

THE IMPLICATIONS OF BAILOUTS

Is “Too Big to Fail” Too Big?

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The problem of private companies deemed by policymakers to be “too big to fail” prevents even the most earnest democratic governments from committing to a laissez-faire policy. Recognizing this, companies consciously incur more risk in their investments than they would were governments to make credible commitments, in advance, against bailouts. Four case studies (US, Korea, Chile, and Argentina) are examined, and compared to an instance when a commitment not to bail out insolvent firms was actually honored (Iceland). Three dimensions of difference in these cases are analyzed, and some conclusions are offered for credible commitments. Ultimately, the trade-off between preserving financial stability and preventing moral hazard may come down to the question of whether “too big to fail” means “too big.”

INTRODUCTION	434
I. DEFINITIONS	435
A. <i>Policy Responses</i>	437
II. BACKGROUND: ORIGINS	439
A. <i>Something Old, Something New</i>	443
III. COMPARISONS	445
A. <i>Classification Scheme</i>	445
B. <i>Bankruptcy Index</i>	445
C. <i>GDP Growth</i>	447
D. <i>Comparison by Categories</i>	449
1. <i>Heavily Regulated, TBTF</i>	450
2. <i>Heavily Regulated, Let SIFI’s Die or No SIFI’s</i>	451

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3. Relatively Little Regulation, TBTF 453

4. Relatively Little Regulation, No TBTF 454

CONCLUSION 455

INTRODUCTION

In a 2010 speech U.S. Federal Reserve chairman Ben Bernanke summarized accurately the problems inherent in the policy that has come to be known as “Too Big to Fail” (TBTF):

[O]ne of the greatest threats to the diversity and efficiency of our financial system is the pernicious problem of financial institutions that are deemed “too big to fail.” . . . Some countries rely heavily on a few large banks to provide credit and financial services; our system, in contrast, includes financial institutions of all sizes, with a wide range of charters and missions. We also rely more than any other country on an array of specialized financial markets to allocate credit and help diversify risks. Our system is complex, but I think that for the most part its variety is an important strength.

[F]or the financial system to do its job well, it must be an impartial and efficient arbiter of credit flows. In a market economy, that result is best achieved through open competition on a level playing field, a framework that provides choices to consumers and borrowers and gives the most innovative and efficient firms the chance to succeed and grow. Unfortunately, our financial system today falls substantially short of that competitive ideal . . .

The costs to all of us of having firms deemed too big to fail were stunningly evident during the days in which the financial system teetered near collapse. But the existence of too-big-to-fail firms also imposes heavy costs on our financial system even in more placid times. Perhaps most important, if a firm is publicly perceived as too big, or interconnected, or systemically critical for the authorities to permit its failure, its creditors and counterparties have less incentive to evaluate the quality of the firm’s business model, its management, and its risk-taking behavior. As a result, such firms face limited market discipline, allowing them to obtain funding on better terms than the quality or riskiness of their business would merit and giving them incentives to take on excessive risks.¹

In this paper, we make an argument for the impact of TBTF policies on risk choices in advanced economies. TBTF has been applied mainly to large financial institutions that are viewed as risking “contagion effects” if they falter or fail, but TBTF also has been applied to industrial firms (such as General Motors in the U.S., deemed TBTF in 2010). We compare several developed nations (in the Organization for Economic Development and Cooperation, or “OECD”)

1. Ben S. Bernanke, Speech at the Independent Community Bankers of America National Convention: Preserving a Central Role for Community Banking (March 20, 2010).

nations with different TBTF policies, and different experiences with the “Great Recession” of 2008–2010.

As Bernanke noted in the extended quote above, TBTF has complex effects. The “Great Depression” of 1929–40 was very nearly worldwide, with every industrialized nation seeing a substantial, and extended, growth penalty. This has not been the experience of the “Great Recession.” Indeed, many nations have seen very little drop-off in economic activity, and have seen no appreciable increase in domestic insolvencies.

Our thesis is that at least some of the difference in the insolvency experience of different nations can be attributed to differences in the ability of governments to commit to a policy that says, *ex ante*, “No organization is TBTF.” Of course, it is easier to make such a commitment if no firm is “too big” in the first place—i.e., so big that it might exert systemic or contagion effects. Indeed, some reformers argue that instead of adopting a TBTF policy, governments should simply break up large firms and restrain mid-sized firms from getting too big, so that none are systemically important, but this is also an interventionist policy. The central policy problem we wish to address is this: *Is it possible for a government to make a credible commitment not to bail out large firms in the event of a crisis by any means short of breaking up (or otherwise restricting) all the large firms?*

Empirically, we find that nations which have had fewer bailouts have also enjoyed superior GDP growth rates. But the question is whether nations that have had economic problems for other reasons were obliged to use bailouts (the optimist/activist view), or whether a failure to forswear any resort to TBTF resulted in excessive leverage and risk-taking (and other practices associated with “moral hazard”) ultimately caused economic problems (the pessimist/laissez-faire view).

The paper proceeds as follows. Section 2 offers some definitions and describes the many problems created by a formal TBTF policy commitment. Section 3 provides historical perspective on TBTF in the U.S. Section 4 considers the time path of economic performance in five OECD countries with very different institutional arrangements. Section 5 looks at the qualitative insolvency experience of those nations, one by one, as cases. Section 6 concludes.

I. DEFINITIONS

For context, it’s important to consider who, precisely, the TBTF policy seeks to protect or assist. In the case of an insolvent bank, does it aim to help depositors—borrowers—investors? Merton defines a bank’s “customers” as people who buy its products, and its “investors” as people who provide the capital used to finance “production” of what customers buy. But because both customers and investors in financial markets are dealing with various forms of contracts and claims on streams of returns, the distinction can be a difficult one for an outsider to apply consistently.

The difference between “customer” and “investor” becomes clearer if we examine regulatory treatment in the case of default. Federal deposit insurance in the form of the FDIC and FSLIC were established to protect and aid customers (depositors, in this case) of insolvent banks and thrifts. Historically, the regulatory and resolution departments of these agencies have taken over failed institutions, frozen their operations, and allocated available assets to creditors. Prior to the financial crisis 2008 depositors in the U.S. were protected up to the statutory limit of \$100,000 by a federal guarantee of deposits to be repaid in full; in May 2009 the covered amount was raised to \$250,000 on a “temporary” basis, but in July 2010 this higher amount was made permanent. Deposit insurance premiums are not graded for the risk profiles of banks, and some argue that this fosters risk-taking.

Government deposit insurance creates a moral hazard, such that depositors do not care much about the financial safety or solvency of the banks they do business with, but it is, at least, a manageable hazard. Riskier banks pay higher deposit rates and attract funds away from safer banks, but at least all banks are still subject to the *constraint* of remaining solvent, and it is binding; if bank managements miscalculate, their investors and owners are still wiped out, and each class suffer greatly after the arrival of the FDIC (for banks) or FSLIC (for savings and loans). Thus, while government deposit insurance means that *customers* are shielded from insolvency risk and deposit loss, it is not so with *investors*; they are not protected from risk, and can punish or reward decisions by bank management.

