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Containing Systemic Risk by Taxing Banks Properly

Law Working Paper N° 317/2016
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Abstract

At the root of recurring bank crises are deeply-implanted incentives for banks and their executives to take systemically excessive risk. Since the 2008- 2009 financial crisis, regulators have sought to strengthen the financial system by requiring more capital (which can absorb losses from risk-taking) and less risk-taking, principally via command-and-control rules. Yet bankers' baseline incentives for system-degrading risk-taking remain intact. A key but underappreciated reason for banks' recurring excessive risktaking is the structure of corporate taxation. Current tax rules penalize equity and boost debt, thereby undermining the capital adequacy efforts that have been central to the post-crisis reform agenda. This tax-based distortion incentivizes financial firms to undermine regulators' capital adequacy rules, either transactionally or by lobbying for their repeal. The resulting debt-heavy structure not only renders banks fragile but also pushes them toward further This result is not inevitable. By repurposing tax tools used elsewhere, we show how the safety-undermining impact of the corporate tax can be reversed without affecting the overall level of tax revenue that the government raises from the financial sector. Several means to the desired end are possible, with the best trade-off between administrability and effectiveness being to lift the tax penalty on banks to the extent that they add to their loss-absorbing, safety-enhancing equity buffer above the regulatory minimum. This solution would minimize the tax impact. ...

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Mark J. Roe and Michael Tröge[†]

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A key but underappreciated reason for banks' recurring excessive risk-taking is the structure of corporate taxation. Current tax rules penalize equity and boost debt, thereby undermining the capital adequacy efforts that have been central to the post-crisis reform agenda. This tax-based distortion incentivizes financial firms to undermine regulators' capital adequacy rules, either transactionally or by lobbying for their repeal. The resulting debt-heavy structure not only renders banks fragile but also pushes them toward further excessively risky strategies.

This result is not inevitable. By repurposing tax tools used elsewhere, we show how the safety-undermining impact of the corporate tax can be reversed without affecting the overall level of tax revenue that the government raises from the financial sector. Several means to the desired end are possible, with the best trade-off between administrability and effectiveness being to lift the tax penalty on banks to the extent that they add to their loss-absorbing, safety-enhancing equity buffer above the regulatory minimum. This solution would minimize the tax impact. Revenue loss would be small and could be offset by modest tax changes targeted at the riskiest forms of financial sector debt. Existing studies indicate that the magnitude of the resulting safety benefit should rival the size of the benefit from all the post-crisis capital regulation to date. Thus the main thesis we bring forward is not a small or technical claim.

Standard bank regulatory style is command-and-control, and while much can be and has been accomplished with the standard style, it has its limits. In

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today's political environment, current safety rules' continuance may not be viable, as a repeal of recent regulatory advances, rather than refinement, has become a serious possibility. Yet rolling back the post-crisis regulatory advances without addressing the underlying risk-taking incentives would be unwise. While our policy preference would be to supplement and not replace traditional and recent regulation with the tax reform, any major rollback makes reducing the risk-taking tax distortion more urgent than ever.

Introduction 183
I. Regulation Thus Far and Why It Must Be Incomplete 189
A. Strengthening Command-and-Control Rules 189
1. Traditional Command-and-Control 189
2. New Command-and-Control Strategies 190
B. Limits to Command-and-Control Bank Regulation and the Limits of the Regulator 190
1. Limits to Regulatory Perspicacity 191
2. Limits of the New Resolution System 192
3. Limits Due to Distorted Incentives from Taxes and the Too-Big-To-Fail Boost for Debt 193
II. Taxing Banks Properly to Make Them Safer 193
A. The Basic Pro-Debt Bias Stated 194
B. Comprehensive Tax Reform or Bank-Specific Tax Reform? 195
C. Ending the Deductibility of Interest for Banks 196
III. The Proposal: A Targeted Deduction for Non-Regulatory Bank Equity . 199
A. Deducting the Cost of Bank Equity 199
B. Deducting the Cost of Non-Regulatory Bank Equity 203
IV. Will It Work?: Taxing Banks Properly as Corporate Governance Strategy 205
A. Shareholder-Manager Agency Cost Benefits for Industry 205
B. Debt-Equity Agency Cost Degradation for Banks 206
C. Corporate Governance Debilities in Banks: Why Existing Tax Proposals Fail for Banks 207
V. Will It Work?: Would Reducing Tax Distortion Change Banks' Capital Structure? 208
A. The Overall Evidence: Tax Incentives Change Banks' Capital Structure 208
B. Extrapolating the Proposal's Impact on American Banks 210
VI. Will It Work?: Tax Arbitrage and the Cost of Finance 216
A. Increases and Decreases in Tax Arbitrage from an ACE on Non-Regulatory Equity 216
1. Tax Arbitrage Today Via Hybrid Instruments 216
2. Tax Arbitrage Today Between Different Corporate Forms 217
3. International Arbitrage 217

Electronic copy available at: https://ssrn.com/abstract=2767151

4. Interaction Between Taxation and Regulation 218
5. Artificial Changes in Equity 218
6. The Inevitability of Arbitrage 219
B. The Cost of Finance When Taxing Banks Properly 220
1. Evening Up 220
2. Facilitating the Liquidity Buffer 221
3. Redistributing Tax Benefits Within the Financial Industry 221
VII. Taxing Banks Improperly in Congressional Reform Proposals and Around the World 221
A. Taxing Banks Improperly: Bank Levies 222
B. Taxing Banks Improperly: Weak and Destructive Proposals in Political Discourse 223
1. Pigouvian Tax Add-Ons 223
2. The Financial Transaction Tax 223
3. Systemically Destructive Surcharges 224
4. The 2017 Tax Proposal 224
C. The Propitious Political Economy of Taxing Banks Properly 225
1. How Strongly Will Banks Oppose It? 225
2. Deposits are Politically Untouchable 225
3. Fix It All 226
Conclusion 226
Appendix A: Tax Cost to Goldman Sachs by Capitalizing at IMF/FDIC Best Safety Level 228
Appendix B: Negative Tax Impact on Bank from Regulatory Requirement to Hold Liquid Treasuries 230

Introduction

Well-capitalized financial firms with considerable safe equity and a traditional banking business model generally handled the 2008 financial crisis well,[1] while weakly-capitalized banks and banks that took on excessively risky activities failed or tottered.[2] Lehman Brothers and Bear Stearns—two of the iconic failures—had less than four percent of their value in equity, allowing relatively small losses to cripple those firms.[3] Banks that were unable to smoothly absorb losses stemming from turmoil in the American housing market

1. *See, e.g.*, Andrea Beltratti & René M. Stulz, *The Credit Crisis Around the Globe: Why Did Some Banks Perform Better?*, 105 J. FIN. ECON. 1 (2012); Asli Demirguc-Kunt, Enrica Detragiache & Ouarda Merrouche, *Bank Capital: Lessons from the Financial Crisis*, 45 J. MONEY, CREDIT & BANKING 1147 (2013).

2. By banks, we refer not only to commercial banks, savings banks, and credit unions, but also to investment banks and broker-dealers, like Bear Stearns and Lehman Brothers.

3. Adrian Blundell-Wignall & Paul Atkinson, *The Sub-prime Crisis: Causal Distortions and Regulatory Reform*, *in* RESERVE BANK OF AUSTL., LESSONS FROM THE FINANCIAL TURMOIL OF 2007 AND 2008 (2008).

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failed, struggled, or were bailed out by the government and, as a consequence, cut back their lending.[4] Lending declined throughout the financial system, slowing economic growth, first in the United States and then around the world, with the world's lost economic output exceeding ten trillion dollars.[5]

Regulators and analysts concluded that better-capitalized financial institutions with fewer risky activities could have better performed their essential economic functions during the crisis. Accordingly, a major regulatory initiative has been to raise capital levels at the world's major financial institutions and to limit their riskiest activities.[6]

The strategy fully satisfies few: pro-regulation critics see the mandated increases in capital and new restrictions in activities as insufficient, too readily reversible, and prone to end-runs by the regulated.[7] Market measures of bank risk do not show much of a decrease from pre-crisis levels,[8] and several primary regulators are skeptical that the regulatory reaction arrests the chance of another financial crisis.[9] New systemic risks will eventually emerge and, when the system is off its high-alert of the first post-crisis few years, authorities are less likely to react quickly and perspicaciously.

More could be done, but more command-and-control regulation will have diminishing safety returns and is becoming increasingly privately costly for banks. Banks are already readying to seek to roll back mandated post-crisis increases in bank equity—increases that important outside analysts see as insufficient to stabilize the financial system in a future crisis:

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4. Jonathan Bridges et al., *The Impact of Capital Requirements on Bank Lending* (Bank of Eng. Working Paper No. 486, 2014), http://www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp486.pdf [http://perma.cc/9EBH-8E7P].

5. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-180, FINANCIAL REGULATORY REFORM: FINANCIAL CRISIS LOSSES AND POTENTIAL IMPACTS OF THE DODD-FRANK ACT (2013).

6. On capital adequacy, see, for example, Daniel K. Tarullo, Governor, Fed. Reserve Sys., Speech at the Banque de France Conference: Capital Regulation Across Financial Intermediaries (Sept. 28, 2015), http://www.federalreserve.gov/newsevents/speech/tarullo20150928a.htm [http://perma.cc/2HWW-VSYC] ("Strengthening the . . . capital held by banks has been a central element of post-financial crisis regulatory reform."). On activity restrictions, see, for example, Charles K. Whitehead, *The Volcker Rule and Evolving Financial Markets*, 1 HARV. BUS. L. REV. 39 (2011).

7. *See* Binyamin Appelbaum, *Policy Makers Skeptical on Preventing Financial Crisis*, N.Y. TIMES (Oct. 5, 2015), http://www.nytimes.com/2015/10/05/business/economy/policy-makers-skeptical-on-preventing-financial-crisis.html [http://perma.cc/LL2U-679G] (reporting the Federal Reserve conference's prevailing wisdom that a crisis like that of 2008 can readily recur); Dan Wilchins & Jonathan Stempel, *Citigroup Gets Massive Government Bailout*, REUTERS (Nov. 24, 2008, 7:05 PM), http://www.reuters.com/article/us-citigroup-idUSTRE4AJ45G20081125 [http://perma.cc/2RW6-NHXY].

8. *See* Natasha Sarin & Lawrence H. Summers, *Understanding Bank Risk Through Market Measures*, BROOKINGS PAPERS ON ECON. ACTIVITY, Fall 2016, at 57, 57 (noting that market data points to banks not being safer, despite post-crisis regulation).

9. Binyamin Appelbaum, *Federal Reserve Executive Says Banks 'Are Still Too Big To Fail'*, N.Y. TIMES (Feb. 17, 2016), https://www.nytimes.com/2016/02/17/business/dealbook/federal-reserves-kashkari-says-banks-still-too-big-to-fail.html [http://perma.cc/LE5Z-98RR]; Andrew Haldane, Exec. Dir., Fin. Stability, Bank of Eng. & Vasileios Madouros, Economist, Bank of Eng., Speech at the Federal Reserve Bank of Kansas City's Economic Policy Symposium: The Dog and the Frisbee (Aug. 31, 2012), http://www.bis.org/review/r120905a.pdf [http://perma.cc/9LEG-GXVU].

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> "Left to our own devices," said Lloyd Blankfein, boss of Goldman Sachs, in February [2017], "we wouldn't hold as much capital as we are holding." He is not alone. "It is clear that the banks have *too much* capital," wrote Jamie Dimon of JPMorgan Chase, America's biggest bank by assets, in a letter to shareholders [in April 2017].[10]

And new public policymakers seem ready to accommodate the banks, by scaling back some or much of the post-crisis safety regulation.[11]

This reaction is part of a general pattern: banks and other financial firms resist regulation that reduces their profitability, lobby against it, and innovate to work around it. This regulatory avoidance then requires new regulation to maintain safety. The regulatory and counter efforts create complexity and absorb economic resources, top management attention, and the energy of the nation's top regulators, with each side's efforts often neutralizing the other's.[12] Banks can create too much private value for themselves by avoiding regulatory impact compared to what they can earn by improving financial channels for lenders and borrowers.

An additional strategy is available. Instead of further micromanaging banks with increasingly complex but less effective rules, regulators can reduce risk by directly acting on financial firms' incentives. Core to the real incentives for any American business is the corporate tax. But current tax rules work against financial stability by penalizing equity and favoring debt. This tax-based distortion then incentivizes financial institutions to undermine capital adequacy rules, either transactionally or by lobbying for repeal and withdrawal of the regulation.

The pro-debt bias arises because the cost of debt is deductible from the corporate tax bill, while the cost of equity is not.[13] Firms consequently can reduce their tax-adjusted average cost of finance by using more debt and less equity than they otherwise would. While this tax effect is well known and affects all firms, it is particularly pernicious for banks as their principal "raw material" is not steel

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10. *American Banks Think They Are Over-Regulated*, ECONOMIST (May 4, 2017) http://www.economist.com/news/special-report/21721504-time-loosen-reins-say-americas-banks-not-so-fast-say-regulators-american-banks [http://perma.cc/F4SX-4PH5] (emphasis added).

11. *See* John Heltman, *Big Banks Plead for Capital Relief. D.C. Is Listening*, AM. BANKER (July 11, 2017, 1:06 PM), http://www.americanbanker.com/news/big-banks-plead-for-capital-relief-dc-is-listening [http://perma.cc/K6KL-SHDT].

12. *See, e.g.*, Rym Ayadi et al., *Does Basel Compliance Matter for Bank Performance?* 3 n.5 (Int'l Monetary Fund Working Paper No. 15/100, 2015), http://papers.ssrn.com/abstract=2613299 [http://perma.cc/3VY8-RAWG] ("By the end of 2014, Citigroup had nearly 30,000 employees working on regulatory and compliance issues (an increase of 33 percent since 2011)."). Complexity undermines regulatory effectiveness. *See* Haldane & Madouros, *supra* note 9, at 1-3.

13. *See* Franco Modigliani & Merton H. Miller, *Corporate Income Taxes and the Cost of Capital: A Correction*, 53 AM. ECON. REV. 433 (1963); *see also Ending the Debt Addiction: A Senseless Subsidy*, ECONOMIST (May 16, 2015), http://www.economist.com/news/briefing/21651220-most-western-economies-sweeten-cost-borrowing-bad-idea-senseless-subsidy [http://perma.cc/L7MA-KXN3]; Mark J. Roe & Michael Troege, *How To Use a Bank Tax to Make the Financial System Safer*, FIN. TIMES (Mar. 24, 2014), http://www.ft.com/content/468a9fe2-b2ce-11e3-8038-00144feabdc0 [http://perma.cc/387W-RPT5].

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or electricity, but funding. Increasing equity adversely affects banks' funding costs because equity is taxed unfavorably. For banks, even a small tax increase in their funding costs—a fraction of a percent—can alter their behavior in large ways, because the change affects banks' ability to compete with more highly leveraged banks and with the newer non-taxed financial intermediaries that are proliferating in the so-called shadow banking sector.[14]

Tax-induced excessive leverage in financial firms is also more economically damaging than excessive leverage in industrial firms. Failure is costly for any firm, its employees, its executives, and its financiers, but a big bank's failure, unlike that of a major industrial firm, can spill over to severely damage other firms and the overall economy.

The tax bias toward debt has not attracted the attention it deserves perhaps because of how the financial crisis of 2008-2009 played out.[15] No immediate pre-crisis change in corporate taxation weakened the financial system.[16] Policymakers and academic analysts accordingly focused on the proximate causes—a housing bubble and weakly-capitalized financial institutions. But the preexisting levels of debt were too high largely because of the tax-based debt bias. To analogize: if one observes a fall off a cliff after an unexpected gust of wind, one might only blame the weather and the wind; here we blame the decision to walk near the cliff's edge.

In the spirit of seeking the doable, we show how an incremental, targeted tax reform that ends the tax penalty for the equity of banks and other financial firms can achieve much of the safety-inducing goals of more comprehensive tax

14. *See* Jeremy C. Stein, *Comment*, BROOKINGS PAPERS ON ECON. ACTIVITY, Spr. 2010, at 50, 52; Claire Celerier, Thomas K. Kick & Steven Ongena, *Changes in the Cost of Bank Equity and the Supply of Bank Credit* (Working Paper, 2017), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2829326 [http://perma.cc/7XW7-T3KE] (demonstrating that changes in the tax cost of equity in Italy and Belgium strongly affect banks' competitiveness). An example: banks borrow from savers and then lend to those needing cash. Those needing cash can today issue securities that are packaged in the shadow-banking sector and sold directly to savers. These shadow banks can often pass through their income and are taxed more favorably than traditional banks, which are subject to the standard tax on corporate income. *See* George Pennacchi, *Banks, Taxes and Nonbank Competition*, 52 J. FIN. SERV. RES. (forthcoming 2017).

