CAPCO

Journal

THE CAPCO INSTITUTE JOURNAL OF FINANCIAL TRANSFORMATION

Regulatory

The Volcker Rule as Structural Law: Implications for Cost-Benefit Analysis and Administrative Law

John C. Coates

RISK

Download the full version of The Journal available at CAPCO.COM/INSTITUTE

RECIPIENT OF THE APEX AWARD FOR PUBLICATION EXCELLENCE

#43
05.2016

EMPOWERING THE [FINANCIAL] WORLD

Pushing the pace of Financial Technology, together we'll help our clients solve technology challenges for their business – whether it's capital markets in Mumbai or community banking in Macon.

We leverage knowledge and insights from our clients around the world:

20,000 clients in towns everywhere are becoming more efficient, modern and scalable.

27 billion transactions processed help solve clients' challenges — big and small.

$9 trillion moved across the globe in a single year empowers our clients' communities to build storefronts, homes and careers.

55,000 hearts and minds have joined forces to bring you greater capabilities in even the smallest places.

Empowering the Financial World

FISGLOBAL.COM

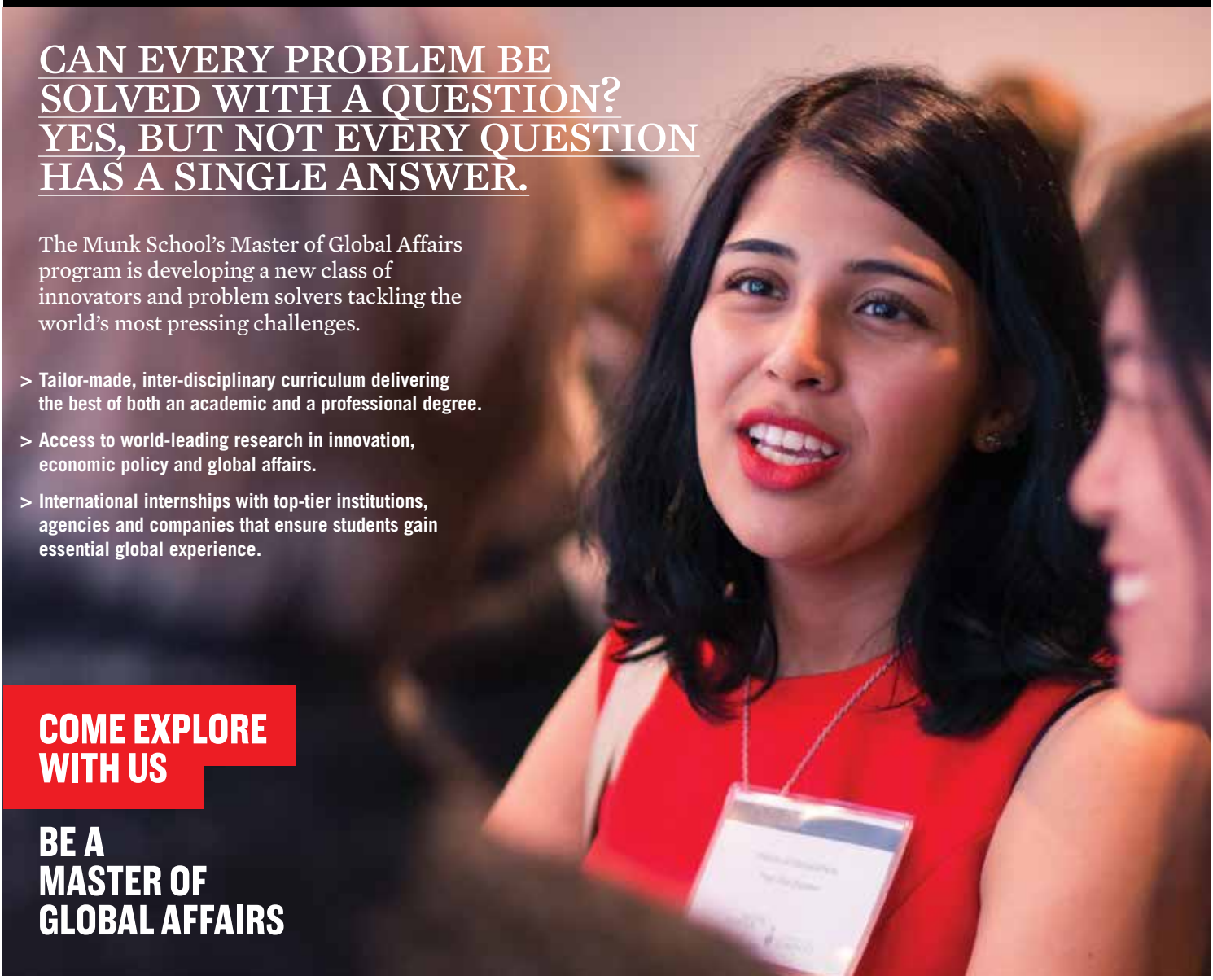
FIS

Journal

The Capco Institute Journal of Financial Transformation

Recipient of the Apex Award for Publication Excellence

WHAT ARE THE DRIVERS AND DISRUPTIONS THAT DETERMINE INNOVATION AND PROSPERITY?



CAN EVERY PROBLEM BE SOLVED WITH A QUESTION? YES, BUT NOT EVERY QUESTION HAS A SINGLE ANSWER.

The Munk School's Master of Global Affairs program is developing a new class of innovators and problem solvers tackling the world's most pressing challenges.

- > Tailor-made, inter-disciplinary curriculum delivering the best of both an academic and a professional degree.
- > Access to world-leading research in innovation, economic policy and global affairs.
- > International internships with top-tier institutions, agencies and companies that ensure students gain essential global experience.

COME EXPLORE WITH US

BE A MASTER OF GLOBAL AFFAIRS

MUNKSCHOOL.UTORONTO.CA
MGA@UTORONTO.CA

MUNK SCHOOL OF GLOBAL AFFAIRS
UNIVERSITY OF TORONTO

Risk

New Entrants

Regulatory

Investment

The Volcker Rule as Structural Law: Implications for Cost-Benefit Analysis and Administrative Law*

John C. Coates – John F. Cogan Jr. Professor of Law and Economics, Harvard Law School

Abstract

The Volcker rule, a key part of Congress's response to the financial crisis, is best understood as a "structural law," a traditional Anglo-American technique for governance of hybrid public-private institutions such as banks and central banks. The tradition extends much farther back in time than the Glass-Steagall Act, to which the Volcker Rule has been unfavorably (but unfairly) compared. The goals of the Volcker Rule are complex and ambitious, and not limited to reducing risk directly, but include reshaping banks' organizational cultures. Another body of structural laws, part of the core of administrative law, attempts to restrain and discipline regulatory agencies, through process requirements such as cost-benefit analysis (CBA). Could the Volcker rule be the subject of reliable, precise, quantified CBA? Given the nature of the Volcker rule as structural law, its ambitions, and the current capacities of CBA, the answer is clearly "no," as it would require regulators to anticipate, in advance of data, private market behavior in response to novel activity constraints. If administrative law is to improve regulatory implementation of structural laws such as the Volcker Rule, better fitting and more nuanced tools than CBA are needed.

* Reprinted with permission from the Capital Markets Law Journal, Oxford University Press, Volume 10 Issue 4. I thank Jody Freeman, Jeff Gordon, Stephen Kane, Todd Rakoff, Meg Tahyar, and an anonymous referee for useful comments and suggestions. Remaining errors are mine.

The best known section of Congress's response to the financial crisis – the "Volcker Rule," section 619 of the Dodd-Frank Act[1] – is a "structural law," with implications for efforts to use cost-benefit analysis (CBA) to enhance regulatory accountability as the rule and others like it are implemented. After briefly characterizing structural laws, this article places the Volcker Rule in historical context, as part of a long tradition of Anglo-American attempts to use structural laws as a technique for governance generally, and of hybrid public-private institutions such as banks and central banks in particular. The article then outlines how another set of laws and institutions, developed later and reflected in administrative law, have been used to constrain regulatory agencies, including those overseeing capital markets, by imposing special procedures and analytical requirements before rules can be changed, such as "CBA," to enhance the policy-neutral accountability of the agencies, but also as a non-neutral political tool of the banks themselves. Finally, the article asks whether, as others have argued, structural laws such as the Volcker Rule should be subject to legally mandated, quantified CBA. Unlike some commentators[2] the article gives an answer, no, that is both consistent with U.S. legal traditions, and based on common sense, given the nature of the Volcker Rule as structural law and the current capacities of CBA. The analysis here, it is hoped, casts light both on the Volcker Rule and on the potential value (and risks) of legal mandates for CBA in administrative law generally.

A BRIEF HISTORY OF STRUCTURAL LAWS IN ANGLO-AMERICAN FINANCIAL HISTORY

Structural laws generally

Different laws function differently. One type of law, a structural law, attempts to create a "structure" that will organize, constrain, and channel activity. Structural laws create and provide for the governance of organizations (e.g., a regulatory agency, such as the Federal Reserve Board; a quasi-public corporation, such as the Federal Deposit Insurance Corporation; or quasi-private corporations, such as systemically important financial institutions), institutions (e.g., a system of connections, such as a road, computer[3] or payment system; or a market, such as a stock exchange) and physical objects (e.g., the blue mailboxes used by the U.S. Postal Service, buildings, safe deposit boxes, nodes of the internet).[4] Structures can be built by affirmative government action (as with a highway system or the Fedwire payment system) or through laws aimed at private or partly private persons (as with regulations of financial markets such as the New York Stock Exchange).

Not all laws are structural. Many are direct commands aimed at private individuals or entities, such as requirements to pay income taxes. Other laws consist of mandates, to make specified disclosures or to maintain specified capital levels, for example. Others are bans aimed at behavior that is socially undesirable, such as theft and fraud.