However, the latest version of TBTF in the U.S.—in place since July 2010—effectively extends government protection to investors in large financial institutions. Washington now has a new policy designation: “Systemically Important Financial Institutions,”² or SIFIs.³ SIFIs are financial institutions that are so

2. The “SIFI” designation is found in the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 214, 124 Stat. 1375, 1518 (2010):

(a) Liquidation required—All financial companies put into receivership under this subchapter shall be liquidated. No taxpayer funds shall be used to prevent the liquidation of any financial company under this subchapter.

(b) Recovery of funds—All funds expended in the liquidation of a financial company under this subchapter shall be recovered from the disposition of assets of such financial company, or shall be the responsibility of the financial sector, through assessments.

(c) No losses to taxpayers—Taxpayers shall bear no losses from the exercise of any authority under this subchapter.

In the first 2012 Presidential debate, this language was the center of controversy. See NPR, *Transcript and Audio: First Obama-Romney Debate* (Oct. 3, 1012, 10:57 PM), <http://www.npr.org/2012/10/03/162258551/transcript-first-obama-romney-presidential-debate>. On its face, it would appear to rule out TBTF. But it is extremely unlikely that this law could prevent “emergency” legislation that would bail out firms of “systemic” importance. It is the nature of legislation that legislatures today cannot bind future legislatures. And everyone, including SIFIs, knows this.

3. See Mark J. Flannery, Speech at the Federal Reserve Bank of Atlanta’s 2010 Financial Markets Conference: “Up from the Ashes: The Financial System after the Crisis,” Atlanta, Georgia (May 12, 2010), for a more extended version of this claim, and some background.

large (as a proportion of the particular market in which they operate, or of particular services and products they sell) that their failure would have a substantial effect not merely on depositors but on investors. And this effect would not be restricted to the investors who own the debt instruments or equity shares of the SIFI itself, but would—if they became insolvent and failed—impose externalities, harms that would extend to other financial institutions in a *systemically* important way.

The argument is made that significant and systemic effects—referred to variously as “domino,” “knock-on,” or “contagion” effects—may be so dangerous for the entire system that the institution may require protection and salvation. All SIFIs are now deemed TBTF, on the grounds that their failure would impose systemic losses that are larger than the costs of bailing out the troubled firm.

Unlike deposit insurance, which entails a manageable degree of moral hazard, the new SIFI policy—which may be thought of as a kind of turbo-charged TBTF policy—seems to involve a near-limitless degree of moral hazard. The systemic costs of a large firm’s failure may be partly endogenous, based on the risk profile of its portfolio of assets and its leverage; but investors, knowing *ex ante* that a firm is a SIFI (and therefore likely to be deemed TBTF) will generally ignore asset risk and leverage, just as depositors now largely ignore safety issues, due to government deposits insurance; investors will keep all gains of a bank succeeds, but make others pay of a bank fails. The equity price of a firm that is TBTF is artificially inflated by the government’s promise, express or implied, to bail out failed, loss-making institutions. Far from disciplining firms’ behavior, as in the case of deposit insurance, TBTF guarantees actually create incentives for excessive risk and leverage. In popular parlance, a TBTF policy means that sound banking practices are not sustainable, because the manager will be fired or the firm will be acquired by investors who recognize that a higher return is possible.

A. Policy Responses

There are four categories of policy response available to government and regulators.

1. Disallow SIFIs, because no law can credibly commit to a policy of no bailouts in an emergency. To forego TBTF, policy must prevent the “B”—that is, prevent “bigness” in the first place; large, systemically-important firms are to be broken up and restrained from growing too much, although this risks punishing competitive success and foregoing economies of scale

2. Allow SIFIs, and pay the costs of bailouts, even if SIFIs assume excessive risks. Despite pious statements and public documents claiming a “commitment” to preclude bailouts, no one believes them to be completely credible, so acknowledge the fact *ex ante*. Everyone will expect that in the case of enormous systemic losses, the probability of bailouts approaches one.

3. Allow SIFIs, but regulate risk and leverage positions through rules, audit-

ing, and oversight. This would require micro-management and costly reporting requirements. These fixed costs are likely to create such large, and artificial, economies of scale that *only* SIFIs can survive in the marketplace. The problem: financial regulators have already failed badly in the past.

4. Allow SIFIs, but commit to a “hands off” policy, such that, regardless of the systemic costs, the government credibly commits not to bail out losers. Yet it is not clear how such a policy could be implemented and believed, as long as the nation is a democracy, or has a legislature.

Each of these approaches has advantages, and drawbacks. Of course, free market advocates would prefer the “hands off” policy (#4 above), but there seems no credible way for any government today to foreswear aid to insolvents, especially after the policy responses seen in 2008–2010. Indeed, the premise of TBTF is that a government promise not to act violates time consistency; states may commit to allowing large firms to fail, but by now “everyone knows” that no government will stand by, passively, amid systemic failure, even if, by intervening, it further boosts the degree of moral hazard.

The problem is not new. Odysseus “contracted” with his men to bind him to the mast, so that he could resist the seductive power of the Sirens. Here is Circe’s dire warning to Odysseus.

First to the Sirens ye shall come, that taint
 The minds of all men, whom they can acquaint
 With their attractions. Whomsoever shall,
 For want of knowledge moved, but hear the call
 Of any Siren, he will so despise
 Both wife and children, for their sorceries,
 That never home turns his affection’s stream,
 Nor they take joy in him, nor he in them
 The Sirens will so soften with their song
 (Shrill, and in sensual appetite so strong)
 His loose affections, that he gives them head.
 And then observe: They sit amidst a mead,
 And round about it runs a hedge or wall
 Of dead men’s bones, their wither’d skins and all
 Hung all along upon it; and these men
 Were such as they had fawn’d into their fen,
 And then their skins hung on their hedge of bones.
 Sail by them therefore, thy companions
 Beforehand causing to stop every ear
 With sweet soft wax, so close that none may hear
 A note of all their charmings. Yet may you,
 If you affect it, open ear allow
 To try their motion; *but presume not so*
To trust your judgment, when your senses go
So loose about you, but give straight command
To all your men, to bind you foot and hand

*Sure to the mast, that you may safe approve
 How strong in instigation to their love
 Their rapturing tunes are. If so much they move,
 That, spite of all your reason, your will stands
 To be enfranchised both of feet and hands,
 Charge all your men before to slight your charge,
 And rest so far from fearing to enlarge
 That much more sure they bind you.⁴*

The paradox is exquisite: Odysseus *orders* his men to *ignore his orders*. The ropes bind Odysseus to do what he wants himself to want to do, rather than what he will want to do later when he is seduced by the song of the Sirens. Everyone, including (especially!) Odysseus, knows that Odysseus will struggle to free himself, and beg to be released from his previous agreement. The paradox embedded in TBTF is that no legislature can “tie a knot” today that some future legislature cannot untie; the nature of the democratic state is that its policies must attain a popular support which itself is rarely immutable.

II. BACKGROUND: ORIGINS

The formal beginning of the TBTF notion in the U.S. was the failure of Continental Illinois in 1984, when the FDIC bailed out a large a commercial bank as a conscious policy; more than insured depositors were paid; most uninsured depositors were made whole, and certain investors also were saved from severe losses.⁵ The government and banking system have denied this as an *ex ante* matter, but no other explanation is consistent with their behavior *ex post*.

The “too-big-to-fail” doctrine was adopted piecemeal rather than all at once, but the reason is clear: the growing number of bank failures in the 1980s. The number of failures have since increased, as have the size of the firms that now fail.

