
Comment

Prediction tools: Financial market regulation, politics and psychology

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Abstract Risk managers operate in the space of risk and returns, constrained by financial market regulations. How can risk managers assess risk associated with changing regulatory structures, given that theories about the relationship between risk and return are much more developed than theories about the determinants of regulatory constraints? To help risk managers develop insight and predictive ability about the evolution of financial market regulations, the authors present a systematic framework to analyse how financial market regulation in the USA has developed in response to the global financial crisis. The framework combines elements from game theory, political science, the economics of regulation and behavioral finance. Notably, the model's prediction for the legislation that came to be named the Dodd–Frank Act turned out to be highly accurate.

Keywords: *financial regulation, risk management, prediction, game theory, politics, hot irons, equilibrium, complex negotiations*

INTRODUCTION: THE REGULATION-DEREGULATION CYCLE

Risk managers have a much better conceptual framework for understanding the determinants of risk and return than for understanding the determinants of the regulatory environment in which they operate. Yet changes to the regulatory environment constitute an important dimension of risk. In the discussion below, a framework is offered for understanding, and perhaps influencing, the financial regulatory environment.

During 2010 the USA will have enacted the most significant strengthening to its financial regulatory structure since the 1930s. The major catalyst for these changes is the global financial crisis which erupted in 2008, but whose root causes go back at least a decade to two major pieces of deregulatory legislation, the Gramm–Leach–Bliley Act of 1999 and the Commodity Futures Modernization Act of 2000.

In a series of works, Shefrin and Statman^{1–3} suggest that financial market regulations come about as a tug-of-war among competing interests with differing relative strengths. This tug-of-war is dynamic, resulting in a cycle of increased regulation and deregulation, as relative political strength shifts among these competing interests. Shefrin and Statman argue that the language of debate about financial market regulation often focuses on tradeoffs between differing notions of fairness and efficiency. Events that have led regulatory ‘irons’ to become hot are varied, and include economic contractions, stock market busts, financial crises and shifts in political power. Events that have led to increased deregulation

have included technological innovation (such as the advent of ATMs) and rulings by the Supreme Court.

The events leading up to the global financial crisis occurred during a period of deregulation. Notably, the same remark applies to the previous major financial crisis, the savings and loan (S&L) crisis of the 1980s. Interestingly, both crises involved increased risk seeking through subprime real estate investments; serious agency conflicts (appraisers in the 1980s and rating agencies in the 2000s); and for financial firms low capital ratios, high accounting profits and large executive bonuses (see Shefrin).⁴

In both crises, high-profile regulators raised alarms, only to have their voices muffled by political resistance. During the S&L crisis, Ed Gray, who headed the Bank Board which regulated S&L institutions, raised alarms about high-risk investments and fraudulent practices by S&Ls. In the run-up to the global financial crisis, Brooksley Born, who headed the Commodity Futures Trading Commission, sounded the alarm about lack of position transparency and price transparency in the over-the-counter (OTC) derivatives market, while Comptroller of the Currency John Dugan raised alarms about the perils attached to high-risk mortgages and a bubble in housing prices.

The use of derivatives to amplify the risk of subprime mortgages, in combination with a housing bubble which burst in 2007, effectively produced the global financial crisis. In this regard, psychological influences played a major role in the development of crisis. Given the strong populist sentiment in the USA for stronger regulations, the regulation-deregulation cycle bottomed, as US lawmakers began

to debate the need for stronger financial market regulation. Below are described the main features of the regulatory debate followed by a formal analysis.

The remainder of the discussion is organised as follows. In the first section, the key issues pertaining to regulatory reform efforts in 2010 are described. In the second section, a game theoretic analysis of financial regulation reform is presented using a model developed by political scientist Bruce Bueno de Mesquita.⁵ The model emphasises how regulatory outcomes are determined by political interactions, which partially reflect considerations of economic and financial efficiency, as advanced for example in Duffie⁶ and Duffie and Zhu.⁷ For discussions about modelling political conflicts, see Bueno de Mesquita and Stokman⁸ and Murphy and Shleifer.⁹ The second section was written before negotiations for the final form of the regulatory legislation were concluded on 25th June, 2010. Therefore, this section reads as a prediction, to be contrasted with the provisions of the final bill, now called the Dodd–Frank Bill. This contrast is provided in the third section, which contains the concluding remarks. Overall, the model enabled the authors to predict the final form of the regulatory legislation with considerable success. The fourth and fifth sections are postscripts to the paper, written after the occurrence of a surprise (shock) in late June 2010 to the model's assumptions and predictions.

