investors than they could earn on other assets within their investment-grade mandate.<sup>28</sup> Growth in CDOs can also be attributed to further market innovations: credit default swap contracts (CDS), “insurance contracts protecting against default of specific asset-backed securities,” and synthetic CDOs, which are created from pools of CDS.<sup>29</sup>

As new products proliferated and market participants used CDS to speculate on CDOs in the 2000s, the financial sector grew dramatically. Total funds invested rose rapidly as CDOs increased from over \$20 billion in 1Q 2004 to over \$180 billion in 1Q 2007, and CDS increased from approximately \$5 trillion in notional value in 1H 2004 to approximately \$45 trillion in 1H 2007.<sup>30</sup> Kumhof and Ranciere (2011) use data from Philippon (2008) to show that by intermediating funds between increasingly wealthy individuals in top income brackets and increasingly indebted individuals in the bottom of income brackets the financial sector as a share of GDP nearly doubled between 1981 and 2007, “and most recently accounted for an extraordinary 8 percent of U.S. GDP.”<sup>31</sup>

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## Inequality and Political Power

As investors turned to financial innovation – and struggling households turned to borrowing – the power and influence of the financial sector grew considerably. Between 1998 and 2010, the financial sector spent more than \$4.4 billion on various forms of political influence, surpassing healthcare as the highest spender.<sup>32</sup> In 2007, the financial sector employed five lobbyists for every member of Congress – a total of 2,996 individuals.<sup>33</sup> Armed with cash and political contacts, the financial sector exerted significant influence from 1970s onward to erode regulatory control.<sup>34</sup>

The biggest change in the banking sector came in 1986 when the Federal Reserve began the process of loosening the restrictions of Glass-Steagall: allowing banks to derive increasing shares of revenues from investment banking, to handle commercial paper, mortgage-backed securities and municipal bonds, and to deal in debt and equity securities.<sup>35</sup> Additionally, the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 eliminated restrictions on interstate banking and branching, promoting industry consolidation.<sup>36</sup>

The banking sector gained further independence through the introduction of the 2000 Commodity Futures Modernization Act (CFMA), legislation that was born of close political connections between the banking sector and bank regulators. The CFMA prevented the Commodity Futures Trading Commission (CFTC) from regulating most over-the-counter derivative contracts, including credit default swaps. Five U.S. commercial banks anticipated earning over \$35 billion trading unregulated derivative contracts and therefore had much to lose by any regulation.<sup>37</sup> From 1999-2006, 93 percent of bills that aimed to tighten regulation were never made into law.<sup>38</sup> However, a number of pieces of legislation promoting lenient regulation were successful, including the American Homeownership and Economic Opportunity Act of 2000, American Dream and Development Act of 2003 and 2004 Consolidated Supervised Entities (CSE) program in 2004.

Once the legislation was instituted, financial firms increased their assumption of risk thereby increasing financial fragility in the sector as a whole. In 2004, the five major investment banks – Goldman Sachs, Morgan Stanley, Lehman Brothers, Merrill Lynch and Bear Stearns – lobbied the SEC for an exemption to brokerage unit leverage caps, in exchange for the SEC’s ability to restrict excessively risky activity.<sup>39</sup> The resulting CSE program was designed as a means for “global investment bank conglomerates that lack a supervisor under law to voluntarily submit to regulation.”<sup>40</sup> Following the program’s initiation, Bear Stearns’ leverage increased from 12 times capital to 33 times and the other investment firms’ leverage increased similarly.<sup>41</sup> However, the agency never took advantage of its supervisory ability and the investment banks’ increased risk-taking combined with higher leverage had dire consequences in the 2007-2009 financial crisis.<sup>42</sup>

## Conclusion

In May 2009, the Financial Crisis Inquiry Commission was created to “examine the causes, domestic and global, of the current financial and economic crisis in the United States.”<sup>43</sup> The Commission did not directly examine the role of income inequality in promoting crisis. This was an oversight – the history of the past century reveals a striking correlation between income inequality and financial crises. Our analysis suggests that this is no coincidence: income inequality generates financial fragility by increasing leverage ratios among lower- and middle-income households, fostering a pool of idle wealth that increases the demand for investment assets and financial innovation, and allocating asymmetrical political power which reduces regulation and threatens financial instability.