The genealogy of TBTF can be traced back much further, however.⁶ More than 40 years ago, a 1950 amendment to the Federal Deposit Insurance Act of 1934 introduced the “essentiality doctrine.” As codified, that doctrine states that in its sole discretion the government can rescue any failed bank when “continued operation of such bank is essential to provide adequate banking service in the community.”⁷ None of the key terms in that provision—“essential,”

4. HOMER, *THE ODYSSEY* 411 (George Chapman ed., 1885) (emphasis added).

5. DAVID MCCOLLUM, *THE CONTINENTAL AFFAIR: THE RISE AND FALL OF THE CONTINENTAL ILLINOIS BANK* (1987); IRVINE H. SPRAGUE, *BAILOUT: AN INSIDER’S ACCOUNT OF BANK FAILURES AND RESCUES* (1986).

6. Portions of this section are adapted from Richard Salsman, Speech at Conference on Banking at The Federal Reserve Bank of Dallas: Banking Without the Too Big to Fail Doctrine (May 12–13, 1992), available at http://www.fee.org/the_freeman/detail/banking-without-the-too-big-to-fail-doctrine#axzz2O3FYeGhX.

7. 4 DOCUMENTARY HISTORY OF BANKING AND CURRENCY IN THE UNITED STATES 354 (Herman E. Krooss ed., 1983).

“adequate,” or “community”—has ever been defined, either as a matter of statute or rule promulgation. Consequently, arbitrary discretion must rule. Strictly speaking, U.S. banks are not subject to the U.S. bankruptcy laws or the bankruptcy courts; bank creditors lack the power to launch legal claims on defaulting banks. Intervention and resolution is wholly a political/regulatory decision subject to all the biases and distortions associated with pressure-group politics that are inconsistent with sound economics. Coupled with the diminishing financial condition of banks in subsequent decades, both the “essentiality doctrine” and the TBTF doctrine have given government wide latitude to bail out failed or failing banks for whatever reasons it deems necessary.

Of course, deposit insurance legislation itself arose out of the bank failures of the early 1930s. These failures in turn were largely the result of Federal Reserve monetary mismanagement.⁸ In short, today’s “too-big-to-fail” doctrine can trace its roots to the very establishment of central banking in this country in 1913. To be clear, the problem is not so much the practice of particular individuals who have made mistakes, but rather an inherent and utterly inevitable problem with time consistency in trying to create an institution that has the power to bail out losers but the political will not to do so.

Central banking systems are characterized by a charge to act as a “lender of last resort.” There are other things asked of central banks, of course, including “managing” the fiat currency printed by the government, facilitating sales of government debt, and fostering conditions of economic growth. To accomplish these diverse goals, central banks have two tools: open-market operations and discount-window lending. One problem central to central banking is that no such agency could possibly hit four or more targets with just two policy bullets, particularly since these many targets may conflict.

The problem of open-market operations, facilitating debt sales, and “managing” inflation and inflation expectations is beyond the scope of this paper, although to the extent these goals conflict with a central bank’s role as lender of last resort, the problem is made worse than the description we give here. But we set these problems aside.

The origins of the “lender of last resort” role lie in Bagehot, who argued that many financial crises are merely problems of illiquidity, not insolvency.⁹ In such a situation, contagion¹⁰ can be contained, and even cured, by making sure a central bank does three crucial things:

8. See MILTON FRIEDMAN & ANNA J. SCHWARTZ, *A MONETARY HISTORY OF THE UNITED STATES, 1867–1960* (1963).

9. WALTER BAGEHOT, *LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET* (John Wiley & Sons, Inc. 1999) (1873).

10. Graciela L. Kaminsky et al., *The Unholy Trinity of Financial Contagion*, 17 *J. ECON. PERSP.* 51–74 (2003).

1. Lend as much money as *necessary* directly to troubled (temporarily illiquid) banks
2. At a *penalty* rate (far above the market interest rate)
3. And only against *good* collateral, as offered by a technically solvent bank.

The three italicized words—*necessary*, *penalty*, and *good*—make the problem seem simple. All the central bank needs to do is adhere to these three “rules,” and all will be well. According to Bagehot, it must not lend to a bank that is insolvent (that is, facing a “run,” *because* it is insolvent), nor must it ever lend to a merely illiquid bank at a mere market rate. The ostensive aim of these basic rules was to keep a banking system liquid and panic-free, without at the same time elevating moral hazard.

The problem is that these are not truly rules, but invitations to abuse and even fraud. We want to keep to our central theme, however: the problem is not misunderstandings or willful misuses of the discretion afforded central banks. The problem is that the Bagehot criteria are not viable guides to policy-making. A lender of last resort will inevitably violate both the second and third elements, and as for the first element, how much lending is “necessary”? Over time, the answer will be simple: more.

In a banking panic, the problem of contagion is real. It is objectively true that the failure of large banks will impose an externality that metastasizes throughout the financial system, not only because banks by now operate on the basis of tiny fractional reserves and wafer-thin capital cushions (some argue, precisely *because* of deposit insurance, discount window lending at low rates, and the TBTF doctrine), but because 80–90% of the money supply (defined as M-1) is comprised of bank checking deposits. A reverse of the deposit-multiplier process is inexorable and destructive, typically involving a reduced money supply deflation. Yet even standard “market failure” theory suggests that government should act to internalize the externalities spawned by fractional-reserves and over-leveraged banking. This might involve taxing the externality directly, since “too much” of the activity will be undertaken in the absence of the corrective (say, a Pigouvian tax).

There is some logic to the prescription of a tax, although bargaining solutions of the type proposed by Coase might be tried first; for example, if some productive activity generates noxious pollution without cost or penalty to the generator, production decisions that take no account of the external costs might require an assignment of property rights that give incentives to account for those externalities. Failing that—perhaps because property rights are too diffuse, or too expensive to implement, due to high transactions costs—a Pigouvian tax of the correct amount might

be a cure.¹¹

But if the product, the externality, or the Pigouvian penalty are all denominated in the same units (currency), the prescription is literally incoherent. If the only way to internalize the externality of a money panic or a failed-bank contagion is to shower miscreants with money, there is no taxing of the benefit, except by rescinding some of the largess. But that only reduces the size of the intervention or “remedy.” Put simply, policymakers do not “punish” or deter firms that inflict systemic externalities, when their policy effectively rewards failed firms with taxpayer funds (bailouts), and worse, when the rewards ultimately are the biggest for those firms that undertake the biggest risks in the first place.

If it were possible to hold fast to Bagehot’s third rule—that central banks only lend to illiquid banks on “good collateral”—then punishments could be inflicted. And the penalty rate of interest itself would be a punishment, and disincentive to borrow money except as a last resort. The central problem is that two different problems are being conflated: (a) contain contagion and (b) get good collateral.

A moment’s thought reveals the problem: Failing banks that lack good collateral are just as contagious, and maybe more contagious, than banks that have good collateral. If the job of the central bank is to prevent contagion, it is literally impossible to hold to Bagehot’s third rule. And without the constraint of requiring good collateral, government authorities can perceive no important differences between crises of illiquidity and crises of insolvency.