15. *See* Fiscal Affairs Dep't, *Debt Bias and Other Distortions: Crisis-Related Issues in Tax Policy*, IMF (June 12, 2009), http://www.imf.org/external/np/pp/eng/2009/061209.pdf [http://perma.cc/8W5P-X99M]. The IMF later abandoned their corporate tax analysis for minor bank levies and a financial transactions tax on trading turnover instead. *A Fair and Substantial Contribution by the Financial Sector, Final Report for the G-20*, IMF (June 2010), http://www.imf.org/external/np/g20/pdf/062710b.pdf [http://perma.cc/5VSA-C4YT]. Policymakers worldwide prefer a bank levy or a financial transactions tax and not overhauling the corporate tax and the interest deduction. For strong academic analysis of the corporate tax and banking, see Hilary J. Allen, *Let's Talk About Tax: Fixing Bank Incentives to Sabotage Stability*, 18 FORDHAM J. CORP. & FIN. L. 821 (2013); Ruud A. de Mooij, *Tax Biases to Debt Finance: Assessing the Problem, Finding Solutions*, 33 FISCAL STUD. 489 (2012); *cf.* Mark J. Roe, *Structural Corporate Degradation Due to Too-Big-To-Fail Finance*, 162 U. PA. L. REV. 1419, 1452-53 (2014); Mark J. Roe & Michael Troege, *How to Use a Bank To Make the Financial System Safer*, FIN. TIMES (Mar. 24, 2014), http://www.ft.com/content/468a9fe2-b2ce-11e3-8038-00144feabdc0 [http://perma.cc/387W-RPT5].

16. *See* Douglas A. Schackelford, Daniel N. Shaviro & Joel Slemrod, *Taxation and the Financial Sector*, 63 NAT'L TAX J. 781, 783-84 (2010).

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reform. This can be achieved without raising or lowering the overall tax load for banks. The least intrusive way to do so is to reduce the added taxation on equity for banks that increase their equity above their regulatory minima, while maintaining the unfavorable taxation of the regulatory equity that banks must have in any case. If, after the expected capital adjustments, banks would still be paying less tax than under the status quo, then an offsetting reduction to the tax benefit of the financial system's riskiest debt can be levied.

Our plan will encourage banks to have equity that noticeably exceeds today's regulatory minima. This extra equity is particularly useful in a financial crisis, when banks must maintain regulatory capital at the minimum level required. During the last crisis, banks desperately avoided violating capital rules by cutting back lending and shrinking their loan assets to fit their diminished equity. This led to a credit crunch that hurt the real economy.[17] Hence, while higher equity, whether required or incentivized, reduces the chance of bank failure, higher required equity does not do as much for the economy during a crisis as higher non-required equity. With higher required equity, banks are more likely to find themselves too close to the regulatory line and, hence, cut their lending in a crisis, to shrink their assets to fit their shrunken equity. A systemically better-capitalized banking system, with equity levels well above the regulatory minimum, would then have been, and would be at this writing, less susceptible to economy-wide degrading systemic risk events.

Overall, more strongly capitalized banks, with more safe equity, should better absorb systemic upheavals, fail less often and less severely, transmit less risk and loss into the financial system, and less sharply cut back lending in a crisis.

Moreover, international experience with tax structures similar to those we analyze clearly shows that financial firms subject to directionally correct tax incentives will voluntarily lower debt and increase equity, promoting rather than resisting capital strengthening. The magnitude of this increase from a properly-designed reform should rival the size of all the post-crisis mandates to increase capital. Thus this is not a small, technical claim we bring forward, but a major one. Given that the current policy environment has seen influential calls for a major regulatory rollback,[18] our tax-incentivized proposal takes on more urgency.

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17. Viral Acharya & Matthew Richardson, *Introduction*, *in* RESTORING FINANCIAL STABILITY: HOW TO REPAIR A FAILED SYSTEM 11-12 (Viral Acharya & Matthew Richardson eds., 2009).

18. Michael C. Bender & Damian Paletta, *Donald Trump Plans To Undo Dodd-Frank Law, Fiduciary Rule*, WALL ST. J. (Feb. 3, 2017, 7:44 AM), http://www.wsj.com/articles/trump-moves-to-undo-dodd-frank-law-1486101602 [http://perma.cc/35GD-KPDL]; Ryan Rainey, *Hensarling: Dodd-Frank Repeal Coming Under Trump*, MORNING CONSULT (Nov. 10, 2016), http://www.morningconsult.com/2016/11/10/hensarling-dodd-frank-repeal-coming-trump [http://perma.cc/XU77-3DKD] (reporting that Jeb Hensarling, chair of the House Financial Services Committee, urges and expects Dodd-Frank repeal); Glenn Thrush, *Trump Vows to Dismantle Dodd-Frank 'Disaster,'* N.Y. TIMES (Jan. 30, 2017), http://www.nytimes.com/2017/01/30/us/politics/trump-dodd-frank-regulations.html [http://perma.cc/GHH4-UWAC].

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A roadmap for this Article: in Part I, we review the major post-crisis regulatory efforts to improve financial safety, demonstrate why critics conclude they are incomplete, and observe that well-placed actors now seek to reverse them.

In Part II, we show the pro-debt bias of taxation and how treating debt and equity symmetrically eliminates it. We then examine how the taxation of bank debt and equity can be equalized, progressing through several reforms, starting with the most comprehensive and then narrowing scope until we reach in Part III our preferred, targeted, new, and quite likely efficacious restructuring of financial taxation. We would allow financial firms to deduct an imputed cost of their equity on the portion of their equity that exceeds what regulators require. This effort is operationally viable and politically possible, could be made tax-revenue neutral, and, despite being modest in its incremental scope, would greatly benefit financial safety. It would make difficult-to-implement safety regulations more viable and some of them unnecessary.

In Part IV, we compare how the tax imbalance distorts corporate governance in industrial corporations with how it distorts corporate governance in banks, to show that the most prominent fixes for industrial firms will degrade financial safety if applied to banks. For large industrial firms, the tax-induced preference for leverage mitigates managerial debilities. But for already highly levered financial firms, further increasing their leverage lacks meaningful corporate governance benefits and is costly in governance terms because it encourages banks' executives and boards to take on more risk, which is just what regulators want the banks to avoid. The most commonly proposed debt-equity fix for industrial firms is a dividend deduction. For banks, this would incentivize very large payouts of cash, which would further destabilize them when the policy goal is the opposite: to induce the banks to retain more cash.

In Part V, we examine the empirical evidence, which points to the tax fix as likely to rival the strength of all post-crisis capital regulation. Banks in nations that accord debt a lower tax advantage than other nations have less debt and more equity; banks react to increases or decreases in debt's tax advantage by decreasing or increasing their equity levels accordingly.

In Part VI, we examine basic objections to the proposal, such as the potential for gaming the system to private advantage. While these cannot be dismissed out of hand, most gaming of the proposal will improve financial safety. And the current tax imbalance encourages safety-*diminishing* gaming, which our proposal would reverse or decrease.

In Part VII, we evaluate the relevant banking tax proposals in policy circles, both international and domestic, and in Congress. Some are better than others, but all fall short of what can and should be done. Most would be inefficacious. Some would be systemically dangerous. We also evaluate the end-of-2017 tax reform, which, by lowering the corporate tax rate that banks pay, will affect

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banks' capitalization incentives for the better. We briefly describe why it falls short of making banks as safe as plausible, and offer predictions.

Overall, we make three primary points for improving financial safety—none of which we believe has been made before—by intersecting legal literatures on financial regulation, corporate taxation, and corporate governance: (1) that the tax benefit can be achieved by focusing on equity levels above the regulatory-required amounts, making the concomitant revenue-neutral tax adjustments practicable; (2) that the currently-favored overall equity-debt tax reforms, which differ from ours, would work for industrial firms, but cause havoc with banking safety and, hence, need to be rejected for banks; and (3) that extrapolating from the extant empirical literature, the impact of our revenue-neutral tax proposal would be about that of all post-2009 crisis capital regulation, making the potential impact on financial stability here not at all small.

I. Regulation Thus Far and Why It Must Be Incomplete

Regulators intensely sought to strengthen the financial system after the 2008-2009 financial crisis, primarily by using command-and-control regulation. In this Part, we summarize that effort and its limits.

A. Strengthening Command-and-Control Rules

1. Traditional Command-and-Control

Traditional bank regulation requires capital adequacy, aiming to make banks able to withstand losses, and restricts their riskiest activities, aiming to make large losses less likely. After the crisis, regulators used both tools to strengthen the financial system.

But increasing bank equity enough to be able to absorb losses of the size suffered during the financial crisis has proven difficult.[19] The best evidence indicates that capital levels are still not high enough.[20] The Financial Stability Board, a major post-crisis international regulatory consortium, estimates that a

19. *See Basel Committee on Banking Supervision Reforms—Basel III*, BANK FOR INT'L SETTLEMENTS (2014), http://www.bis.org/bcbs/basel3/b3summarytable.pdf [http://perma.cc/7KKU-XXK8] [hereinafter *Basel III*]; *see also* HAL S. SCOTT, CONNECTEDNESS AND CONTAGION: PROTECTING THE FINANCIAL SYSTEM FROM PANICS 169-82 (2016). The most prominent academic critical evaluation of the international capital requirements as still being far too low is ANAT ADMATI & MARTIN HELLWIG, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT 179-91 (2013).

20. "Merrill Lynch . . . lost 19% [of its value]. It would have needed a core-capital ratio of 23% to avoid falling through the 4% floor . . . ." *Reforming Banking: Base Camp Basel, Regulators Are Trying To Make Banks Better Equipped Against Catastrophe*, ECONOMIST (Jan. 21, 2010), http://www.economist.com/node/15328883 [http://perma.cc/MEU8-WYNH]. An IMF study points to fifteen percent to seventeen percent equity as the level of risk-weighted capital needed to withstand most financial crises, such as the one we had. *See* Jihad Dagher et al., *Benefits and Costs of Bank Capital* 19 (IMF Staff Discussion Note, Mar. 2016), http://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Benefits-and-Costs-of-Bank-Capital-43710 [http://perma.cc/EE3P-LV23].

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seven percent equity requirement, roughly the current rule, would have stabilized no more than one-quarter of the largest banks.[21] Alan Greenspan, the former Federal Reserve chair, argued for equity levels of up to twenty-to-thirty percent.[22]

2. New Command-and-Control Strategies

Because banks resist both sharply higher equity levels and limits on their activities, regulators seek different tools to stabilize banks. They have mandated not only increases of banks' going concern loss absorption capacity via increases in capital, but also shock absorbers for bank failure via debt that can rapidly be turned into equity, which takes up a bank's business loss before the bank's basic business is deeply damaged[23] and still has all of debt's tax advantages in normal times. In a sense, this is a command-and-control capital requirement, with the extra capital mandated in the form of tax-deductible debt when the bank is stable and solvent. Our proposal is in the spirit of these existing concepts—to remove the tax consideration from banks' calculus on whether to add more capital that can absorb loss in a crisis—but to do so more effectively.

An added strategy to stabilize banks has been to lift their liquidity, by requiring banks to own assets that can readily be sold for cash quickly.[24] Whether these liquidity rules are improving the long-term stability of the financial system and whether they stabilized highly indebted banks enough is questionable, as the recent European bank failures have demonstrated.[25]

B. Limits to Command-and-Control Bank Regulation and the Limits of the Regulator

While these overall efforts have made the system safer to an uncertain degree, they are reaching their limits and may be affecting bank efficiency.

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21. *Historical Losses and Recapitalisation Needs Findings Report*, FIN. STABILITY BD. 23 tbl.A2 (2015), http://www.fsb.org/wp-content/uploads/Historical-Losses-and-Recapitalisation-Needs-findings-report.pdf [http://perma.cc/62CD-2YTN].

22. *See* Alan Greenspan, *More Capital Is a Less Painful Way To Fix the Banks*, FIN. TIMES (Aug. 17, 2015), http://www.ft.com/content/4d55622a-44c8-11e5-af2f-4d6e0e5eda22 [http://perma.cc/BL2P-FHNR].

23. *See* Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements for Systemically Important U.S. Bank Holding Companies, 82 Fed. Reg. 8,266 (Jan. 24, 2017) (to be codified at 12 C.F.R. pt. 217, 252).

24. *See Basel III*, *supra* note 19.

25. *See* Rachel Sanderson, *Italian Finance Minister Reassures over Liquidity of Troubled Banks*, FIN. TIMES (May 25, 2017), http://www.ft.com/content/daafda3c-148e-3b8c-a913-33d8f0e4e79d [http://perma.cc/3Z8D-D9EZ].

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1. Limits to Regulatory Perspicacity

Command-and-control regulation puts much of the economic onus for error on the regulators, but government officials lack enough contextual knowledge for understanding which regulatory commands are efficacious and which are onerous. They must predict how inherently uncertain future economic conditions will affect banks. They may mistakenly ban a profitable activity that poses minimal risks.[26] Conversely, they may misunderstand how, say, credit derivatives can put a financial firm at risk of failing.[27] Such misjudgments are neither isolated nor unlikely to recur. They are common, contributed to the 2008-2009 financial crisis,[28] and are embedded in the regulators' limited knowledge base. Financial regulation must be incomplete, over-shooting and under-shooting the mark in promoting safety.

This is an instance of the generalized limits of centralized information and the value of decentralized decisionmaking, a view Friedrich Hayek famously promoted.[29] Regulators have limited information and that which they have is often distorted, because it is mismeasured and because the regulated players are often its source. Banks find transactional channels that the rules do not penalize but accomplish the same end; the banks have little reason to inform regulators that the channels are close to the regulated channel but unregulated.[30]

But an improved incentive-based structure using tax rules can harness information closer to the market than command-and-control regulation. When the bank is thinly capitalized, its incentives are to take risk and, hence, the regulators' rules reduce the banks' range of permitted risk-taking. But the regulators are far from the scene and not as well informed as the bankers themselves, so the regulators will over-regulate and under-regulate particular risky activities. But if the bank raises its own equity level voluntarily because negative tax incentives are removed, its biases toward risk-taking diminish, and because it is better informed than the regulators, its actions will more accurately reduce the costliest risk-taking. While the result may be insufficient, the incentives of the better informed players will improve. Although this information concept is not alien to tax theory,[31] it surprisingly is not part of the analytics of bank safety regulation.

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26. *Cf.* Sarin & Summers, *supra* note 8, at 59, 89, 95-102 (observing that safety-seeking regulation is eroding big banks' franchise value).

27. *See* Richard Squire, *Shareholder Opportunism in a World of Risky Debt*, 123 HARV. L. REV. 1151, 1182-98 (2010).

28. *See* Viral V. Acharya, Philipp Schnabl & Gustavo Suarez, *Securitization Without Risk Transfer*, 107 J. FIN. ECON. 515, 515 (2013).

29. *See, e.g.*, Friedrich A. Hayek, *The Use of Knowledge in Society*, 4 AM. ECON. REV. 519 (1945). Decentralized decisionmaking in banks with a thin equity layer has better-informed actors deciding but lacking good incentives for systemic safety. The proposals here aim to better align incentives.

30. Donald J. Smith, *Hidden Debt: From Enron's Commodity Prepays to Lehman's Repo 105s*, 67 FIN. ANAL. J. 15 (2011).

31. *Cf.* Louis Kaplow & Steven Shavell, *On the Superiority of Corrective Taxes to Quantity Regulation*, 4 AM. L. & ECON. REV. 1, 4, 7 (2002).

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2. Limits of the New Resolution System

Major efforts now seek to resolve failed banks well, by rapidly putting the losses on long-term debt. But these mechanisms have proven unwieldy, are yet to be tested, and may not work as planned in a crisis.[32] Stalling litigation is plausible, incomplete regulatory authority is likely,[33] and, given the global nature of the largest financial institutions and markets, may be unworkable because international regulatory coordination is still too low.[34] Regulators, fearful of failure, may refuse to test the new resolution structures,[35] waiting until it is too late when they again feel compelled to bail out the banks.

One can only learn for sure whether the planning process works by seeing how it performs in a crisis, with little possibility of a mid-course correction.[36] European regulators started down this path earlier than their American counterparts and have not succeeded: in the first half of 2017, multiple European banks with the purportedly easy-to-restructure debt in place failed, but instead of being privately restructured, several failed institutions were bailed out.[37]

32. *See* Mark J. Roe, *Why Regulators Are Needed To Handle Failed Banks*, N.Y. TIMES (June 6, 2017), http://www.nytimes.com/2017/06/06/business/dealbook/why-regulators-are-needed-to-handle-failed-banks.html [http://perma.cc/4X72-5RM5]; *see also* Howell E. Jackson & Stephanie Massman, *The Resolution of Distressed Financial Conglomerates*, 3 RSF J. SOC. SCIEN. 48 (2017); Paul H. Kupiec, Is Dodd-Frank Orderly Liquidation Authority Necessary To Fix Too-Big-To-Fail? (AEI Working Paper No. 2015-09, 2015), http://www.aei.org/wp-content/uploads/2015/10/Kupiec-Oct-22-working-paper.pdf [http://perma.cc/6R83-DDL5].

