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# How many lightbulbs does it take to change the financial system? Economic ideas and financial regulation, 1846–2007

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## Abstract

Ideas may impact economic policy change, but their specific effects are difficult to untangle. Material factors may influence both ideational change and policy change. In order to study these complex interrelationships, this article looks at the impact of both ideational change (the rise and fall and rise of free-market economics) and material factors (competitive pressure, crises, and domestic politics) on financial regulatory change and on one another in the United Kingdom and United States since 1846. Using a vector error correction model, I find that elite ideas influenced regulation in Britain, but not the United States. Material factors exhibited more explanatory power in both cases, although institutional differences between Britain and the United States made some shocks more or less important in either country. Material factors also influenced ideational change in both cases.

## Keywords

financial regulation, history of economic thought, international political economy, international relations, macrohistory, time series

Lately, scholars of financial regulation have been ‘cursed’ with interesting times. In the 1980s and 1990s, a wave of deregulation produced many financial innovations, while subsequent crises prompted stricter rules. Recent episodes of reform are but the latest examples of a longstanding historical process. Typically, banking and securities regulation experiences bouts of epochal change followed by long periods of regulatory stasis.<sup>1</sup> However, it has proven difficult to reach conclusions about why the regulatory pendulum swings from stringency to laxity and back again, because many plausible explanations coincide temporally.

Extant works present a range of plausible drivers of financial reform including economic ideas, the impact of crises, global competitive pressures, and domestic politics. Some scholars emphasize purely ideational discussions of policy change (Skidelsky,

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2010), while others prefer more nuanced arguments. Explorations of ideational evolution during crises (Blyth, 2002; Widmaier et al., 2007) tell us much about the causal mechanisms behind policy change. The impact of ideational change can be mediated by national institutions (Hall, 1989). Works operating from the epistemic community framework provide evidence that ideas influence policy by infiltrating the corridors of power (Adler and Haas, 1992; Chwioroth, 2007, 2010). Other works offer materialist explanations of regulatory change, emphasizing interest group politics (Kroszner and Strahan, 1999; Suarez and Kolodny, 2011), the material impact of crises (Grossman, 2010; Higgs, 1987), interstate competition (Costigliola, 1977), or a mix of factors (Helleiner, 1996; Helleiner and Pagliari, 2010).

Although existing works greatly advance our understanding of the drivers of regulatory change, the tendency for scholars to fall in ideational or materialist camps is limiting. Many materialist scholars ignore plausible ideational explanations of reform outright. Many ideational accounts explain how material factors facilitate the spread of ideas, but say less about material influences on the process of idea generation. We should develop eclectic theories of regulatory change that address the potential for multiple directions of causation, and stronger tests of two-way causation.

Additionally, most empirical tests of regulation examine short time periods or single reform episodes. Quantitative studies typically emphasize the recent past (Kroszner and Strahan, 1999; Simmons and Elkins, 2004). Yet shifts in both economic ideas and financial regulatory change often follow a punctuated equilibrium pattern, ill-suited to short-term analysis.<sup>2</sup> Qualitative works tend toward case studies of major events (particularly financial crises). Although useful, the conclusions of case studies may be over-determined. Many aspects of, say, the Great Depression contributed to increased financial regulation. Testing theories against the variation offered by long periods of history is useful for generating robust theories.

In this article, I seek to understand complex ideational–material linkages in economic policymaking, and to examine which factors best explain historical patterns of regulation. I develop an eclectic framework for assessing the ideational and material causes of financial reform, as well as their complex interactions. I argue that financial crises, competitive pressures, and the relative influence of the financial sector are all plausible drivers of regulatory policy. I am more skeptical about the ability of broad ideational shifts—particularly shifts toward and against free markets<sup>3</sup>—to explain policy reform (for instance, ‘neoliberalism caused deregulation’). Ideational shifts often occur alongside material shifts that could influence reform and the processes by which ideas are generated.<sup>4</sup> I do not mean that ideas are irrelevant. Ideas prominent among elites may exhibit influence on policy, and may vary from those in public discussion.

Empirically, I develop a long-term vector error correction (VEC) model of financial regulation in the United Kingdom (1846–2005) and the United States (1870–2007) to examine what drives change. A VEC model is useful in addressing a number of the sticking points facing the literature. VEC models are robust to multidirectional causation, and thus can provide information not only on what drives regulatory change, but also on the factors that influence ideational change itself. Additionally, a long-term quantitative approach can overcome the problems of over-determination plaguing case study approaches, while modeling the punctuated equilibrium pattern typifying financial reform.

I seek to understand why countries sometimes adopt endorse lax regulation of financial intermediaries, while at other times they prefer stringent rules.<sup>5</sup> Specifically, I am interested in whether states favor capital requirements, unit banking regulations, rules

against margin trading, and comprehensive reporting requirements for intermediaries. Deregulation allows capital to flow towards innovative and profitable opportunities, but raises the risk of financial crises, while the latter implies the opposite (Loayza and Ranciere, 2006; Ramey and Ramey, 1995). Growth and risk are not the only tradeoffs in financial regulation—Rosenbluth and Schaap (2003) emphasize the distinction between pro-competitive and anti-competitive reforms, while some rules (for instance usury laws) pose distributional consequences. However, the innovation–risk tradeoff is useful to investigate because it informs both current and historical debates about post-crisis reform.

## **Theory-building**

In this section, I present an eclectic framework for predicting financial regulatory change. In particular, I develop theoretical rationales for four factors driving financial regulation: financial crises, the sectoral impact of financial crises, the relative power of the financial sector domestically, and competitive pressures globally. Next I explore how each factor might interact with the battle of economic ideas.

Ideational *change* is not an exogenous process—theories do not rise to prominence in a vacuum. As academics, we often acknowledge motivations beyond the pure quest for truth: ‘how does this hypothesis fit with the literature?’ ‘Will the (US) National Science Foundation approve this request for funding?’ or ‘will this line of research lead to a job?’ Many factors linking ideas to policy also impact the generation of ideas. Accounting for feedback effects, I am skeptical of the explanatory power of broad ideational shifts like ‘great man’ versions of economic history, or explanations of policy emphasizing eras of ‘Keynesianism’ or ‘neoliberalism’. Although economic theory matters, public and academic debates furnish policymakers with an abundance of options. How politicians choose from an expansive menu may be more important than the composition of that menu. The impact of ideas is thus best understood by examining more specific sets of ideas, their links with the corridors of power, and accounting for feedback loops from material factors.

## **Crises**

Some explanations of policy change explore how crises—including wars and financial crises—alter policy (Blyth, 2002; Widmaier et al., 2007). Crises create an uncertain environment, from which policy entrepreneurs can emerge, prescribing solutions, and reshaping the identities underlying political contention. Indeed, the crisis label itself may be an act of construction (Baker and Underhill, 2015). For instance, in the United States, the unemployment rate was higher in the early 1980s recession than after the 2008 financial crisis, but the Reagan years are remembered as ‘morning in America, again’, while 2008 is ‘the worst economic calamity since the Great Depression’ (Bureau of Labor Statistics (BLS), 2016).