The distinction between ordinary laws and structural laws has less to do with their form, than with their goals. Rather than banning an undesirable behavior, as with an ordinary law, structural laws may require transparency, which will lead those covered to alter their behavior, or they may ban otherwise unobjectionable behavior, in order to increase some desirable behavior, or in order to simplify supervision of behavior that can create social risks. Structural laws, in other words, are indirect, and have their effects "ex-ante," in advance of some decision by those affected. As a result, they can be more self-executing than other laws, in the sense that once created, they require lower levels of public enforcement effort. As a result, even if they create large initial compliance and adjustment costs, structural laws are often more efficient at achieving public goals than laws that function as simple commands enforced solely through the fact or threat of criminal prosecution or civil fine. Structural laws, particularly those affecting organizational governance or behavior, often affect remote actors without any self-conscious change in behavior or even affirmative awareness by those affected, can be less likely to generate evasion. Structural laws affecting

1 Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub L No 111-203, s 619, 124 Stat 1376, 1620 (2010) (codified at 12 USC s 1851 (2012)). Section 619 is colloquially called the "Volcker Rule" because former Federal Reserve Board Chairman Paul Volcker was a prominent backer of the law. It is not technically a "rule" in the standard legal usage in the U.S., but part of a statute, now implemented through rules and regulations adopted by designated federal agencies, as discussed below. Also as discussed below, the Volcker Rule applies to "banking entities," rather than to "banks" or "bank holding companies," the customary nouns for regulation in the U.S. In this article, I generally use "bank" in a non-technical sense, to include both technical "banks" under U.S. law, as well as bank holding companies and other entities affiliated with banks, except where indicated otherwise.

2 For example, Committee on Capital Markets Regulation, Committee Issues Statement on Applying the Volcker Rule (18 February 2014) ("we reiterate our concern over the lack of cost-benefit analysis in the Volcker Rule... For a regulation as significant as the Volcker Rule, conducting cost-benefit analysis in accordance with best practices should be an agency priority, even where not required by law.").

3 For example, Lessig, L., 1999, Code and other laws of cyberspace, Basic Books (architecture as a regulator of cyberspace); Reidenberg, J. R., 1998, "Lex informatica: the formulation of information policy rules through technology," 76 Texas Law Review 553, 554 ("Technological capabilities and system design choices impose rules on participants.").

4 I take the mailbox example from Edward K Cheng"s illuminating article, Cheng, E. K., 2005, "Structural laws and the puzzle of regulating behavior," 100 Northwestern University Law Review 655, 662 (noting how the use of uniform steel mailboxes helped greatly reduce the costs of enforcing laws against tampering or stealing mail); see also Katyal, N. K., 2002, "Architecture as crime control," 111 Yale Law Journal 1039, 1042 (analogizing "code" as architecture to actual building architecture as means for reducing crime).

organizational governance or behavior can be more effective than either direct commands or disclosure requirements intended to inform third parties, which depend on those third parties obtaining the information, processing it and acting on it in rational, or at least systematically predictable ways.

Structural laws in finance

Structural laws have long been a core component of Anglo-American legal history. Fundamental structures for government itself – the separation of powers, federalism, for example – are embedded in the U.S. Constitution. In finance, structural laws have also been common and traditional from the outset of modern banking.

Reflecting the mixed public-private character of large banks and systemically important financial institutions (SIFIs), structural laws have been used to serve several purposes, at times complementary and at times competing: to restrain the power of banks, to limit their profitability when privately owned, to protect banks from competition, to reduce systemic risk, and to shelter central banks from political pressures in their management of the money supply.[5]

At its creation, the Bank of England was structurally limited to financial activities by the terms of its charter, reinforced by custom, and so was barred from engaging in nonfinancial activities, such as trade, or, as the Industrial Revolution progressed, manufacturing.[6] It remained a privately owned organization long after it had taken on the public obligations modernly associated with a central bank.[7] But throughout its private existence, it was constrained by structural laws, partly enforced by the terms and conditions of periodic bailouts caused by poorly managed financial panics.[8] In 1844,[9] 1946[10] and 1998,[11] Parliament passed structural laws that radically reshaped the Bank's basic functions, ownership and governance.

In the U.S., too, both the First and Second Banks of the USA had their activities carefully limited by the terms of their charters, and indeed, similar constraints were imposed on all banks and corporations in the early American period.[12] This tradition carried past the Civil War, and constrained (and still constrains) the national banks created by the National Banking Act of 1863,[13] to engage in banking business alone, and also to constrain their geographic reach, typically to a single city, county or state.[14] These privately held banks were seen as necessary for public functions – the creation of a currency and payment system – but were also viewed with suspicion. Likewise, when the Federal Reserve Banks were created in 1913,[15] they were similarly constrained for similar reasons, and their governance a highly negotiated political compromise between regional, sectoral, and partisan interests. The Federal Reserve System more generally has had its governance and powers carefully negotiated and renegotiated through structural laws during its entire existence.[16]

Structural banking laws in the twentieth century

Over the course of the twentieth century, a new feature in the legal landscape affecting finance was the emergence of regulatory agencies.[17] Early structural laws were relatively simple, and were contained in bank charters or statutes. Two things changed this, and led to more detailed and complex structural laws in the finance sector. First, the laws needed to cover the behavior of a greater number of banks and institutions, as a result of growth in the economy and the financial sector, accompanied by a commitment to private enterprise – in both the Jacksonian era and in the Gilded Age – and the continued resistance to a single, dominant central bank. These developments increased the number and significance of banks, generating a need for structural constraints that could be imposed other than through a focused chartering decision. The activities of the banks, trust companies and other financial firms became more complex, too, as the country's markets matured. Bond underwriting, stock issues, mergers and acquisitions, options trading, speculation in the commodities markets, were all features of the late nineteenth and early twentieth century financial system.

---

5 Reduction of systemic risk is now the widely acknowledged primary goal of such laws. On limiting power and limiting profit, see Hammond, B., 1957, Banks and politics in America from the revolution to the civil war, Princeton University Press (recounting battles between national and state bank promoters and among bank and non-bank political interests generally); Jackson, A., 1832, "Veto message," 10 July, http://tinyurl.com/9hmony accessed 29 August 2015 ("The present value of the monopoly [to be granted to the Second Bank of United States] is $17,000,000, and this the act proposes to sell for [$3,000,000]..."); Roe, M., 1994, Strong managers, weak owners, Princeton University Press (noting ways that U.S. financial laws preserved autonomy for corporate managers). On sheltering monetary policy from politics, see Blinder, A., 2004, The quiet revolution: central banking goes modern, Yale University Press; Lastra, R. M., 2006, Legal foundations of international monetary stability, Oxford University Press; Miller, G. P., 1998, "An interest-group theory of central bank independence," 27 Journal of Legal Studies 433; see also Bagehot, W., 1871, Lombard Street, Henry S. King and Co., II.65 ("A trade [such as central banking] peculiarly requiring consistency and special attainment would be managed by a shifting and untrained ruler ... [At least in England,] the practical result ... would ... be bad ... for Government ... to choose" the governors of the central bank).

6 Bank of England Act 1694 (5 & 6 W&M c 20 s 28); Clapham, J. H., 1970, The Bank of England: a history, Cambridge University Press; Carruthers, B. G., 1996, City of capital: politics and markets in the English financial revolution, Princeton University Press; Desan, C., 2014, Making money: coin, currency and the coming of capitalism, Oxford University Press.

7 Bagehot (n 5) II.27 describes the Bank"s public function in plain terms ("great public duty").

8 Ibid II.10.

9 Bank Charter Act 1844 (7 & 8 Vict c 32) (monopolizing note-issuing powers in the Bank, limiting note issuances to reserves in gold plus up to 14 million in government debt).

10 Bank of England Act 1946 (9 & 10 Geo 6 c 27) (nationalizing the ownership of the Bank of England).

11 The Bank of England Act 1998 (Commencement) Order 1998 (1998 No 1120 (c 25)).

12 Hammond (n 5).

13 12 U.S. Code ch 2ff.

14 12 U.S. Code s 24 (Seventh) (limiting national banks to activities "incidental to the business of banking").

15 Act of 23 December 1913, 38 Stat, L 251.

16 Conti-Brown, P., 2015, "The institutions of Federal Reserve independence," 32 Yale Journal of Regulation, 2, 257

17 The first bank regulator, the Office of the Comptroller of the Currency (OCC), supervised national banks, and was created in 1863, but the remaining federal banking agencies were not created until the twentieth century.

Secondly, the goals of structural laws became more ambitious, beyond the kind of constraint on activities reflected in the earlier period. This ambition reflected greater recognition of the importance of a functioning currency, which became acute during the Civil War, that required significantly greater public finance than previous wars. The resulting national system of banks, interconnected to each other and to English banks and trading companies, was capable of transferring capital from and to different parts of the economy. This capacity accompanied and supported the emergence and growth of canal and shipping companies, resource extraction and distribution companies such as Standard Oil, and the great regional and then transcontinental railroads. This system also generated a series of increasingly serious financial crises, however, that led to the formation of the Federal Reserve, and an increasing effort to regulate the financial system as a whole.

With the emergence of regulatory agencies, structural laws took on a different, more complex agenda. Agencies were delegated increasing amounts of authority and discretion to achieve such tasks as governance, risk management, and conflict management. Reserve requirements, loan underwriting standards, and capital requirements were modernized, and other modern features of financial law emerged, first through supervisory guidance and enforcement, then through formal rules and regulations.