33. *Cf.* State Nat'l Bank of Big Spring v. Lew, 795 F.3d 48 (D.C. Cir. 2015) (challenging regulators' authority under the Dodd-Frank resolution regime, with appellate court deferring decision as not ripe until an emergency contemplated by the statute arose); Note, *D.C. Circuit Limits Prospects for Challenging Dodd-Frank's Orderly Liquidation Authority*, 129 HARV. L. REV. 835 (2016).

34. Emilios Avgouleas & Charles Goodhart, *Critical Reflections on Bank Bail-ins*, 1 J. FIN. REG. 3 (2015); Federico Lupo-Pasini & Ross P. Buckley, *International Coordination in Cross-Border Bank Bail-ins: Problems and Prospects*, 16 EUR. BUS. ORG. L. REV. 203, 203 (2015) ("[B]ail-in suffers from complex coordination problems.").

35. John Gallemore, Does Bank Opacity Enable Regulatory Forbearance? (2013) (unpublished Ph.D. dissertation, University of North Carolina) (on file with author).

36. *See* Resolution of Systemically Important Financial Institutions: The Single Point of Entry Strategy, 78 Fed. Reg. 76,614 (Dec. 18, 2013); *see also* John F. Bovenzi, Randall D. Guynn & Thomas H. Jackson, *Too Big To Fail: The Path to a Solution*, BIPARTISAN POL'Y CTR. (May 2013), http://bipartisanpolicy.org/wp-content/uploads/sites/default/files/TooBigToFail.pdf [http://perma.cc/H9X7-5D25] (discussing a bankruptcy channel for financial resolution); Letter from Jeffrey N. Gordon & Mark J. Roe to Senator Michael Crapo et al., Financial Scholars Oppose Eliminating 'Orderly Liquidation Authority' as Crisis-Avoidance Restructuring Backstop, May 23, 2017, http://www.ssrn.com/abstract=2979546 [http://perma.cc/NGL2-CJT7].

37. Neel Kashkari, *New Bailouts Prove 'Too Big To Fail' Is Alive and Well*, WALL ST. J. (July 9, 2017, 6:17 PM), http://www.wsj.com/articles/new-bailouts-prove-too-big-to-fail-is-alive-and-well-1499638636 [http://perma.cc/5RGT-SQP8].

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3. Limits Due to Distorted Incentives from Taxes and the Too-Big-To-Fail Boost for Debt

Distorted incentives deepen these problems. There is a double regulatory subsidy to bank debt (over bank equity): the first comes from the implicit too-big-to-fail guarantee on big banks' borrowings, a subsidy that waxes and wanes, depending on the strength of the economy and the anticipation of regulatory help for bank debt. This subsidy pushes banks to use more debt than equity, because creditors understand that in a crisis they will (usually) be paid at government expense, whereas shareholders' losses will (usually) be absorbed by the shareholders themselves. The second regulatory subsidy is the pervasive tax advantage of debt, due (in simplistic terms) to the deductibility of interest on debt and the nondeductibility of dividends on equity.

To illustrate verbally: Posit that banking regulators require banks to double their level of equity. If a bank's size stays the same, the bank would reduce its own borrowing concomitantly. But that bank borrowing would have been tax beneficial, with the interest paid deductible from the tax bill, while returns to the new equity will not be. The bank's tax bill would rise, making the new equity expensive. The Appendix shows how increased equity for Goldman Sachs along the lines and magnitude of respected safety proposals could devastate the bank's after-tax profits.

Given this double subsidy for debt, it is not surprising that banks see equity as costlier than debt.[38] Increased equity should reduce the too-big-to-fail subsidy, by making banks less likely to fail. Moreover, the tax disparity itself can be ended—or even reversed to counterbalance any remaining too-big-to-fail subsidy. In this paper, we shall show how.

II. Taxing Banks Properly to Make Them Safer

In this Part, we show the basic tax bias toward debt embedded in today's tax code and then outline a simple, revenue-neutral way to reverse the bias. We consider mechanisms to right the balance: first, an economy-wide, but thus far unattainable, rebalancing of the taxation of all debt and equity. Next, and second, we consider a bank-specific end to the tax deductibility of bank-paid interest. It is the simplest fix conceptually and the most disruptive to implement. We then in the next Part develop our proposal: a targeted allowance for bank equity.

38. Bankers say more equity will raise banks' cost of funding, induce them to raise their lending rates, and then reduce overall economic growth. *See The Cumulative Impact on the Global Economy of Changes in the Financial Regulatory Framework*, INT'L INST. FIN. 12 tbl.I.2. (Sept. 2011), http://www.iif.com/file/7080/ [http://perma.cc/E6PV-7BJX].

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A. The Basic Pro-Debt Bias Stated

The basic tax bias toward debt arises from the American corporation now paying a thirty-five percent tax on its net profits. (This rate is scheduled to go to twenty-one percent, diminishing the effect, but maintaining the bulk of it.) Both banks and nonbanks alike pay this tax. The corporation deducts its interest expense on debt from its gross profits, but cannot deduct its costs for common equity, such as the dividends and capital gains that stockholders expect.[39]

Consider two operationally identical trillion-dollar firms, with one raising its funding only via equity, while the other raises its funding via significant borrowing. Both earn five percent, or $50 billion, from operations. At a thirty-five percent tax rate, the unlevered, all-equity firm pays thirty-five percent of $50 billion in taxes and has a $32.5 billion return to its owners. The first column of figures illustrates:

Table 1: Corporate Tax Impact in an All-Equity vs. a Highly-Leveraged Firm

	All-equity firm	Highly-leveraged firm
Earnings from operations:	$50 billion	$50 billion
Deductible interest:	0	(40 billion)
Income before corp. taxes:	50 billion	10 billion
Corporate income tax:	(17.5 billion)	(3.5 billion)
Income to shareholders:	**32.5 billion**	**6.5 billion**
Income to creditors:	**0**	**40 billion**
Total investor income:	**$32.5 billion**	**$46.5 billion**

The second firm borrows heavily to fund itself and pays $40 billion in interest, the deductibility of which lowers its tax bill. By paying taxes on the net income of $10 billion at a thirty-five percent tax rate, it returns $46.5 billion to its investors ($40 billion to its creditors and $6.5 billion to its stockholders, from $10 billion in pre-tax income, minus $3.5 billion in corporate income tax), yielding $14 billion more to its investors. Hence, unless this rather large difference of $14 billion is fully offset by the increased risk of failure, financial stress, or operational degradation, the total value to investors of the second, indebted firm will be much higher than that of the first firm. The second column of figures shows the higher after-tax returns to investors in the highly-leveraged firm.

39. Sven Langedijk, Gaëtan Nicodeme, Andrea Pagano & Alessandro Rossi, *Debt Bias in Corporate Taxation and the Costs of Banking Crises in the EU* (Eur. Comm'n Taxation Papers, Working Paper No. 50-2014, 2014), http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_50.pdf [http://perma.cc/AS77-2WZ4].

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To emphasize this result (which is standard in financial analysis): the total value that these firms create for private investors comes from the sum of all monies returned to investors. The all-equity operation returns $14 billion less to its investors than does the leveraged firm. Ordinarily the leveraged firm would be worth much more to its total investor pool than the all-equity firm, solely due to the tax deductibility of interest paid.

One might mistakenly think that the investors in the leveraged firm have suffered compared to the investors in the all-equity firm. Stockholders of the highly-leveraged firm get $6.5 billion after taxes while the all-equity stockholders get $32.5 billion. But such a view is wrong because the leveraged firm needs, and would get, less investment from stockholders. The key feature is which firm can return more dollars to the totality of its investors. Clearly, it's the leveraged firm.

Tax aficionados know that this is not the whole story. While equity is costlier to the firm's tax bill, individuals are taxed more favorably on equity than on debt, via low tax rates on dividends and capital gains taxes. This tax advantage of equity for investors partially offsets its tax disadvantage at the firm level.[40] Balancing out these pluses and minuses yields a mixed analytic, but the consensus is that when all factors are added up, the tax system is biased toward debt.[41]

A firm will generally choose its debt level by trading off the positive and negative effects of leverage. If the tax savings from debt were not in the mix of trade-offs, then the chance of failure would weigh more strongly in the bank's mix of pluses and minuses. Everything else equal, the current corporate tax system pushes firms in general, and banks in particular, to take on more debt. If we fixed this bias, banks would take on less debt, would be more stable, and would drag the economy down in crisis less often and less severely.

B. Comprehensive Tax Reform or Bank-Specific Tax Reform?

This bias towards debt pervades the corporate economy. Proposals to even up the taxation of debt and equity throughout the economy have regularly been made but not enacted.[42] Good reasons support a system-wide reform. By

40. The same principle reduces the investor-level tax disadvantage of debt. But while interest income is generally taxed to investors, debt held by untaxed entities is not. The earnings on debt instruments owned by tax exempt entities are never taxed, but the interest paid is still deducted from the issuer's tax bill. The issuer of equity, however, enjoys no tax deduction. "[T]he share of U.S. corporate stock held in taxable accounts fell more than two-thirds over the past 50 years, from 83.6 percent in 1965 to 24.2 percent in 2015." Steven M. Rosenthal & Lydia S. Austin, *The Dwindling Taxable Share of U.S. Corporate Stock*, 151 TAX NOTES 923, 923 (2016).

41. RICHARD A. BREALEY, STEWART C. MYERS & FRANKLIN ALLEN, PRINCIPLES OF CORPORATE FINANCE 441-43 (11th ed. 2014); John R. Graham, *How Big Are the Tax Benefits of Debt?*, 55 J. FIN. 1901 (2000).

42. *E.g.*, U.S. DEP'T OF THE TREASURY, REPORT ON INTEGRATION OF INDIVIDUAL AND CORPORATE TAX SYSTEMS: TAXING BUSINESS INCOME (Jan. 1992).

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encouraging nonbank operating firms to raise their outside capital more via debt than via equity, firms become more susceptible to financial stress and failure.

Hence, even industry-only interest-based tax reform should bolster *financial* safety (and not just bolster industrial firm stability), by reducing the general demand for debt and by making less risky that debt which would continue to exist.

This point deserves emphasizing. We focus on the tax incentives *inside* the financial institution to favor debt over equity. But the debt bias *outside* in the real economy raises *outside* demand for financial institutions to grow, lend, and finance themselves via debt. This artificially boosted demand for debt induces an artificially large debt-based financial sector. (The deductibility of interest on personal debt, such as on household mortgages, has the same systemically detrimental effect.) Fully fixing the corporate (and household) debt bias would shrink an unnaturally large financial intermediation sector.[43] (And, analogously, the scheduled reduction in the corporate tax rate to twenty-one percent would reduce the nonfinancial sector's demand for debt, including bank debt. The financial sector should shrink somewhat, but to an uncertain degree.)

Moreover, the debt bias arises from the corporate tax. If the corporate tax were eliminated, the basic bias would disappear; when the corporate tax is reduced, the bias should be reduced. Proposals to reduce or eliminate the corporate tax have multiple pluses and minuses. One unstated plus is its positive impact on bank safety, by reducing industrial sector demand for debt as well as by reducing financial firms' demand for excessive debt in their capital structure.

While we favor comprehensive reform, we do not pursue our analysis in that direction. First and foremost, no such full-scale debt-equity reform has yet proven politically viable.[44] Second, comprehensive reform implicates issues beyond financial system safety, such as capital accumulation, industrial investment, and income distribution. Third, the most-developed tax reform for industry would devastate the financial industry and degrade systemic safety, as we analyze in Part IV, meaning that even comprehensive reform must treat finance and industry differently anyway.

C. Ending the Deductibility of Interest for Banks

The most direct path to capital structure neutrality is to tax debt the way we tax equity, that is, to end the deductibility of interest. That would greatly expand

43. Shawn Donnan, *Financial Sector in Advanced Economies Is Too Big, Says IMF*, FIN. TIMES (May 12, 2015), http://www.ft.com/content/4b70ee3a-f88c-11e4-8e16-00144feab7de [http://perma.cc/LXJ5-VLUG].

44. Most comprehensive corporate tax reforms would reduce the corporate incentive to retain cash, and doing so is not a goal that corporate leaders tend to support. *See* Jennifer Arlen & Deborah M. Weiss, *A Political Theory of Corporate Taxation*, 105 YALE L.J. 325 (1995). Below, we indicate the impact on banks' capital structure and size from the reduction in the corporate tax rate, enacted shortly before this article went to press. *See infra* Section VII.B.4.

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the taxable base for banks. Hence, to avoid a big tax increase, the tax rate for the pre-interest income base would have to decrease substantially.

We add more structure to the prior financial statements to illustrate. Consider a trillion-dollar bank with the following capital structure and $50 billion in gross profit before interest:

Table 2: Trillion-dollar Bank's Balance Sheet and Traditional Tax Impact

Traditional bank balance sheet	
Loans & investments $1000B	100B bonds at 6%
	100B short-term debt at 6%
	700B deposits at 4%
	100B equity

With a traditional corporate tax on profits after deducting interest, this balance sheet would produce an income statement like that in the right-hand column of Table 1. This is reproduced below, with more detail, on the left:

Table 3. Trillion-dollar Bank's Income Statements

Traditional bank's income statement, traditionally taxed		Traditional bank's income statement with low corporate tax levied on pre-interest profit	
50B	Gross operating profit (income from loans & investments)	50B	Gross operating profit (income from loans & investments)
(6B)	Bond interest	(0)	6B Bond interest:
(6B)	Short-term interest	(0)	6B Short-term interest
(28B)	Deposit interest	(0)	28B Deposit interest:
10B	Taxable profit	50B	Taxable profit
(3.5B)	Corporate tax	(3.5B)	Tax of 7% on pre-interest
		46.5B	After-tax pre-interest
		(40B)	Interest paid to creditors
6.5B	Net profit for shareholders, after interest expenses and taxes	6.5B	Net profit for stockholders, after interest expenses and taxes

This table compares two banks' income statements. The first bank, on the left, has $40 billion in interest expenses on deposits and debt. It pays tax at a 35% rate on the net profit of $10 billion after deducting interest from its gross profits. The second pays its tax on pre-interest gross income of $50 million at a lower 7% rate. The first returns $46.5 billion to its investors, as does the second.

The traditionally-taxed bank—on the left—pays tax on $10 billion in profits, from operating income of $50 billion, minus $40 billion in interest expense. The bank's net profit of $10 billion is taxed at the longstanding thirty-five percent corporate income tax rate, yielding the tax authorities $3.5 billion.

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Note that in addition to the bank's deposits and short-term borrowings, the bank borrows $200 billion from capital markets. When it raises capital via debt, it shields operating income from tax, because the return to that capital is deductible from its gross income.

The right-hand income statement shows that the Internal Revenue Service can obtain that same $3.5 billion from this bank by taxing its gross operating profit of $50 billion, instead of taxing the bank's net profit of $10 billion. To yield the tax authorities the same $3.5 billion, the tax rate on the gross operating income of $50 billion would be only 7%.

This reform idea begins with several strengths. It is simple and easy to understand: the tax impact would become independent of interest expense and the bank's leverage. So management and the bank's creditors would not choose debt levels with the tax bill in mind. It also leads to a low tax rate and comports with basic preferences for American taxation, namely, to widen the tax base and lower the tax rate.[45] If policymakers wish not to levy the tax on insured deposits, they need not. If $20 billion of the $28 billion deposit interest went to insured deposits, then the tax would be levied on $30 billion; the tax rate would be eleven and two-thirds percent of $30 billion (of profit, before deposit interest), not seven percent of $50 billion.[46] Most importantly, it would encourage banks, as compared to the current tax structure, to substitute away from debt and into systemically safer equity.

However, ending the deduction for interest for banks has major drawbacks. First, it will tax them even if their net profit is zero or if they run a loss. This drawback could be ignored, because banks running losses are systemically wounded, are risky to the economy, and should shrink further. Alternatively, one could exempt a net-loss bank.

The second major drawback is that the bank's tax would vary with the level of interest rates. When interest rates increase, banks' interest income rises, but so does their interest cost. And the tax bill would decline when interest rates declined. For a traditional corporate tax, a rising deduction offsets rising interest income. But, a tax only on the "top-line" gross income, with no offsetting deduction for its interest expense, would balloon when interest rates rise. Some mechanism for indexing, perhaps to the inflation rate, would be needed.

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45. Stephen E. Shay, Senior Lecturer, Harv. Law Sch., Presentation at the EC-IMF Conference on Corporate Debt Bias: U.S. Experience with Interest Deductibility Restrictions 32 (Feb. 23-24, 2015), http://studylib.net/doc/9425959/u.s.-experience-with-interest-deductibility-restrictions [http://perma.cc/XZA7-BUGN] (applying the concept to interest deduction and ACE). On broadening the base and cutting the rate, see *The President's Framework for Business Tax Reform: A Joint Report by the White House and the Department of the Treasury*, U.S. DEP'T TREASURY 1-2 (2012), http://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/OTA-Report-Business-Tax-Reform-2012.pdf [http://perma.cc/Z836-NJDE].