Crises encourage a search for ‘what went wrong’. While some works argue that crises tend to promote increased regulation and intervention (Grossman, 2010; Higgs, 1987) for prudential and political reasons, others disagree (Crouch, 2011). Opponents of regulation may be able to construct alternate narratives of why crises occurred (for example, conservative explanations of the US Subprime crisis blamed the crisis on the Community Reinvestment Act). Similarly, Dellepiane-Avellaneda (2015) discusses how the idea of ‘expansionary’ fiscal contractions diffused in the 1990s and 2000s. Understanding why some crises lead to increased regulation, while others do not is useful.

Financial crises are not merely national events—they are also distributive events that alter the balance of power between domestic interests. It can be useful to think of different financial crises along a spectrum of distributional outcomes. At one extreme, a ‘finance-heavy’ crisis, the brunt of the crisis falls on the financial sector in the form of bank failures and a plummeting stock market. Even though downstream industries in the real economy face negative effects from the crisis, their losses would be smaller than that of the financial sector. For instance, in the United States, while the Great Depression wrought much hardship, by the 1933 Bank Holiday it had eviscerated the banking sector in particular (Hendrickson, 2001). In contrast, in a ‘finance-light’ crisis, a few ‘troublesome’ firms might experience losses, but the real economy experiences the bulk of economic pain. Post-crisis responses by governments and central banks, such as bank bailouts, can often generate a finance-light outcome. For instance, the Bank of England–led bailout of Barings in 1890 blunted the impact of the crisis on the financial sector, but failed to prevent a protracted recession in Britain.

Thus, while financial crises may increase regulatory scrutiny, the impact of crises on the financial sector augments the likelihood of reregulation. Financial firms occupy a different position on the growth–stability tradeoff than other actors, and seek to influence policy in their preferred direction. Finance-heavy crises undermine these channels for influence: financial firms influence policymakers and regulators through campaign donations (Stratmann, 2002), and by indirect means of influence like the iron triangle (Grossman and Helpmann, 2001). In a zero-sum battle for influence through campaign donations, dwindling coffers are a problem. Similarly, employment in the financial sector for a retiring regulator is an unattractive inducement when banks and investment firms are failing. Moreover, financial firms themselves may accept stricter regulation in the face of a serious crisis. Hendrickson (2001), for instance, finds evidence that the precarious position of financial firms after the banking crisis of 1932 weakened financial sector opposition to the Glass–Steagall act. Of course, it is necessary to stress that financial sector preferences for less regulation are relative. Finance might push for the status quo, or even increased regulation following a crisis, but they are likely to be less enthusiastic for reforms than other sectors of the economy.

Thus, I propose two hypotheses: financial crises generally produce increased regulation; however, finance-heavy crises amplify the push for regulatory stringency, as non-financial actors are better able to push policymakers toward their preferred positions. In contrast, finance-light crises may reduce regulation, relative to finance-heavy crises:

*H1.* Financial regulation increases after financial crises.

*H2.* Finance-heavy crises increase regulation, while finance-light crises reduce regulation.

Finance-heavy and finance-light crises are also likely to impact ideational debates. A finance-heavy crisis might be interpreted in a manner unflattering to finance—overreaching financial intermediaries engaging in unwise or unethical activities paint unfettered markets in a negative light. Insofar as financial firms influence debate, their influence will be weakened by diminished resources. Many of the think-tanks that transmit academic ideas to the public are privately financed (Stone, 1996). Similarly, when employment in finance is highly desirable, economists may select research questions with the prospects of private sector employment in mind. Not only do employment motivations inure

scholars to ask questions of interest to finance, access to proprietary data may require a degree of compromise (Zingales, 2013). In contrast, a finance-heavy crisis should weaken these channels for financial influence. Thus, while regulatory reform may coincide with ideational shifts, financial crises might influence reform *and* ideational debates.

### *Domestic politics*

Many works suggest that it matters ‘who rules’, although they differ on the mechanism. Partisanship and sectoral influence present distinct patterns on how policymakers might regulate financial sector actors. As with crises, domestic politics also impact ideational discourse.

Some works emphasize right–left differences as important drivers of economic policy. For instances, Hibbs (1977) abstracts policy differences from the Phillips curve, the right fears inflation (which hurts capital) while the left fears unemployment (which hurts labor). Focusing more on the politics of finance, Simmons (1994) argues that left–right differences drove the response to financial crises in the gold standard era, with the right favoring protectionism and the left, devaluation. While this frame offers insight into many areas of economic policymaking, it is less fruitful on financial regulatory questions. One issue is that the implications of a tradeoff between growth and stability for capital and labour are not obvious. Capital in emerging sectors might have dramatically different interests than capital in old-growth sectors. Moreover, the politics of financial regulation often eschews left–right patterns. In the United States, for instance, Democratic President Bill Clinton signed bills eliminating interstate branching restrictions, the Glass–Steagall system, and restrictions on derivative trading. Furthermore, ‘pro-business’ coalitions depend not only on business actors with broad, diversified interests, but also actors able to coordinate them. Firms may often be unwilling to underwrite the costs of broadly pro-business political advocacy, preferring to mobilize around narrower issues (Mizruchi, 2013).

Rather than broad left–right or capital–labor distinctions, policy might be driven by sectoral politics. No sector has a greater stake in financial regulation than the financial sector itself. Accordingly, the relative influence of the dominant securities and banking institutions and the real economy are relevant. Reporting standards impose costs, and reduce information asymmetry between financial actors and others. Capital or reserve ratio requirements prevent firms from using capital for profitable investments. Restrictions on branching or the scope of operations for financial institutions prevent firms from engaging in new activities. While the fruits of finance-led growth flow disproportionately to the firms underwriting economic expansion, the costs of instability are widely shared. Thus, financial firms are likely to favor less regulation than other actors. These preferences are relative, of course, and within a diverse financial sector, some banks and securities firms may diverge from the sector as a whole.

A powerful financial sector can influence policy through myriad channels. Even left-leaning governments need the confidence of financial markets to retain power. As James Carville opined, ‘I used to think if there was reincarnation, I wanted to come back as the president or the pope or a .400 baseball hitter. But now I want to come back as the bond market. You can intimidate everybody’.<sup>6</sup> Legislators, in turn, may be influenced by the promise of future employment as lobbyists. In the United States, where lax campaign finance laws allow us to examine campaign donations as a window into financial sector preferences, finance tends to prefer winners. Whatever qualms financial institutions had about Presidents Franklin Delano Roosevelt (Webber, 2000), Bill Clinton (Ferguson,

1995), or Barack Obama (Center for Responsive Politics, 2016), they were willing to put those aside in exchange for access and influence. Of course policy is contested, and when the financial sector is weak, compared to the real economy, its priorities are less likely to be enacted:

*H3.* When financial wealth as a percentage of gross domestic product (GDP) is greater, governments will be less likely to impose regulations.

The financial sector can exert direct and indirect influence on economic ideas. For instance, Gould (2006) argues that the financial sector effectively lobbies the purportedly technical International Monetary Fund (IMF), shifting the priorities of a significant font of expertise toward the financial sector. As with legislators, private sector employment and consulting opportunities remain lucrative options for many economists—particularly those at the top of their fields. Lobbying may have a second-order effect as well—if hiring agencies are likely to emphasize financial sector priorities, economists seeking future employment might be more likely to devise research agendas compatible with financial sector objectives (Zingales, 2013). Likewise, regulators and academics often rely on private sector actors for expertise, particularly as the financial sector grows more complex (Johnson and Kwak, 2011; Underhill, 2015). Financial sector influence need not result from a conscious conspiracy. Economists may simply ask questions that are of interest to the financial sector when the financial sector is relatively large.