THE MAKING AND SHAPE OF CURRENT REGULATORY REFORM

The global financial crisis and accompanying economic recession heated regulatory irons in the USA. In

this section, a brief description of the legislative process generating the regulatory reforms of 2010 is provided.

The formal process began in June 2009, when President Obama proposed a broad new regulatory framework for financial markets. This proposal was general in nature, and emphasised a centralised structure for oversight, with the Federal Reserve Bank (the Fed) being a focal point, as well as the creation of a consumer protection agency. Subsequently, the House and Senate passed bills with alternative versions of how financial reforms would be structured. The discussion below divides the main issues into four categories.

In December 2009, by a vote of 223 to 202, the House of Representatives passed H.R. 4173, the *Wall Street Reform and Consumer Protection Act of 2009*. Interestingly, the process was quite partisan, as no Republicans voted for passage of the legislation. Major provisions of H.R. 4173 include:

- (1) Consumer Financial Protection: Establishment of a separate agency to protect against 'unfair and abusive' financial services and practices;
- (2) Derivatives/Financial Risk: Authorisation to regulate the OTC derivatives marketplace; imposition of higher capital standards, with any large bank holding company identified as posing a potential risk to the economy being required to put up additional capital, and a leverage cap of 15-to-1 debt-to-net capital ratio.
- (3) Too Big to Fail: Establishment of a process for shutting down financial institutions deemed 'too-big-to-fail', with a US\$150bn emergency fund,

paid for by the financial industry; the Government Accountability Office (GAO) would be given broader power to conduct audits of the Fed.

- (4) General Issues: Creates an 11-member group to conduct financial oversight; enables shareholders to exert greater influence on executive compensation levels; requires hedge funds to register with the Securities and Exchange Commission (SEC); ratings agencies would have to register with the SEC and would face increased liability standards; lenders would be required to obtain proof from borrowers that they can pay for their mortgages.

After the House passed H.R. 4173, the Senate took up the issue. In May 2010, by a vote of 59–39 (which met the three-fifths majority hurdle required to overcome a Republican filibuster), the Senate passed its version of regulatory reform, S. 3217, the *Restoring American Financial Stability Act of 2010*. Major provisions of S. 3217 include:

- (1) Consumer Financial Protection: A bureau to be housed within the Federal Reserve; crack down on swipe fees that retailers pay when customers use debit cards.
- (2) Derivatives/Financial Risk: Trades of derivatives to take place in regulated exchanges; the so-called ‘Volcker Rule’ prohibiting proprietary trading; the ‘Lincoln Provision’ requiring banks to spin off all their derivatives business into subsidiaries; banks with more than US\$250bn in assets must meet capital standards at least as strict as those that apply to smaller banks.
- (3) Too Big to Fail: Banks will be taxed to pay for unwinding banks after a collapse; the GAO would conduct a

one-time examination of the Fed’s emergency lending to financial institutions in the months surrounding the 2008 financial crisis.

- (4) General Issues: Creates a nine-member Financial Services Oversight Council; shareholders would have the right to cast non-binding votes on executive pay packages; the Fed sets standards on excessive compensation that would be deemed an unsafe and unsound practice for the bank; an independent board would select ratings agencies to assess the risks of new financial products, replacing a long-standing practice where banks select and pay ratings agencies to rate their new offerings; lenders would be required to obtain proof from borrowers that they can pay for their mortgages.

The House and Senate bills are similar in broad structure, but differ in several important details. For example, the House bill features a free-standing Consumer Financial Protection Agency, financed through a mix of sources, whereas the Senate version is weaker in that it would create a Bureau of Consumer Financial Protection within the Federal Reserve, with a director appointed by the president and its budget coming from within the Fed. In addition, the House version contains no swipe fee provision for debit cards.