46. A corporate tax at a 35% on $10 billion of traditional, after-interest profit yields a tax bill of $3.5 billion. A tax of 7% on pre-interest income of $50 billion also yields a tax bill of $3.5 billion. A tax of $11^2/3$% on $30 billion of income after deducting only deposit interest paid yields a tax bill of $3.5 billion.

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Third, ending the deduction may push the newly disfavored debt from the sector whose tax is reconfigured to elsewhere in the economy. If that elsewhere is systemically safer, this shift is a benefit; if riskier, it is not. Accordingly, the specific sorts of debt that would be targeted would need to be thought out.

Hence, while the no-deduction-for-interest solution has conceptual simplicity in its favor, much work would be needed to make it viable in practice.

III. The Proposal: A Targeted Deduction for Non-Regulatory Bank Equity

Comprehensive corporate tax reform, while desirable, has been unattainable. Ending the deductibility of interest has conceptual simplicity in its favor and difficulty in implementation as a weakness. We now come to our general conceptual proposal: an allowance to the bank, allowing it to deduct the cost of equity.

A. Deducting the Cost of Bank Equity

The concept, although less intuitive than the other evening-up solutions, is quite promising: treat equity similarly to debt for tax purposes, by according the bank an interest-like deduction for the cost of its equity. Conceptually, the firm "rents" debt for its operations and *also* "rents" equity. Both rental payments are costs to the firm.

Financial-oriented readers may think of firms paying up for their "cost of capital" and that intuition accords well with this tax idea, an allowance for corporate equity (or ACE): Equity capital, like debt capital, has a cost. Under traditional corporate taxation, equity's cost is not deductible; with an ACE, it would be.[47]

To be sure, our proposal does not depend on precisely calculating the actual cost of equity. Thus a purist might object. Our proposal is, instead, instrumental, designed to induce the banks to capitalize with more equity and less debt, with the net impact on tax revenue from the financial sector approximately neutral. Moreover, the ACE does not allow banks to deduct dividends paid (which is the

47. The ACE idea was introduced almost simultaneously in Ekkehard Wenger, *Gleichmäßigkeit der Besteuerung von Arbeits- und Vermögenseinkünften*, FINANZARCHIV [PUBLIC FIN. ANALYSIS] 207 (1983), and in Robin Boadway & Neil Bruce, *A General Proposition on the Design of a Neutral Business Tax*, 24 J. PUB. ECON. 231 (1984), then developed in Equity for Companies: A Corporation Tax for the 1990s, IFS CAP. TAXES GRP. (1991), http://www.ifs.org.uk/comms/comm26.pdf [http://perma.cc/D77R-M8U3], and most recently analyzed in the Mirrlees Review, *see* DIMENSIONS OF TAX DESIGN (Stuart Adam et al. eds., 2010) [hereinafter Mirrlees Review]. For further analysis, see Alvin C. Warren, *The Business Enterprise Income Tax: A First Appraisal*, 118 TAX NOTES 921, 921-26 (2008); Alvin C. Warren, Corporate Cash-Flow Tax Bases (Sept. 24, 2015) (unpublished manuscript) (on file with author); *cf.* Michael J. Graetz & Alvin C. Warren, *Integration of Corporate and Shareholder Taxes* (SSRN Working Paper, 2016), http://www.ssrn.com/abstract=2780490 [http://perma.cc/77JW-JXSK].

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favored reform to remedy the debt-equity imbalance)—a distinction that is a quite important strength of ACE for banks, as we shall discuss further below.[48]

The ACE tax system was developed to reduce investment and financing distortions in nonfinancial corporations and was not intended for financial institutions.[49] However, the ACE concept can be repurposed for taxation of financial institutions to reverse the tax subsidy to debt.

Mechanically, in most ACE renditions, the deduction for equity is calculated by multiplying the book value of equity by a formulaic rate of interest tied to market rates. The following financial statement illustrates a straightforward six percent allowance for corporate equity for the running example of our trillion-dollar bank. The allowance for the cost of the bank's equity gives the banks a $6 billion deduction for the cost of the bank's $100 billion of equity, which it deducts from its gross operating income alongside its interest expense. By allowing that $6 billion deduction for the cost of equity, the bank then has $4 billion of taxable profits, instead of the original $10 billion.

We apply an ACE in our running example, in the next illustration. The ACE structure is as leverage-neutral as the prior possibility of taxing only pre-interest operating income, as long as the interest rate on the bank's debt is the same as percentage equity allowance. (If the interest rate is eight percent but the allowance is only six percent, then the traditional corporate tax retains a small advantage; conversely, if the ACE rate is higher than the interest rate, equity becomes more attractive after taxes than debt.) When the two (the interest rate and the equity allowance) are equal, then, if the bank decided to increase its equity and decrease its long-term debt, its overall tax bill would not change, because the bank would replace deductible debt with newly-deductible equity. Tax would no longer motivate capital structure. However, the total tax bill diminishes—the proposal is not yet revenue-neutral.

These two income statements for the traditional bank compare results with and without an allowance for corporate equity. The ACE is calculated as some function of the long-term U.S. Treasury rates, resulting in a six percent number here. The book value of equity is accorded a deduction of six percent, or $6 billion. This should make the bank tax-indifferent to debt at 6% or new equity, but the capital structure of the trillion-dollar bank remains unchanged here, even after the ACE is introduced. And the tax bill with the ACE is about $2 billion less than without it; this example's structure is not revenue neutral.

48. As we have alluded before, a deduction for dividends-paid—the reigning reform idea—would devastate the financial system, by encouraging banks to pay out cash to get the tax deduction. *See infra* Section IV.C.

49. *Setting Savings Free: Proposals for the Taxation of Savings and Profits*, INST. FOR FISCAL STUD. 31 (1994) (unpublished report), http://www.ifs.org.uk/comms/r44.pdf [http://perma.cc/23RZ-6K5U].

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Table 4: ACE for traditional bank

Traditional bank's income statement, traditionally taxed		Income Statement with a 6% Allowance for the Cost of Corporate Equity, on $100 B of equity	
50B	Gross operating profit (income from loans & investments)	50B	Gross operating profit (income from loans & investments)
(6B)	Bond interest	(6B)	Bond interest
(6B)	Short-term interest	(6B)	Short-term interest
(28B)	Deposit interest	(28B)	Deposit interest
10B	Taxable profit	10B	Basic pre-tax profit
		(6B)	ACE at 6% of the $100B equity
		4B	Taxable profit
(3.5B)	Corporate tax	(1.4B)	Corporate tax
6.5B	Net profit	8.6B	Net profit

A more realistic rendition would have equity, made relatively cheaper as compared to debt, increasing while debt, made relatively more expensive, decreasing. The following example shows how, once an ACE structure is in place, the bank would not be penalized by increased taxation if it raised its equity to $200 billion from $100 billion, by replacing $100 billion of old debt with new equity. Profit increases overall, because shareholders would have more capital in the bank, while the overall payout to all investors (stockholders and creditors, together) remains constant. Again, tax would no longer motivate the firm's choice of capital structure.

We introduce dynamism next. When the bank's debt matures in the prior example with the ACE in place, it is tax-indifferent to rolling over the debt into more debt and replacing the old debt with equity. Here it replaces the old debt with new equity, thereby doubling its equity from ten percent of its trillion-dollars in total value to twenty percent. The bank loses the $6 billion deduction for interest paid to the debt that is not rolled over, but requires that deduction via the allowance for corporate equity for the newly increased equity, which makes the bank more stable. The two structures are tax-revenue-neutral as between the ACE with no equity increase and ACE with a major increase in equity. But neither is revenue neutral when compared to the current system. Both reduce the bank's tax bill.

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Table 5: Expected Impact of the Allowance for Corporate Equity: More Equity

Tax-induced transformation of $1 trillion bank balance sheet

Loans & investments $1000B	~~100B bonds at 6%,~~ retired or not renewed
	100B short-term debt at 6%
	700B deposits at 4%
	100B original equity + 100B new equity

ACE Income Statement for the $100B-equity bank, with no change in capital structure		ACE Income Statement for $200B-equity bank	
50B	Gross operating profit (income from loans & investments)	50B	Gross operating profit (income from loans & investments)
(6B)	Bond interest	~~(6B)~~	~~Bond interest~~
(6B)	Short-term interest	(6B)	Short-term interest
(28B)	Deposit interest	(28B)	Deposit interest
10B	Basic pre-tax profit	16B	Basic pre-tax profit
(6B)	ACE at 6% for $100B equity	(12B)	ACE at 6% of the $200B equity
4B	Taxable profit	4B	Taxable profit
(1.4B)	Corporate tax	(1.4B)	Corporate tax
8.6B	Net after-tax profit for shareholders	14.6B	Net after-tax profit for shareholders
40B	Income to creditors	34B	Income to creditors
$48.6B	Total investor income	$48.6B	Total investor income

This allowance mechanism has a very basic disadvantage: in isolation, it would reduce bank taxes greatly. The political headline of a bank-specific allowance for corporate equity might be that the banks would be favored with a deduction for profits that should be taxed. Or lobbying by banks may yield no offset to the allowance and lowered tax bill. (As in, "Thank you for the deduction for equity; but let's just stop there."[50])

In our running example, the bank would pay only $1.4 billion in tax with an allowance for equity, instead of the $3.5 billion from a traditional tax. Revenue neutrality would require $2.1 billion from elsewhere in the financial system.

50. Critics would argue that the tax system encouraged risky banker behavior. Policymakers should not give bankers a gift of more deductions for equity, but a penalty. Lost in the political rhetoric back-and-forth would be that offsetting taxes that could make the change revenue-neutral.

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Before we achieve that revenue neutrality, we shall first show that most of the safety advantage can be obtained without according banks the full allowance for the cost of equity, but rather targeting it at the bank's equity above the regulatory-required level. This will greatly reduce the make-up needed for revenue neutrality. We thus now come to our central proposal.

B. Deducting the Cost of Non-Regulatory Bank Equity

Consider allowing banks to deduct their cost of corporate equity for only that portion of equity *exceeding* the regulatory minimum. The authorities would thereby not give banks a windfall tax benefit for equity that they must have in any case. The tax authorities would not need to search as far and wide for offsetting limits that would maintain tax revenue neutrality.

Table 6: Incremental ACE Reduces Total Tax Bill Less Than Full ACE

Bank's income statement with ACE on $100B in equity		Bank's income statement with ACE on $200B in equity	
50B	Gross operating profit	50B	Gross operating profit
(6B)	Bond interest	~~(6B)~~	~~Bond interest~~
(6B)	Short-term interest	(6B)	Short-term interest
(28B)	Deposit interest	(28B)	Deposit interest
10B	Pre-tax profit	16B	Pre-tax profit
(1.2B)	ACE at 6% on $20B non-regulatory equity	(7.2B)	ACE at 6% on $120B nonregulatory equity
8.8B	Taxable profit	8.8B	Taxable profit
(3.1B)	Corporate tax	(3.1B)	Corporate tax
6.9B	After-tax net profit	12.9B	After-tax net profit
40B	Income to creditors	34B	Income to creditors
46.9B	Total investor income	46.9B	Total investor income

Here, the allowance for corporate equity is allowed only on equity above the regulatory-required amount (which we assume here to be 8%, or $80 billion for the $1 trillion bank). The revenue loss from the non-regulatory ACE is much less than that of the ACE when available for all equity. Instead of a $2 billion revenue loss, the loss is $400 million, which would be easier to offset with a tax elsewhere in the financial system.

Suppose that the required regulatory minimum equity is eight percent of assets. The $1 trillion bank in the running illustration has $100 billion of equity, meaning that it has $20 billion of capital in excess of the regulatory minimum. The minimally disruptive allowance is to allow it to deduct the same percentage cost of equity, six percent, but only for the $20 billion excess.

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That would yield the bank a $1.2 billion deduction, which would decrease its tax by $400 million instead of the $2.2 billion from an allowance for all equity.

Without the ACE, the bank would have paid $3.5 billion in taxes (from a tax rate of thirty-five percent on $10 billion of traditionally-calculated after-interest profit). The lost $400 million of tax revenue can be made up via a low .04% levy on the bank's full $1 trillion of assets.[51] Or the make-up could target the riskiest forms of short-term debt spread throughout the financial system, which is the offset we prefer.

Revenue-neutrality could alternatively be achieved by limiting the deductibility of the bank's interest payments to the risk-free rate, proxied by the rate on U.S. Treasuries of the same duration as the bank debt.[52] Low-risk banks borrow at a rate approximating that on U.S. Treasuries; they could deduct most of their interest paid. As a bank took on more debt and more risk, its borrowing cost would rise, but the tax allowance would not. Such a well-designed tax system would thereby penalize the riskier bank and reward the safer one.[53]

We emphasize that by favorably taxing the slice of equity above what regulation requires, the authorities would not be favoring a random slice of equity with no more than a weak impact on safety-increasing equity. The authorities would be favoring the "marginal," extra equity above that which is already required. The income on every dollar of *extra* equity would be tax-free, or nearly so. This allowance can be grafted onto the current tax structure for financial firms without reconstructing the taxation of all of corporate America. It would reward banks for building up more safe equity on top of what regulators already require.

The authorities can also adapt the incentives to obtain the best debt-equity mix. By raising or lowering the size of the allowance for the cost of equity, and any corresponding tax offset to achieve revenue neutrality, the authorities could modulate the after-tax benefit of equity and debt. If the authorities wanted more equity, they would raise the relative ACE benefit and limit the deduction for interest.

* * *

51. Our core proposal thus parts company with Allen's approach, *supra* note 15, at 875-83, 886-87, which seeks an ACE-like deduction for regulatory capital and perhaps more. In our view, leaving disadvantaged the slice that regulators already require is not systemically damaging and focusing only on the incremental slice yields wider offset options.

52. Edward Kleinbard, *Designing an Income Tax on Capital*, *in* TAXING CAPITAL INCOME 180-82 (Henry J. Aaron et al. eds., 2007); Robin Boadway & Neil Bruce, *A General Proposition on the Design of a Neutral Business Tax*, 24 J. PUB. ECON. 231, 237-38 (1984); Edward D. Kleinbard, *Beyond Good and Evil Debt (and Debt Hedges): A Cost of Capital Allowance System*, 67 TAXES 943, 946, 955-61 (1989).

53. *Cf.* Calvin H. Johnson, *Corporate Meltdowns and the Deduction of Credit-Risk Interest*, 131 TAX NOTES 513, 513 (2011) (recommending that there be no deduction for the risk component of the interest paid).

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Four major objections must be overcome for the proposal to be viable. First, does the tax advantage of debt have major corporate governance benefits that our reform would eliminate? Second, would banks take up the tax incentives and build up more systemically safe equity? Third, would the players game the new system and defeat it? Fourth, would the banks' cost of finance rise so that the economy would be damaged? In the following Parts we address these objections. None seriously undermines the proposal.

IV. Will It Work?: Taxing Banks Properly as Corporate Governance Strategy

In this Part we examine the first major objection to the targeted proposal, looking at the bank tax issue through the analytic lens of corporate governance and organizational efficiency. We make critical points that have not yet been highlighted for bank tax reform: while the pro-debt tax bias has important mitigating *positive* benefits for *industrial* firms, these benefits are missing for banks. Worse yet, as we pointed out above, the most prominent corporate tax "fix"—a deduction for corporate dividend payments—would *reduce* bank safety greatly, necessitating a sharply different tax reform for financial firms.

A. Shareholder-Manager Agency Cost Benefits for Industry

The large public firm has two core corporate governance conflicts: (1) between senior executives and stockholders and (2) between debt and equity. More debt reduces the first conflict but exacerbates the second. Because industrial firms typically have much less debt than banks, the first conflict should be more pernicious for them while the second will be more important for banks.

The conflict between executives and stockholders in industrial firms arises because executives have slack, since stockholders in the public firm are insufficiently cohesive, attentive, and powerful to hold managers tightly accountable for failing to produce corporate value. Heavily increasing debt in an industrial firm tightens that slack, because the managers must then produce enough cash to pay the debt. If they fail to pay, unforgiving creditors have remedies that stockholders lack. Hence, traditional thinking has it that managers scramble to meet debt payments more earnestly than to satisfy stockholders.[54]

The point is not that agency costs justify debt's deductibility for industrial firms but that for industrial firms there is a mitigating benefit that reduces the cost of the tax distortion for them, but, as we see next, not for financial firms.

For banks, no such mitigating benefit from debt's tax benefit is in play, because banks have much more debt than industrial firms and will remain heavily indebted even if tax equalization raises equity levels. Industrial firm debt

54. Alan J. Auerbach, Michael P. Devereux & Helen Simpson, *Taxing Corporate Income*, *in* DIMENSIONS OF TAX DESIGN 837, 858 (Stuart Adam et al. eds., 2010); Michael C. Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 AM. ECON. REV. 323, 323-24 (1986).

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in developed nations typically averages between ten and thirty percent of assets, while bank debt is typically more than ninety percent of the bank's overall value.[55] If there's a corporate governance shareholder-oriented benefit from debt, it's already well embedded in bank capital structures.