These developments were concentrated in the wake of crises and failures – most significantly after the Crash of 1929 and the Great Depression, but they also reflected a combination of interest group politics – as banks began to move into other financial sectors – and the back-and-forth of private efforts to evade existing laws followed by regulatory efforts to combat the evasion. The most famous structural laws enacted in this period were contained in the Banking Act of 1933, which established federal deposit insurance and incorporated the Glass-Steagall Act. That law established a structural regime separating investment and merchant banking (i.e. equity underwriting and equity investment) from commercial banking (i.e. deposit-taking and lending).[18] Shortly later, the Investment Company Act imposed a stringent set of structures on any company that wanted primarily to engage in the business of investing or holding securities and to raise capital from the public.[19]

The same approach was taken, and indeed tightened, in the Bank Holding Company Act of 1956, after banks began to use holding companies to evade the structural restraints of the National Banking Act to move into non-banking financial activities such as insurance and to operate across state lines.[20] Similar structural laws were later imposed on state banks as one of the costs of federal deposit insurance.[21]

Survival of structural laws through the era of "deregulation"

Contrary to popular impression, many important structural laws constraining finance survived the 1970s, 1980s and 1990s, commonly said to be a period of "deregulation" – in truth, "re-regulation," since few banking activities were fully deregulated. Instead, technological and market changes forced traditional limits on product competition to be loosened and price controls on interests rates and geographic market segmentation, all designed to limit competition in the name of safety and soundness, to be eliminated. As these structural limits were being lifted, little thought was given to how reforms in the structure of the financial sector should lead to reforms in the philosophy and structure of supervision and regulation. Most limits on the activities of both banks (national and state) and holding companies remained largely intact, as did the limits on investment companies, even as the limits on "investment banking" in Glass-Steagall Act began to erode. The limits on investment banking were largely eliminated, but not in dramatic fashion, as often suggested. Instead, it occurred over a lengthy period of time, exemption by exemption, exception by exception.[22] Banks (and their lawyers) and regulators negotiated and renegotiated the precise contours of the structural limits imposed by Glass-Steagall, a process that was functionally complete by the early 1990s.[23] Those

18 Perkins, E. J., 1971, "The divorce of commercial and investment banking: a history," 88 Banking Law Journal 483.

19 Coates, J. C., 2009 "Reforming the taxation and regulation of mutual funds: a comparative legal and economic analysis," 1 Journal of Legal Analysis 591.

20 Public Law 511, 84th Congress, ch 240, 2d Session, HR 6227: An Act to Define Bank Holding Companies, Control their Future Expansion, and Require Divestment of their Nonbanking Interests.

21 Federal Deposit Insurance Act s 24 (generally limiting insured bank activities).

22 Different exemptions and regulatory interpretations were exploited by national banks to offer discount brokerage services in a subsidiary (1974), sponsor pooled investment funds equivalent to closed-end funds (1971), offer variable annuities (including equity-like returns) (1993), become members of securities exchanges (1986), advise investment companies (1987), lend securities (1986), manage collective investment retirement accounts (1986) and privately place commercial paper (1989). See Carpenter, D. H., and M. M. Murphy, 2010, "Permissible securities activities of commercial banks under the Glass-Steagall Act and the Gramm-Leach-Bliley Act," Congressional Research Service Report, April 12. Available at:www.crs.gov accessed 29 August 2015. Bank holding companies and non-bank subsidiaries became even more aggressive in pursuing exemptions and interpretations of this kind. Ibid.

23 As a result of these renegotiations, JP Morgan—despite being a commercial, deposit-taking bank—had emerged as a major investment bank by the mid-1990s, competing anew for the same business that it had been forced to divest in the Great Depression (forming Morgan Stanley), and led the underwriting of numerous securities offerings, including underwritings for which the author was counsel to the bank. Chernow, R., 2001, The House of Morgan: an American banking dynasty and the rise of modern finance, Grove Press, tells some of this history well.

negotiations were necessary because, as with the Volcker Rule, the Glass-Steagall Act contained a number of vague terms and phrases, such as "control," "dealing," "affiliated," and "engaged principally."[24] It required follow-up legislation in 1935 to clarify and resolve inconsistencies contained in the initial statute.[25]

The Gramm-Leach-Bliley Act of 1999,[26] the product of the bold attempt at "corporate nullification" of the Glass-Steagall Act and Bank Holding Company Act by Citigroup,[27] had a more dramatic effect. Even it, however, only partially relaxed structural constraints on U.S. banks, and its primary effect was to allow bank holding companies to move into the insurance business, and not to repeal or reverse the Glass-Steagall Act,[28] which (as noted above) had already largely been renegotiated as a major constraint on the ability of large commercial banks to move back into investment banking through affiliates. More importantly, however, is what the Gramm-Leach-Bliley Act did not do. It did not eliminate the basic structural law constraining banks to financial activities.[29] In the period leading up to the financial crisis bank holding companies were, and today still are, limited by this core structural constraint – they did and must still confine their activities to "financial" activities, and are not permitted to engage in manufacturing, trade, or commerce more generally. This core constraint is carefully circumscribed and in some instances, elaborately specified ways – for example, for temporary periods after foreclosure of assets used to secure debts,[30] or pursuant to the capital-limited ability to make merchant banking investments in non-financial portfolio companies.[31] Each of these exemptions is rounded out with lengthy regulations and interpretations.

The Volcker Rule as structural law

In sum, throughout Anglo-American history, structural laws were routinely used to confine systemically important activities (deposit-taking, money markets, and payment systems) to a limited set of entities. These laws, with all the same kinds of ambiguities and line-drawing difficulties that any structural law will create, have thus been operative long before the Volcker Rule was conceived. Paul Volcker would have known the outlines of that history, and it may be presumed to be part of the reason he proposed the rule that carries his name. As one of the most reputable central bankers in U.S. history, Volcker would have known about the long-standing structural limits on banks in the U.S. At a high level of generality, the Volcker Rule is of a kind with many long-standing structural laws in the financial sector, some of which endured, some of which did not.

What, then, briefly is the Volcker Rule, and how does it compare to its predecessor structural laws? The Volcker Rule is an attempt to reduce the risk and improve the governance of U.S. "banking entities" – essentially deposit-taking banks and companies that control such banks – by channeling them into the most basic and traditional core functions of banking – financial intermediation and lending – and away from two types of speculation – "trading" for the account of the bank and indirect investments through unregulated collective investment funds.[32] More specifically, it bans banking entities from engaging in "proprietary trading" or holding "ownership interests" in hedge or private equity funds, subject to a number of exceptions.[33] These definitions were to be further specified by the relevant banking agencies pursuant to delegate rulemaking authority, which (as is conventional) allows for further derogations and interpretations over time. Specific regulations implementing the Volcker Rule were approved (after many delays) in

24 12 USC s 24 (Seventh) (1997).

25 Banking Act of 1935 (23 August 1935) ch 614, 49 Stat 684. This law was 37 pages long, but in fairness, only about a third of it was devoted to amending and clarifying the Glass-Steagall Act, as it also substantially reorganized the Federal Reserve Board structure.

26 Pub L 106-102, 113 Stat 1338, enacted 12 November 1999.

27 On Citigroup"s bold move to buy control of The Travelers, despite being then limited to core banking activities, see PBS, Frontline, "The long demise of Glass-Steagall." Available at: http://tinyurl.com/owk6j accessed 29 August 2015. The phrase "corporate nullification" is from an astute recent article primarily about the high technology sector, but applies to this earlier effort in the financial sector. Pasquale, F., and S. Vaidhyanathan, 2015, "Uber and the lawlessness of "sharing economy" corporates," The Guardian, 28 July.

28 cf Chatterjee, R. R., 2011, "Dictionaries fail: The Volcker Rule"s reliance on definitions renders it ineffective and a new solution is needed to adequately regulate proprietary trading," 8 BYU International Law & Management Review, 8:1, 33-62 ("The 1999 passage of the Gramm-Leach-Bliley Act, also known as the Financial Services Modernization Act of 1999, effectively reversed the changes made by the Glass-Steagall Act.").

29 Unfortunately, it also did not reform or modernize the resolution regime for holding companies or non-bank subsidiaries of financial holding companies, even though it created legal incentives for banking organizations to move more financial activities, liabilities and risks out of banks into those entities. This was one of the biggest regulatory weaknesses of the U.S. financial system during the crisis. Whether it has been fixed by the Dodd-Frank Act remains the subject of active debate. See, for example, Roe, M. J., and S. Adams, 2015, "Restructuring financial firms in bankruptcy: selling Lehman"s derivatives portfolio," 32 Yale Journal of Regulation 2.

30 12 USC s 1843(c)(2).

31 12 USC s 1843(c)(2).

32 For the definition of "banking entity," see ibid s 1851((h)(1). Banks that limit their deposit-taking activities to trust-related activities are generally exempt. ibid. The relevant regulatory agencies are not given authority in the statute to exempt entities from this definition. Certain non-bank financial companies supervised by the Federal Reserve Board are also covered, as are foreign banks treated as bank holding companies under s 8 of the International Banking Act of 1978. See ibid s 1851(a)(2) and (h)(1).

33 "Proprietary trading" is defined as "Hedge fund" and "private equity fund" are statutorily defined as any fund that would be an investment company under as defined in the Investment Company Act of 1940, 15 USC 80a-1ff, but for s 3(c)(1) or 3(c)(7) of that Act, 15 USC 80a-3 (c)(1) and (7), which in general terms exempt "private" funds – i.e., those that are not marketed to the public. The terms also include "similar funds" as determined by regulation by the federal banking agencies, the SEC and the Commodity Futures Trading Commission (CFTC). The Volcker Rule explicitly permits many types of socially useful or deemed not to be speculative trading, such as trading in U.S. government and municipal securities, market-making and underwriting of corporate debt and equity based on the reasonably expected near-term demand of clients.

December 2013, were finalized on 1 April 2014 and were largely (if not wholly) effective as of 1 July 2015.[34]

On the surface, the Volcker Rule may not appear to be a structural law. It appears to consist of a simple command – do not engage in the specified activities. However, it is clear that the goal of Mr. Volcker and other supporters of the rule was not to suppress the activities so banned, which remains legal for non-banking entities. Rather, the goal was to increase the reliability and safety of large banks' more traditional activities. In so doing, the rule is meant to work a change in the organizational culture of banks, and so indirectly to reduce the interconnectedness of banks from other, riskier components of the capital markets. By reducing the need to rely on a bonus-culture conventional on trading floors, the goal was also to dampen the incentives of individual bankers to take risk, and to reduce the power of traders within banks. By reducing or at least flattening the growth in compensation flowing to the part of the financial sector underwritten in numerous ways by the tax-paying public, the rule had the less obvious likely effect of reducing the power and influence of banks generally, and to reduce moral hazard implicit in such government support. Whether these goals will be realized by the Volcker Rule, and at what cost, remains to be seen, as discussed below. But as so understood, the Volcker Rule is indeed a quintessential structural law, directly analogous to structural banking laws dating back to the 17th century, as reviewed above.