In terms of the Volcker Rule, there is no direct version in the House bill, although it does give regulators discretion to crack down on proprietary trading. In contrast, the Senate bill directs regulators to ban such proprietary trading after a period of study. Moreover, the Senate bill went further than the House bill in requiring most derivatives

to be traded on exchanges and to be processed, or cleared, through a third party to guarantee payment in the case of default. In this regard, the House bill provides much more leeway for financial firms to avoid exchanges and the posting of collateral, especially if they are not considered big derivatives dealers. In the House version, approximately 50 per cent of derivatives trades would go uncleared, whereas in the Senate version the corresponding figure is 10 per cent. Moreover, the House bill contains no counterpart to the Lincoln Provision.

As for Too Big to Fail, both bills call for a process modelled on the approach used by the Federal Deposit Insurance Corporation (FDIC) to take over failing banks. The House bill calls for large financial firms to contribute to a US\$150bn fund *ex ante*. In contrast, the Senate bill does not include a fund, but proposes to tax the industry *ex post*, meaning after an institution has failed.

For General Issues, the two bills also differ in respect to pre-emption, the extent to which the new agency's rules would override consumer standards promulgated by states. The House bill would exempt auto dealers from the reach of the new consumer agency; the Senate bill would not.

On 10th June, 2010, a conference committee of House and Senate Democrat and Republican members began the reconciliation process for a final financial regulatory package. Throughout the process, the Obama administration and financial firms have contributed input from the sidelines. In this regard, the Center for Responsive Politics reports that, since January 2009, financial services firms

spent nearly US\$600m, engaging lobbyists to influence financial reform legislation (see Liberto).¹⁰ During the first quarter of 2010, the five largest banks in the USA, which dominate the derivatives business, orchestrated a parade comprising trade groups, 130 registered lobbyists and their own executives to convince elected officials to weaken key provisions in the proposed bills. It is worth noting that in the last decade, executives and political action committees from financial firms contributed more than US\$1.7bn to Congressional candidates, especially members of the financial committees overseeing the industry's operations (see Appelbaum and Lichtblau).¹¹

Officials from the Obama Administration suggested that they were inclined to favour provisions in the Senate version over those of the House bill in three areas:

- (1) consumer protection;
- (2) restricting banks from speculative trading with their own accounts;
- (3) dealing with failing institutions that threaten the financial system.

Treasury officials expressed strong reservations about the Lincoln Provision, saying that the provision would block derivatives-clearing organisations from receiving liquidity assistance in the event of a crisis, undermining a major aim of the measure. Administration officials have also expressed reservations about the exemption for auto dealers mentioned above: the President personally argued against excluding auto dealers from strict oversight.

PREDICTING REGULATORY REFORM OUTCOMES

Shefrin and Statman³ apply capture theory to explain how populist sentiment following an economic and financial downturn causes regulatory irons to become heated, thereby offsetting private sector interests. Below the authors develop this idea by using game theoretic techniques used in political science to predict the outcome of political conflicts.

The game theoretic framework used has been developed by political scientist Bruce Bueno de Mesquita^{5,12} 'to predict the process and outcome leading to the resolution of complex negotiations or potentially coercive situations, including the possibility that they end with agreement, breakdown, or even eventuate in the use of force'.¹² Bueno de Mesquita's framework involves interactions among an arbitrary number of players who conduct round robin bilateral negotiations with each other about the specifications of a joint outcome. Players might differ in their views about which is the most favoured outcome. In this regard, they engage each other, with one possibly trying to coerce the other to modify their position.

In applying the Bueno de Mesquita framework (BdM) to the financial reform process, six specific players are identified: Senate Democrats, Senate Republicans, House Democrats, House Republicans, the Obama administration and financial firms. In respect to the number of players, six is quite small for this type of application, representing as it does a high degree of aggregation; however, given the information available to the authors, they found it quite tractable.

The objective of the analysis is to predict the nature of the legislation to emerge from the political process. To

this end, a set of potential outcomes is identified, a subset of which is depicted in Table 1. Here the focus is on outcomes pertaining to the reconciliation process. In this respect outcomes are excluded that had been a part of the authors' earlier analysis, such as the status quo (no bill is passed) and outcomes with stronger measures such as unconditionally breaking up financial firms considered too big to fail.