B. Debt-Equity Agency Cost Degradation for Banks

Given the high leverage inherent in financial firms, the main agency-cost, corporate-governance conflict in banks is between debt and equity, more so than that between executives and stockholders. As the bank's equity level declines, stockholders have reason to increase the riskiness of their operation because the stockholders enjoy the upside if the risks pay off, but are not fully exposed to the downside because of corporate limited liability: they can only lose their investment. This conflict is well known and empirically documented.[56] Thinly capitalized banks took on more risk and did worse during the financial crisis than better capitalized banks.[57]

Can these private creditors contribute to better corporate governance? Active creditors can play a positive role in industrial firm corporate governance but are unlikely to do so in banks. Banks' non-deposit financial creditors know that the regulator is the bank's biggest de facto creditor (via government guarantees of deposits and too-big-to-fail government bailout expectations), which weakens private creditors' incentives and capacities as corporate governance players. They know that (1) their incentives are similar to those of the regulators who are de facto creditors of the bank (so, why bother duplicating the government's work?) and (2) they, the private creditors, cannot readily displace the regulators if the two disagree.

In addition, (3) much of the financial firm's debt is owed to short-term creditors who do not participate in bank governance but instead refuse to re-lend when a bank shows weakness. Lastly, (4) banks are notoriously opaque,[58] so that serious governance requires a boardroom position, which is awkward for bond creditors and inconceivable for depositors and overnight lenders that finance so much of modern financial firms' debt.

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55. Raghuran G. Rajan & Luigi Zingales, *What Do We Know About Capital Structure? Some Evidence from International Data*, 50 J. FIN. 1421, 1430 (1995). For banks, see *Bank Capital to Assets Ratio*, WORLD BANK, http://data.worldbank.org/indicator/FB.BNK.CAPA.ZS [http://perma.cc/HMN5-C9JD].

56. *See* BREALEY ET AL., *supra* note 41, at 459.

57. *See* Beltratti & Stulz, *supra* note 1, at 6, 8, 16; Daniel Ferreira, David Kershaw, Tom Kirchmaier & Edmund Schuster, *Shareholder Empowerment and Bank Bailouts* (London Sch. Econ. Working Paper, 2012), http://www.ssrn.com/abstract=2170392 [http://perma.cc/3ZEJ-DRJP]; *cf.* John Armour & Jeffrey N. Gordon, *Systemic Harms and Shareholder Value*, 6 J. LEGAL ANALYSIS 35 (2014).

58. Mark J. Flannery, Simon H. Kwan & Mahendrarajah Nimalendran, *The 2007-2009 Financial Crisis and Bank Opaqueness*, 22 J. FIN. INTERMEDIATION 55 (2013).

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C. *Corporate Governance Debilities in Banks: Why Existing Tax Proposals Fail for Banks*

Industrial conglomerates that have grown too bulky face internal and external corporate pressures to resize. Executive compensation, board direction, and shareholder action all can press in this direction. But large, heavily indebted, and equally bulky banks lack major governance correctives when the too-big-to-fail funding advantages are large and a downsized financial firm would lose that too-big-to-fail funding advantage. Once the bank downsizes, it may still stumble but it would no longer be too big to fail.[59]

Moreover, we have effective means to restructure failed industrial firms, namely, chapter 11 of the Bankruptcy Code. But failed financial firms are still regularly bailed out.[60] Reversing the tax bias would reduce these corporate governance debilities in banks.

* * *

With corporate governance in mind, we can better evaluate proposed mechanisms to even up the tax impact of debt and equity.

A deduction for dividends paid—corporate tax reformers' favorite—would bolster industrial firms' corporate governance by incentivizing them to pay out cash, which industrial firm executives prefer to retain at excessive levels.[61] But it would cause havoc for banks: by pushing them to pay cash out, it would push them to reduce their retained equity, which is their fundamental cushion of safety. Financial reformers should want a corporate tax that does the *opposite* for the financial sector, incentivizing financial firms to *retain* earnings to bolster equity levels. We will need a different system for evening up debt and equity taxation in industry and in finance, such as the allowance for corporate equity above the regulatory required amount, as outlined in the previous Part.[62]

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59. *See* Roe, *supra* note 15, at 1428-31.

60. Jeffrey M. Chwieroth & Andrew Walter, *Policy Responses to Banking Crises over the Longer Run* (SSRN Working Paper, 2015), http://www.ssrn.com/abstract=2715468 [http://perma.cc/JPA9-GAV6].

61. Amy Dittmar, Jan Mahrt-Smith & Henri Servaes, *International Corporate Governance and Corporate Cash Holding*, 38 J. FIN. & QUANT. ANAL. 111, 116-117 (2003); Jensen, *supra* note 54, at 324.

62. One might mistakenly think that the allowance for corporate equity approximates the proposed dividend deduction. But the differences are quite large. Under the reigning proposals, the firm cannot get a deduction for equity unless it pays a dividend and reduces its cash; thus the proposals motivate firms to declare dividends that push cash out from the firm. The ACE proposal is neutral on dividend payouts; the firm can keep the cash or not; either way it gets the tax benefit.

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V. Will It Work?: Would Reducing Tax Distortion Change Banks' Capital Structure?

We examine in this Part whether banks would take up the incentives and build up more systemically safe equity. The core tradeoff theory of capital structure[63] has the choice between debt and equity by executives and their financiers balancing the costs of high debt (mainly from the risk of bankruptcy) against the tax benefits from interest's deductibility.[64] A reduction in the tax advantage increases the relative size of bankruptcy costs and should therefore lead to an increase in equity. However, additional factors determine debt levels and capital structure for banks: The business of banking is managing liabilities and profitably matching them to the bank's loans. Hence, banks will have much debt regardless of how they are taxed. It is plausible in theory that tax incentives could have only a weak effect on banks' leverage decisions.

Only analysis of the data can settle this question. Fortunately, there are now multiple, recent empirical studies demonstrating that, even if the tax-versus-bankruptcy "tradeoff" theory does not apply to *all* of the typical bank's debt, it still strongly influences a bank's capital structure choice. The tax effect from an ACE may not drive bank equity toward thirty or fifty percent of the bank assets, but it has an impact on the whether the bank chooses the pre-crisis four percent, the current eight percent, or a safer fifteen percent level for its equity. We report and discuss this empirical evidence in the following sections.

A. The Overall Evidence: Tax Incentives Change Banks' Capital Structure

Table 7 summarizes all studies since 2010 that examine the effect of taxes on bank capital structure.[65] Most studies observe change in capital structure and

63. *See* Alan Kraus & Robert H. Litzenberger, *A State- preference Model of Optimal Financial Leverage*, 28 J. FIN. 911 (1973); James H. Scott, Jr., *A Theory of Optimal Capital Structure*, 7 BELL J. ECON. 33 (1976).

64. BREALEY ET AL., *supra* note 41, at 18-25; Modigliani & Miller, *supra* note 13; Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261, 263 (1958).

65. Sources: Grace Weishi Gu, Ruud de Mooij & Tigran Poghosyan, *Taxation and Leverage in International Banking*, 22 INT'L TAX & PUB. FIN. 177, 184 (2015) (row 1); De Ruud de Mooij & Michael Keen, *Debt, Taxes, and Banks*, 48 J. MONEY, CREDIT & BANKING 5, 21 (2016) (row 2); Thomas Hemmelgarn & Daniel Teichmann, *Tax Reforms and Capital Structure of Banks*, 21 INT'L TAX & PUB. FIN. 649 (2014) (row 3); Kristoffer Milonas, *Bank Taxes, Leverage, and Risk*, J. FIN. SERV. RES. 1, 1 (2016); Alexander Schandlbauer, *How Do Financial Institutions React To a Tax Increase?*, 30 J. ON FIN. INTERMEDIATION 86, 98 (2017) (row 5); Glenn Schepens, *Taxes and Bank Capital Structure*, 120 J. FIN. ECON. 585, 592 (2016) (row 6); Célérier et al., *supra* note 14, at 15 (rows 7 and 11); Steve Bond et al., *Regulation, Tax and Capital Structure: Evidence from Administrative Data on Italian Banks* 46, tbl. 3, col. 3 (Banca d'Italia Working Paper No. 361, 2016), http://www.researchgate.net/publication/309234582_Regulation_tax_and_capital_structure_evidence_from_administrative_data_on_Italian_banks [http://perma.cc/HD6L-LVAD] (row 8); Leonardo Gambacorta et al., *The Effects of Tax on Bank Liability Structure* 4 (BIS Working Paper No. 611, 2017), http://www.ssrn.com/abstract=2923758 [http://perma.cc/V7GB-3QTD] (row 9); Jose Martin-Flores & Christophe Moussu, *Is Bank Capital Sensitive to a Tax Allowance on Marginal Equity?* 2 (ESCP Europe Working Paper, 2017),

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debt levels after corporate tax rates change; some studies focus on a single nation, some examine several. Other studies measure the impact of introducing special taxes that allow interest paid to be deducted. This deduction for interest makes debt more valuable to the firm; researchers extrapolate from the change in debt levels how the tax leads to more debt. Three studies examine the effect of an ACE in Belgium and Italy.

All studies confirm that banks' capital structure choices include a tradeoff of tax benefits for other costs. In every study, banks capital structure changes in the direction theory predicts.

Table 7: Impact of Debt-Equity Tax Neutrality on Bank Equity Levels

Study	Methodology	Key result	Extrapolated impact (in percentage of assets in added equity)	Scope of sample and added results	Extrapolated impact
Worldwide banks subsidiaries					
1. **Gu, de Mooij & Poghosyan, 2015**	Leverage reaction to changes in corporate tax rate	Equity increases 3% when tax rate decreases 10%	10.5%	60 countries, 1998-2011 Debt shifts to subsidiaries in high tax countries	10.5%
Worldwide commercial banks					
2. **de Mooij & Keen, 2016**	Leverage ratio reaction to changes in corporate tax rate	Long-run 2.7% equity increase for 10% decrease in corporate tax rate	9.5	82 countries, 2001-2009 Banks with small equity buffers and larger banks less sensitive	6.4
3. **Hemmelgarn & Teichmann, 2014**	Leverage ratio reaction to changes in the corporate tax rate	A 10% increase in the statutory tax rate increases leverage by 0.98%	3.4	87 countries, 1997-2011 Lower taxes reduce dividend payout	
US bank-holding companies and commercial banks					
4. **Milonas, 2016**	Reaction of capital structure to changes in U.S. state taxes	Equity increases by .15% when tax rate decreased by 1%	5.3	Effect is symmetric for tax increases and decreases, 1995-2012	8.4
5. **Schandlbauer, 2017**	Reaction of non-depositary debt to increase in U.S. state taxes	Tax increase of 1% increases non depositary debt ratio by .60%	11.6	Tax increases have an effect, decreases do not, 1998-2011	
Belgian banks					
6. **Schepens, 2016**	Change in relative equity in Belgian and European banks after Belgium ACE	Previously taxed at 34%; after 2 years, Belgian banks' equity levels rise 1.03% more	1.1	2002-2007 Interrupted by the crisis and Belgian cutbacks in ACE	1.0

http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2017-Athens/papers/EFMA2017_0467_fullpaper.pdf [http://perma.cc/3RWN-RSPY] (row 10).

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7. Célérier et al., 2017	Change in equity growth rates after ACE introduced	Equity increases by 1% for a tax reduction of 34%	1.0	1997 Positive effect on market share of Belgian banks in Germany	
Italian mutual banks					
8. Bond et al., 2016	Exogenous regional and time variation of value added tax	Equity increases by .3% for each 1% reduction in the value added tax	11.1	1998-2011 Muted when banks are closer to the regulatory constraint	8.2
9. Gambacorta et al., 2016	Exogenous regional and time variation of value added tax	Equity increases by .15% for each 1% reduction in the value added tax	5.3	1998-2011 Measured impact is of reduced nondeposit liabilities	
Italian banks					
10. Martin-Flores & Moussu, 2017	Introduction of partial ACE	Equity increases by 0.44% for a tax reduction of 18%	0.9	2000 and 2002 Impact of ACE removal stronger than its introduction	1.4
11. Célérier et al., 2017	Change in equity growth rates after removal of partial ACE	Equity increases by 1% for a tax reduction of 18%	1.9	2002 Negative effect on market share of Italian banks in Germany	
Average impact on equity for banks from neutral tax					**6%**

This table summarizes post-2010 studies of the relationship between corporate tax rates and equity levels in banks. Similar samples are grouped and averaged. A linear extrapolation from the studies, when averaged, predicts a 6% increase in total equity from eliminating the tax benefit of tax that the American corporate tax creates. That is, a bank whose equity was 4% of its assets would by extrapolation have equity at 10% of assets, according to the banking-only studies.

Several studies also provided additional evidence and caveats: Some studies see the tax-incentive impact as strongest for smaller and already-better capitalized banks,[66] with already highly leveraged banks unable or unwilling to increase their equity. And while tax increases are consistently followed by higher leverage, some tax decreases are not followed by similarly sized leverage decreases. The immediate effects in some studies are smaller than the more major longer-term effects. And several studies show that banks (in those studies) increase equity by decreasing cash dividends and long-term financial debt.

B. Extrapolating the Proposal's Impact on American Banks

Overall, the results indicate that our proposal would roughly double bank equity from pre-crisis levels, which would be quite substantial.

To get to that rough estimate of a predicted 6% increase in equity, we extrapolated from each study's results the impact of ending the American

66. de Mooij & Keen, *supra* note 65, at 21; Gu et al., supra note 66, at 184.

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corporate tax bias for debt over equity. Then we averaged the results; several studies analyzed the same event, such as the impact of the Belgian ACE. For these we averaged the multiple studies for a single estimate. We assumed that the ACE we propose would lead to the same capital structure changes as eliminating the corporate tax (because new equity would incur no tax). Thus if the study showed the increased equity from a ten percent tax decrease, we extrapolated the result linearly to estimate the impact on capital structure of a zero marginal tax on equity (i.e., we multiply the impact by 3.5, to reach today's corporate tax rate).

An example: The International Monetary Fund study covering 82 countries shows that decreasing the corporate tax rate by 10% leads to bank equity increasing by nearly 1% in the short run and 2.7% in the longer run.[67] A linear extrapolation has ending the American 35% corporate tax increasing bank capital 3.5 x 2.7%, or about 9.5%.[68] This increase would rival the impact on equity levels of all post-2008 crisis efforts to increase bank equity.

True, banks may not adjust their capital structure to tax changes linearly with the size of the tax incentive. In the short run, while the observed changes in capital structure are all directionally positive, their size seems not to depend much on the strength of the tax incentive. Two explanations come to mind for this impact. First, the impact might not be directly proportional; differently-sized tax changes could have different nonlinear impacts. But, secondly, banks may not adjust quickly. Large changes in capital structure are difficult to implement quickly; banks are accustomed to doing business in a particular way, so initial adjustments are small and tentative. But long-run changes need not be small and tentative; they could well fit the linear assumptions. Several studies indicate that better capitalized banks also react more to tax incentives, so, once initial small adjustments have pushed up equity levels, further adjustments might accelerate. Overall a linear approximation seems the best estimate; even when including the small, short-term adjustments that were cut short (because the reforms were terminated), the average is at 6%—longer-term results may well be and should be higher— but the margin of error here is large.

A linear approximation also allows us to scale our results and generate simple predictions for how banks should react to partial tax reductions. For example, the year-end 2017 reduction of the corporate tax rate to 21 percent should lead American banks to prefer 2.4% more equity in the long-run than they

67. de Mooij & Keen, *supra* note 65, at 21 ("[T]he tax effect on the leverage ratio is positive and . . . large."); *see also* Hemmelgarn & Teichmann, *supra* note 65, at 645 (finding that each 10% of corporate tax "result[s] in an increase of leverage of . . . 1.04 [percent] in the long-run, with a [full] adjustment period [of] 3.85 years"); Michael P. Devereux, Giorgia Maffini & Jing Xing, *Corporate Tax Incentives and Capital Structure: Empirical Evidence from UK Tax Returns* (Oxford Ctr. for Bus. Taxation Working Paper 15/07, 2015), http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Working_Papers/Series_15/WP1507.pdf [http://perma.cc/C95P-PA7R].

68. In cases where this simple extrapolation was not possible, we made similar rough approximations. For example, Schandlbauer, *supra* note 65, analyzes the effect of tax increases and decreases separately. We averaged the two observed effects.

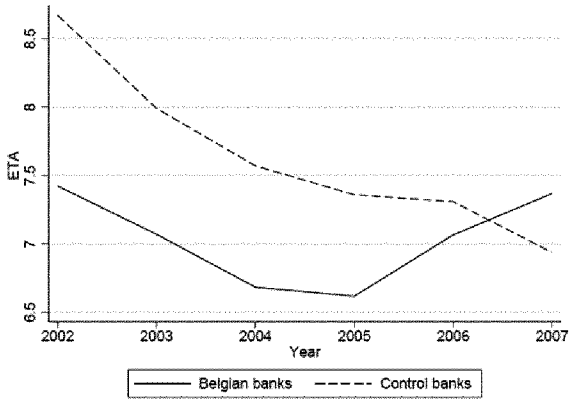
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currently prefer. (Calculated by taking the 6% average in Table 7, based on the long-standing 35% corporate tax rate and scaling it to the amended rate: 6% *21%/35%=2.4% of assets.)