### *Competitiveness*

Other works emphasize the importance of competition for global economic leadership and its interactions with ideational and policy change.<sup>7</sup> Seabrooke (2006) discusses how states used credit expansion to legitimize a broader drive for global financial power. Similarly, Helleiner (1996) argues that economic realpolitik drove an Anglo-American return to globalization in the 1970s. Dollarization shored up America's global position, while Britain's 'treasury-city compact' was hungry to restore Britain's position as a leading financial center. Helleiner and Pagliari's (2010) later work on the 2008 crisis similarly emphasizes competitive pressures, although also discussing how interest groups and changing ideas were important in post-crisis reform.

I offer a more general argument linking global competition and financial regulation. Many traditions within international relations discuss the idea of global leadership as a prize, conferring rents and influence to the dominant power (Modelski and Thompson, 1996; Organski and Kugler, 1980). Many of the rents (control of the global reserve currency, a dominant role in global economic institutions, and ownership of the world's leading stock exchange) are zero-sum, and difficult to share. There are no retirement homes for former hegemon—declining powers experience slow growth, lose the structural benefits of leadership, and often find the domestic institutional idiosyncrasies developed during primacy ill-suited for their needs (Kennedy, 1987). When the gap in capabilities between the lead economy and its nearest challenger is small, competitive dynamics may push governments to adopt risky, pro-growth deregulation to reverse decline.<sup>8</sup> For instance, when France challenged Britain in the mid-19th century, Lord Palmerston gutted the stringent Peel Act, and adopted limited liability banking. While a subsequent boom in company subscriptions helped shore up the British position, reform also contributed to the Overend–Gurney crisis of 1866. Even states (or cities)

vying for regional financial leaders (for instance Shanghai–Tokyo–Singapore–Hong Kong competition) may face similar pressures. Anglo-American financial rivalry in the 1920s (Costigliola, 1977) and US–Japanese competition in the 1980s would also resemble this pattern.

*H4.* When the relative financial power of the leading economy is weak, governments will be less likely to impose regulations.

Competitive pressures also have a causal relationship with economic ideas. Lead economies at their peak often favor the free flow of capital, owing to their domestic makeup and international interests. Domestically, countries achieving technological and financial primacy have been characterized by nimble capital markets, adept at underwriting the innovative firms (Amable, 2003). Globally, lead economies export high-margin advanced goods that few other states can produce and have much surplus capital to invest abroad. In contrast, late developers have distinct institutions from those at the cutting edge, characterized by large banks and state intervention to facilitate economies of scale (Gerschenkron, 1962). In eras where the lead economy is in relative decline, observers are more likely to adopt critical views of lead economy institutions and favorable views of late developers. Policies like credit expansion can stave off legitimacy critiques (Seabrooke, 2006), but their embrace belies increasing doubts in the free-market economic order. For economists, decline may raise questions as well. Assessments of the best economic system depend, in part, on data. If the lead economy—a critical case for most analyses—experiences anemic growth, many will question its prevailing policies. Furthermore, lead economies directly impact the spread of economic ideas globally through international institutions like the IMF (Copelovitch, 2010). Should their influence wane, global institutions may embrace alternative models. In short, just as was the case for crises and sectoral politics, there are good reasons to believe that the declining relative position of leading economies may weaken market ideals, *even as they increase the material incentives to adopt policies of deregulation.*

### *Ideas*

Superficially, it may appear as if broad ideational shifts can explain policy shifts. For instance, many might explain the less-regulated 19th century, more regulated Bretton-Woods era, and moderately regulated post-Bretton-Woods era by pointing to an age of Adam Smith, John Maynard Keynes, and Milton Friedman, respectively. Yet each of those ideational shifts emerged alongside significant material changes that could plausibly influence regulation and the thinking of economists themselves. Academia provides policymakers with an abundance of choice over which ideas to implement. Rather, if one is interested in the role of ideas, it may make more sense to look at how ideas become adopted by governments in the first place.

The epistemic community literature examines how communities form around ideas, penetrate the corridors of power, and eventually implement their grand designs (see Adler and Haas, 1992). For instance, the emergence of limited liability banking in the United Kingdom involved distinct epistemic communities with divergent motivations. In the 1830s, Christian Socialists and some economists (including John Stuart Mill) advocated limited liability as a means to democratize banking, expanding credit for the working class. While successful in winning a Committee investigating limited liability, the



movement failed to enact its plans. In contrast, a later effort emphasizing limited liability as an extension of laissez-faire principles was more successful. Although Lord Palmerston, Prime Minister during the limited liability debate of the 1850s, was pragmatic on economic matters, he was surrounded by limited liability advocates (Taylor, 2006). Chwieroth (2007, 2010) offers one of the few quantitative tests of an epistemic community model, finding that the presence of neoliberal economists increased the likelihood of current account liberalization in developing countries. Lay accounts seeking to explain the financial deregulation of the 1980s and 1990s, in turn, might variously emphasize Alan Greenspan or Larry Summers as being critical in turning abstract principles into policy (Reich, 1997).

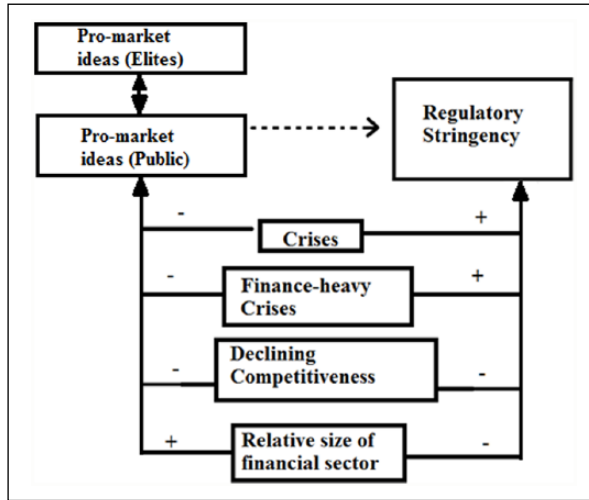
Thus, although governments are unresponsive to shifts in academic debate, circumstances may shift the set of ideas held by elites. Shifts in elite perceptions may themselves be driven by material considerations—policymakers are searching for ideas that will help them understand real changes in competitiveness or the likelihood of financial crises. Ideologically similar governments may yet enact different policies depending upon which epistemic communities frame the choices they make. As with other factors considered here, elite ideas might also have a feedback loop, influencing academic debate. The ideas that elites consider are more likely to be enacted as policy, thus giving academics something to study. It is good and well for some economist to propose a global bank tax, but such proposals are difficult to study empirically until after they are implemented. Thus, I propose a hypothesis about the influence of ideas on policy.

*H5. When elites favor pro-market ideas, governments will be less likely to impose financial regulations.*

To summarize, there are good reasons to believe that financial crises, financial sector strength, and competitive pressures influence financial regulation. However, in order to gauge the independent impact of ideational change, it is necessary to distinguish how plausible material factors influence *both* ideas and policy. It is also useful to distinguish between ideas held by elites and those held by academics. Simply ascribing explanatory power to broad ideational shifts runs the risk of omitted variable bias, as illustrated in Figure 1. Many factors predicting regulatory change are likely to change simultaneously, sometimes in contradictory ways that inhibit reform (for instance, a crisis might increase pressure to regulate, while weakening competitiveness). Different political systems, institutions can heighten or dampen contending material or ideational channels (Hall, 1989). That is why it is useful for our purposes to consider a broad framework.