Beginning at the left of Table 1, the first column identifies the four broad regulatory categories discussed in the first section. The second column lists major elements under negotiation, or at least those that were specified in either the House or Senate bills. (The authors' analysis also recognises elements that were part of the overall debate, but which were rejected during the process.) The third column, labelled Strongest, is constructed to feature the strongest elements between the House and Senate bills. The fourth and fifth columns respectively characterise the Senate and House bills in terms of the main elements. The remaining columns depict several possible outcomes of the overall negotiations. The column at the right, labelled Weakest, is constructed to feature the weakest element between the House and Senate bills. Intermediate outcomes represent compromises. For example, the column labelled 'Weak CP, NL/NV, Weak TBF' stands for Weak Consumer Protection, no Lincoln Provision, no Volcker Rule and a Weak approach to Too Big to Fail.

The bottom row of Table 1 is a variable called Position. This variable is an index whose values range between 30 and 100. Notably, it is assumed that financial firms' most preferred outcome corresponds to 30, the outcome featuring

Table 1: Potential outcome combinations

	Strongest	Senate Bill	House Bill	Strong CP, NL/ NV, Weak TBF	Weak CP, NL/NV Weak TBF	Weak CP, NL/NV, Weak TBF, Weak Exchange, Weak Capital Stds	Weakest
CP	Standalone agency No	Bureau in Fed No	Standalone agency Yes	Standalone agency No	Bureau in Fed Yes	Bureau in Fed Yes	Bureau in Fed Yes
	Yes	Yes	No	Yes	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Der/FR	Yes	Yes	No	No	No	No	No
	Yes	Yes	No	No	No	No	No
	Yes, strong	Yes, strong	Yes, weak	Yes, strong	Yes, strong	Yes, weak	Yes, weak
TBF	Yes, big like small banks \$150bn fund ex ante	Yes, 15% cap ex post tax	Yes, big and small \$150bn ex ante	Yes, big like small banks ex post tax	Yes, big like small banks ex post tax	Yes, 15-to-1 D/NC ex post tax	Yes, 15-to-1 D/NC ex post tax
GI	Investor say	Fed standards More	Investor say	Investor say	Investor say	Investor say	Fed standards More
	Little	Register with SEC	Little	Little	Little	Little	Register with SEC
	Chosen for banks	One time 9 members	Chosen for banks	Chosen for banks	Chosen for banks	Chosen for banks	Register with SEC
	Routine 11 members	One time 9 members	Routine 11 members	Routine 11 members	Routine 11 members	Routine 9 members	One time 9 members
Position	100	85	70	60	50	40	30

the weakest possible regulation in the set. It is also assumed that financial firms prefer positions with lower index values to positions with higher index values. For Senate Democrats, the assumption is that their most preferred outcome corresponds to the Senate bill which carries an index value of 85, and that the further away an index outcome is from 85, the worse the outcome for Senate Democrats. That is, Senate Democrats are assumed to have single peaked preferences, with the peak lying at the outcome with index value 85. Similarly, it is assumed that all other players have single peaked preferences, with possible differences in the location of the peaks.

Table 2 below illustrates the key inputs for the game, essentially subjective judgments made based on the authors' reading of press reports. The column Position refers to the index value of players' respective most preferred outcomes. Taken together, Tables 1 and 2 provide a sense of the six players' respective most preferred outcomes. For the Obama administration, their preferences are placed at 65, reflecting a compromise between their weaker views on derivatives trading, but stronger views on consumer protection, especially in regard to the regulation of auto loans. The placement of the administration

position at 65 reflects their statements after the passage of the Senate bill. The placement of the administration position that was articulated in June 2009 would be lower, at approximately 55.

Saliency is a variable that reflects the resources each player is able to devote to the negotiation under study. Below is how BdM describes the saliency variable on his game website (www.predictioneersgame.com/game).

'Saliency assesses how focused a stakeholder is on the issue. Its value is best thought of in terms of how prepared the stakeholder is to work on the issue when it comes up rather than some other issue on his or her plate. Would the stakeholder drop everything else to deal with the issue? The more confidently it can be said that this issue takes priority over other matters in the stakeholder's professional life, the higher the saliency value.

90–100: This is my most important issue. I would drop whatever I am doing and turn to this issue whenever asked.

70–80: This issue is very important to me. It is certainly one of my most important issues. I would try very hard to reschedule to handle this issue when it arises . . .