In banking, the two dangers are almost always interdependent and hence indistinguishable. Any central bank that bails out insolvent firms is no longer a mere *lender* of last resort, but also an *insurer* of last resort—a backstop for bank bondholders and stockholders. A lender loans liquidity, and can quickly be repaid (out of good collateral). An insurer makes good on actual losses, to restore the value of the firm in terms of equity prices. Such “loans” cannot be repaid, at least not at penalty interest rates, because the loan was made to restore the value of the firm (its solvency, or net asset value), not to provide the liquidity it needs to operate. Thus, the correct definition of “bailout” is now clear. Bailouts are not a lender of last resort function, for illiquid banks. Bailouts are giving money to insolvent banks, just what Bagehot said a responsible central bank must not do.

Of course, our claim that a failure of policy discretion was the inevitable result of Bagehot’s rules from the 1870s (which were followed by most central banks for many decades thereafter) suggests a potent objection: Why did it take decades for the TBTF problem to become central? Back in 1908, when the earliest versions of government deposit insurance were advanced, the president

11. Though it is hard to know how the government might price the damage in the absence of price information. See Mario J. Rizzo, *The Knowledge Problem of the New Paternalism*, 2009 BYU L. REV. 103 (2009).

of the First National Bank of Chicago, James Forgan, asked the following: “Is there anything in the relations between banks and their customers to justify the proposition that in the banking business the good should be taxed for the bad; ability taxed to pay for incompetency; honesty taxed to pay for dishonesty; experience and training taxed to pay for the errors of inexperience and lack of training; and knowledge taxed to pay for the mistakes of ignorance?”¹²

One answer, summarized by Salsman, is that deposit insurance reduced the short-run need for discretionary bail-outs, while making massive bail-outs more likely in the then-distant future that we now live in.¹³ As Salsman put it, “deposit insurance is a scheme put in place because the Federal Reserve mismanaged the discount window in the 1930s, and it is a scheme that has been expanded ever since in concert with the Fed’s inflation of the money supply (which consists predominantly of bank demand deposits).” In terms of Merton’s distinction, then, the decision to protect *customers* allowed the growth SIFIs to such an extent that there was no choice but to protect *investors* also.

Finally, systems of central banking involve extensive regulation of bank branching, lending, and product offerings—regulations that prohibit sound diversification and invite still greater instability. It could be argued, then, that the origins of the “too-big-to-fail” doctrine do not lie in 1984, the year when Todd Conover, Comptroller of the Currency, said the top 11 banks in the country would not be permitted to fail. The TBTF doctrine is intrinsic to the mandate that a central bank serve as a lender of last resort, a decision made by the U.S. in 1913, the year the Federal Reserve was first established.

Notice the insidious policy pattern that has developed over the past century: at first the currency (once issued by banks) was nationalized (1913); then small deposits were insured (1933); then TBTF was adopted, protecting even large, uninsured depositors (1984); in the latest crisis, the FDIC extended its guarantees to bank bonds (2009); and now SIFI (2010) extends the bailout pledge to shareholders. In these ways Washington has intervened inexorably in all the key liabilities of a bank’s balance sheet, each step instigating systemic frailties that seem to have necessitated the next steps—from short-term liabilities (currency), to medium-term liabilities (deposits, bonds), and finally, to ownership (equity).

A. *Something Old, Something New*

It is one thing to say that TBTF is inherent in any system of central banking; it is quite another to propose an alternative policy if central banking is to be retained. After all, a central bank is the sole money issuer (and it is that, by definition), and as such it must also have the sole, unmitigated power to ensure the money and credit system is kept whole, if necessary even by keeping certain

12. James B. Forgan, Address to the Illinois Bankers’ Association: Should National Bank Deposits Be Guaranteed by the Government? (June 11, 1908), available at <http://babel.hathitrust.org/cgi/pt?id=mdp.39015077845009;seq=6;view=1up;num=2>.

13. Richard Salsman, *The Credit Crunch: Myth or Reality?* 58 AM. INST. FOR ECON. RES. 133 (1991).

large but failed banks “whole” (despite major holes in failed banks’ capital). Even if it is argued that TBTF need not follow logically or inexorably from a system of central banking, it’s clear that TBTF is now the explicit policy of most central banks around the world.

At this point it is useful to summarize the two key conclusions of this section.

First, the TBTF doctrine has transformed the original role of the lender-of-last-resort from an entity that provides high-priced cash to temporarily-illiquid banks, to one that provides extended credit (capital) to permanently-insolvent banks. TBTF is based solely on the estimated magnitude of the likely external effects of a contagion arising from a firm’s failure; a bank’s solvency is irrelevant. Not surprisingly, the distinction between illiquidity and insolvency disappeared from policy considerations soon after TBTF was adopted in the U.S. back in 1984. As early as 1991 a House Banking Committee report concluded that the Federal Reserve provided subsidized credit to hundreds of banks that ultimately failed.¹⁴ In the six years ending May 1991, 530 of the 3000 banks that drew on the Fed’s discount window (and not even at a penalty borrowing rate) failed within three years. Many more banks, if not ultimately failures, had the lowest financial performance ratings assigned by regulators, and were technically insolvent rather than simply illiquid.¹⁵ Even as a provider of short-term liquidity, the lender of last resort has been a safety valve for banks that mismanage liquidity; worse, it charges no penalty rate; this subsidy for liquidity mismanagement has been in place for many years.

Second, the application of TBTF has had a qualitative impact, crossing the customer/investor membrane that had been the basis of any regulatory policy that might aim at limiting moral hazard. Deposit insurance, regardless of its flaws, was primarily focused on preventing systemic bank “runs” by removing depositors’ incentive to withdraw all their cash amid temporary liquidity crisis, even from perfectly solvent banks. The problem is after many decades, the policy fostered “bigness” in banks and thinner capital cushions (hence higher leverage); paradoxically, by insuring deposits, governments ended up ensuring the adoption of riskier banking practices than otherwise would have been adopted. TBTF extends this official policy of favoritism toward risk-taking, but beyond depositors (qualifying customers) to previously uninsured depositors, creditors, and equity investors. At best, no one any longer need have a stake in the solvency of financial institutions; all parties can now choose based solely on returns (not risks). At worst, the effects are perverse, as large institutions recognize that they are free to take extra risk amid excessive leverage, because larger losses only increase their probability of being bailed out.

Can anything limit the size of the TBTF expenditures? Only the insolvency

14. STAFF OF H. COMM. ON BANKING, FINANCE AND URBAN AFFAIRS, 102D CONG., AN ANALYSIS OF FEDERAL RESERVE DISCOUNT WINDOW LOANS TO FAILED INSTITUTIONS (Comm. Print 1991).

15. See also Anna J. Schwartz, *The Misuse of the Fed’s Discount Window*, 74 FED. RES. BANK ST. LOUIS REV. 58 (1992), http://research.stlouisfed.org/publications/review/92/09/Misuse_Sep_Oct1992.pdf.

of the agencies offering the “insurance.” In the case of FDIC or FSLIC, this is a finite number, limited by statute, by reserves in the funds, and by a line of credit at the Treasury against which the agencies could draw. There is no analogous limit on the Federal Reserve as a lender of last resort, because the Fed has no effective constraint on the quantity of new money it can create. Once adopted, TBTF is not a doctrine which can be effectively scaled back in isolation or in increments. Unless it is prohibited *outright, ex ante* and *credibly*, exceptions will always be made to resort to it and even expand it, and the Fed will always be able to provide the necessary funds, without effective limit.