## Method

In order to assess my framework, I assembled data on British and American financial regulation during the period when each was either the leading financial power, or a strong contender.<sup>9</sup> There are a few reasons for an Anglo-American focus. First, I measured shifts in economic thought over time using book data. The book data for the English language is more complete than for other languages, and a relatively strong transatlantic flow of ideas makes it possible to use the same ideational dataset for both countries. Second, as the leading financial powers for the period under question, neither state is likely to have adopted the policies it did due to coercion by others. Thus, in Britain and the United States, policymakers had a wider scope for choice than, say, most developing countries.



**Figure 1.** Hypothesized influences on ideas and regulation.

Third, both countries represent critical cases, both due to their size, and their role as hubs for institutional diffusion and ideational imitation.

The long time scope is additionally useful because it allows one to look at multiple periods of rapid financial regulatory reform. Major British reforms include the limited liability revolution of the 1850s, banking reform in 1878, the imposition of wartime controls, the interwar return to normalcy, reform after the Second World War, and deregulation during the Thatcher years. For the United States, the period in question runs from 1870, as the US GDP passed that of Britain (Maddison, 2013), to the deregulation of the 1980s and 1990s. Obviously, there are downsides to a macrohistorical approach as well. Idiosyncratic features of a particular reform episode might be missed. At the same time, it is useful to theorize about political phenomena from multiple vantage points—to see what can be generalized and what cannot.

Both the theoretical goals of this project, and methodological considerations informed my empirical approach. A number of issues common to time series analysis had to be addressed by the model. First, both of the data series were non-stationary, as confirmed by an Augmented Dickey–Fuller test. Simply regressing in the face of non-stationarity would be problematic, because of the presence of a unit root process—a stochastic trend which causes exogenous shocks to impact the model for all eternity (Enders, 2001). One solution to non-stationarity is differencing, which is recommended by proponents of a Box–Jenkins approach (McCleary and Hay, 1980). However, differencing eliminates interesting long-term dynamics, resulting in model misspecification (Ostrom and Smith, 1992). Given that my objective is to find out the long-term correlates of regulation, a differenced model would be ill-equipped to test the theory under investigation here. Furthermore, many variables investigated here exhibit the property of cointegration. A non-stationary time series that is stationary after  $I$  differences is said to be cointegrated at order  $I$ . Differencing a cointegrated series entails throwing away valuable information about the long-term relationships between variables.

Engle and Granger (1987) introduced the error correction model, as a more appropriate way in which to address cointegrated data. An error correction model includes an error

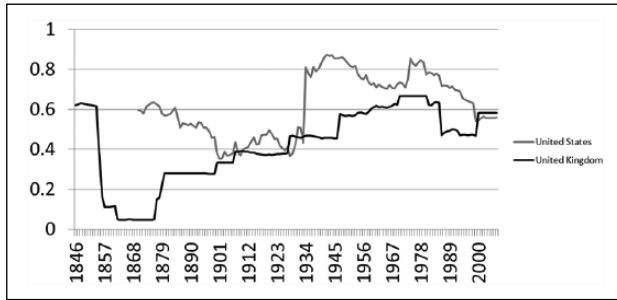
correction term alongside a differenced series, in order to distinguish usefully between long-term and short-term dynamics. As Murray (1994) explains, imagine that the ‘drunk’ of random walk fame owned a dog. As the master called out for the dog, and the dog responded to its master’s voice (the error correction mechanism), the two might gradually approach one another, even if their meandering path resembled a random walk in the short-run. Indeed, even if non-stationarity were not a concern, it can be theoretically useful to distinguish between long- and short-term coefficients and it remains appropriate to run VEC models (De Boef and Keele, 2008). However, the original two-step formulation of Engle and Granger is not appropriate in cases where three or more series are cointegrated. As such, I employ the Johansen (1991) technique, which is able to identify  $N$  cointegrated time series (a drunk person and  $n$  dogs) to determine the rank of cointegration. Next, I run a VEC model for Britain and for the United States, with the rank indicated by the Johansen test. In addition, to guard against autocorrelation and moving average issues, I included lags of each variable so as to minimize the Akaike information criterion (Greene, 2008).

The VEC approach is additionally useful because it treats all variables as endogenous to one another. One of my contentions is that while ideas may impact policy, policy could impact ideational change (or either relationship might be spurious). There is empirical support for such a proposition as well, as the Durbin–Wu–Hausman test showed ideas to be endogenous with policy in both cases.

## Data

To measure the stringency of financial regulation over time, I constructed a weighted index of stringency across multiple dimensions for banks and securities firms. Banking regulation was measured by the degree to which the country possessed unit banking restrictions (such as branching restrictions, scope restrictions), risk management regulations (such as limits to bank leverage), and bank reporting requirements. Securities regulation was measured by the degree of risk management regulations (such as subscribed capital minimums or margin requirements), company reporting laws, and rules governing company formation. The banking and securities indices were then averaged, with each weighted based on its relative importance within the economy. The weight of banking regulations was based on the value of bank deposits, while that of securities was based on market capitalization to account for regulatory arbitrage. That is, if regulators only regulate one type of intermediary, investors may simply use less-regulated alternatives. A similar problem, albeit one I am not able to capture with this data, is exhibited by the growth of shadow banking institutions over the past 40 years. British and American financial regulation over time is charted in Figure 2, while a detailed list of sources is contained in online Appendix 1.

In Britain, the 1844 Peel Act imposed reporting requirements, and restrictions on company formation. Coupled with an existing system of unlimited liability, risk-taking by financial institutions was regulated strictly. However, the Peel Act system was short-lived. In the 1850s, Lord Palmerston gouged the Peel Act, and old safeguards—like unlimited liability—were abandoned. Amidst the crash of 1878, Parliament enacted minimum subscribed capital requirements for companies and new legislation allowing banks to place uncalled capital into a reserve, should the bank be wound up. Progressive improvements in company reporting requirements proceeded in the 20th century, including the elimination of the incompetence alibi. More significant reporting rules were passed after the Second



**Figure 2.** British (1846–2007) and American (1870–2007) regulatory stringency.

World War. Stringent rules remained in place till the premiership of Margaret Thatcher, who made reserve ratios voluntary and launched the ‘Big Bang’, deregulating the London Stock Exchange. For a list of British regulatory events, see Table 1.

Financial regulation in the United States followed a broadly cyclical pattern. Initially, weak regulations grew weaker still as the less-regulated equities sector outpaced the more regulated banking sector in size. The Great Depression prompted a second significant shift in the stringency of American financial regulations—the Glass–Steagall act imposed restrictions on banks and the Securities and Exchange Commission started to monitor securities. By the 1970s, however, the dismantling of the Glass–Steagall/Bretton-Woods system began. First, capital controls were abolished in 1974. Second, the deregulation of Savings and Loans banks in the 1980s eliminated a risk-averse haven for depositors (and a powerful opponent of bank deregulation). Third, the Federal Reserve reinterpreted the Glass–Steagall act in 1986, allowing banks to underwrite some securities. Each minor act of reform set the stage for a massive repeal of financial regulation in the 1990s, including the elimination of branching restrictions, the Glass–Steagall act, and the liberalization of derivatives trading. For a detailed history of American financial regulation, see Table 2.