Others may not have understood the fact and influence of these structural laws on Anglo-American financial history. Academic economists in the Obama administration, who only grudgingly included the Volcker Rule in the Dodd-Frank Act,[35] may have been under the misapprehension that the sole structural law of consequence in U.S. financial history was the Glass-Steagall Act, which had failed to prevent investment banks (Lehman, Bear Stearns) from being sufficiently interconnected with commercial banks to threaten the financial system as a whole in the crisis. Alternatively, they may have been concerned that any nation-specific structural law would be doomed to fail under the forces of international competition or rent-seeking stakeholders. Outside the administration, the market-oriented ideologues whose voices are the loudest in their critiques of the Volcker Rule may still fail to appreciate the roles that structural laws have always played in creating money, reducing systemic risk and accomplishing political settlements that simultaneously enable and constrain the financial sector. Fantasies of anarchic "golden ages" in finance are common in certain circles.[36]

To be sure, the Volcker Rule is an innovation. The structures it seeks to impose on the financial markets are distinct from those imposed by prior laws. Its expected effects cannot be understood in isolation from other, equally innovative legal reforms contained in the Dodd-Frank Act. As one element of that law, the Volcker Rule represents a novel effort to require banks to be "more focused on the business of banking, so they are better able to serve as safe places for families to deposit their savings and to extend credit to consumers and businesses."[37] As an innovation, the Volcker Rule cannot be evaluated based solely on the structural precedents described above, about which there remains much that is unknown, in any event. However, the history of structural laws must be part of any fair-minded assessment of the Volcker Rule's goals, promise and likely costs and benefits.

The Volcker Rule versus the Glass-Steagall Act

Many seem to think the Volcker Rule represents not an innovation but a "watered down" version of the Glass-Steagall Act.[38] This claim is not entirely wrong. The efforts in both laws to curtail speculative and presumptively risky behavior are similar, and the Volcker Rule will contain a larger number of exceptions and industry accommodations from the outset than did the Glass-Steagall Act, consistent with it being more "watery" than its predecessor.

But the claim is not accurate either. The specific activities targeted by the Volcker Rule are not a subset of those targeted by the Glass-Steagall Act, but overlap with them. As a result, the likely consequences for banks and their affiliates generally also differ. For example, proprietary trading of corporate "investment securities"[39] would have been permitted for non-bank affiliates of banks under

34 The banking agencies and the SEC issued a joint final rule. Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, Department of the Treasury and others (2013). Available at: www.sec.gov/rules/final/2013/bhca-1.pdf accessed 29 August 2015 [hereinafter Joint Volcker Rule Release] (to be codified at 12 CFR pt 44 (OCC); 12 CFR pt 248 (Fed Reserve); 12 CFR pt 351 (FDIC); 17 CFR pt 255 (SEC)). The CFTC issued a final rule separately. Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, CFTC. Available at: www.cftc.gov/ucm/groups/public/@newsroom/documents/file/federalregister121013. pdf accessed 29 August 2015 (codified at 17 CFR pt 75). Extensions were granted by Board of Governors of The Federal Reserve System, Order Approving Extension of Conformance Period Under s 13 of the Bank Holding Company Act (18 December 2014).

35 Krawiec K. D., and G. Liu, 2015, "The Volcker Rule: a brief political history," 10 CMLJ 507.

36 cf Desan (n 6), critiquing such fantasies about the history of money in modern economies.

37 U.S. Department of Treasury, 2015, "Dodd-Frank at five years," July. Available at: http://tinyurl.com/oh8xqg6 accessed 29 August 2015.

38 E.g., Sekar, A., 2015, "The Glass-Steagall Act explained." Available at: http://tinyurl.com/p3ujnbz accessed 29 August 2015.

39 Banks themselves could invest in, but not underwrite, "investment securities" under the Glass-Steagall Act. They included most short-term, marketable debt securities, including those issued by private corporations. Under 12 USC s 24 (Seventh), "investment securities" was defined to mean "marketable obligations, evidencing indebtedness of any person, copartnership, association, or corporation in the form of bonds, notes and/or debentures commonly known as investment securities under such further definition of the term "investment securities" as may by regulation be prescribed by the Comptroller of the Currency." That definition is broader than the government securities exception in the Volcker Rule. More importantly, consistent with the Glass-Stegall Act, as interpreted over time, bank affiliates could engage in proprietary trading prior to the Volcker Rule.

the Glass-Steagall Act, but will not generally be permitted under the Volcker Rule. A general securities underwriting or dealing business, by contrast, was prohibited as the Glass-Steagall Act was initially implemented, but came to be gradually permitted during the 1970s, 1980s, and 1990s, as described above, and would survive the Volcker Rule largely intact. Equity investments for the proprietary account of a bank or holding company were generally banned under the Glass-Steagall Act, and generally continue to be so banned for banks, and short-term equity investments – that is, "proprietary trading" in stocks – would be banned under the Volcker Rule for all covered banking entities, whereas longer term merchant banking investments for non-bank subsidiaries of financial holding companies would continue to be permitted under the Volcker Rule, but only to the extent permitted by the Bank Holding Company Act, as modified by the Gramm-Leach-Bliley Act, and subject to the Volcker Rule ban on investments in private investment funds.

The casino-like speculative culture of banks was the focus of the concerns expressed by Paul Volcker at a roundtable held at Harvard University during the crisis, which the author attended, and presumably the same focus of the rule writers in the drafting process leading to the Dodd-Frank Act. It is reflected in Mr Volcker's comments on the proposed Volcker Rule regulations: "The need to restrict proprietary trading is not only, or perhaps most importantly, a matter of the immediate market risks involved. It is the seemingly inevitable implication for the culture of the commercial banking institutions involved, manifested in the huge incentives to take risk inherent in the compensation practices for the traders. Can one group of employees be so richly rewarded, the traders, for essentially speculative, impersonal, short-term trading activities while professional commercial bankers providing essential commercial banking services to customers, and properly imbued with fiduciary values, be confined to a much more modest structure of compensation?"[40]

Changing "culture" may strike some readers as a soft, vague, or secondary goal for policy. But financial economists have over the past 20 years come to recognize the way that organizations, including how they screen for and manage employees, and the values and incentives they create, can generate first-order effects in the capital markets. Organizational culture of this kind is not easily understood through the lens of myopic cynicism, or even with the useful – but for that very reason limited – standard working assumptions of neoclassical economic models.[41] If one thinks that bonus-driven speculative trading, even a (relatively) safe financial asset such as corporate debt, can create a casino-like atmosphere inside a bank, and undermine its governance,[42] then the Glass-Steagall Act's approach would fail to address that problem, whereas the Volcker Rule would. If one thinks that equity underwriting or customer-driven market making is excessively speculative and risky, then the Volcker Rule will not address that problem, whereas the Glass-Steagall Act (if strictly enforced) would. Neither is clearly a watered down approach for the other.

A full discussion of the many nuances of the line between conduct permitted and prohibited for covered entities under the Volcker Rule, and how if at all regulators will address unintended consequences of the rule and the implementing regulations, is beyond the scope of this article.[43] Indeed, one standard complaint about the rule – made not primarily by lawyers who profit from its complexity, but by bank managers, business journalists, and Paul Volcker himself – is that the implementing regulations are too complex and long, requiring 71 pages, and 892 pages more in the accompanying releases.[44]

---

40 Volcker, P. A. 2012, "Commentary on the restrictions on proprietary trading by insured depositary institutions," attached to Letter from Paul A Volcker to financial regulatory agencies, 13 February, http://tinyurl.com/qanzy6d accessed 29 August 2015 (emphases added).

41 cf Summers, L. H., and W. R. Easterly, 1992, "Culture is not to blame," Financial Times, 15 April ("The primacy of economic incentives over [national] culture is good news for courageous reformers."); with Hermalin, B. E., 2000, "Economics and corporate culture," in: Cooper, C. L., S. Cartwright and P. C. Early (eds.), The international handbook of organizational culture and climate ("with a few exceptions . . . economists have ignored the issue of corporate culture in their studies of firms and other organizations"); Cohan,W. D., 2015, "Can bankers behave?" The Atlantic, May. Available at: http://tinyurl.com/pto4bu6 accessed 29 August 2015 (former Lazard banker attributing change in culture at Morgan Stanley to effects of Volcker Rule); Cohn, A., E. Fehr and M. A. Marechal, 2014, "Business culture and dishonesty in the banking industry," 516 Nature 86 ("Employees of a large, international bank behave, on average, honestly in a control condition. However, when their professional identity as bank employees is rendered salient, a significant proportion of them become dishonest."); and Guiso, L., P. Sapienza and L. Zingales, 2015, "The value of corporate culture," 117 Journal of Financial Economics 60 ("With few notable exceptions, the finance literature has ignored the role corporate culture can play").

42 See Lewis, M., 1989, Liar"s poker, Hodder Paperbacks (detailing culture of bond traders and its effects on Salomon Brothers).

43 For example, application of the Volcker Rule to non-U.S. entities and activities is itself a complex topic. See, for example, Massari, J., 2015, "Foreign bank cross-border securities trading under the Volcker Rule: exploring the trading outside the United States exemption"s unintended consequences," 10 Capital Markets Law Journal 523; Yoshiya, S., 2015, "The Volcker Rule: regulatory challenges and unintended consequences for banks in Asia," 10 Capital Markets Law Journal 542. Likewise, the Volcker Rule will require ongoing collaboration between the regulatory agencies that have traditionally overseen banks and those that have traditionally overseen financial markets. Dombalagian, O. H., 2015, "The Volcker Rule and regulatory complementarity," 10 Capital Markets Law Journal 469.