III. COMPARISONS

A. *Classification Scheme*

Below we offer a means of classifying financial systems according to the way they institutionalize (or not) the TBTF doctrine in particular and experience private-sector insolvencies in general. By now we know the TBTF doctrine was introduced in 1984 (in the U.S.) and was radically expanded amid the financial crisis of 2008 and “Great Recession” of 2008–2010. Yet not all national economies were equally affected by the Great Recession—and the differences are informative. Although GDP contractions were almost universal in 2009, some countries recovered relatively quickly thereafter, compared to others. Below we are interested in the relation between GDP growth (or recession) and the number of bankruptcies in nations, based on whether they have the following policies:

Regulation of the banking sector—heavily regulated or relatively unregulated.¹⁶

Commitment to bail out losers if they are SIFIs (this is TBTF). It should be noted, however, that there are two very different ways to avoid TBTF: one is to make a credible commitment not to bail out SIFIs, even if they fail, and the other is to ensure that there are no SIFIs (or to live in a small nation with an open economy, so that there are no SIFIs).

One may quarrel with our coding scheme, but we have matched at least one nation to each of the four cells to be able to trace out the process of growth and bankruptcy over our sample period.

B. *Bankruptcy Index*

Using the national insolvency index published by the OECD,¹⁷ we compiled data on the performance of the eight nations in our sample over the period 2006–2011. The index takes the form of defining the proportion of bankruptcies of firms in 2006 as “100,” and deviations above and below that level are

16. The idea of a “relatively” unregulated bank sector should be interpreted with care. Banking is heavily regulated almost everywhere, usually at the request of the banks.

17. ORG. FOR ECON. COORD’N. & DEV., BANKRUPTCY INDEX (2006–2011) (2012).

Table 2: Correlation Matrix of Bankruptcy Index, 2006–2011

	<i>Canada</i>	<i>Chile</i>	<i>France</i>	<i>Germany</i>	<i>Iceland</i>	<i>Japan</i>	<i>UK</i>	<i>US</i>
<i>Canada</i>	1							
<i>Chile</i>	0.19	1						
<i>France</i>	-0.82	0.32	1					
<i>Germany</i>	0.49	0.46	-0.13	1				
<i>Iceland</i>	-0.92	-0.17	0.75	-0.52	1			
<i>Japan</i>	0.41	0.78	0.16	0.70	-0.38	1		
<i>UK</i>	-0.93	0.093	0.92	-0.26	0.90	-0.14	1	
<i>US</i>	-0.69	0.48	0.95	0.052	0.57	0.30	0.85	1

Iceland, UK, US). The dotted line at 100 makes clear the relative scale, and helps distinguish between those nations that experience only short-term spikes in bankruptcies, and those nations that have seen more persistent bankruptcies.

C. GDP Growth

Our eight cases can also be compared in terms of GDP growth. Figure 4 depicts the growth performance of the eight nations from 2006, with the vertical axis being the rate of growth or shrinkage of their national economy. Again, we use a heavy dotted line to depict the reference point (which in this case is zero).

The experience of six of the nations is qualitatively similar. There is some

Figure 2.

Four Countries That Made It Through

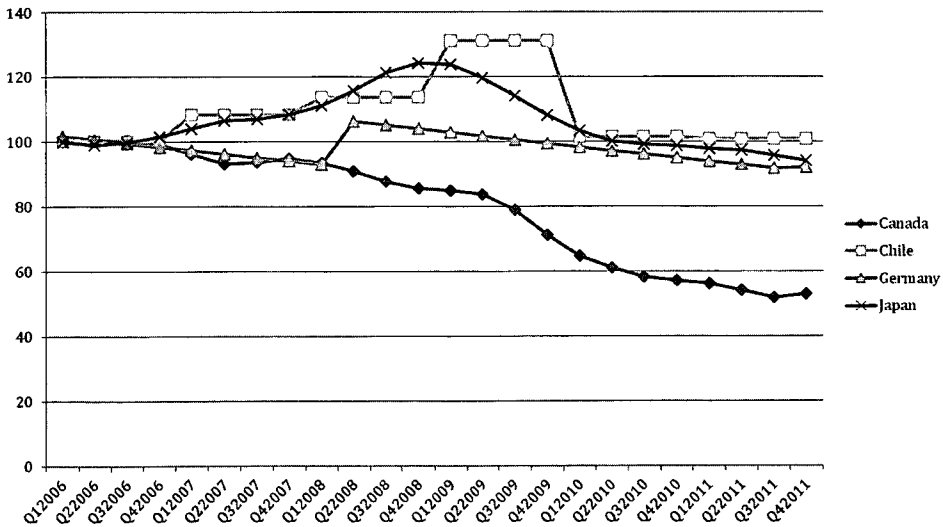
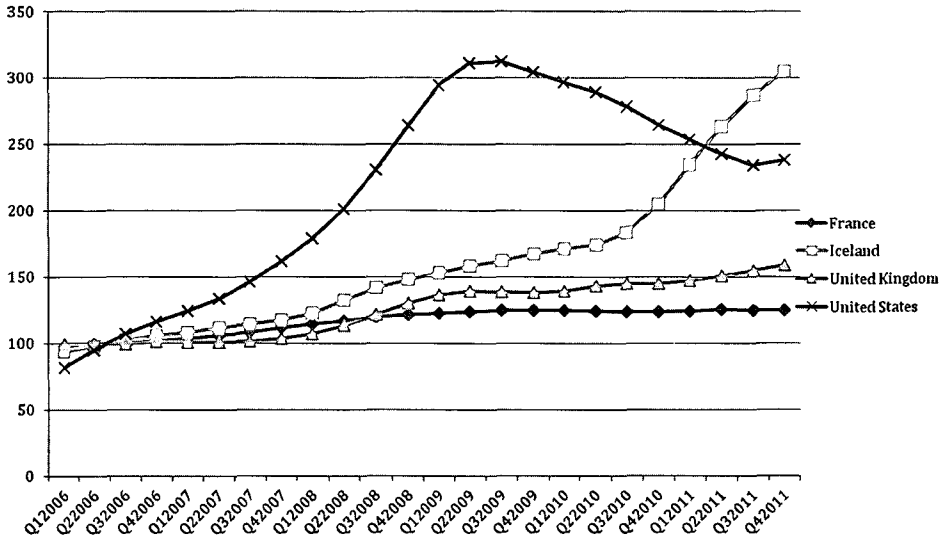


Figure 3.