To capture the state of economic ideas among public discussion and elites, I examined the work of 28 leading economists using Blaug’s (1985a, 1985b) list of the 200 ‘greatest’ economists as a guide. I coded each on whether their primary contributions supported or suggested limits to free markets, or neither (see online Appendix 4). To measure ideas in public–academic discussion, I weighted the relative influence of each economist over time using Google’s Ngram viewer tool (Google, 2011). The Ngram viewer reports the frequency of references to search phrases over time, relative to all other phrases in a sample of over 5 million books (approximately 4% of all books ever written). Subtracting the share of anti-market references from the share of pro-market proportion and dividing by the total relative share of books mentioning the 28 economists produced a –1 to 1 measure of the prominence of pro-market ideas (Figure 3). I applied the same approach to ideational prominence for elites, using UK parliamentary debates (UK Parliament, 2016) and US congressional hearings (US Congress, 2016) for data. If hypothesis 5 is correct, we should see deregulation when pro-market ideas are ascendant among elites, but not the public.

References to economists in books exhibit good face validity as a measure of shifting ideas: the 1840s saw a swing in favor of market economics, as mercantilist thinkers were supplanted by free traders, and later marginalists. Scholars in the marginal school of economics remained prominent up till the Great Depression, despite an

**Table 1.** British regulatory timeline, 1846–2005.

Banking	Equities
1846, banks required to make annual reports, with minimum share capital of £100,000, no unit banking restrictions	1846, annual reports required but standards unclear, companies subject to minimum capital requirements, Board of Trade approval necessary for company formation
<i>1855–1857, reporting restrictions eliminated, Peel Act repealed but unlimited liability remains</i>	<i>1855–1857, reporting requirements abolished (restored in 1857, but not mandatory), capital minimums eliminated, formation of limited liability companies liberalized</i>
<i>1862, limited liability extended to banks</i>	1877, minimum subscribed capital for companies imposed
1878–1879, compulsory audits required, reserve liability imposed	1900, annual audits required by law but contents unclear
1947, Companies Act of 1947 adds reporting requirements, but allows concealment	1906, clarification of reporting requirements
1971, concealment disallowed, Reserve Ratio Requirements imposed	1927, accounting standards tightened further
<i>1981, voluntary system for reserve ratio requirements adopted</i>	1947, Companies Act of 1947 adds reporting requirements
	<i>1985–1986, Big Bang reforms, replacement of internal regulation with more lax, SIB, derivatives exempt from reporting requirements</i>
	2000, Financial Services and Markets Act requires reporting of derivatives

SIB: Securities and Investment Board.

Deregulating events are indicated with italics.

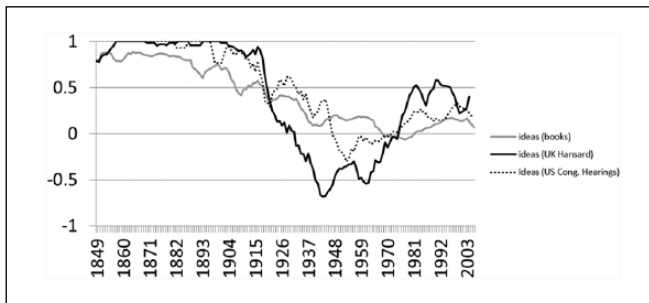
intellectual challenge from radicals like Marx or Veblen. The Depression, however, saw a marked turn toward Keynesian ideas, which continued until the 1970s. Finally, the past four decades have seen the resurgence of pro-market economists. All three series seem to move in similar ways; indeed, the Hansard data have a .6838 with the book series while Congressional Hearing series and the book series have a correlation coefficient of .8242.

In order to test hypothesis 1, that crises increase regulation, I included a variable measuring the incidence of a financial crisis. Reinhart and Rogoff (2009) discuss a number of different types of crises, including banking crises, currency crises, stock market crashes, debt crises, and hyperinflation. I include all types of crises, except debt crises, because excluding banking, currency, stock market, or hyperinflation crises might say more about a country's relative preference for different sectors of the economy, than its regulatory preferences. Crises may coincide, prompting difficult choices: for instance, a country beset by a banking and currency crisis might defend the currency, resulting in deflation and a banking collapse, or use monetary policy to save the banking system, depreciating the currency in the process. I excluded debt crises for two reasons: debt crises are the mildest form of crisis and debt crises are often the result of the debt-deleveraging phase of other types of crises rather than distinct events (Reinhart and Rogoff, 2011). In particular, domestic debt crises did not disrupt the payments system the way other crises did. For instance, Reinhart and Rogoff (2011) consider 1873–1883 as a domestic debt crisis for

**Table 2.** American regulatory timeline, 1870–2007.

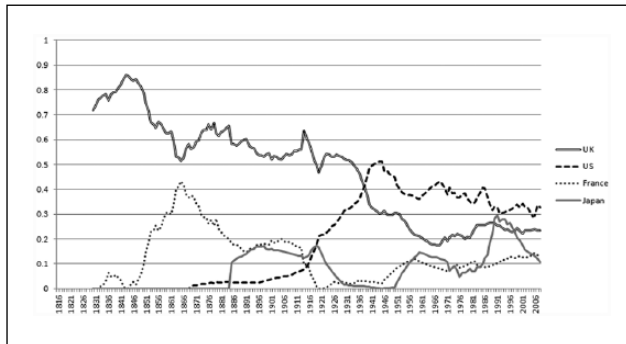
Banking	Equities
1870, strong reporting requirements, banking restrictions in most states, national charters granted with some restrictions, capital minimums for national banks, subject to double liability banking rules. No lender of last resort (beyond voluntary clearinghouses)	1870, little regulation of equities markets
<i>1901, capital minimums for national banks reduced under the Gold Standard Act</i>	1934, creation of the SEC, imposition of margin trading rules
1927, McFadden act clarifies branching rules	1945, high-margin trading rules introduced
1933, Glass–Steagall imposes branching restrictions and separation between investment and commercial banks	<i>1974, margin trading limits lowered again</i>
<i>1980–1982, deregulation of S&amp;L banks</i>	<i>1999–2000, Gramm–Leach–Bliley and Commodity Futures Modernization Act</i>
<i>1986, Fed reinterprets Glass–Steagall allowing some security underwriting by banks</i>	2002, Sarbanes–Oxley passed, tightening accounting standards
<i>1994, Riegle–Neal Act eliminates restrictions on bank branching</i>	
<i>1999–2000, Gramm–Leach–Bliley eliminates Glass–Steagall</i>	

SEC: Securities and Exchange Commission.  
Deregulating events are indicated with italics.

**Figure 3.** The prevalence of pro-market ideas, 1846–2007, 5-year moving average.

the United States, despite average growth of 5.7% per year (Maddison, 2013). Given the nature of my theory, which hinges on crises being harsh, I exclude the domestic debt crisis of 1873–1883.

In addition to a dummy variable marking crisis years, I included a second variable, recording the percentage change in financial wealth as a percentage of GDP in each crisis year was measured. This variable gauges whether a crisis was a finance-heavy (financial wealth fell more than GDP) or a finance-light (financial wealth fell less than GDP) crisis, so that I can test hypothesis 2. If hypothesis 2 is correct, finance-heavy crises should prompt increased regulation, while finance-light crises prompt less regulation. Crisis dates were taken from Reinhart and Rogoff (2011), data on financial wealth from the



**Figure 4.** Relative financial power of leading states and major challengers, 1830–2007.

sources outlined in online Appendix 2, while data on GDP was from Officer and Williamson (2008).