44 For example, Sloan, A., 2013, "The Volcker Rule: a triumph of complexity over common sense," Washington Post, December 19 (criticizing rule as too long and complex); Culp, S., 2013, "Final Volcker Rule leaves facing compliance hurdles," Forbes, December 17; Wallison, P. J., 2013, "Why the Volcker Rule will harm the U.S. economy," The American, December 13 (criticizing rule as too long and complex); Bobelian, M., 2013, "Will the Volcker Rule work?" Forbes, December 11 (noting length and complexity); Armstrong, R., 2011, "Paul Volcker says Volcker Rule too complicated," Reuters, November 9 (quoting Volcker as criticizing complexity of rule and attributing it to bank industry lobbyists).

But in both spirit and level of detail the Volcker is not different in kind from the structural laws described above. As for the spirit, both the precedents and the Volcker Rule work in three similar, structural ways. First, they banned some set of activities for designated entities, with the goal of encouraging the remaining activities, while reducing their risk. Secondly, for those same entities, they created or preserved government subsidies. The subsidies were both explicit (for example, federal deposit insurance, access to the Fed's payments system, ability to borrow from the Fed's discount window) and implicit (too big to fail), as well as barriers to competition from non-banks (for example, requirements of bank charter and regulation for deposit-taking institutions). But because those subsidies were now flowing to entities limited in their power and activities, the subsidies would be more likely to have the public-regarding benefits they were intended to have, and less likely to cross-subsidize risky and less publicly valuable activities, or enrich private citizens at taxpayer expense. Thirdly, the laws imposed special and often detailed, lengthy, and complex regulatory requirements, such as capital requirements[45] and bank supervision, some of which functioned to reinforce the structural nature of the laws; changing the nature of the banks' activities indirectly, rather than through simple command and control obligations.

As for the level of detail, some readers may demur. They will say, as some have, that the Glass-Steagall Act was nice and simple and short (merely 37 pages!), while the Volcker Rule regulations are long (over 900 pages!).[46] The comparison is silly. The Volcker Rule in the Dodd-Frank Act itself is short (only 11 pages!), shorter than either the Glass-Steagall Act or the Federal Reserve Act. The Glass-Steagall Act regulations,[47] interpretations and case law were sufficiently long, complex, and often inconsistent that banking law texts prior to Glass-Steagall Act's repeal commonly devoted many pages to what still amounted to a highly abbreviated summary of the laws governing securities activities by banks.[48] As noted above, the Glass-Steagall Act also changed significantly in operation over time – reflecting complexity generated by steady pressure from banks to push that law's boundaries wherever profit made it attractive to do so.

In sum, the Volcker Rule is a structural law designed to protect the banking system that is similar in kind to many prior laws shaping the financial sector. That fact may cast some light on how to evaluate it and predict its effects. But before turning to that task, let us first review a distinct set of structural laws that are important to any understanding of how the Volcker Rule will be implemented in practice: the many statutes and regulatory processes that in the U.S. are the general domain of administrative law.

ADMINISTRATIVE LAW AS STRUCTURAL LAW

In possible tension with the traditional use of structural laws to constrain banks and capital markets is a newer set of structural laws, designed to constrain the very government agents responsible for implementing complex modern financial regulations. Administrative law – the body of statutes and court doctrines channeling and controlling the use of law-making power by government officials – grew in importance in the twentieth century. It now occupies a role practically co-equal with the substance of financial regulation in any understanding of how such regulation affects capital markets in practice. Most recently, legal requirements for CBA have come to the fore as part of the administrative law arsenal, posing the question of whether structural laws such as the Volcker Rule can be usefully subject to such analysis.

Ambiguity in structural constitutional laws

As noted at the outset of the prior section, the U.S. Constitution contains an important set of structural laws that constrain the most basic functions of those responsible for making, enforcing and interpreting law. Based on political philosophical commitments to divided and accountable government, these structural laws separate the "legislative powers" the "executive power" and the "judicial power"[49] into

45 Capital requirements sound simple – simpler than dividing proprietary trading from customer-driven market making. But even a quick glance and the huge number of pages devoted to each of the major capital rule reform initiatives sponsored by the Basel Committee should be enough to dispel the idea that capital rules are short and simple in practice. See Basel Committee on Banking Supervision, Bank for International Settlements (http://www.bis.org/bcbs) accessed 29 August 2015.

46 Culp (n 43).

47 In 1998, prior to the repeal of the Glass-Steagall Act, the formal regulations in Subpart C of the Federal Reserve Board"s Regulation Y (http://tinyurl.com/nuylocz) accessed 29 August 2015, which governed non-banking activities of bank holding companies, alone took up more than 25 single-spaced narrow-margin pages. A single statement of guidance from the Federal Reserve Board in 1998 regarding securities activities of banks took up 14 pages. See Supervisory Policy Statement on Investment Securities and End-User Derivatives Activities, July 27. Available at: http://tinyurl.com/o7bq75h accessed 29 August 2015. The Federal Reserve Board"s current web page (http://tinyurl.com/ovf6no6 and accessed 29 August 2015) lists 12 supervisory policy statements on securities activities since 1990, which is an incomplete listing of the relevant guidance from the Fed alone. To that should be added comparable regulations and guidance from the OCC and the FDIC.

48 For example, Jackson, H. E., and E. L. Symons, Jr, 1999, Regulation of financial institutions, West Group, 117-41 (materials showing efforts to define legal bank activities); Herlihy, E. D., et al. 1996, "The new aggressive era in financial institutions mergers and acquisitions," in Mergers and acquisitions of financial institutions 1995: an unprecedented year of consolidation, Practising Law Institute, 48-57, 120, 154-56 (discussing aspects of law relevant to bank acquisitions of securities firms prior to repeal of Glass-Steagall Act). A search of Westlaw returns over 100 Federal court decisions running to more than 1000 pages, which interpreted the Glass-Steagall Act prior to its repeal. This does not count the pages of formal regulations proposed or adopted and informal guidance provided under that law.

49 U.S. Constitution, art I s 1; art II, s 1; art III, s 1.

three distinct branches of government, and similarly layer those powers in two levels, federal and state.[50] For the Republic's first 100 years, these ambiguous and inconsistent commitments generated disputes and conflicts, some resolved but many deferred, suppressed or ignored, only to erupt even more violently over time. For example, the U.S. Civil War can be attributed in part to the decision to avoid reconciling the entanglement of some but not all states with slavery, on the one hand, with a clear statement of national unity reflected in the supremacy of national laws over state laws, on the other hand.

Another dispute suppressed during the Constitutional ratification process was the authority and propriety of the federal government to create a central bank.[51] The initial suppression of this dispute led to controversies in the Washington administration, when Alexander Hamilton sought to enhance the country's financial capacities through a strong U.S. Treasury and the First Bank of the United States in 1791. When the First Bank's charter expired, it was not renewed, in part of because of the controversy over its legality.[52] After the Second Bank was created in 1816 and the state of Maryland sought to tax it, basic structural controversies over both separation of powers and federalism as applied to the financial sector found their way to the Supreme Court. In the landmark legal dispute of McCulloch v Maryland,[53] Justice Marshall interpreted article I's "necessary and proper" clause[54] generously for the national government, and at the same time took a narrow view of the states' residual powers where they arguably interfered with those of the government of the country as a whole.

Another set of latent conflicts created by the ambiguous and inconsistent commitments to divided government, however, did not arise in full form until the role of government generally began to expand. In the late nineteenth and early twentieth centuries, in response to the massive social and economic effects of the Industrial Revolution and the rise of corporate capitalism, the U.S. entered an "Age of reform."[55] State and federal governments alike began to enact new kinds of laws addressing shipping, industrial accidents, wages, working conditions, labor, immigration and – as noted above – money markets and banking. Beginning with the Civil Service Act and the Civil Service Commission in 1883, and then the Interstate Commerce Commission in 1887, efforts to isolate government employees and agents from cronyist and partisan pressures led to a wave of civil service protections and the creation of "independent" government agencies, often elaborately designed to achieve political compromise over the expected distribution of power they were expected to wield.[56]

The majority of the financial regulatory agencies – the Federal Reserve Banks and (later) the Board, the SEC, the FDIC, the CFTC and (most recently) the Consumer Financial Protection Bureau – are all examples of such "independent" agencies.[57] Even the Office of the Comptroller of the Currency (OCC), which (as part of the Department of the Treasury) had long functioned as a core part of the "executive" branch, overseeing national banks, was re-identified as an "independent" agency in the Dodd-Frank Act.[58] Among the typical features of independent agencies are multi-member commissions with staggered terms, and sometimes specifications of party, designed to prevent any one administration from effecting wholesale change in their policies. The banking agencies (but not the SEC or the CFTC) also have effective budget autonomy, giving them substantially more discretion than agencies that have to persuade Congress to refund them every year.[59]

As the role of government grew, along with the role of "independent" agencies, numerous battles were fought in the courts over whether laws passed by legislatures or regulation adopted by agencies were constitutional.[60] When two world wars and the Great Depression led to even more innovation and expansion of public administration of what had previously been private activity, the court

50 Ibid s 8 (enumerating powers of Congress).

51 Klarman, M., 2015, working paper

52 See Hammond (n 5).

53 17 U.S. 316 (1819). The First Bank also was involved in legal controversy, over whether it could sue in its own name, or whether its president, directors and shareholders, residing in one state, could sue on its behalf citizens of another state, in federal court, to recover stolen property. In Bank of the U.S. v Deveaux, 9 US 61 (1809), the Court held that the Constitution prevented the Court from expanding its jurisdiction beyond that established by Congress, and that the Bank"s charter"s terms implicitly denied it standing to sue itself as a "citizen" in federal court. At the same time, the Court held that because the U.S. Constitution, like all constitutions, "from its nature, deals in generals, not in detail," and should be interpreted in that light, with the result here that the bank could serve as a placeholder in a suit by its president, board and shareholder-citizens.