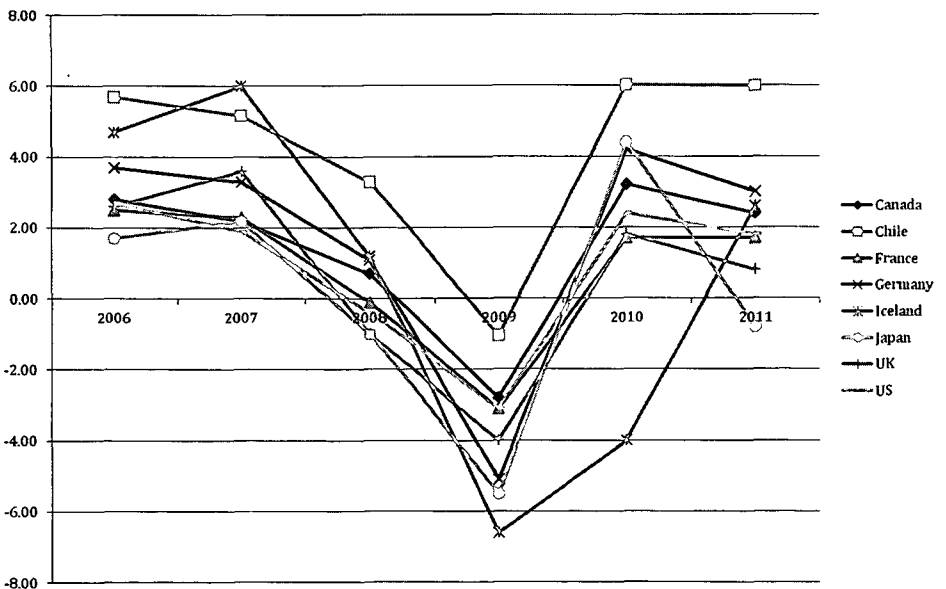
Four Countries that Did NOT Make it Through



growth before the beginning of the crisis, then a major contraction in 2008–2009, followed by various economic recoveries. After the trough of the recession (around the middle of 2009), all six of these nations (Canada, France,

Figure 4.

% GDP Growth, Eight Nations



Germany, Japan, UK, and US) generated a marked, though mild recovery (but note that Japan fell back into recession in 2011).

The two exceptions in Figure 4—namely, Chile and Iceland—are interesting because they also differ so much geographically, culturally and politically. Each had the highest GDP growth rates in 2006 and 2007, but then Iceland's GDP plunged, and did not recover until 2011; in contrast, Chile saw a sharp but brief drop in GDP growth, and by 2009 was growing rapidly.

D. Comparison by Categories

It is useful to consider each of the cases in more depth, and to consider the relation between bankruptcy experience and GDP growth fluctuations. Recall how we divided our eight cases into four categories, in Table 1; we reproduce the table below, this time with the means for each nation's bankruptcy index and GDP growth rate:

	Save SIFs (TBTF)	Let SIFs Die, or No SIFs
Heavily Regulated	France mean BI: 107 Germany mean GDP%: 0.69 Japan	Canada mean BI: 91 Chile mean GDP%: 2.79
Relatively Little Regulation	UK mean BI: 171 US mean GDP%: 0.75	Iceland mean BI: 160 mean GDP%: .65

Granted, this is a relatively small sample, over a relatively short time span which includes some of the worst economic contractions in decades, so sweeping conclusions are by no means warranted; yet our data are consistent with at least two interesting and important propositions:

1. If a government is unable to commit to let its failing SIFs expire, and accept the potentially negative consequences, regulation of SIFs may be required (to mitigate moral hazard). If a government insists that no firm is TBTF and that it will force investors in failed firms to internalize the costs of excessive risk and leverage, it will not be able to insist credibly. With further regulation may come more distorted incentives and misdirected investment. Yet these *ex ante* distortions are likely to be less expensive, and perhaps even less distorting, than the (implicit or explicit) guarantee by government that huge SIFI losses will be made up *ex post*.

2. A more tenuous conclusion, one which we offer in a spirit of being provocative rather than certain, is that the root problem with TBTF is bigness *per se*. In a mixed financial system, with fiat money and large quantities of sovereign debt, SIFs are surely dangerous. Iceland's experiment with limited regulation proved disastrous. As Michael Lewis said:

An entire nation without immediate experience or even a distant memory of high finance had gazed upon the example of Wall Street and said, “We can do that.” For a brief moment it appeared they could. In 2003, Iceland’s three biggest banks had assets of only a few billion dollars, about 100% of the country’s GDP. Over the next three-and-a-half years the banking assets grew to over \$140 billion and were so much greater than Iceland’s GDP that it made no sense to calculate the percentage . . . [Talking to an IMF official]: Iceland was entirely new to his experience: a nation of . . . historically rational human beings who had organized themselves to commit one of the single greatest acts of madness in financial history. “You have to understand,” [the IMF official] told me, “Iceland is no longer a country. It is a hedge fund.”¹⁸

Iceland had pledged not to adopt TBTF as a policy; and indeed it managed to make good on that pledge, despite widespread failures of its largest financial institutions in 2008–2009. But Iceland was able to stick to its pledge because most of the actual value lost was concentrated abroad. Icelanders suffered enormous paper losses, but the resulting disintermediation simply returned the nation to being a nation again—instead of a hedge fund posing as a nation.

1. Heavily Regulated, TBTF

France, Germany, and Japan are the three largest world economies after the US and China, and each has substantial “corporatist” elements, such that business activity is heavily regulated and subsidized, with significant (and mandated) labor representation in board rooms and business decisions.¹⁹ As Figure 5a illustrates, their experiences with the recent recession were substantially the same.

All three nations have been willing to accept, and even promote, a few very large firms at the expense of domestic competition.²⁰ France and Japan, for complex reasons, have suffered anemic economic growth rates for decades, but Germany’s growth, by comparison, has been robust. None of these three nations have seen a substantial increase in bankruptcies—in fact, Germany saw a decline in bankruptcies over the sample period—and the mean of the bankruptcy index for the three nations over the whole period was only 107—but most interesting, for our purposes, is that both France and Germany have managed recently to suffer only temporary reductions in trend growth rates.

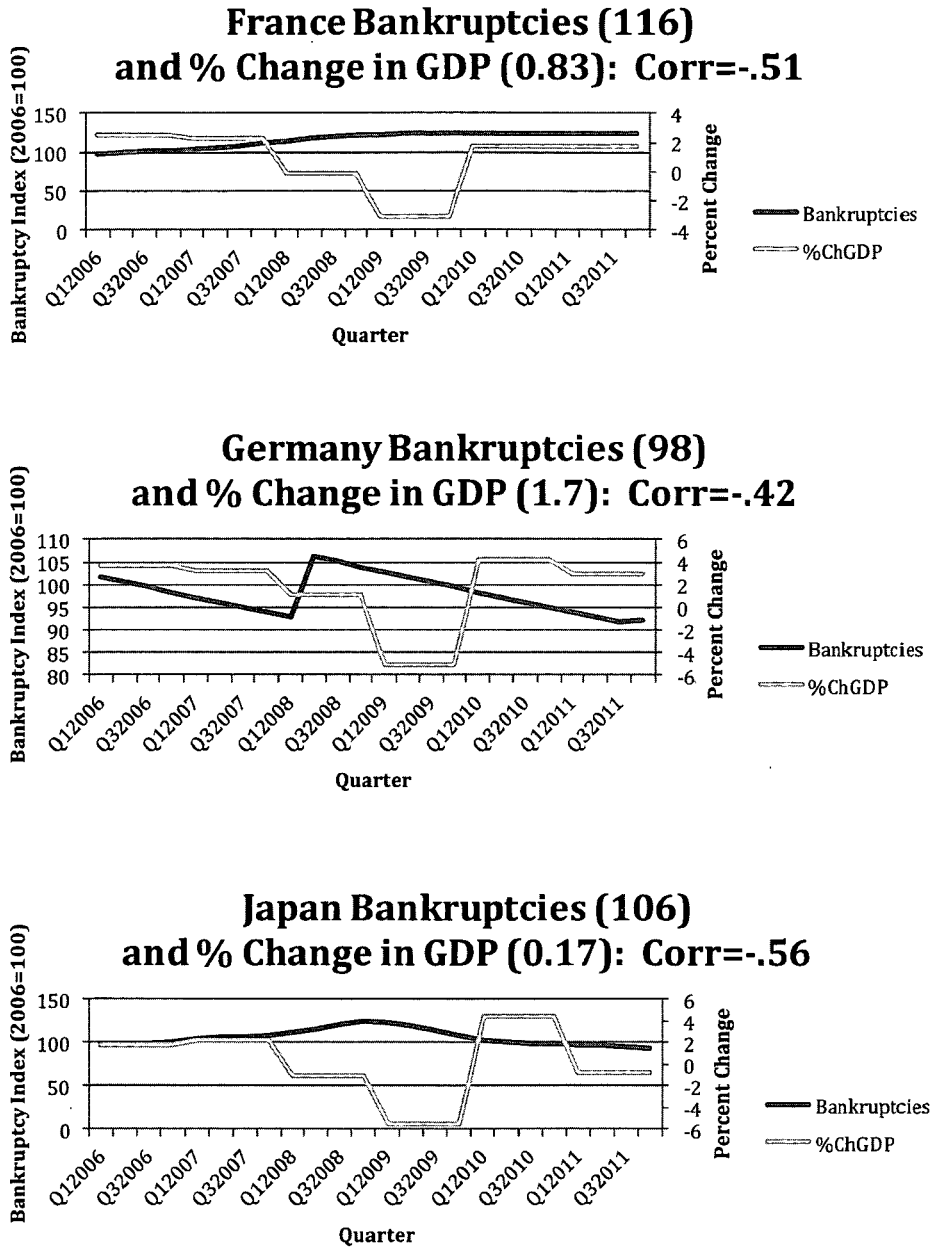
Finally, the correlation between bankruptcies and GDP growth is about -0.5 . This indicates that the decline in GDP growth had a discernible impact (more so in Japan and France, as the bulge in the bankruptcy graph shows), although the