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In isolation, each of these factors may have little impact on systemic crisis, but collectively, they can reinforce each other. As households fall further and further behind the economic elite, they turn to credit; over-leveraging not only threatens household solvency but also expands business for, and the influence of, the financial sector. Simultaneously, growing pools of wealth among the top brackets seek high-return investments, promoting the development of complex financial products – which, in the Great Recession at least, piggy-backed on the expansion of household debt through CDOs and CDS. The expanded role of the financial sector combined with the concentration of economic resources at the top of the distribution amplifies the political influence of financial interests, which promotes lax regulation and deregulation. The end results are extremely fragile economic conditions. Based on our analysis, evidence suggests that income inequality has been – and should be in the future – an important variable to consider and assess when evaluating the road to financial crisis.

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## Endnotes

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<sup>4</sup> D. Moss, “Bank Failures, Regulation, and Inequality in the United States”; *Historical Statistics of the United States: Colonial Times to 1970*, Series X-741; “Federal Deposit Insurance Corporation Failures and Assistance Transactions United States and Other Areas,” Table BF01; R. Sutch, “Gross domestic product: 1790–2002.” Table Ca9-19 in *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition*; Bureau of Economic Analysis, “Gross Domestic Product.” NIPA Table 1.1.5; T. Piketty and E. Saez, “Income Inequality in the United States, 1913-1998,” *Quarterly Journal of Economics*, 118(1), 2003, pp. 1-39, with updated data to 2008.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.; O. Berruyer, “Income Inequality in the US,” December 2010, post on blog “The Crisis,” <http://www.the-crises.com/income-inequality-in-the-us-1/>, accessed April 2011.

<sup>7</sup> U.S. Census Bureau, “Table F-2: Share of Aggregate Income Received by Each Fifth and Top 5 Percent of Families,” <http://www.census.gov/hhes/www/income/data/historical/inequality/index.html>, accessed April 2011.

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<sup>9</sup> U.S. Census Bureau, Table F-2: “Share of Aggregate Income Received by Each Fifth and Top 5 Percent of Families.”

<sup>10</sup> E. Saez and T. Piketty, “Income Inequality in the United States, 1913-1998 [Tables and Figures Updated to 2008]”, July 2010, <http://elsa.berkeley.edu/~saez/>, accessed April 2011

<sup>11</sup> T. Piketty and Emmanuel Saez, “Income Inequality in the United States, 1913-1998,” *Quarterly Journal of Economics*, 118(1), 2003, pp. 1-39, with updated data to 2008. Notes: Computations based on family market income including realized capital gains (before individual taxes). Incomes are deflated using the Consumer Price Index (and using the CPI-U-RS before 1992). The fourth column reports the fraction of total real family income growth captured by the top 1 percent. For example, from 1920-1929, average real family incomes grew by 2.7% annually but 38.0% of that growth accrued to the top 1% while 62.0% of that growth accrued to the bottom 99 percent of U.S. families.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Heathcote, Jonathan, Fabrizio Perri, and Giovanni Violante, “Unequal We Stand: An Empirical Analysis of Economic Inequality in the United States, 1967-2006,” January 2008, [http://www.econ.umn.edu/~fperri/papers/redusa\\_jan29.pdf](http://www.econ.umn.edu/~fperri/papers/redusa_jan29.pdf), accessed April 2011.

<sup>15</sup> This finding, which mirrors conclusions reached by Slesnick (2001), Krueger and Perri (2006), and Attanasio et al. (2007), indicates that income inequality is effectively insurable.<sup>15</sup> The mechanism for this insurance, which allows all income segments to compensate for income stagnation or loss, is credit.

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<sup>41</sup> Ibid; J. Crotty, “Structural Causes of the Global Financial Crisis: A Critical Assessment of the ‘New Financial Architecture,’” *Cambridge Journal of Economics*, 2009, 33.

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<sup>43</sup> Fraud Enforcement and Recovery Act (Public Law 111-21) passed by Congress and signed by the President in May 2009.



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