54 US Constitution, art I, s 8.

55 Hofstadter, R., 1955, The age of reform: from Bryan to F.D.R., Knopf, 23-93; Sanders, E., 1999, Roots of reform: farmers, workers, and the American state, University of Chicago Press, 1877-917; Trachtenberg, A., 1982, The incorporation of america: culture and society in the gilded age, Hill & Wang

56 Skowronek, S., 1982, Building a new American state: the expansion of national administrative capacities, Cambridge University Press, 1877-920; Keller, M., 2007, America"s three regimes: a new political history, Oxford University Press; Lowi, T. J., and N. K. Nicholson, 2009, Arenas of power: reflections on politics and policy, Routledge

57 See Conti-Brown (n 16).

58 Dodd-Frank Act, s 315.

59 United States General Accounting Office, 2002, "SEC operations: implications of alternative funding structures," GAO-02-864. Available at: http://www.gao.gov/new.items/d02864.pdf

60 These battles are typically encapsulated as the "Lochner era," referring to Lochner v New York 198 U.S. 45 (1905). See also Allgeyer v Louisiana 165 U.S. 578 (1897) (corporations have liberty of contract, and the due process clause of the Fourteenth Amendment prevents a state from barring a corporate "citizen" from mailing a notice describing goods it seeks to insure under a policy issued by a foreign insurance company); Reagan v Farmers" Loan and Trust Co 154 U.S. 362 (1894) (railroad corporations could not be required to charge less than the tariff proposed by the state railroad commission under due process clause if it would leave the railroad unable to pay its debts); Conn Gen Life Ins Co v Johnson 303 U.S. 77, 90 (1938) (Black, J, dissenting) (collecting cases).

battles came to a head, resulting in the end of the "Lochner era" and a great retreat by federal courts from attempting to curtail the exercise of economic regulatory power, whether through the legislatures or the agencies.[61] As part of the political settlement over this retreat, however, and increasingly over time as progressive advocates of active government found themselves disappointed with the behavior of regulatory agencies,[62] a new body of structural laws emerged. Now generally labelled "administrative law," these structural laws variously intended to constrain or improve the functioning of what has come to be called the "Fourth Branch."

Major components of administrative law

Chief among the structural components of administrative law in the U.S. is the Administrative Procedures Act (APA).[63] Coupled with a residual, if uncertain, "right of review" by courts of agency decisions and reinforced by a "presumption of reviewability,"[64] the APA has given courts (and hence, private plaintiffs) a varying, but at times important role in checking the process and at times substance of financial regulation. The APA (among other things) imposes specified procedures for agencies to follow before enacting rules. Absent clear Congressional direction, courts have held that rules are presumptively reviewable by courts for adherence to statutory commands and process regularity.

In addition, with greater controversy and less consistency, courts have subjected agency regulations to substantive "hard look" review, testing them by asking if they are "arbitrary and capricious" or otherwise fail to respect the minimal demands of rationality. In principle, courts have self-imposed limits on their own roles, by stressing the need to defer to agencies on a variety of questions, including statutory interpretation[65] and rationality of agency rules.[66] Observers of the courts have at times criticized them for exceeding or applying these limits in inconsistent ways, with the result that at times neither legislatures nor agencies but courts – neither accountable nor expert – have become the ultimate rulemakers for the capital markets.[67]

Reinforcing the role of courts in reviewing agency decisions, and increasingly in the last quarter of the twentieth century, legal mandates have emerged for the conduct, interagency review and publication of CBA.[68] CBA – or more generally, regulatory impact analysis – is a component of the process that agencies commonly follow in considering proposed rules, and (for executive agencies) a legal requirement.

CBA of financial regulation

CBA of financial regulation (CBA/FR) has emerged as an important topic in policy and legal debates,[69] due in part to the unprecedented number and importance of new regulations called for by the Dodd-Frank Act, including the Volcker Rule.[70] Interest groups seeking to delay and shape those regulations have joined a set of policy entrepreneurs and academics whose long-term project has been to spread the use of CBA generally. A related but partially distinct group of political entrepreneurs has the long-term and largely

61 Standard histories treat the Lochner era as ending in the late 1930s, with West Coast Hotel Co v Parrish 300 U.S. 379 (1937), upholding minimum wage legislation and overturning Adkins v Children"s Hospital 261 U.S. 525 (1923); United States v Carolene Products Co 304 U.S. 144 (1938) (legislative authority over economic matters plenary, entitled to presumption of constitutionality), and cf Humphrey"s Executor v United States 295 U.S. 602 (1935) (President may not remove officer of "quasi-legislative" independent agency) with Myers v U.S. 272 U.S. 52 (1926) (finding unconstitutional law requiring advice and consent of Senate for President to remove executive branch official, a postmaster); see also Nebbia v New York 291 US 502 (1934) (upholding price controls over milk); Landis, J., 1938, The administrative process, New Haven: Yale University Press, 15-46 (articulating legality and advantages of multimember, bipartisan, expert independent agencies).

62 Rodriguez, D. B., 1997, "Jaffe"s law: an essay on the intellectual underpinnings of modern administrative law theory," 72 University of Chicago-Kent Law Review 1159; Shapiro, M., 1986,"The APA: past, present, future," 72 Virginia Law Review 447; Landis, J., 1960, Chairman of the Subcommittee on Administrative Practice and Procedure, Senate Committee on the Judiciary, 86th Congress, 2d Session, Report on Regulatory Agencies to the President-Elect; Stewart, R., 1975, "The reformation of American administrative law," 88 Harvard Law Reviwew 1667.

63 5 USC ss 500-96 (1946).

64 Jaffe, L. L., 1965, "The right to judicial review," in Jaffe, L. L., (ed.) Judicial control of administrative action, Little, Brown & Co., ch 9; Krent, H., 1997, "Reviewing agency action for inconsistency with prior rules and Regulations," Chicago-Kent L Rev 1187; Abbott Laboratories v Gardner 387 U.S. 136 (1967) (presumption of court reviewability); Motor Vehicle Mfrs Ass"n v State Farm Mut Auto Ins Co 463 U.S. 29, 43-44 (1983) (standard for "hard look" review by courts of agency decisions).

65 Chevron USA, Inc v Natural Resources Defense Council, Inc 467 U.S. 837 (1984). For a recent Supreme Court case in which Chevron deference seemed not to play a significant role in limiting the court"s involvement, see Michigan v EPA 576 U.S. (2015).

66 Motor Vehicle Mfrs Ass"n v State Farm Mut Auto Ins Co (n 63); Citizens To Preserve Overton Park, Inc v Volpe 401 US 402 (1971). For a discussion of the relationship between Chevron and "hard look" review, see Stephenson, M. C., and A. Vermeule, 2009, "Chevron has only one step," 95 Virginia Law Review 597.

67 Ahdieh, R. B., 2013, "Reanalyzing cost-benefit analysis: toward a framework of function(s) and form(s)," 88 NYU Law Review 1983; Cox, J. D., and B. J. C. Baucom, 2012, "The emperor has no clothes: confronting the D.C. Circuit"s usurpation of SEC rulemaking authority," Texas Law Review 1811, 1840; Fisch, J. E., 2013, "The long road back: business roundtable and the future of SEC rulemaking," Seattle University Law Review ssrn.com/abstract¼2164423; Sunstein, C. R., and A. Vermeule, 2014, "Libertarian administrative law," 29 June, working paper, June 29. Available at: http://ssrn.com/abstract¼2460822, accessed 1 July 2014.

68 Adler, M. D., and E. Posner, 2006, New foundations of cost-benefit analysis, Harvard University Press; Sunstein, C. R., 2003, Risk and reason: safety, law and the environment, Cambridge University Press; Sunstein, C. R., 2002, The cost-benefit state: the future of regulatory protection, ABA Book Publishing. In the financial regulatory context, see Coates, J. C., 2015, "Cost-benefit analysis of financial regulation: case studies and implications," 124 Yale Law Journal 1, 913-26; Kraus, B., and C. Raso, 2013, "Rational boundaries for SEC cost-benefit analysis," 30 Yale Journal of Regulation 289, 342; Lee Y-H. A., 2015, "SEC rules, stakeholder interests, and cost-benefit analysis," 10 Capital Markets Law Journal 311.

69 See, for example, Symposium, 2014, "Developing regulatory policy in the context of deep uncertainty: legal, economic, and natural science perspectives," 43 Journal of Legal Studies (including several articles on the topic of CBA of financial regulation); "The administrative law of financial regulation," 2015, 78 Law & Contemporary Problems (including several articles on the topic of CBA of financial regulation); Colloquium, 2014, "Critiquing cost-benefit analysis of financial regulation," George Washington Law.

70 The full title of this statute is the Dodd-Frank Wall Street Reform and Consumer Protection Act (n 1) (codified as amended in scattered sections of 12 USC) (Dodd-Frank Act).

partisan project of embedding CBA/FR in judicial review of regulations under the APA.[71] White papers calling for CBA/FR have elicited academic symposia and multidisciplinary efforts to study and improve CBA/FR, while a continuing flow of bills have been introduced in Congress to require or empower the President to mandate CBA/FR. A few of these bills have received at least some bipartisan support, even as some judges on the DC Circuit continue to use CBA as a tool for intervening in regulatory contests.[72]

In the U.K., the two main financial regulatory agencies are required by statute to conduct quantified CBA/FR, unless in the opinion of the agencies the costs or benefits "cannot reasonably be estimated" or "it is not reasonably practicable to produce an estimate," in which case the agency must publish its opinion and explain it.[73] In striking contrast to the recent U.S. experience, however, courts have not repeatedly overturned rulemakings by the old Financial Services Authority (FSA) and its successors for inadequate CBA. A rare example of a court decision even referring to CBA by the FSA is R (on the application of the British Bankers Association) v FSA et al.,[74] which rejected a challenge by a banking trade group to the handling of complaints about "Payment Protection Insurance" by the FSA and the Financial Ombudsman Service, which handles consumer financial complaints.