18. MICHAEL LEWIS, *THE BIG SHORT: TRAVELS IN THE NEW THIRD WORLD* 1–2 (2011).

19. See HOWARD J. WIARDA, *CORPORATISM AND COMPARATIVE POLITICS* (1997).

20. For details, see Sigurt Vitols, *German Industrial Policy: An Overview*, 4 *INDUS. & INNOV.* 15 (1997); *VARIETIES OF CAPITALISM: INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE* (Peter A. Hall & David Soskice, eds., 2001); and, Marcus Noland, *Industrial Policy, Innovation Policy, and Japanese Competitiveness* (Peterson Inst. for Int’l Econ., Working Paper No. 07-4, 2007).

Figure 5a.



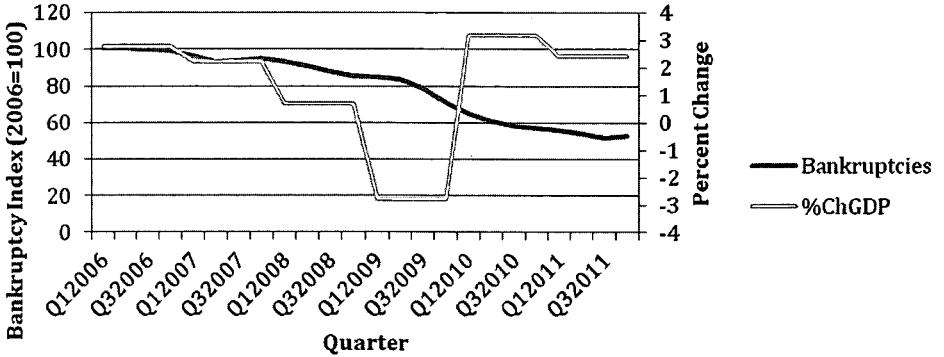
effect was quickly metabolized by the system.

2. Heavily Regulated, Let SIFI's Die or No SIFI's

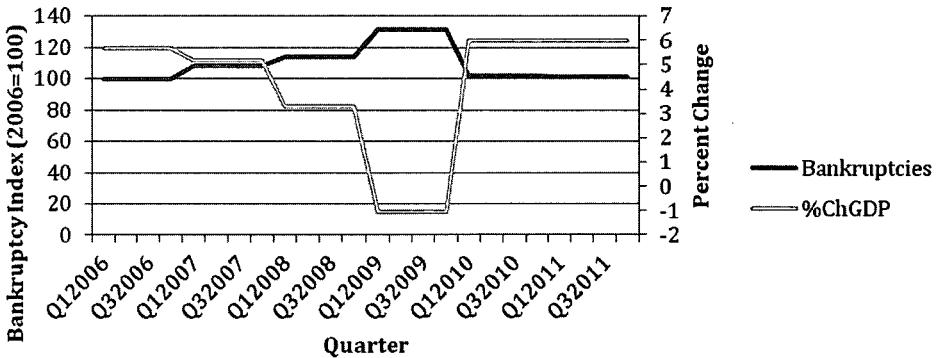
The countries in this category are Canada and Chile. Both countries have substantial regulation of their financial sectors, but also have very few SIFIs (though Chile has systemically important mining sectors). Thus, it is not clear

Figure 5b.

**Canada Bankruptcies (80)
and % Change in GDP (1.4): Corr=-.13**



**Chile Bankruptcies (111)
and % Change in GDP (4.18): Corr=-.98**



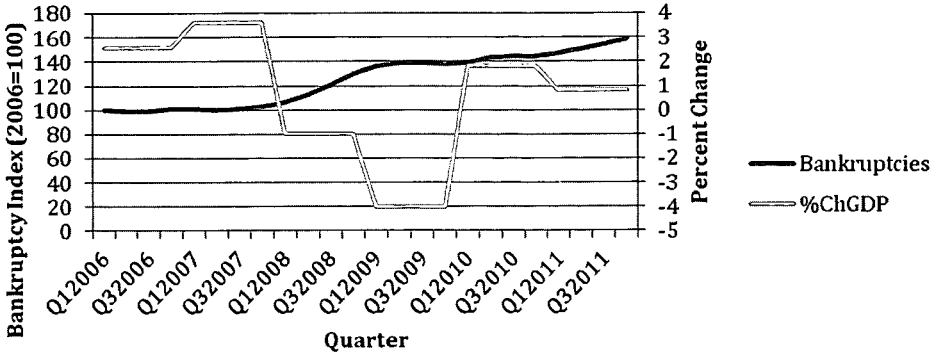
whether there is a credible commitment against bailouts of losers, or if small size and open economies discipline risk-taking more effectively than under a TBTF policy.

In any case, mean annual GDP growth was 2.79% over this period, though both nations suffered a sharp contraction in 2009. Mean bankruptcies over the period took an index value of 91—by far the best performance of any of our categories.