In order to test hypothesis 3, that regulation decreases when financial interests are strong, I employed a measure of financial wealth (bank deposits, market capitalization, and foreign assets) as a percentage of GDP. Sources for financial wealth are described in online Appendix 2.

Another key variable of this study is the gap between the leading financial power and its most significant challenger. To capture financial power, I calculated gross foreign assets as a share of global foreign assets for all major capital exporting countries (see online Appendix 1 for sources by country). Then for Britain and the United States, I calculated the absolute value of their gap with the leader or nearest challenger. If hypothesis 4 is correct, regulation will decrease if the gap between leaders and challengers is small, and increase if the gap is large (that is, the leader faces only weak competitive pressure or the challenger does not see a near-term opportunity to overtake the leader). Others may question this choice, suggesting the use of deposits or market capitalization. However, while alternate measures reflect the size of a country's financial sinews, they do not tell us about international influence. Alternately, some might suggest reserves as another measure of financial power. However, most of the states with large currency reserves also have fixed exchange rates, which they must defend against speculative attacks. Not only are reserves a fairly contingent measure, they are often a response to exchange rate vulnerability.

Admittedly, there are distinctions between different types of foreign investment, such as foreign direct investment (FDI) and portfolio investment. Unfortunately, data making clear distinctions between the two are not available until the 20th century (Twomey, 2000). A second line of critique might emphasize that some states with significant overseas assets also possess substantial liabilities. The United States, for instance, has long run a current account deficit. My response is twofold: liabilities themselves can be a source of leverage—default can be a powerful weapon. Moreover, leading global economies may take on overseas liabilities to exploit the advantages of owning the global reserve currency. For instance, some works suggest that the United States can reinvest foreign funds more profitably than others, borrowing short and investing long (Schwartz, 2009). Sources for the financial power data are detailed in online Appendix 3. Figure 4 charts the financial power of leadership contenders since 1846.

Finally, I controlled for the economic ideology of the government in power. For Britain, I coded governments on a scale between +1 (strongly in favor of free markets)

and -1 (strongly opposed to free markets). For the United States, I averaged the DW NOMINATE first dimension ideal point of the executive, the median senator, and the median House member, using data from Carroll et al. (2011). Executive branch estimates were derived from presidential requests and tie-breaking vice-presidential votes for Presidents Rutherford Hayes and Herbert Hoover, where nominate scores were unavailable (Lomazoff, 2009). Summary statistics of all included variables can be found in online Appendix 4.

## Results

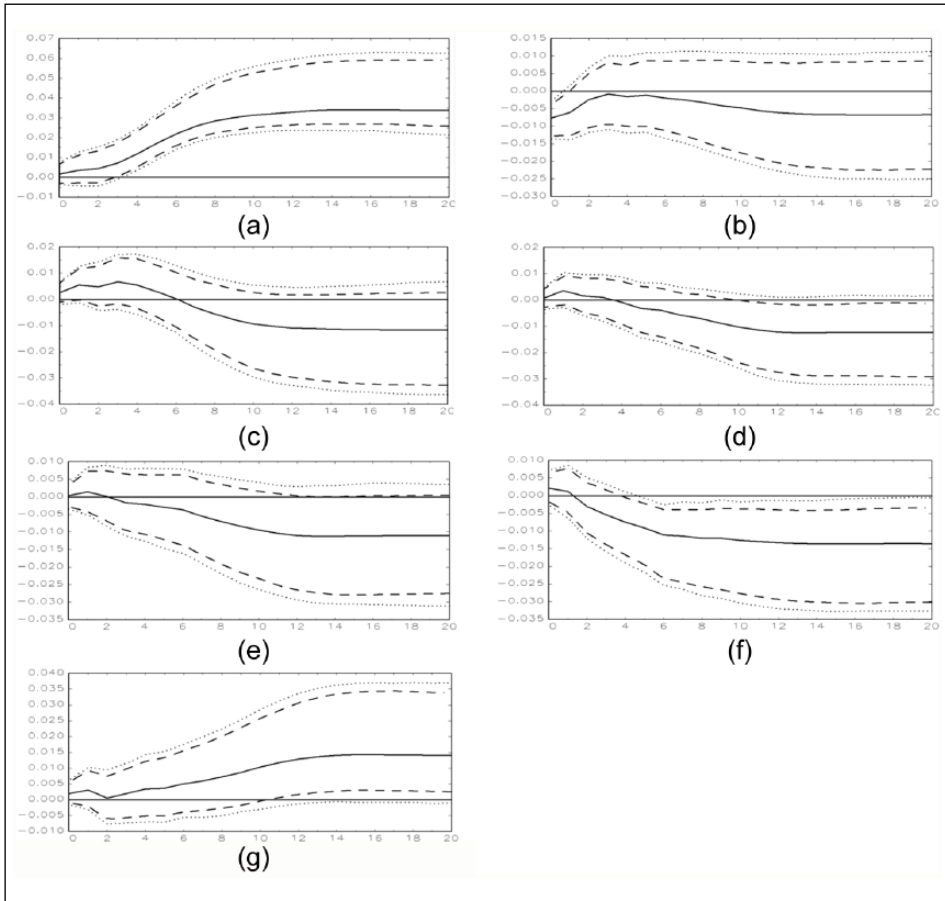
Before running the VEC model, I ran some diagnostic checks (see online Appendix 4 for a more detailed discussion). In order to determine the appropriate lag order, I selected an initial number of lags that minimized the Akaike information criterion. Next, I ran a Johansen test for each model, in order to determine the rank of cointegration. I also used the Akaike information criterion to determine whether a constant, restricted constant, trend or restricted trend produced the model of best fit, and a Lagrange multiplier test to examine for the presence of continued autocorrelation. If autocorrelation persisted, I increased the lag order of the model. The best fit model for Britain exhibited a lag order of 4 and cointegration rank of 4 and a restricted trend; the best fit for the United States had 2 lags, a rank of 4, and no constant.

In explaining the results of the VEC regression, I focus on the impulse response function and variance decomposition of key independent variables for the sake of clarity and brevity. Regression results are less intuitive in VEC models because of the assumption that all variables are endogenous to one another, and because of the possibility for conflicting relationships between the short term, and either of the cointegrating equations. Standard errors for impulse response functions were calculated using the Hall bootstrap technique with 2000 replications, available in the Jmulti software package (Lutkepohl and Kraizig, 2004).

Observing the British case (Figure 5), broad ideational shifts (Panel 5E) had no impact on financial regulatory stringency. Rather, material factors and elite ideas had more influence. Britain also failed to respond to financial crises in the hypothesized manner. Financial crises exhibited a weakly significant deregulatory tendency in the long-term (Panel 5D) contrary to H1, while finance-heavy crises (Panel 5C) were not significant, contrary to hypothesis H2. The wealth of the financial sector relative to GDP tended to decrease regulations, consistent with H3 (Panel 5B). There was also strong support for the notion that competitive pressures drove deregulation (Panel 5A) in keeping with H4. Similarly, when elites referenced pro-market ideas, regulations fell, consistent with H5 (Panel 5F). Finally, the ideological slant of governments had a weakly significant positive relationship with regulation, with right-leaning governments tending to *increase* regulation slightly (Panel 5G).