How might these efforts play out in the context of a structural law such as the Volcker Rule? The answer to that question – analyzed in the final section of this article – may help guide future efforts to assess the costs and benefits of CBA/FR itself, and so to guide the intersection of structural laws governing banking and structural laws governing administrative agencies.

Evaluating administrative law's effects

All of these components of administrative law have the effect of constraining regulatory discretion, and the potential to improve regulatory decisions. They also all have the cost, however, of slowing down regulatory action, and potentially hiding from the public the goals and effects of regulation (or de- or re-regulation) generally under a veneer of legalistic or technocratic analysis. They also have the potential cost of putting regulations at risk of the same kind of judicial second-guessing reflected in the Lochner era,[75] or at risk of the same kinds of partisan or cronyist influences that independent agencies were designed to combat. At different times in legal history, they have functioned as tools for unhappy pro-regulatory lobbies to try to nudge agencies to be more vigorous in protecting the public, or as tools for unhappy anti-regulatory lobbies to try to slow down or blunt the effect of new regulatory efforts.[76]

A policy-minded citizen trying to evaluate the effects of administrative law – or more plausibly, the effects of one of its structural components – would need to conduct a meta-CBA – to ask if the benefits of these administrative law constraints on regulatory action outweigh their costs? At least part of that meta-analysis would require, in turn, a careful consideration of what CBA can practically achieve, in the context of specific regulations, such as the Volcker Rule.

CBA AND THE VOLCKER RULE

This last section of the article takes up the following, related questions: could the regulations needed to implement a complex, ambitious structural law such as the Volcker Rule be the subject of useful CBA? If so, would that analysis consist solely of the identification of qualitative effects of the rule, or could it usefully contain a precise and reliable quantification of those effects? Would a requirement or expectation of such analysis be expected to enhance and detract from the regulatory process for the Volcker Rule? Would such analyses create a means of constraining agency discretion and improving agency accountability, or give the agencies cover for using crude guesstimates to camouflage the likely effects of the rule? Would they only impose unnecessary and pointless delays, or give partisan or cronyistic enemies of the public-regarding goals of the law weapons to undermine its effectiveness in court or in an inter-agency process? The answers to these questions must remain somewhat speculative, but if CBA/FR is clearly ripe for implementation, the potential for CBA of a structural law like the Volcker Rule should at least be susceptible to qualitative assessment.

Administrative law requirements relevant to the Volcker Rule

To be clear, the independent financial agencies have largely been exempted from CBA requirements. The formal releases published by the financial agencies in the Federal Register contain no general CBA/FR of the Volcker Rule. Legally, the financial agencies are subject to no general CBA/FR mandate, and the statutory requirement for and authorization of the regulations implementing the Volcker Rule are part of the Bank Holding Company Act of 1956,[77]

71 Pub L 79-404, 60 Stat 237 (codified as amended in scattered sections of 5 USC).
72 Coates (n 67) 882.
73 Financial Services Act, 2012, amending inter alia s 138I (Financial Conduct Authority) and 138J (Prudential Regulation Authority) of the Financial Services and Markets Act 2000.
74 [2011] EWHC 999 (Admin).
75 See n 59 above.
76 See citations in n 56 above.
77 Bank Holding Company Act of 1956, Pub L No 84-511, 70 Stat 133 (codified as amended in scattered sections of 12 USC). The Bank Holding Company Act of 1956 (BHCA) contains a broad regulatory delegation of authority to the Federal Reserve Board to "issue such regulations and orders as may be necessary to enable it to administer and carry out the purposes" of the Act and to "prevent evasions thereof." Ibid s 5, 70 Stat 137.

which does not contain even the loose kind of requirement in the securities laws that the SEC consider "efficiency" or in the commodities laws that the CFTC consider costs and benefits.[78] Nothing in the language of section 619 of the Dodd-Frank Act itself required CBA of the regulations.[79] The formal rulemaking contained limited cost-related information in its analyses under two minor components of administrative law – the Regulatory Flexibility Act and the Paperwork Reduction Act[80] – but no information about benefits or non-compliance costs.

The OCC's CBA of the Volcker Rule

The OCC, however, did release its own CBA of the Volcker Rule.[81] It identified a number of "non-monetized" (qualitative) benefits from the rule. They included (a) improved supervision by bank regulators, due to metrics reporting required by the rule; (b) better management of risk by bank managers (for the same reason); (c) reduced conflicts of interest; (d) protecting "core banking services" and improved bank safety and soundness (reduced risk of bank failures); (e) reduced "tail risk" from trading activities and reduced risks of financial crises; (f) improved corporate governance of banks resulting from reduced stock market liquidity; and (g) reduced harms caused by excess liquidity.[82] As the OCC noted, the "benefits of the regulation can be difficult to quantify including the value of enhanced economic stability."[83]

The OCC also identified a number of costs of the rule. For a subset, the OCC provides quantified estimates: (a) compliance costs (U.S.$405 to U.S.$541 million); (b) additional capital costs for permissible investments in covered funds (U.S.$0 to U.S.$165 million); (c) the OCC's own costs of supervising compliance with the new rule (U.S.$10 million); and (d) a one-time hit to the value of assets owned by banks but restricted by the rule, resulting from reductions in demand for those assets due to the rule. For the last type of cost, the OCC drew on academic research estimating a similar haircut in corporate bond values when bonds are downgraded by credit rating agencies and insurance companies (subject to regulations limiting their ownership of junk bonds) are forced to sell such bonds, deriving a range of costs from U.S.$0 to U.S.$3.6 billion.

However, the types of costs that are likely to be the largest ongoing costs were not quantified. Foremost among these non-quantified costs is the reduced liquidity in markets where banks were significant trading participants, particularly arising from interdealer trading, which is not treated as a permissible source of "customer" demand under the rule.[84] Banks, as a result, will not be able to hold certain assets as "inventory," which will reduce liquidity in the markets for those assets and make it harder for banks to share risk with other banks when permissible customer-driven trading results in banks taking on large blocks of equities. Banks may incur higher costs to hedge or shed those risks, or face more difficulties in managing risks. The reduction in liquidity caused by the ban on inter-dealer trading will likely reduce the depth of those markets and the ability of issuers to raise capital within them.[85] Another potential cost of the rule is similar to one relevant to any structural law making conduct of an activity more difficult or expensive within a bank, including capital rules, for example. That potential cost is the migration of trading activity to non- or less-regulated "shadow" banks, which could pose systemic risks, offsetting (and possibly exceeding) the benefits of risk reduction within the banking system.

---

78 See 7 USC s 19(a)(1) (2010) (requiring the CFTC to "consider the costs and benefits" of its regulatory actions). This is true even though the SEC and the CFTC were also required to adopt the Volcker Rule, because their authority (and mandate) to do so is (unusually) in the BHCA, not the statutes that traditionally authorize them to act. Office of the Comptroller of the Currency, Analysis of 12 CFR Part 44, U.S. Department of the Treasury (March 2014), available at: http://www.occ.gov/topics/laws-regulations/legislation-ofinterest/volcker-analysis.pdf accessed 29 August 2015.

79 The specific section that authorizes the Volcker Rule, 12 USC s 1851 (2010), added to the BHCA by the Dodd-Frank Act, contains a similarly broad grant of authority and does not condition rulemaking on any particular finding or process, other than (1) to "consider" a statutorily mandated January 2011 study of how to implement the section conducted by the Financial Stability Oversight Council, see 12 USC s 1851(b)(1)-(2)(A); Financial Stability Oversight Council, 2011, "Study and recommendations on prohibitions on proprietary trading and certain relationships with hedge funds and private equity funds," available at: http://www.treasury.gov/initiatives/documents/volcker%20sec%20%20619%20study%20final%201%2018%2011%20rg.pdf accessed 29 August 2015; and (2) to coordinate rulemaking among the Federal Reserve Board, FDIC, OCC, SEC and CFTC so as to "assur[e], to the extent possible, that such regulations are comparable and provide for consistent application and implementation ... to avoid providing advantages or imposing disadvantages to the companies affected ... and to protect the safety and soundness of banking entities and nonbank financial companies supervised" by the Federal Reserve, 12 USC s 1851(b)(2)(B)(ii).

80 Joint Volcker Rule Release (n 33) 928-44 (conducting analysis under the Paperwork Reduction Act (PRA)); ibid 944-48 (conducting analysis under the Regulatory Flexibility Act (RFA)). The American Bankers Association (ABA) and other plaintiffs sued to enjoin enforcement of the Volcker Rule on the ground that the agencies" RFA analysis failed to consider the rule"s "significant economic impact on a substantial number of community banks." See Emergency Motion of Petitioners for Stay of Agency Action Pending Review at 15-16, Am Bankers Ass"n v Bd of Governors of the Fed Reserve Sys, No 13-1310 (DC Cir, 24 December 2013), available at: http://www.aba.com/Issues/Documents/12-24-13ABA EmergencyMotionforStayofVolckerRuleOwnership InterestProvision.pdf. The Joint Volcker Rule Release specifically addressed potential impacts by exempting banks below various specified size thresholds from reporting and compliance burdens. The ABA suit focuses on one indirect effect of the rule, which is to ban "banking entities" (including all depository institutions, small or large) from holding "ownership interests" in hedge and private equity funds (Subpart C of the Volcker Rule), including debt instruments that give holders the right to remove a collateral manager for a collateralized debt obligation – an entity that holds multiple trust-preferred or other securities, which (as the ABA in its papers admits) collapsed in value during the financial crisis. See ibid 2, 7.

81 See Office of the Comptroller of the Currency (n 77).

82 ibid 18-22. The FSOC also identified the benefit that the rule would reduce the risk that banks have effective liability for nominally off-balance sheet funds they sponsor. Financial Stability Oversight Council (n 78).

