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Manufacturing Tail Risk: A Perspective on the Financial Crisis of 2007–2009

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Abstract

We argue that the fundamental cause of the financial crisis of 2007–2009 was that large, complex financial institutions ("LCFIs") took excessive leverage in the form of manufacturing tail risks that were systemic in nature and inadequately capitalized. We employ a set of headline facts about the build-up of such risk exposures to explain how and why LCFIs adopted this new banking model during 2003–2Q 2007, relative to earlier models. We compare the crisis with other episodes in the United States, in particular, the panic of 1907, the failure of Continental Illinois and the Savings and Loan crisis. We conclude that several principal imperfections, in particular, distortions induced by regulation and government guarantees, developed in decades preceding the current

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one, allowing LCFIs to take on excessive systemic risk. We also examine alternative explanations for the financial crisis. We conclude that while moral hazard problems in the originate-and-distribute model of banking, excess liquidity due to global imbalances and mispricing of risk due to behavioral biases have some merit as candidates, they fail to explain the complete spectrum of evidence on the crisis.

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1

Introduction

There is virtually universal agreement that the fundamental cause of the global economic and financial crisis of 2007–2009 was the combination of a credit boom and a housing bubble. In the five-year period covering 2002–2007, the ratio of debt to national income in the United States increased from 3.75:1 to 4.75:1. It had taken the whole preceding decade to produce an increase in aggregate debt of this magnitude. Moreover, from 2002 to 2007, house prices grew at an unprecedented rate of 11% per year. Why? With the benefit of hindsight, an extraordinary flood of liquidity and accommodative monetary policy that ignored asset prices produced extraordinarily low expected real interest rates. This appeared to have left investors scrambling for "alpha" — the so-called "search for yield" — that encouraged all kinds of borrowers to use maximum leverage. Households, corporations, financial firms, investors, and even countries borrowed heavily. When the "bubble" burst, a severe economic crisis was bound to come. At the household level, families whose homes were highly leveraged and whose equity represented 35% of their wealth would not be able to consume as they did through 2007. The real economy was bound to feel the brunt of the inevitable correction

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It is much less clear, however, why this combination of events led to such a severe financial crisis — why we had such widespread and sometimes catastrophic failures of financial institutions along with the freezing-up of capital markets. The systemic crisis that ensued reduced the supply of capital to creditworthy institutions and individuals, resulted in a sudden sharp decline in global trade and production, and amplified the effects on the real economy worldwide

We argue that what made this economic shock unique, and led to such a severe financial crisis was the behavior of many of the large, complex financial institutions (LCFIs) — the universal banks and financial conglomerates, investment banks, insurance companies, and (in rare cases) even hedge funds — that today dominate the financial industry. These LCFIs ignored their own business model of securitization and chose *not* to transfer credit risk to other investors. Instead, they employed securitization to manufacture and retain tail risk that was systemic in nature and inadequately capitalized. Institutions matter, and in this case the robustness of the financial architecture built over two decades or so showed severe weaknesses

The legitimate and valuable purpose of securitization is to spread risk. It does so by removing large concentrations of risk from the balance sheets of financial institutions, and placing small concentrations into the hands of a large number of investors who get paid an acceptable price for bearing that risk. But especially from 2003 to 2007, the main purpose of securitization appeared not to have been to share risks with investors, but to make an end-run around capital-adequacy regulations applied to financial intermediaries. The net result was to keep the risk concentrated in the financial institutions themselves — and, indeed, to keep that risk at a greatly magnified level because of the overleveraging that it allowed. When the risk actually materialized — the housing bubble burst — these institutions experienced wholesale failures, resulting in the greatest systemic crisis we have seen since the Great Depression.

Our assessment can be restated in a different way. It is now well recognized that given limited liability, levered firms have incentives to shift the profile of their assets toward higher risk (the so-called "risk-shifting" argument of Jensen and Meckling, 1976). Left to market

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devices, agency costs arising due to these incentives should be priced by creditors. In turn, the firms should have incentives to limit agency costs *ex ante*. In this view, all outcomes are assumed to be second best in equilibrium. However, this view needs to be refined for financial firms, since they have an important set of creditors — the government and the taxpayer — as a consequence of implicit and explicit subsidies. Government guarantees are often not priced fully (or at all). This distorts financial firms' cost of capital and their capital budgeting, inducing a preference for higher risk and higher leverage. Recognizing this moral hazard problem, regulation such as capital requirements are put in place.

As a result, the objective function of financial firms can be viewed as maximizing shareholder value given the mispricing of agency costs in government guarantees and subject to capital-adequacy requirements. While these firms can maximize their objective functions by enhancing overall value, that is, taking positive net present value investments, they can also circumvent capital requirements if regulation is lax and the resulting "regulatory arbitrage" is opaque and complex enough that markets cannot fully price the resulting agency costs. Viewed in this perspective, LCFI behavior during 2003–2007 clearly shows profit maximization by extensively exploiting gaps in the regulatory constraint rather than by undertaking positive net present value investments. The end result was the classic excessive leverage build-up in the financial sector. But since the manner in which such gaps were exploited was complex and opaque, the crisis that resulted was not well-anticipated by markets and led to severe spillovers to both financial and real sectors of the economy.

Section 2 of this monograph begins with a brief history of how the U.S. financial system evolved into its current form. We pay special attention to the risk-taking incentives of financial institutions and the breakdown of the regulatory system-wide protections that had emanated from the experience of the Great Depression.

Section 3 proposes a set of headline facts about the precise manner in which banks built tail (systemic) risk exposures during 2003–2Q 2007 in large measure to get around capital requirements, in contrast to their

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earlier business models. We explain how lax regulation contributed to these outcomes, especially during the 2003–2005 period.

In light of these headline facts, Section 4 examines alternative explanations for the financial crisis: (1) Failure of the originate-and-distribute model, and the role played by rating agencie; (2) Panics in response to efficient securitization undertaken by the financial sector; (3) Global imbalances; (4) "Animal spirits" and mispricing of risks; (5) Loose monetary policy, especially in the United States; and, (6) Illiquidity-induced crisis (rather than an insolvency-induced one). By and large, we conclude that global imbalances and loose monetary policy were relevant proximate contributors to the crisis by producing an asset-price bubble in the United States that ultimately led to the large negative economic shock; concomitantly, the contemporaneous business model of LCFIs to concentrate tail risks on their balance sheets rather than distribute them translated the economic shock into a full-blown crisis in the financial sector which was soon transferred to the real sector. We explain why none of the other alternative explanations does much to help explain the complete spectrum of available evidence on risks undertaken by banks.

Section 5 provides concluding remarks and a brief discussion of possible remedies to charge banks for manufacturing tail risks and to contain such propensity in the first place. Though we focus on the United States for most of our discussion, we also discuss risk-taking and realized losses by LCFIs in other parts of the world. This latter discussion is contained in Section 4, where we consider the role of global imbalances, and in a separate Appendix.

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