The forecast error variance decomposition of the two ideational variables can also shed some light onto which factors drove ideational change. As we can see in Figure 6, ideas are not autonomous—material factors influenced ideational change. Whereas ideas referenced in books were most strongly influenced by financial crises, changes in elite ideas corresponded with shifts in government ideology. Overall, elite (Panel 6A) and public (Panel 6B) ideas did not exhibit much influence on one another, despite a strong correlation. This outcome is consistent with an epistemic community explanation—ideas matter, but British governments read economists they agree with.





**Figure 5.** Impulse response functions of assorted factors on British financial regulatory stringency over 20 periods: (a) financial leadership gap, (b) financial sector wealth/GDP, (c) crisis impact on finance, (d) financial crisis, (e) economic ideas (books), (f) economic ideas (Hansard), and (g) government ideology.

GDP: gross domestic product.

Dotted line indicates 95% confidence interval. Dashed line indicates 90% confidence interval.

The story of regulatory change in the US was consistent with the framework of this article, but different from Britain (Figure 7). Unlike Britain, ideas were not a significant driver of regulatory change at all (Panel 7E). Consistent with H1, crises increased regulation (Panel 7D), particularly finance-heavy crises (Panel 7C), keeping with H2. The relative size of the financial sector had no statistically significant impact on regulation (Panel 7B), nor did competitive pressure (Panel 7A), contradicting H3 and H4. Finally, conservative governments (Panel 7G) tended to reduce regulation.

As in Britain, the forecast error variance decomposition of economic thought in the United States (Figure 8) exhibits strong evidence that material factors influence ideational change. Both elites and public-academic discussion in the United States were strongly influenced by competitive pressures. As in Britain, ideology influenced elite ideas, though even this effect was modest considering the strong correlation between

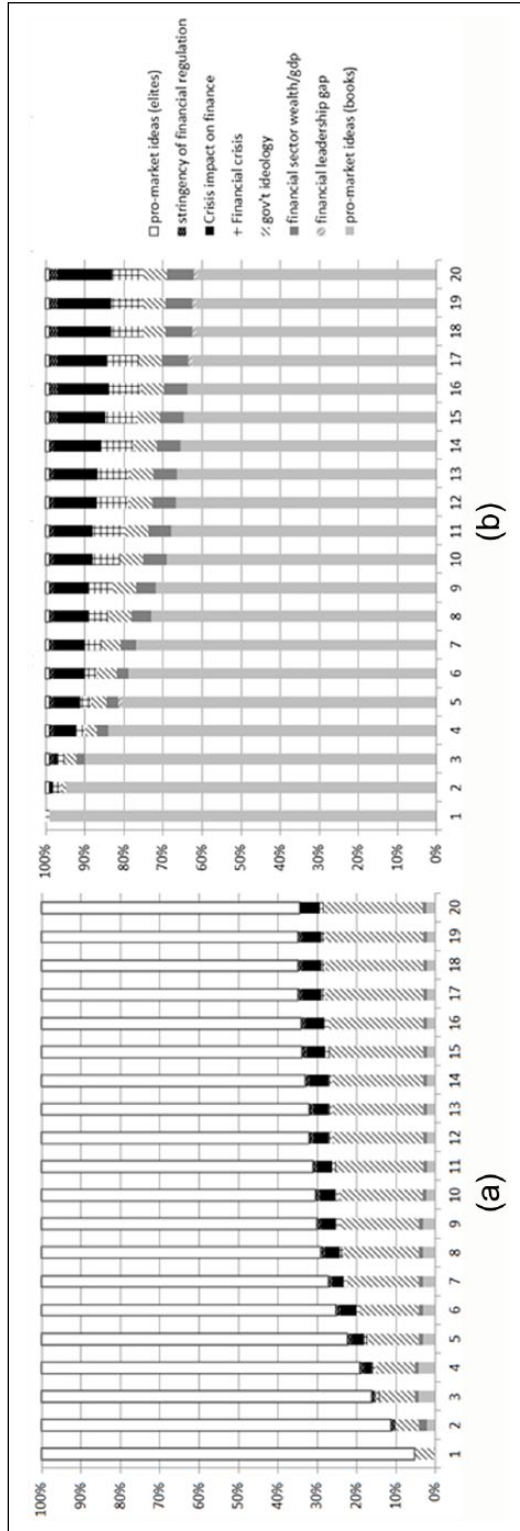
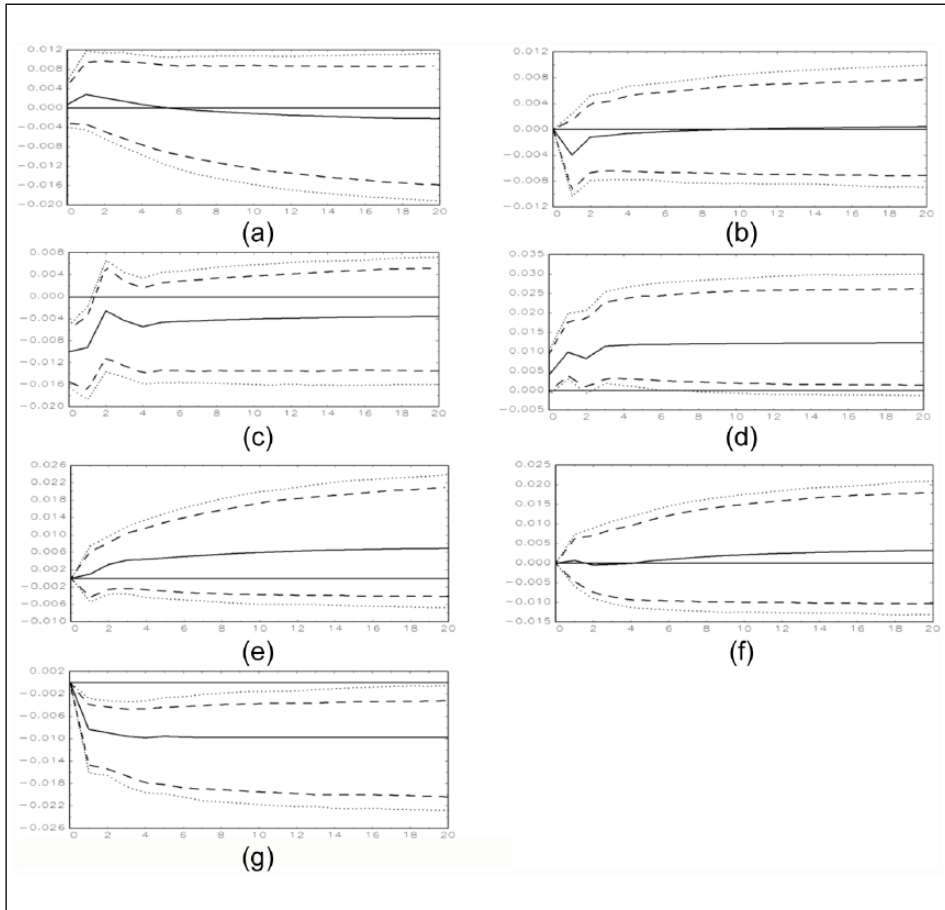


Figure 6. Forecast error variance decomposition of economic ideas in Britain: (a) economic ideas (Parliament) and (b) economic ideas (books).