83 Office of the Comptroller of the Currency (n 77) 1.

84 ibid 15.

85 cf Cox, J. D., J. R Macey and A. L Nazareth, 2013, "A better path forward on the Volcker Rule and the Lincoln Amendment," Bipartisan Policy Center 85. Available at: http://www.sec.gov/comments/s7-41-11/s74111-648.pdf accessed 29 August 2015.

In sum, the OCC's CBA/FR did not include a quantification of the benefits, and only quantified a subset – and likely a small portion – of the costs of the Volcker Rule. The result was that the OCC confidently categorized the rule as "major" for purposes of the CRA,[86] because that categorization only requires bounding the rule's costs, but did not reach any conclusion about the rule's net costs and benefits.

Is a fully quantified CBA of the Volcker Rule feasible?

Could the agencies go beyond conceptual CBA and conduct a fully quantified CBA/FR? The short answer is no. The reason is simple, and derives from the nature of the Volcker Rule as a novel structural law. Because of its nature, there simply are no historical data on which anyone could base a reliable estimate of the benefits and costs of preventing banks from engaging in proprietary trading or investing in hedge and private equity funds. As a structural law, the Volcker Rule will be significantly constitutive of the very capital markets it regulates, making forward-looking predictions about how those markets will function under the rule inevitably speculative. Professor Jeffrey Gordon has argued this point more generally about financial regulations,[87] but regardless of whether it applies to all or even most financial regulations, it clearly applies to structural laws such as the Volcker Rule.

In addition to this core problem posed by structural laws, any effort to quantify those benefits runs straight up against numerous other difficulties. Any complete quantified CBA/FR of the Volcker Rule would require estimates of the costs and frequency of financial crises, which in turn would require macroeconomic modeling, subjective data selection and the prediction of policy responses to any emergent crisis. The difficulties with the Volcker Rule are compounded beyond those facing any regulation designed to reduce the odds and effects of a financial crisis, however, for two reasons. First, the rule has additional, separate benefits, such as the mitigation and reduction of conflicts of interest, which can only be quantified by relying on causal inferences with low-powered tools about complex institutional arrangements.

Secondly, and perhaps more important, it remains unclear how, if at all, the Volcker Rule will in fact reduce the risk or cost of financial crises. For reasons sketched in Sections 1 and 2 above, the rule's proponents (including Volcker himself) strongly believe that it will, by decreasing the role of speculation within banks, changing their organizational culture, and by limiting the ability of banks to attract and retain individuals with a risk-taking temperament.[88] But those judgments rest on personal experience and direct observation, not on publicly available historical data, nor is there any mechanical relationship between an activity (proprietary trading) and failure, as there may be with other elements of banking that are regulated, such as capital levels. Ironically, perhaps, the primary category of benefits (reduced systemic crisis risk from less speculation by banks) is inherently speculative, as with any novel structural law.

Quantifying the aggregate costs of the rule would be equally difficult. While the OCC quantified a subset of costs, it did not quantify the costs that are likely to be largest – especially the potential costs of lower liquidity. As the OCC noted, it may be possible to develop guesstimates for those costs: there are research papers estimating the cost of reduced liquidity for specific categories of assets.[89] But, as the OCC also noted, any estimates produced by relating predicted reductions in liquidity to this sparse research literature would be "difficult."[90] Among other things, a full set of cost estimates would require predicting the impact of the rule on liquidity across a range of financial markets, including anticipating entry by institutions not subject to the rule – institutions that could be expected to take advantage of any competitive opportunities opened up by the exit of banks subject to the rule. Those estimates would then have to be linked to estimates of the impact on the cost of capital from any expected reduction in the liquidity of one channel for capital raising, again taking into account possible substitution effects from other channels. Then, finally, the effects on output of any estimated capital cost increase would have to be quantified, using a macroeconomic model.

In sum, the result of any CBA of the Volcker Rule would be complex, difficult, constrained by limited data, highly contestable and sensitive to modeling assumptions. Any bottom-line "quantification" emerging from such an analysis would consist of no more than guesstimates that likely would straddle net benefits of zero by a large amount in either direction. An administrative law mandating that the banking agencies achieve the impossible – to reliably and precisely quantify the costs and benefits of the Volcker Rule – is by definition impractical, and would have more negative effects (delaying otherwise defensible, and in this case, legally mandated, regulation) without any clear offsetting benefit. Mandatory quantified CBA of the Volcker Rule flunks its own cost-benefit test.

86 See Office of the Comptroller of the Currency (n 77) 1, 23.

87 Gordon, J. N., 2015, "The empty call for cost-benefit analysis in financial regulation," 43 Journal of Legal Studies, S 351.

88 Financial News, 2012, "Paul Volcker fights for Volcker Rule," 14 February; Moyers, B., 2012, "Paul Volcker on the Volcker Rule," 5 April, http://billmoyers.com/segment/paul-volcker-on-the-volcker-rule/ accessed 29 August 2015.

89 Office of the Comptroller of the Currency (n 77) 17 (citing Hasbrouck, J., 2009, "Trading costs and returns for U.S. equities: estimating effective costs from daily data," 64 Journal of Finance 1445, 1445-77).

90 Ibid 1, 23.

CONCLUSION

In this article, the Volcker Rule has been analyzed as a "structural law," a type of law that aims to shape behavior not only or primarily through direct commands but indirectly, by shaping and channeling the institutions of banking and in so doing change their cultures. At once more ambitious and more powerful than ordinary laws, structural laws work indirectly and sweepingly. Such laws, the article argues, have a long pedigree in Anglo-American legal history. At the same time, modern structural laws require more delegation to regulatory agencies, and so run up against another set of structural laws – those comprising the bulk of administrative law.

One component of administrative law over the last several decades has increasingly been legal commands that agencies engage in CBA, and ideally quantification of the costs and benefits of important new regulations. The difficulty with such an administrative law approach, however, is that it requires agencies to do the impossible, in the case of new structural laws such as the Volcker Rule: to anticipate, in advance of relevant data, the private market behavior in response to novel structural constraints on banking activity, such as that reflected in the Volcker Rule. In other words, if administrative law's goals are to be achieved in the context of major banking laws such as the Volcker Rule, they must find some other way to do so than through requirements of CBA. Perhaps inter-agency dialogue will help, perhaps laws and budgetary tools designed to encourage regulatory experiments will help, perhaps agencies can be pressed to include sunsets and other means to evaluate and adapt regulations over time.[91] But for novel structural laws such as the Volcker Rule, CBA is not a promising way forward.

91 Coates, J. C., 2015, "Towards better cost-benefit analysis: an essay on regulatory management," 78 Law and Contemporary Problems 1-23 (making these and other suggestions for improving regulation through better CBA by financial regulatory agencies).

FINANCIAL COMPUTING & ANALYTICS

STUDENTSHIPS

Four-Year Masters & PhD

for Final Year Undergraduates and Masters Students

As leading banks and funds become more scientific, the demand for excellent PhD students in **computer science, mathematics, statistics, economics, finance** and **physics** is soaring.

In the first major collaboration between the financial services industry and academia, **University College London, London School of Economics,** and **Imperial College London** have established a national PhD training centre in Financial Computing & Analytics with £8m backing from the UK Government and support from twenty leading financial institutions. The Centre covers financial IT, computational finance, financial engineering and business analytics.

The PhD programme is four years with each student following a masters programme in the first year. During years two to four students work on applied research, with support from industry advisors. Financial computing and analytics encompasses a wide range of research areas including mathematical modeling in finance, computational finance, financial IT, quantitative risk management and financial engineering. PhD research areas include stochastic processes, quantitative risk models, financial econometrics, software engineering for financial applications, computational statistics and machine learning, network, high performance computing and statistical signal processing.

The PhD Centre can provide full or fees-only scholarships for UK/EU students, and will endeavour to assist non-UK students in obtaining financial support.

UCL LSE Imperial College London

financialcomputing.org

INDUSTRY PARTNERS

Financial:

Barclays
Bank of America
Bank of England
BNP Paribas
Citi
Credit Suisse
Deutsche Bank
HSBC
LloydsTSB
Merrill Lynch
Morgan Stanley
Nomura
RBS
Thomson Reuters
UBS

Analytics:

BUPA
dunnhumby
SAS
Tesco

MORE INFORMATION

Prof. Philip Treleaven
Centre Director
p.treleaven@ucl.ac.uk

Yonita Carter
Centre Manager
y.carter@ucl.ac.uk

+44 20 7679 0359

Layout, production and coordination: Cypres – Daniel Brandt, Kris Van de Vijver and Pieter Vereertbrugghen
Graphics: DuKemp
Photography: Alex Salinas

Imperial College Business School | Centre for Global Finance and Technology

Centre for Global Finance and Technology

The Centre for Global Finance and Technology at Imperial College Business School will serve as a hub for multidisciplinary research, business education and global outreach, bringing together leading academics to investigate the impact of technology on finance, business and society.

This interdisciplinary, quantitative research will then feed into new courses and executive education programmes at the Business School and help foster a new generation of fintech experts as well as re-educate existing talent in new financial technologies.

The Centre will also work on providing intellectual guidance to key policymakers and regulators.

"I look forward to the ground-breaking research we will undertake at this new centre, and the challenges and opportunities posed by this new area of research." – Andrei Kirilenko, Director of the Centre for Global Finance and Technology

Find out more here:
imperial.ac.uk/business-school/research/finance/centre-for-global-finance-and-technology/

CAPCO

BANGALORE
BRATISLAVA
BRUSSELS
CHICAGO
DALLAS
DÜSSELDORF
EDINBURGH
FRANKFURT
GENEVA
HONG KONG
HOUSTON
JOHANNESBURG
KUALA LUMPUR
LONDON
NEW YORK
ORLANDO
PARIS
SINGAPORE
TORONTO
VIENNA
ZÜRICH