Remarkably, none of the tax reforms, whose impact on bank capital was the subject of these studies, was *intended* to push bank equity up; better bank equity was a side effect. A reform specifically aimed to make equity more tax attractive should achieve much higher reactions.

The Belgian reform bears comment. Belgium changed its overall corporate tax system—not just bank taxation—in 2006 to be neutral between debt and equity via a mechanism that is analytically a cousin to that which we propose. European banks' equity levels were falling then. After the change, equity in Belgian banks rose, while it continued to fall in comparable European banks.[69] The graphic illustrates.[70]

Figure 1: Evolution of the Equity Ratio for the Belgian Banks and a Control Group of Banks



The reform's positive effect on bank capital is surprising as its purpose was not to strengthen financial stability; accordingly, it was badly structured for this purpose. (It aimed to make Belgium an attractive locale for corporate activity.[71]) The reform favored the equity that the Belgian bank itself had, but not the equity of the Belgian bank's often larger foreign subsidiaries and affiliates. Moreover, the tax boost to equity was netted against other tax advantages, making it less

69. Glenn Schepens, *Taxes and Bank Capital Structure*, 120 J. FIN. ECON. 585, 585-86 (2016).

70. *Id.* at 586 fig.1. Doubts about the reform's durability weakened its impact. It was passed by a very small majority and has been regularly challenged. It survived but concessions were made to opponents, reducing the benefit to equity.

71. Savina Princen, *Determining the Impact of Taxation on Corporate Financial Decision-Making*, 51 REFLETS ET PERSPECTIVES DE LA VIE ECONOMIQUE 161-70 (2012); Schepens, *supra* note 65, at 588.

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efficacious for financial safety purposes. And Belgium after only a few years cut back the reform,[72] which was seen as too advantageous for multinationals[73] and did "not seem to boost the economy or serve any employment objective, [thus] undermin[ing] its value in the eyes of the public."[74]

Thus, although Belgium's equity-favoring reform persists, as we write, it has been weakened such that it no longer has a major impact on correcting the debt-equity imbalance. Despite its weaknesses, its initial impact was directionally aligned with promoting bank safety and, given its short effective duration, substantial.

Similar weaknesses afflicted the ACE that Italy introduced in 1997 for non-financial firms and then extended to banks in 2000, but revoked in 2002 due to governmental revenue concerns. The reform was weak, in that the notional "cost of equity" was not fully deductible, but instead taxed at a nineteen percent rate instead of the ordinary thirty-seven percent rate. Still, the measured impact of this short-lived and badly structured reform on bank capital structure was directionally to make the banks safer and its size was not negligible.

* * *

72. *Id.* at 168. Because the Belgian ACE applied to all corporations and on all of their equity, the ACE reform significantly and adversely affected government revenue, which a revenue-hungry government later sought to reverse. By 2017, the allowed deduction for equity was down in Belgium to a very low .237%, less than one-tenth the rate on long-term government bonds. *Des intérêts notionnels au plus bas en 2017, c'est jackpot pour l'Etat*, RTL INFO (Sept. 21, 2016) http://www.rtl.be/info/belgique/economie/des-interets-notionnels-au-plus-bas-en-2017-c-est-jackpot-pour-l-etat-852661.aspx [http://perma.cc/T57N-RET3]. For the cutbacks, see Art. 132 Loi-programme [General Act] of Dec. 23, 2009, MONITEUR BELGE [M.B.] [Official Gazette of Belgium] Dec. 30, 2009, 82.310; Art. 45 Loi portant des dispositions diverses [Miscellaneous Provisions Act] of Dec. 28, 2011, MONITEUR BELGE [M.B.] [Official Gazette of Belgium], Dec. 30, 2011, ed. 4, 81.644; Art. 48 and 56 of the Loi portant des dispositions fiscales et financières [Fiscal and Financial Provisions Act] of Dec. 13, 2012, MONITEUR BELGE [M.B.] [Official Gazette of Belgium], Dec. 20, 2012, ed. 4, 86.373; Art. 46 Loi portant des dispositions diverses [Miscellaneous Provisions Act] of July 30, 2013, MONITEUR BELGE [M.B.] [Official Gazette of Belgium], Aug. 1, 2013, ed. 2, 48.270.

73. Princen, *supra* note 71, at 168.

74. Savina Princen, *Taxes Do Affect Corporate Financing Decisions: The Case of Belgian ACE* 15 (CESifo Working Paper No. 3713, Jan. 2012), http://ideas.repec.org/p/ces/ceswps/3713.html [http://perma.cc/F3Q2-DSQT]. Dexia, a major Belgian-French bank, failed during the financial crisis. Had Belgium's 2006 equity-friendly tax been stronger, implemented earlier, targeted to making banks safer, and covered the bank's international operations, perhaps the bank could have better weathered the financial crisis. The Belgian ACE tax law is only for equity of the Belgian firm, not its foreign subsidiaries. *Cf. Rapport Annuel 2008*, DEXIA51 (2008), http://www.dexia.com/FR/actionnaires_investisseurs/actionnaires_individuels/publications/Documents/rapport_annuel_2008_fr.pdf [http://perma.cc/UY4H-TNKQ]. In 2008, when Belgium's allowance for corporate equity was more than 4%, instead of Dexia getting a reduction of 4% of its 16 billion euros of equity, it obtained a benefit corresponding to only a 1% allowance. The allowance was offset by other tax benefits and rules restricting application to non-Belgian lines of the bank's operations. (By the time the crisis hit, not only was the Belgian tax reform's future in doubt, but banks suffering significant operating losses, which result in tax deductions and a low tax rate (or no corporate tax payment at all), would have had no incentive to increase equity, even if a more equity-friendly tax was in place.)

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Complementary empirical evidence exists. After several European nations added small levies on bank borrowing, their banks borrowed less.[75] Reductions in the personal-level taxation of equity in 2003 in the United States led overall corporate leverage to decrease.[76] Moreover, the American bank tax history is consistent. Between 1947 and the mid-70s, U.S. banks were allowed to build reserves for loan losses that far exceeded the banks' actual losses. These reserves reduced bank taxable income and effectively became bank equity, until the bank reversed the reserve. Banks responded to these tax incentives by accumulating large reserves, adding additional capital corresponding to about two percent of loans.[77]

For completeness and a check, we also compiled all post-2010 studies of the tax impact on non-bank firms' debt levels. Their reaction to tax incentives, summarized in Table 2, was of the same general magnitude as that for banks. Banks may well be different than industrial firms, because banks' business means they will naturally have higher leverage than industry. But the roughly similar incremental results strongly suggest that, whatever the baseline preference for debt over equity is for the two, capital structures for both are on the margin shaped by the same factors and can be influenced by the same incentives.[78]

The studies focus on the period just before the financial crisis, after which regulators raised required capital.[79] Hence, when bank capital was 4%, the bank studies on average indicate that better taxation of equity could raise that equity level by 6% to 10%. But with capital now at about 7 or 8%, only 3% is left from that original 10%. That is, better taxation would just induce the banks to acquiesce in the current levels, and perhaps add 3%.

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75. Michael Devereux, Niels Johannesen & John Vella, *Can Taxes Tame the Banks? Evidence from European Bank Levies* (Oxford Univ. Ctr. for Bus. Taxation Working Paper No. 1325, 2013), http://www.ssrn.com/abstract_id=2563634 [http://perma.cc/MQ4J-CCEH].

76. Leming Lin & Mark J. Flannery, *Do Personal Taxes Affect Capital Structure? Evidence from the 2003 Tax Cut*, 109 J. FIN. ECON. 549, 549-50 (2013) (observing that a decline in maximum tax on dividends of 23.6% and on capital gains of five percent led to decline in leverage of five percent for firms in which the marginal investor was an individual).

77. *See* John R. Walter, *Loan Loss Reserves*, 77 FED. RES. BANK RICHMOND ECON. REV. 20, 24 (1991).

78. Sources: Florian Heider & Alexander Ljungqvist, *As Certain as Debt and Taxes: Estimating the Tax Sensitivity of Leverage from State Tax Changes*, 118 J. FIN. ECON. 684, 687 (2015) (row 1); Frederic Panier et al., Capital Structure and Taxes: What Happens When You Also Subsidize Equity? 20 (2014) (unpublished manuscript) (on file with author) (row 2); Mara Faccio & Jin Xu, *Taxes and Capital Structure*, 50 J. FIN. QUANT. ANAL. 277, 279 (2015) (row 3); Devereux et al., *supra* note 67, at 17 (row 4); Michael Faulkender & Jason M. Smith, *Taxes and Leverage at Multinational Corporations*, 122 J. FIN. ECON. 1, 13 (2016) (row 5); Craig Doidge & Alexander Dyck, *Taxes and Corporate Policies: Evidence from a Quasi-Natural Experiment*, 70 J. FIN. 45, 48 (2015) (row 6).

79. *See* Dagher et al., *supra* note 20.

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Table 8: Impact of Debt-Equity Neutrality on Non-Bank Equity Levels

Study	Companies	Scope of sample	Methodology	Key Result	Extrapolated impact (as equity rise, as a percentage of assets)	Added results
1. **Heider & Ljungqvist, 2016**	Non-financial Corporations	US, 1990-2011	Reaction of debt ratio to increase in local U.S. state taxes	Leverage ratio increases by.4% for each 1% increase in tax	13.5%	Increases have an effect, not decreases
2. **Panier, Pérez-González & Villanueva, 2012**	Non-financial Corporations	Belgium, 2001-2009	Equity change compared to European firms after Belgium ACE	Increase in Belgian firms' equity of 1.2% compared to other European firms	1.2	Larger, newer firms strongly affected
3. **Faccio & Xu, 2015**	Non-financial Corporations	29 OECD countries, 1981-2009	Leverage change in reaction to tax rate changes.	6.35% average tax rise associated with 2.52% leverage rise	13.9	Firms in OECD countries with low tax evasion
4. **Devereux, Maffini & Xing, 2015**	Non-financial Corporations	UK, 2001-2010	Leverage differences correlate with tax rate differences	10% increase in the marginal tax leads to increase in leverage of 7.6% to 14.0%	37.8	External debt of multinationals is less sensitive to taxation
5. **Faulkender & Smith, 2016**	Multinational Firms	US firms and their worldwide subsidiaries, 1994-2011	Leverage correlated to weighted average tax rate paid by multinationals	10% decrease in tax rate leads to between a 2.4% and 5.9% decrease in debt	14.5	Increase in a multinational's debt is usually located in high-tax US
6. **Doidge & Dyck, 2015**	Canadian Trusts	Canada, 2006	Reaction to tax rate increase from 0% to 31.5%	Debt increases by 6% after tax increases by 31.5%	6.7	Presence of non-debt tax shields reduces leverage
Average impact on nonbanks' equity of neutral tax					**14.8%**	

This table summarizes post-2010 studies of the relationship between corporate tax rates and equity levels of non-financial firms. A linear extrapolation from the six studies predicts a 14.8% increase in equity by eliminating the tax benefit to debt in the United States.

But three considerations largely erase this reservation. First, an additional 3% in capital is not small. Second, inducing acquiescence is also not a small benefit. Banks are readying to militate for a cutback in required capital, so as to allow more bank stock buybacks and decapitalization.[80] Third, an incentivize-

80. Ben McLannahan, *Biggest US Banks Have More than $120bn of 'Excess' Capital*, FIN. TIMES (Feb. 7, 2017), http://www.ft.com/content/dc7f7f66-ed83-11e6-930f-061b01e23655

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compatible move from, say, 4% to 10% would establish a new base on which command-and-control rules could further increase capital; that is, if command-and-control can only get the banks an additional 4%, better taxation of equity could make that 4% an add-on to 10%, instead of an add-on to 4%.

* * *

Overall, although the actual tax rate changes studied are small and not designed to increase bank equity, they lead to noticeable changes in equity in both banks and in non-bank firms. If a full-scale regulatory tax effort were implemented, larger effects than those now seen could be anticipated, perhaps reaching a level beyond that which is thought viable via command-and-control regulation.

VI. Will It Work?: Tax Arbitrage and the Cost of Finance

A. Increases and Decreases in Tax Arbitrage from an ACE on Non-Regulatory Equity

Financial firms will game the proposed allowance, but the extent of such tax arbitrage (to use the tax jargon) can be exaggerated. Different types of financial institutions are already taxed differently.[81] The proposal here will add to tax differentiation, but not create it. Moreover, because the proposal would tax debt and equity more symmetrically than they are now taxed, the changes will *reduce* adjacent gaming and boundary problems that now occur. Many of today's tax arbitrage strategies *exploit* the tax deductibility of interest[82] and *raise* systemic risk. Arbitraging safety rules today is quite plausibly more dangerous than arbitraging the marginal-ACE tax bill tomorrow.

1. Tax Arbitrage Today Via Hybrid Instruments

Taxpayers' tax planning strategies now blur the distinction between debt and equity, in order to create loss-absorbing, risk-bearing securities that are tax deductible. A leverage-neutral tax system will render these arbitrage strategies pointless.

[http://perma.cc/26ZZ-J3BR]. For further support, see the comments of the leaders of JPMorgan Chase and Goldman Sachs. *American Banks Think They Are Over-Regulated*, *supra* note 10.

81. For insurance companies, see Subchapter L of the Internal Revenue Code, I.R.C. §§ 801-848 (2012); for mutual funds, Subchapter M, I.R.C. §§ 851-860H; for savings banks, Subchapter H, Pt. II, *id.* §§ 591-601. Commercial banks are already taxed differently than industrial firms via Subchapter H, Pt. I, *id.* §§ 581-586. And other nonregulated financial firms, such as hedge funds and private equity firms, can organize themselves as Subchapter K partnerships, which are taxed differently than corporations. *See id.* §§ 701-77.

82. Richard Rubin, *Businesses Say Proposed Tax Rule Is Too Complicated*, WALL ST. J. (July 6, 2016), http://www.wsj.com/articles/businesses-say-proposed-tax-rule-is-too-complicated-1467797403 [http://perma.cc/T2B9-FNCF].

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2. Tax Arbitrage Today Between Different Corporate Forms

Tax arbitrage between different financial channels boosts the so-called "shadow banking" sector, which moves currently taxed bank operations into tax-favored entities. Firms and savers with cash can "deposit" that cash in non-taxed money market funds instead of in banks; those money market funds in turn lend to industrial firms by buying the firms' debts. They thereby provide a banking function that is taxed differently from, and less than, the traditional banking channel.

And banks can arrange a long-term loan to an industrial firm; left on the bank's books, the loan income would be taxed to the bank. But the bank can pool such loans, place them into a separate trust or partnership that pays no tax directly, and then sell off ownership in the pool to investors.

Overall, to compete with these loan pools and money market funds directly, the bank is incentivized to "zero out" its tax bill by offsetting its taxable interest income on loans with an interest deduction on the bank's own borrowing to finance the loans. Bank equity undermines zeroing out and renders the banks less able to compete with the more favorably taxed "shadow banking" sector. The allowance for corporate equity will narrow the difference between the shadow and traditional banking sectors. This narrowing will *reduce* tax arbitrage. Regulators worry that too many financial activities have moved into "shadow banking," beyond regulatory reach.[83] Evening up the tax differences between the two will reduce the incentives for migration.

3. International Arbitrage

Multinational firms can shift income to less-taxed jurisdictions.[84] Multinational banks operating globally can minimize their tax bill by allocating their debt and equity to the jurisdiction where each is taxed least.

This type of arbitrage should benefit countries that initiate the allowance for non-regulatory equity: Banks with low leverage should move to this country while banks with high leverage seek to be taxed elsewhere. Multinational banks will be incentivized to lodge debt in an affiliate taxed by a nation where interest is fully deductible[85] and move debt away from the equity-favoring authorities.

83. Daniel K. Tarullo, Governor, Federal Reserve Board of Governors, Speech at the Americans for Financial Reform and Economic Policy Institute Conference, Washington D.C.: Shadow Banking and Systemic Risk Regulation (Nov. 22, 2013), http://www.federalreserve.gov/newsevents/speech/tarullo20131122a.htm [http://perma.cc/YWA8-7FBA]. Tarullo was a governor of the Federal Reserve with principal responsibility for regulatory matters.

84. Kimberly A. Clausing, *The Effect of Profit Shifting on the Corporate Tax Base in the United States and Beyond*, 69 NAT'L TAX J. 905 (2016).

85. *See* Mihir Desai & Dhammika Dharmapala, *Interest Deductions in a Multijurisdictional World*, 68 NAT'L TAX J. 653 (2015).

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This tax arbitrage would stabilize the initiating nation. Coordinated international tax reform might ensue, yielding a self-sustaining coordination as most nations converge on the same unbiased tax system for banks.