**Figure 7.** Impulse response functions of assorted factors on American financial regulatory stringency over 20 periods: (a) financial leadership gap, (b) financial sector wealth/GDP, (c) crisis impact on finance, (d) financial crisis, (e) economic ideas (books), (f) economic ideas (hearings), and (g) government ideology.

GDP: gross domestic product.

Dotted line indicates 95% confidence interval. Dashed line indicates 90% confidence interval.

the two. Additionally, past regulatory experiences also exhibited some pressure on academic and elite ideas evoking a similar story to that explored by Blyth (2002). The shifting prominence of pro-market ideas in books was also, interestingly, influenced by elite ideas.

## Discussion

What to make of these findings? There is little evidence that broad ideational shifts generate regulatory reform. There is a stronger case that elite ideas drive regulatory shifts, although this held only in Britain. Moreover, there was scant evidence that shifting economic ideas in the public square drove change among elites. Rather, elite and public ideas responded considerably to material factors.

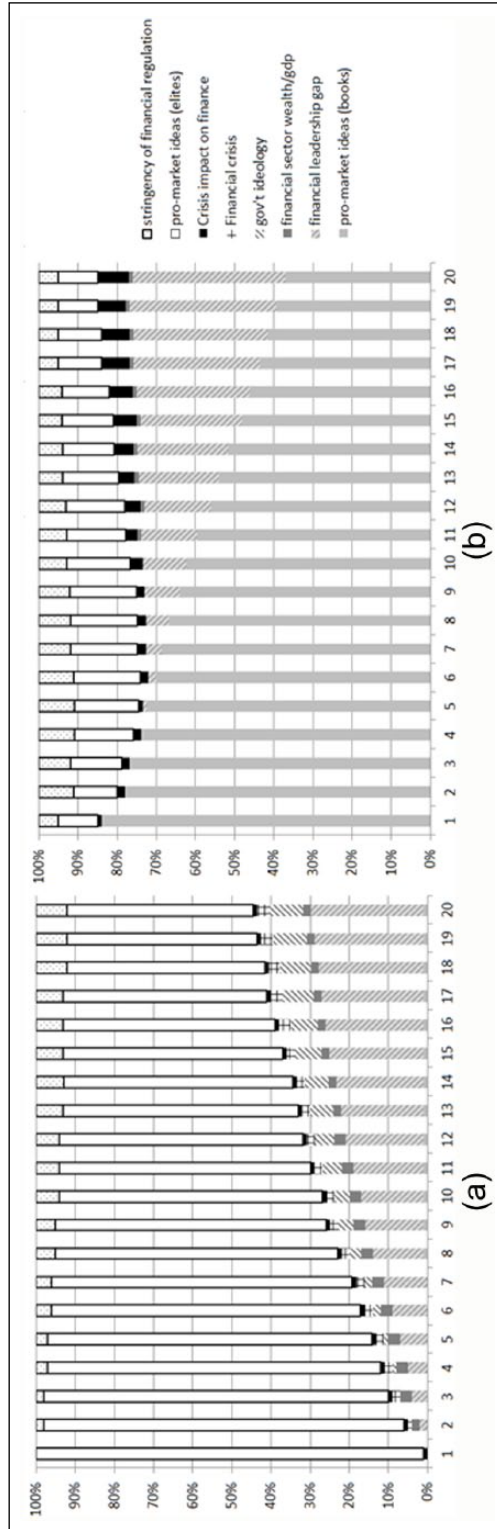


Figure 8. Forecast error variance decomposition of economic ideas in the United States: (a) economic ideas (Congress) and (b) economic ideas (books).

The pattern of regulatory reform in Britain and the United States is consistent with the framework developed by this article. Nonetheless, stark Anglo-American differences are apparent in the model. In Britain, long-term drivers of change (waning competitiveness, the influence of the financial sector, and shifting ideas among elites) most often drive reform, whereas short-term change, like crises, matter more in the United States. This difference makes sense in light of the distinct political institutions in each country. In Britain (prior to the 2011 Fixed Elections Act), majority governments could wait out crises, requesting the dissolution of parliament in a more politically opportune time. In contrast, in the United States, given fixed election terms and a near-constant Congressional election cycle, crises may often influence elections significantly. Unable to wait out a crisis, American policymakers may be more reactive than British ones. For a recent example, contrast comparably rapid passage of the Frank–Dodd financial reforms by Democrats fearing the loss of control of the House in 2010, with the comparably slow process in Britain (significant financial reforms were not enacted till 2013). In Britain, elite ideas and policies may shift in response to events. In the United States, events push voters to shift elites. Change of government (in the presidency *and* Congress) may also have more of an impact in the United States. Strong party discipline in Britain strengthens party leaders over individual Members of Parliament (MPs), who have a strong incentive to target the same swing districts (McGillivray, 2004). In contrast, primary threats and weak party discipline encourage American members of Congress (and to a lesser degree, Presidents) to appeal to core constituents.

The approach taken here can be expanded and innovated upon in many ways. Regulatory stringency depends not only on legislation, but also enforcement. Many of the ways governments regulate their financial institutions are indirect, such as the appointment of regulators. Content analysis approaches, such as those employed here, can also be applied more broadly. Internal discussions by policymakers or regulators, like those conducted by the Federal Open Market Committee, could be analyzed with similar techniques. References to specific economic concepts instead of economists might be employed to capture more refined policy distinctions. In addition to considering cases beyond Britain and the United States, future works might also depart from the field's perennial emphasis on financial reform amidst crises. Other phenomena, such as competitive pressure, can also foster financial reform.

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## Notes

1. The experience of many advanced industrial democracies follows a punctuated equilibrium pattern in financial regulation (Grossman, 2010). Rules governing intermediation, once instated, impact the shape of the economy. Like electoral reform, financial reform is self-reinforcing. Consider, for instance, the lifecycle of the American Glass–Steagall system. Glass–Steagall emerged amidst a chrysalis of intense political conflict. However, once enacted, inter-industry jealousies undermined deregulation for years (Suarez and Kolodny, 2011).
2. Capital controls may offer an exception (Moschella, 2015).
3. I emphasize the pro/anti-market divide here because it has been central to regulatory debates for the longest period of time. My emphasis may miss more subtle, area-specific distinctions in ideational change.
4. These factors are not the only plausible pathways for complex interaction and indeed, the empirical approach I use considers the possibility of interactions between all factors.
5. I consider regulation of banks *and* securities markets. Including both can address the prospect of regulatory arbitrage—stringent regulation of one intermediary may simply lead more capital to be raised through less-regulated channels.

6. Quoted in Reich (1997: 64). See also Ferguson (1995) for similar discussions of the Clinton administration.
7. Competition for leadership is distinct from a race-to-the-bottom story, which would suggest that capital mobility drives regulation downward. Despite a surge in race-to-the-bottom arguments in the 1990s (Cerny, 1995; Strange, 1998), recent works are more circumspect about the strength of downward pressure on regulation (Jensen, 2006; Mosley, 2000).
8. For evidence of the tradeoff between growth and financial risk, see Ramey and Ramey (1995) and Loayza and Ranciere (2006).
9. For Britain, that period runs from 1846 to 2005, while the United States was included from 1870 to 2007.

## Supplementary information

Additional supplementary information may be found with the online version of this article.

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