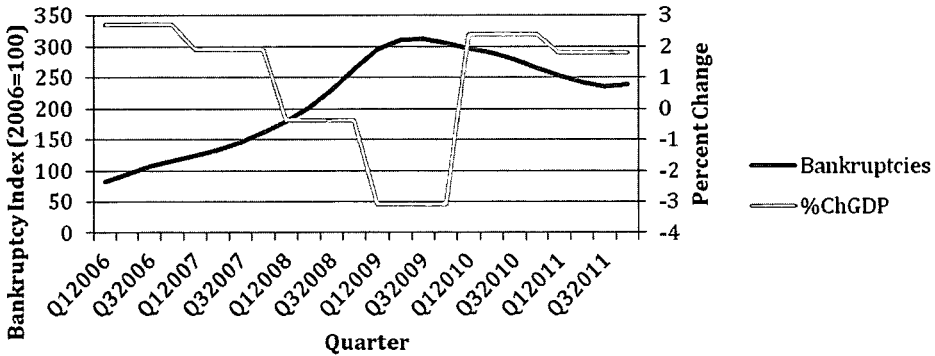
Two oddities are worth noting. First, Chile’s robust economic growth rate puts it in a separate class entirely compared to other nations, Canada included, for it has averaged more than 4% per annum for the past decade, a remarkable achievement. Further, the simple correlation between GDP growth and bankruptcies in Chile is -0.98 , meaning that nearly all of the bankruptcies may be

Figure 5c.

**U.K. Bankruptcies (126)
and % Change in GDP (0.63): Corr=-.44**



**U.S. Bankruptcies (215)
and % Change in GDP (0.88): Corr=-.56**



caused by world business cycle fluctuations. The second oddity is that bankruptcies declined in Canada throughout the period. Even more strangely, the simple correlation between GDP and bankruptcies in Canada is effectively zero (-0.13).

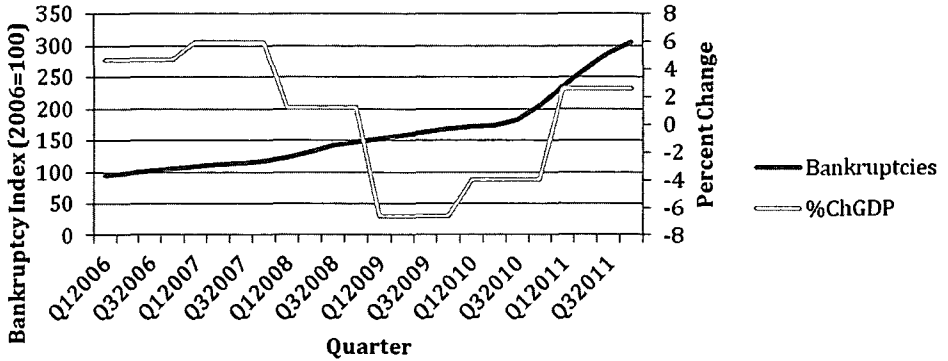
3. Relatively Little Regulation, TBTF

The countries in this category are the UK and US. Both suffered enormous increases in the number of bankruptcies from 2006 to 2011, and the index for new bankruptcies is still above 100, indicating that the "contagion," far from being contained, still reverberates through their financial systems.

Both the UK and US have had anemic growth rates since the Great Recession, with no signs as yet of a true recovery, let alone a robust "catch up" rate of

Figure 5d.

Iceland Bankruptcies (160) and % Change in GDP (0.65): Corr=-.25



growth that finally delivers the solid and sustainable gains in employment and output typical of a rebound. Further, the correlation between bankruptcies and GDP growth is middling (-0.50). These two facts taken together indicate that a relatively²¹ low-regulation environment, combined with an implied (or explicit) policy of bailing out large-size, systemically-contagious insolvents, is detrimental to any real vigor in economic activity.

4. Relatively Little Regulation, No TBTF

Iceland; oh, Iceland.

It is hardly surprising that Iceland witnessed an increase in bankruptcies in our sample period, given the only-partly facetious description of its pre-2008 status: “not a nation, but a hedge fund!” But there are two interesting aspects of the Iceland experience.

First, Iceland’s experience with bankruptcy shows no sign of abating. The index level in 2011 was 300, and still climbing. The only other nation that was still seeing increased levels of new bankruptcies was the UK, and Iceland is nearly 30% above the level of bankruptcies in UK.

Second, Iceland’s bankruptcies have not destroyed its economy. It is true that “wealth” in Iceland, measured as the market value of private sector assets that proved largely fictional, has plunged dramatically.²² But Iceland’s economic performance is not much worse than nations with less-severe bankruptcy fre-

21. We should emphasize that the level of regulation of the banking and financial sectors in the UK and US are low only *relative* to Canada, France, Germany, and Japan; the UK and US banking sectors are in fact heavily regulated compared to other sectors in those economies.

22. Gerald Dwyer, *Economic Effects of Banking Crises: A Bit of Evidence from Iceland and Ireland*, FED. RES. BANK OF ATLANTA (Mar. 2011), http://www.frbatlanta.org/cenifscf/pubscf/nftv_1103.cfm.

quency. In fact, the correlation between bankruptcy and GDP growth in Iceland is only -0.25 , the smallest (in absolute value) of any country in our sample besides Canada.

CONCLUSION

In this paper we have outlined the general problem of “Too Big to Fail” (TBTF), and have discussed some of the history of the problem and some reasons why its problems have been so intractable. The core problem is not that an explicit TBTF policy is unwise; rather, an implicit policy of refusing to bail out SIFIs is impossible, and will not be believed by financial markets.

One can argue that the US tried, briefly, to act on its blustery promise not to bail out losers when it took no action to “save” Lehman Brothers in September 2008,²³ but the shock over that unexpected inaction was due to the fact that the US had already bailed out a competitor, Bear Stearns, in March 2008, and then refused to do the same for Lehman Brothers six months later. The problem was not an absence of a TBTF policy, but the sharp policy reversal and the rank inconsistency of TBTF applications, which caused an equally-sharp reversal of market expectations. Had Bear Stearns not been bailed out in March 2008, Lehman Brothers (along with Merrill Lynch, which also failed in September 2008) likely would have raised capital and averted disaster (and thus any need for a TBTF action).

Thus we claim that the lack of assistance to Lehman Brothers was not a violation of stated policy, but rather a violation of expectations. No one believed that bankruptcies of large firms would be allowed to go forward, because the harm to other firms and to the financial system as a whole was too large. Thus, the collapse of asset prices following the Lehman bankruptcy was not so much the direct consequence of “knock-on” effects, but rather the capitalized market reaction to the possibility that the government *might not* act to bailout other, even larger firms.

The bottom line argument is that, in a system with fiat money and a central bank playing lender-of-last-resort, TBTF may be “too big.” The first best solution, a pre-commitment to refuse to bail out losers, is impossible. Of course, the policy is *feasible*, in the sense that it is within the power of the monetary authority to do nothing. But the policy is “time inconsistent.” In short, it is not likely to be adopted consistently over time, and hence is not likely to be believed by markets. The likely policy is to do something—to intervene and bail out, given the history and entrenched central bank habits. Odysseus was unable to fasten his future self to the mast because he could not credibly order his men today to disobey orders he might give in the future. Such pre-commitment is often impossible, especially in an age when policy-making is deemed superior if

23. See CARMEN REINHART & KENNETH ROGOFF, THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY (2009).

subject to mere discretion rather than strict rules. Policy-makers with “commitment issues” today are ultimately impotent to do anything other than what they already have been doing; yet even adherence to precedence may provide little predictability about policy. It is often argued that “extraordinary times” (financial crises, failures) “require extraordinary measures,” or full discretion. Rules are more likely to be abandoned when the shoe pinches than when it is comfortable. Moreover, no current Congress, regulator, or Fed chairman can bind future ones. The financial collapse of 2008–2009 was no aberration; indeed, the possibility that it will be repeated seems inherent in the system.