4. Interaction Between Taxation and Regulation

If the ACE tied directly to regulatory-required equity levels, then whenever regulators changed that level, they would also determine the tax bill for the regulated. For bank regulators to determine the tax bill would be an odd result.

Moreover, the interaction between taxation and regulation would create peculiar incentives. If the regulator raised the required equity, then the regulator would be raising the banks' tax bill. The first effect of increased equity would make the banks safer; the second effect, from an increased tax bill, would not. Analogously, banks would have an added reason to induce lower required equity levels. Lower levels would be taxed more favorably than higher requirements. Fiscal authorities seeking new revenue would conversely intermittently want to raise the required equity level, which would raise more revenue for the government.

Administrability and dampening of these potentially perverse incentives could be achieved by fixing the level at which the ACE kicks in at the time the allowance was implemented. Thus, the allowance would be available for bank equity above, say, eight percent of total assets, even if regulation changes later.

But economic, financial, and regulatory reality change over time—the economy's financial system may morph in a major way, new regulation may be needed in a decade, tax rules may change, or even higher equity levels should be required. Hence, the incremental ACE, while initially simple, could become cumbersome to adjust to new realities. The ideal threshold might be chosen today, but later changes in finance or the economy could lead to that threshold being noticeably too high or too low. Yet, change could then become sticky. This is a real, but secondary implementation issue. This problem of divergence between rates and reality though afflicts most tax rules that involve thresholds, such as the very basic and pervasive income taxation via progressive income brackets.

5. Artificial Changes in Equity

Another tax reduction strategy that ACE potentially permits is for the ACE-taxed firm to create fictitious equity. A bank invests in the equity of a subsidiary and then the subsidiary invests this money back in equity of the bank. The net cash balance of the offsetting equity investments is zero, but the circular transaction allows the bank to present deductible equity at the parent level to the

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tax authorities. This tax gambit requires a countermeasure that zeroes the two out when calculating the allowance.[86]

6. The Inevitability of Arbitrage

Nevertheless, if banks are taxed differently than industrial firms, players will move some transactions from the industrial sector to the financial sector, and vice versa. Regulatory activity restrictions on banks will reduce but not eliminate such shifts. And regulatory capital is typically demanded when the bank takes on new assets and a new activity; the ACE we propose only softens the taxation of capital above the level that regulators require. For example, for fee-based financial businesses, debt is not as integral to their business as it is for banks, whose core business is to transform short-term debt into long-term loans. A bank with untaxed equity above the regulatory minimum would be tempted to acquire and expand fee-based financial businesses, because they would effectively be untaxed. One can imagine Citigroup's ACE incentivizing it to acquire Fidelity. The authorities would need to keep those fee-based businesses in traditionally-taxed affiliates.

Wise design can reduce arbitrage. First, the allowance for equity should apply to a wide array of financial firms: not just commercial and investment banks, but also other financial firms that are taxed as corporations and subject to capital adequacy regulation, such as insurance firms, other financial firms, and asset managers.[87] (Private equity funds, hedge funds, and mutual funds are generally not taxed as corporations and are thus unaffected.) Begin with the banks, but do not end with them.

Second, the offsetting limit to interest deductibility should target, either entirely or in major part, a sector-wide financial instrument. This tax should resist activity shifting because it's the instrument that is taxed, not the institution. For example, if the offsetting tax was on short-term repurchase agreements (which are seen by many as an unstable part of the financial system) wherever held (as opposed to just those held by banks), the incentive to move these instruments from banks to the less-regulated shadow banking sector would diminish.

86. The circular investment problem and the Belgian and Italian resolution are analyzed in ORG. FOR ECON. CO-OPERATION & DEV., OECD TAX POLICY STUDIES: TAX POLICY REFORM AND ECONOMIC GROWTH (2010); Shafik Hebous & Martin Ruf, *Evaluating the Effects of ACE Systems on Multinational Debt Financing and Investment* (CESifo Working Paper No. 5360, 2015), http://ideas.repec.org/p/ces/ceswps/_5360.html [http://perma.cc/QG8S-YHJN]; Ernesto Zangari, *Addressing the Debt Bias: A Comparison between the Belgian and the Italian ACE Systems* (Eur. Comm'n Taxation Papers Working Paper N.44-2014, 2014), http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_44.pdf [http://perma.cc/7ZLA-9R98].

87. *Asset Managers Told to Hold More Capital: Regulators Scrutinise Balance Sheets to Reduce Systemic Risk*, FIN. TIMES (Sept. 16, 2016), http://www.ft.com/content/e0817f36-7a8a-11e6-ae24-f193b105145e [http://perma.cc/YZ8F-L6P6].

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Third, keep in mind that the larger enterprise is not necessarily less stable: the price of Citigroup's previously noted acquisition of Fidelity was that the combined entity would have noticeably more equity than the standalone Citigroup. (And even today Citi could acquire Fidelity and shield Fidelity's fee-based income from taxation, if Citi financed the acquisition via debt.) Financial stability might well, on net, be enhanced even with an ACE-based acquisition.

Overall, a tax reform favoring equity in financial institutions and debt in non-financial corporations should lead equity to migrate from non-financial companies to the financial system, with debt migrating in the opposite direction. Because risk in the financial system is more dangerous than the debt-based risk in non-financial corporations, this migration will, on balance, lead to a more robust economy. Hence, the first-order net arbitrage enhances systemic safety. Tax arbitrage after reform would be less systemically-damaging than it is now, because equity would be tax favored, and therefore sought after.

B. The Cost of Finance When Taxing Banks Properly

When regulators seek to raise the capital required of banks, bankers argue that equity is expensive and that debt is cheaper.[88] Hence, regulation that forces banks to use more costly equity will, they say, shackle them with higher financing costs, which they would pass on by charging borrowers more and paying depositors less.

1. Evening Up

However apt these counters are for command-and-control regulatory capital requirements (and we have reservations about their persuasiveness even there), they are irrelevant for tax debiasing. Because the goal is to make capital choices neutral between debt and equity, with the overall tax bite the same, the overall cost of funding to the banks should be unchanged.

When banks say equity is cheaper than debt, they are largely pointing to the fact that debt is cheaper on an after-tax basis than equity. But the proposal here would even up the score, not raise their overall cost of capital.

88. Douglas J. Elliott, *Higher Bank Capital Requirements Would Come at a Price*, BROOKINGS (Feb. 20, 2013), http://www.brookings.edu/research/papers/2013/02/20-bank-capital-requirements-elliott [http://perma.cc/8BZX-STY6]. For sharp criticism, see ADMATI & HELLWIG, *supra* note 19, at 100-14; Anat R. Admati, Peter M. DeMarzo, Martin F. Hellwig & Paul Pfleiderer, *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Socially Expensive* 23 (Stanford Rock Ctr. for Corp. Governance, Working Paper No. 161, 2016), http://ssrn.com/abstract=2349739 [http://perma.cc/73LW-U76L].

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2. Facilitating the Liquidity Buffer

The ACE will lower other costs of bank safety. Consider regulation that requires banks to own easily sellable government securities.[89] (The concept is that if the bank suffers a cash-crunch, it can raise cash immediately by selling these securities.) But today, if the bank finances the securities with short-term inexpensive debt, the bank may well be made no safer; and given the tax deductibility of interest, the bank is incentivized to finance the regulatory-required government debt with short-term borrowings. Yet the systemically safest way to finance the government securities is for the bank to use equity. But with the bank taxed today on the interest income on the securities, the bank's shareholders' net income would be below the low-risk government interest rate. The investors in the bank's stock would be better off buying the government debt directly. The Appendix shows the bank's and its stockholders' incentives to undermine the safety features of the requirement and how an allowance for equity neutralizes those incentives to undermine.

3. Redistributing Tax Benefits Within the Financial Industry

The reform would redistribute tax benefits within the banking industry, altering the relative tax bill. Banks with high leverage would be taxed more; banks with low leverage would be taxed less. Thus some banks already with low leverage would be favored. This is a functional advantage of the proposal: the tax reform would favor safer banks.

Our proposal would reduce any too-big-to-fail subsidy to banks, however, which will make previously too-big-to-fail banks have a higher private cost of capital because they will lose that subsidy. This shift is legitimate and good policy. It provides some banks an incentive to oppose the proposal.

VII. Taxing Banks Improperly in Congressional Reform Proposals and Around the World

Around the world, different ways to tax banks—levies on debt, taxes on financial transactions, surcharges on profits—are proposed and implemented. Most are misguided or weak; some are systemically dangerous.

89. *Basel III*, *supra* note 19.

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A. Taxing Banks Improperly: Bank Levies

Bank levies tax the bank's overall size, or its aggregate debt.[90] President Obama first proposed such a bank levy in 2010[91] and again in 2015,[92] as did the Republican chair of the House Ways and Means Committee in 2014.[93] Several European nations have enacted them. These levies are often justified as payback for government support during the financial crisis[94] and sometimes defended as a tool to bolster safety.[95]

But at the rates enacted and proposed, these bank levies cannot be viewed as serious regulatory tools because the tax rates for the levies are too low to improve financial safety much. They disadvantage debt, yes, but at only about one-tenth of the level that the current deductibility of interest advantages debt: The bank levies aim to tax the principal amount of bank debt by between five-hundredths and three-tenths of a percentage point for each dollar of targeted debt the bank has on its books. So a levy on a $100 million, 3% interest loan to a bank would range from $50,000 to $300,000 annually. But with corporate tax rates in the United States at 35%, the basic corporate tax deduction for interest reduces the cost of the 3% loan to the bank by about $1,000,000 annually, because the $3,000,000 in interest reduces the firm's gross taxable income, which is taxed at 35%. That $1 million tax saving is between three and twenty times larger than the tax cost from the levies that have been enacted or are actively discussed. The new post-2017 corporate rate of 21% reduces that disparity to between twice and about ten times larger.

Therein lies bank levies' limit: they do not reverse the distortion from the deductibility of interest and, hence, their impact will be weak. To have a major safety impact, a levy would have to be high and targeted at the riskiest bank activities. But if high, it will weaken banks unless they are given other tax relief.

90. *See A Fair and Substantial Contribution by the Financial Sector: Final Report for the G-20*, INT'L MONETARY FUND (2010), http://www.imf.org/external/np/g20/pdf/062710b.pdf [http://perma.cc/JK7J-TZ4K].

91. Richard T. Page, *Foolish Revenge or Shrewd Regulation? Financial-Industry Tax Law Reforms Proposed in the Wake of the Financial Crisis*, 85 TUL. L. REV. 191, 197 (2010); Press Release, The White House, Financial Crisis Responsibility Fee Fact Sheet (2010), http://obamawhitehouse.archives.gov/the-press-office/president-obama-proposes-financial-crisis-responsibility-fee-recoup-every-last-penn [http://perma.cc/QB5K-2GKN].

92. *General Explanations of the Administration's Fiscal Year 2016 Revenue Proposals*, U.S. DEP'T TREASURY 160 (2015), http://www.treasury.gov/resource-center/tax-policy/Documents/General-Explanations-FY2016.pdf [http://perma.cc/Q9ZC-NG2L].

93. Tax Reform Act of 2014, H.R. 1, 113th Cong. (2014).

94. Press Release, The White House, President Obama Proposes Financial Crisis Responsibility Fee to Recoup Every Last Penny for American Taxpayers (Jan. 14, 2010), http://obamawhitehouse.archives.gov/realitycheck/the-press-office/president-obama-proposes-financial-crisis-responsibility-fee-recoup-every-last-penn [http://perma.cc/ZJL4-YWCE].

95. EXEC. OFFICE PRESIDENT, ECONOMIC REPORT OF THE PRESIDENT 225-29 (2015).

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B. *Taxing Banks Improperly: Weak and Destructive Proposals in Political Discourse*

We here note relevant taxation proposals in current political discourse.

The most prominent proposed corporate tax reform in tax policy circles would allow corporations to deduct dividends paid, just as they can now deduct interest.[96] As we analyzed in Part IV, such a reform would work well for *industrial* firms, which tend to retain cash beyond what is efficient. But for financial firms, a dividend deduction would degrade safety severely, because to even up the taxation of equity with debt, the bank must declare and pay out a dividend, which drains cash from the bank, thereby weakening it.

1. Pigouvian Tax Add-Ons

Targeted bank taxes have been conceptualized as "Pigouvian," named for Arthur Pigou, who showed how activities causing externalities, like pollution, could be taxed at a rate reflecting their social cost.[97] Bank activities that risk damaging the economy are like pollution and can be taxed to reduce their incidence to proper levels.[98]

But targeted Pigouvian taxes face the same information problems as direct command-and-control type regulation. Authorities must target the correct risky features, which is a daunting task. Worse yet conceptually, Pigouvian add-ons make little sense when the overall tax framework heavily subsidizes debt: the tax system pushes financial firms to produce the "pollution" that Pigovian reformers then seek to abate by taxing that pollution.

Pigouvian thinking underlies the most popular financial tax reform around the world: the financial transactions tax,[99] often called a Tobin-tax, after James Tobin,[100] the Nobel winner who promoted the idea.

2. The Financial Transaction Tax

The concept behind the Tobin-tax on financial transactions is that excessive financial trading is destabilizing and believed to increase financial volatility with excessive market swings, so taxing transactions would reduce trading and

96. S. COMM. ON FIN., THE BUSINESS INCOME TAX, BIPARTISAN TAX WORKING GROUP REPORT 34-38 (2015); Stephen K. Cooper & Kaustuv Basu, *Finance Committee May Soon Unveil Corporate Integration Draft*, 150 TAX NOTES 300 (Jan. 18, 2016). Reuven Avi-Yonah and Amir Chenchinski show that the dividend deduction does much that is needed. *See* Reuven S. Avi-Yonah & Amir C. Chenchinski, *The Case for Dividend Deduction*, 65 TAX LAW 3, 3-4 (2011).

97. A.C. PIGOU, THE ECONOMICS OF WELFARE (1920).

98. Enrico Perotti & Javier Suarez, *A Pigovian Approach to Liquidity Regulation*, 7 INT'L J. CENT. BANKING 3 (2011).

99. *Commission Proposal for a Council Directive Implementing Enhanced Cooperation in the Area of Financial Transaction Tax*, COM (2013) 71 final (Feb. 14, 2013).

100. James Tobin, *A Proposal for International Monetary Reform*, 4 E. ECON. J. 153 (1978). Tobin's proposed tax targeted foreign currency trading.

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volatility. Although prominent and politically popular,[101] it has sharp limits in promoting overall bank safety.

First, banks can take on large risks without trading. A risky loan portfolio, which need not trade at all, is all it takes. Second, the tax is easy to avoid, by moving the locus of the trade to another jurisdiction without the tax. Several European nations enacted Tobin taxes that gathered little revenue, because trading went abroad.[102] Third, evidence indicates that the tax makes finance more volatile (because it discourages trading, leading to pricing leaps and falls).[103]

3. Systemically Destructive Surcharges

Worse yet, the tax direction today in some nations will weaken financial firms. Britain in 2015 degraded its bank tax system. It had previously enacted a small bank levy, but then replaced it with an eight percent surcharge on bank profits.[104] A bigger tax on profits is a bigger tax on equity, which will incentivize British banks to reduce their equity levels. This British reform is exceedingly unwise, moving in precisely the wrong direction.

4. The 2017 Tax Reform

As this Article was moving into its final form, Congress completed a major tax reform.[105] The new law will change the corporate tax rate, which is the rate banks pay, and affect bank safety for the better. The corporate tax rate will fall from 35% to 21%.[106] That will affect banks directly in the ways suggested in the discussion around Table 1. Banks will, we predict, be less opposed to equity financing and will be comfortable with about a 2.4% equity level higher than their comfort level now.

Moreover, with operating firms' equity taxed more favorably than it is now, American firms would have less demand for debt and more for equity, somewhat shrinking the financial sector, albeit to an uncertain extent. And, lastly, the bill

101. See Shelley Marshall, *Shifting Responsibility: How the Burden of the European Financial Crisis Shifted Away from the Financial Sector and Onto Labor*, 35 COMP. LAB. L. & POL'Y J. 449, 472 (2014) (noting that there is "support across much of Europe [for a] financial transaction tax"); Editorial, *The Need for a Tax on Financial Trading*, N.Y. TIMES (Jan. 28, 2016), http://www.nytimes.com/2016/01/28/opinion/the-need-for-a-tax-on-financial-trading.html [http://perma.cc/44YL-F67R].

102. C.R., *Do Tobin Taxes Actually Work?*, ECONOMIST (Sept. 10, 2013), http://www.economist.com/blogs/economist-explains/2013/09/economist-explains-1 [http://perma.cc/D5N4-U7WJ]. For a review of the academic literature, see Gunther Capelle-Blanchard & Olena Havrylchyk, *The Impact of the French Securities Transaction Tax on Market Liquidity and Volatility*, 47 INT'L REV. OF FIN. ANALYSIS 166 (2016).

103. Anna Pomeranets & Daniel G. Weaver, *Securities Transaction Taxes and Market Quality* (Bank of Canada Working Paper No. 2011-26, 2013), http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2214058_code1770334.pdf [http://perma.cc/Y6HU-XKKS].

104. Finance (No. 2) Act 2015, c. 33 (Eng.). Section 16 of the Act lowers the levy on bank liabilities in steps, from 2016 to 2021. Section 17 adds the eight percent surcharge on bank profits.

105. Tax Cuts and Job Act, Pub. L. No. 115-97, 131 Stat. 2054 (2017).

106. *Id.* § 13001.

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would limit the tax deductibility of interest to 30% of a firm's base income.[107] This would also reduce the economy's demand for lending from the financial sector, also to an uncertain extent.

Uncertainties remain. Commentary indicated a belief that the corporate tax rate was, although formally "permanent," at serious risk of being raised by a near-future Congress, because of controversy, future revenue needs, and the partisan nature of its passage. (Since the law passed without Democratic votes, it's thought to be vulnerable to change if control of Congress and the Presidency change.[108]) The lack of confidence in the stability of some of the tax changes in Table 1 that benefited bank equity undermined banks' confidence in fully adjusting to the incentives. The rate change will still substantially incentivize banks to use less equity than is optimally safe; an ACE on nonregulatory equity would still be the best way to proceed.

C. The Propitious Political Economy of Taxing Banks Properly

Is bank-based tax reform here politically viable?

1. How Strongly Will Banks Oppose It?

Banks have less incentive to oppose being taxed properly than to oppose equally efficacious command-and-control regulation. Because the tax fix should not take more money out from the banks, it will cause banks less pain than does tighter capital and activity regulation. And small banks, which are politically powerful, tend to be better capitalized already, so they could well support the reform.

True, banks will not powerfully promote the reform; they and their executives are accustomed to current bank taxation. Properly taxing banks will also reduce any too-big-to-fail subsidy to banks, which benefits bank equity and, derivatively, bank management. But if regulators persuaded banks that the regulators could forgo the next level of command-and-control regulation, then banks might be enticed to go along.

2. Deposits are Politically Untouchable

Bank liabilities include retail deposits. While a safety-oriented tax reform need not distinguish insured deposits from other borrowings, there are reasons to do so. On safety, insured deposits do not run as quickly in a crisis as other

107. *Id.* § 13301. Since the limitation is based on net interest expense (interest income minus interest expense), the limit would not affect bank taxation here, because banks' interest income is nearly always higher than their interest expense.

108. Rebecca Kysar & Linda Sugin, *The Built-In Instability of the G.O.P.'s Tax Bill*, N.Y. TIMES (Dec. 19, 2017), http://www.nytimes.com/2017/12/19/opinion/republican-tax-bill-unstable.html [http://perma.cc/G55P-W3UA].

Electronic copy available at: https://ssrn.com/abstract=2767151

bank debts. On practical politics, regulators will not want to tax retail deposit liabilities unfavorably.

Reform that increases the taxation of bank debt need not affect insured deposits. U.S. banks have half of their funding coming from deposits, with equity funding nearly ten percent and the remaining forty percent coming from non-deposit debt.[109] At this proportion, the nondeposit debt on which the tax reforms would operate amounts to a hefty four times the level of equity, meaning that even a deposit-exempt proper taxation of banks can be efficacious.

3. Fix It All

Purists might object to changing how banks are taxed with the view that *all* of corporate tax needs to be fixed, not just that for banks.

We sympathize with this view, but would not want to make the perfect the enemy of the very good. Waiting for a full corporate debt-equity tax reform probably means no bank-safety tax reform at all. Substantial corporate tax reform proposals emerged from the U.S. Treasury in 1992, but did not move through Congress. The best political economy explanation for the failure was not that highly motivated interests killed the proposal, but that some executives preferred the current corporate tax, because it discourages distributions and facilitates the executives' desire to retain cash.[110] And the tax-equalizing reform for industry must differ from that for finance anyway. The recent tax reform that will lower the corporate tax rate to twenty-one percent does not address bank taxation directly, but as noted above should have a noticeable but incomplete impact on bank safety.

A practical impediment to the proposal here is related. The congressional committee handling bank legislation is not the same as the one handling tax legislation—e.g., the House Committee on Financial Services for the former, Ways and Means for the latter.[111] Our proposal is addressed to the financial regulators, but they, even if convinced, may be less able to influence congressional tax committees than banking committees.

Conclusion

The next regulatory frontier for making finance safer should be to restructure the corporate taxation of financial firms. Interest should no longer be

109. See Kevin Buehler, Peter Noteboom & Dan Williams, *Between Deluge and Drought: The Future of US Bank Liquidity and Funding—Rebalancing the Balance Sheet During Turbulent Times* 3 ex.1 (McKinsey Working Papers on Risk, No. 48, July 2013), http://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Risk/Working%20papers/48_Future%20of%20US%20funding.ashx [http://perma.cc/EAE9-ZBAR].

110. Arlen & Weiss, *supra* note 44, at 327-28. The issue then was integration of corporate and personal taxation.

111. *See* Rules of the House of Representatives, Effective for One Hundred Twelfth Congress (Jan. 5, 2011) (House Rule X(1)(h), (t)).

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taxed favorably, at least at the margin, while equity is taxed unfavorably. Evening up the two will create better incentives for safety in finance. The tax change will incentivize banks to use more equity and less debt.

We analyzed four tax reforms that would greatly increase financial safety in a sequence moving from the most general (and most effective) to the most targeted and most politically and technically viable. The first would comprehensively reform corporate taxation of both nonfinancial and financial firms. We add as a rationale for a system-wide fix that it will increase financial safety via two channels: the financial sector would lose the tax-based bias for debt and separately, the industrial sector would demand less lending from the financial sector.

The next most general tax reform would reform bank taxation by eliminating the deduction for interest. The change would widen the tax base for financial firms and rates could drop precipitously. That base-widening and rate-lowering comports with prevailing American tax norms, but has major drawbacks. The just-enacted cut in the corporate tax to twenty-one percent should reduce banks' preference for debt, which is useful for bank safety. More could be done, as our extrapolation from the studies done thus far points to reducing the aversion to equity by 2.4%, but a preference for 6% or more of extra equity is plausible to achieve by fully evening out the tax costs of debt and equity.

The third general reform would focus on equity, allowing banks to deduct an allowance for their cost of equity. It would narrow the tax base sharply and reduce revenue from bank taxation. But debt-based offsets can make the reform revenue neutral. An obvious offset would be a levy on bank liabilities. Another would be to reduce the deductibility of nondeposit interest payments, particularly on the systemically riskiest debt.

The core of our preferred solution, the fourth we analyze, is to allow banks a deduction for the cost of their equity that exceeds the regulatory minimum. That deduction would make additional bank equity as tax-attractive as debt. This fix best combines safety enhancement, minimal disruption to the extant tax system, and political viability. Because our preferred reform would only apply to the portion of equity that the bank has above the regulatory required level, the offsets needed for revenue neutrality would be modest.

The reform would better align the incentives of bank shareholders and bank executives with the public interest in financial safety and stability. If we have reached the limits of command-and-control regulation either as a policy or as a political matter, but have not yet made the financial system as safe as it needs to be for continued prosperity, it is time to turn to reforming the banks' real incentives. And if the command-and-control progress thus far made is rolled back, then the tax alignment strategy that we push forward needs even more urgently to be high on the agenda for containing systemic risk.

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Appendix A: Tax Cost to Goldman Sachs by Capitalizing at IMF/FDIC Best Safety Level

The International Monetary Fund estimates that bank capital-to-asset ratios between 8.5% and 13% would have avoided between 70% and 80% of past banking crises in the world's richer nations.[112] U.S. Federal Deposit Insurance Corporation estimates are similar.[113]

Here we estimate the tax impact of banks reaching that safety level. The FDIC estimates that U.S. banks' non-risk-adjusted capital is now on average 5.75% of assets, with larger banks having lower than average capital. Goldman Sachs, for example, is at 4.4%.[114] Goldman would need to approximately double its capital to be at the IMF's minimum safety goal and triple it to be at the top safety level.

If Goldman Sachs sought to, or were required to, reach the lower IMF goal, without changing the bank's size, it would need roughly $80 billion more in equity and would reduce its debt by the same amount.[115] If it sought to or were required to reach the upper goal, it would need more than $160 billion in additional equity.

How much tax would Goldman have to pay to substitute this new equity for debt? That cost depends on what debt it would retire and what interest rate it paid on that debt. Current interest rates in 2017 are at near-historical lows, with Goldman's interest expense in 2016 at about 0.9% of its overall debt and about 5% on its long-term subordinated debt.[116] A future effort to get to the highest IMF goal could require Goldman to substitute the new equity for debt paying a more typical long-term 7% interest.

112. The relevant IMF staff paper is Dagher et al., *supra* note 20. This 8.5% to 13% target ratio is not weighted for the riskiness of the bank's assets.

113. Thomas M. Hoenig, Vice Chairman, FDIC, Statement on the Semi-Annual Update of the Global Capital Index (Sept. 20, 2016), http://www.fdic.gov/news/news/speeches/spsep2016.html [http://perma.cc/AZ7Y-2ZDY].

114. *Global Capital Index: Capitalization Ratios for Global Systemically Important Banks (GSIBs) Data as of June 30, 2016,* FDIC, http://www.fdic.gov/about/learn/board/hoenig/capitalizationratio2q16.pdf [http://perma.cc/3EJ2-AF7T]. The American Federal Deposit Insurance Corporation uses the higher International Reporting Standard's asset calculation rather than the United States' generally accepted accounting principle calculation. The differences come from different risk-weighting rules and differing rules on netting similar obligations and assets. Netting will decrease the total asset level (as well as the total liability level). But the bottom-line result of more debt sharply increasing the tax bill does not change.

115. FDIC, supra note 114. The FDIC estimates Goldman Sachs IFRS assets to be $1,902 billion. Its total capital approximates .044*$1,902 billion, or $83 billion. The IMF's projection of 13% to avoid most banking crises would need .13*$1,902, or $247 billion, an increase of about $160 billion. (U.S. GAAP assets would be about half as much; the earlier capital goals for the IMF, stated *supra*, note 20, were based on the lower U.S. GAAP asset calculation. Using those numbers, with a higher target capital level and higher equity level, would lead to a similarly very high percentage of 2016 profits absorbed by the lost tax advantage of deductible debt.)

116. *Bonds*, FIN. INDUS. REG. AUTH. (JAN. 1, 2018), http://finra-markets.morningstar.com/BondCenter [http://perma.cc/PEB7-B472].

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The following table shows the Goldman's increased tax bill as a portion of 2016 profits[117] from reaching the IMF's highest capital goal, under three different interest rate assumptions: that the new equity is substituted for (1) primarily short-term debt at the current historically low interest rate, (2) primarily long-term debt at the current historically low interest rate, and (3) primarily long-term debt at a more typical long-term interest rate. (Using the lowest IMF goal would have results half as large.)

The tax hit when short-term interest rates are low, at 3.3% to 6.6% of current profits may seem small (depending on whether we assess the IMF's low or high estimate) and might be dismissed as unlikely to affect bank behavior. But in a hyper-competitive financial marketplace where investment bankers fight for a few hundredths of a percentage point in yield, it would not be ignored. Financial players seem ready to alter behavior for competitive advantage to capture a few hundredths of a percentage point of interest for themselves and their organization.[118] And the impact of the substitution being for long-term debt at normal interest levels is tremendous, amounting to *one-half* of 2016 profits.

Table 9

Impact of Goldman reaching IMF's high safety goal of $160 billion increased capital as a percentage of 2016 profit

	Current overall interest rate for Goldman of 0.9%	*Current long-term interest rate for Goldman of 5%*	*Long-term interest rate of 7%*
Tax increase	0.9% * $160 billion * 35% = $504 million	5% * $160 billion * 35% = $2.8 billion	7% * $160 billion * 35% = $3.18 billion
Percentage of 2016 profit of $7.57 billion	6.6% of profit (from 504/7570)	37% of profit (from 2.8/7.57)	**51.8% of profit (from 3.18/7.57)**

This table shows the impact of equity increases on Goldman's 2016 tax bill as a percentage of those profits. Instead of the main regulatory ratio of equity to risk-weighted assets, we use an approximation of the bank's "leverage" ratio—that is, equity as a percentage of total assets (as calculated under International Financial Reporting Standards rules). That level is about 4.14% for Goldman, with its risk-weighted ratio higher. The leverage ratio corresponds more closely than the regulators' risk-weighted ratio to what is taxed. The equity levels we use for the estimates are the IMF's highest goal—13%. For the debt that the equity would replace, we estimate results for Goldman's current average interest paid, its current long-term interest rate, and a more typical long-term interest rate of 7%. This yields several plausible estimates. Estimating the impact of the lower IMF goal would yield results about half as large. Using the recently

117. By reducing interest payments, reduced debt will also change overall profit levels.
118. *See* Stein, *supra* note 14.

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enacted corporate tax rate of 21% changes the bottom right extrapolation to have the IMF/FDIC safety goal to about 30% of Goldman's 2016 profits. Still not a small hit to after-tax profit.

Appendix B: Negative Tax Impact on Bank from Regulatory Requirement to Hold Liquid Treasuries

The current tax structure discourages banks from holding low-risk liquid securities like U.S. Treasuries. Here, we show why that is.

Posit that regulators require that banks like Citibank hold more low-risk government securities, as they generally have been.[119] Assume it must hold $100 billion of U.S. Treasury bonds, of any maturity, and, seeking the best rate, Citi chooses a long-term bond with a five percent interest rate.[120]

Citibank could finance these bonds by borrowing $100 billion or by raising $100 billion in equity. If it borrows, then the interest earned on the bonds is offset by the interest paid to the financing source, yielding no tax under the current system. But if it finances the bonds with new safe equity, then the bank would pay about $1.75 billion in additional tax, from thirty-five percent (the current corporate tax rate) of $5 billion. Citi's stockholders will obtain only $3.25 billion of Citi's $5 billion, with the rest going to the Internal Revenue Service. Equity investors in the bank today would see the investment as a loss-generating part of the bank's portfolio. They would be better off holding the Treasury bonds directly, instead of paying the $1.75 billion in taxes to the government. Hence, banks and their investors, for their own private reasons, resist this type of safety-enhancing regulation.

If the bank invests in long-term Treasury bonds and finances that purchase with new short-term borrowing at a lower interest rate, then the transaction could be profitable for the bank, but would not make the bank any safer. Although possessing the liquid Treasury bonds would make the bank safer, that safety would largely be offset or exceeded by the bonds being financed by short-term runnable debt.

However, with the allowance for corporate equity, the bank could deduct the cost of equity from its Treasury bond income; hence, the bank would no longer have a tax reason to avoid equity financing. Tax reform thereby helps the regulators facilitate safety by affecting the banks' asset mix (more low-risk government debt) as well as by affecting the banks' financing structure (more stable, safety-enhancing equity).

The impact on the after-tax cost of equity should be the same as the after-tax cost of the added debt. This follows from the well-known Modigliani-Miller theorem,[121] and can be intuited by considering a corporation whose single asset

119. As is now required. *Basel III*, *supra* note 19.

120. That rate is higher than today's historically low rates. But, five percent or higher is both more typical for long-term rates and more intuitive to calculate.

121. Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance, and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958).

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is that $100 billion Treasury bond. Because the bond provides the equity holders with $5 billion in income, they will value the firm at $100 billion and expect $5 billion in income annually; this corresponds to the last column of our table below. If it instead provided them with only $3.75 billion in annual income because the income is taxed unfavorably, then they will value that investment at only $65 billion, which corresponds to the table's third column.

The following table calculates the results for each of these scenarios. (Had the table been constructed with the new 21% corporate tax rate, the differences would persist, but narrow. The new 21% rate would lead to an increase of the after-tax income in the first column from $2.6 billion to about $3.2 billion; it would reduce the loss at the bottom of the third column of equity financing to about $1 billion. The differential would narrow under the new rate but would persist as substantial.)

Table 10: Financing $100 billion of U.S. Treasury 5% securities under various assumptions

	Financed by short-term 1% debt	*Financed by long-term 5% debt*	*Financed with equity under current tax law*	*Financed with equity under a 5% allowance for corporate equity*
Income	$5 billion	$5 billion	$5 billion	**$5 billion**
Financing cost	($1 billion)	($5 billion)	(no interest deduction)	**($5 billion ACE)**
Taxable Income	$4 billion	0	$5 billion	**0**
Tax Bill at 35%	($1.4 billion)	0	($1.75 billion)	**0**
After-tax income	$2.6 billion	0	$3.25 billion	**0**
Net	**$2.6 billion**	**0**	**($1.75 billion loss)**	**0**
Note:	By increasing its short-term, runnable debt, bank increases illiquidity and interest rate risk.	Taxable income zeroes out, but safety muted as bank debt rises.	Safety enhanced by equity financing, but bank loses money. Investors prefer to buy the Treasuries directly.	Safety enhanced with no after-tax loss.

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