30–40: This is an issue I care about, but it is not that important to me. I have

Table 2: Input parameters to the game

Name	Position	Saliency	Influence	Flexibility	Veto
Senate Republicans	50	30	50	50	N
Senate Democrats	85	80	80	60	N
House Republicans	40	30	20	40	N
House Democrats	70	80	80	60	N
Obama Administration	65	70	30	90	Y
Financial Firms	30	99	70	20	N

many more important issues to deal with and so generally would not drop what I am doing to deal with this and generally would focus on something else.’

In Table 2, issues of financial reform are most salient for financial firms, and least salient for House and Senate Republicans. The authors’ reading of media reports suggests that, by and large, Republicans favour weak financial reform, and their support for regulatory reform stems from the need to respond to strong public pressure for a legislative response. Nevertheless, as their voting records showed, particularly in the House, they could easily be persuaded to shift their attention to some other issue and continue with the status quo.

The variable Influence reflects players’ respective abilities to persuade others to shift their positions during a sequence of negotiating rounds. The higher a player’s Influence variable relative to the other players, the more persuasive that player will be. Influence reflects relative power. Needless to say, financial firms’ influence stems from political contributions and lobbying efforts described in the previous section. When it comes to complex financial issues, there is a significant information asymmetry between financial firms and legislators. Legislators’ awareness of their lack of expertise, and concern for instituting disastrous legislation, mean that the flow of information and advice to legislators from financial firms through lobbyists comprises a very important source of firms’ influence. Nevertheless, influence is relative. House Democrats, Senate Democrats and the Obama administration have total influence equal to 190 (= 80 + 80 + 30). In contrast, House Republicans, Senate Republicans

and Financial Firms have total influence equal to 140.

The variable Flexibility measures the degree to which players are willing to compromise in order to achieve agreement instead of the status quo. The BdM game website contains the following description of the coding for this variable.

‘50–60: The stakeholder has a fair amount of flexibility regarding the outcome, but is mindful of trying to promote seriously the position s/he prefers. Reaching agreement is about as important as promoting an outcome favored by the stakeholder. Few players are routinely much higher than this to start with. Of course, some are so take this observation as just a rule of thumb.

30–40: Reaching an agreement is considerably less preferable than showing resolve and sticking to one’s position, but the stakeholder is open to significant concessions on the issue dimension in order to improve his or her welfare on the flexibility/resolve dimension.

10–20: The stakeholder strongly values the position s/he has advocated although s/he will make some significant concessions to reach an agreement not too far from his/her current position. Losing is preferred to being a party to a deal that is not close to the stakeholder’s preferred position.’

The final input variable is Veto. Certainly the President has a veto option, and it is assumed he is the only player with veto power.

Notice that Table 2 captures the idea that the regulatory iron is hot. Democrats from both House and Senate prefer strong regulatory reform, attach high

salience to the issue, and wield considerable influence.

House Democrats in this negotiation are led by Congressman Barney Frank, while Senate Democrats are led by Senator Chris Dodd. During the actual reconciliation negotiations, House Democrats and Senate Democrats will indeed bargain with each other about how to address the different versions of the House and Senate bills. For example, in discussing the differences in the House and Senate approach to Too Big to Fail, Dodd suggested that the Senate version should prevail, because it is bipartisan, reflecting a compromise with Senate Republicans which enabled the Senate bill to pass. Yet, Frank responded to this suggestion by saying that, although he appreciates the need for bipartisan deals, 'it's not binding on us' (see Liberto¹³).

To understand the bargaining dynamics in the formal game, consider

an example of a bilateral negotiation for a given round. Below is a description of how the BdM framework models bilateral bargaining in a given round. Figure 1 provides an accompanying graphical illustration. As Table 2 indicates, Frank and Dodd differ in their most preferred outcomes, being positioned at 70 and 85, respectively. During the very first bargaining round, each player states a position, effectively casting a vote. Players are assumed to be partially myopic and uncertain about how many iterations the process of negotiation will involve until the game ends. Each player goes through possible stages that are identical. If neither Frank nor Dodd makes a proposal the status quo is maintained.

Starting with one proposal from Frank and going through possible stages of interaction with Dodd produces a mirror image of starting with a proposal from

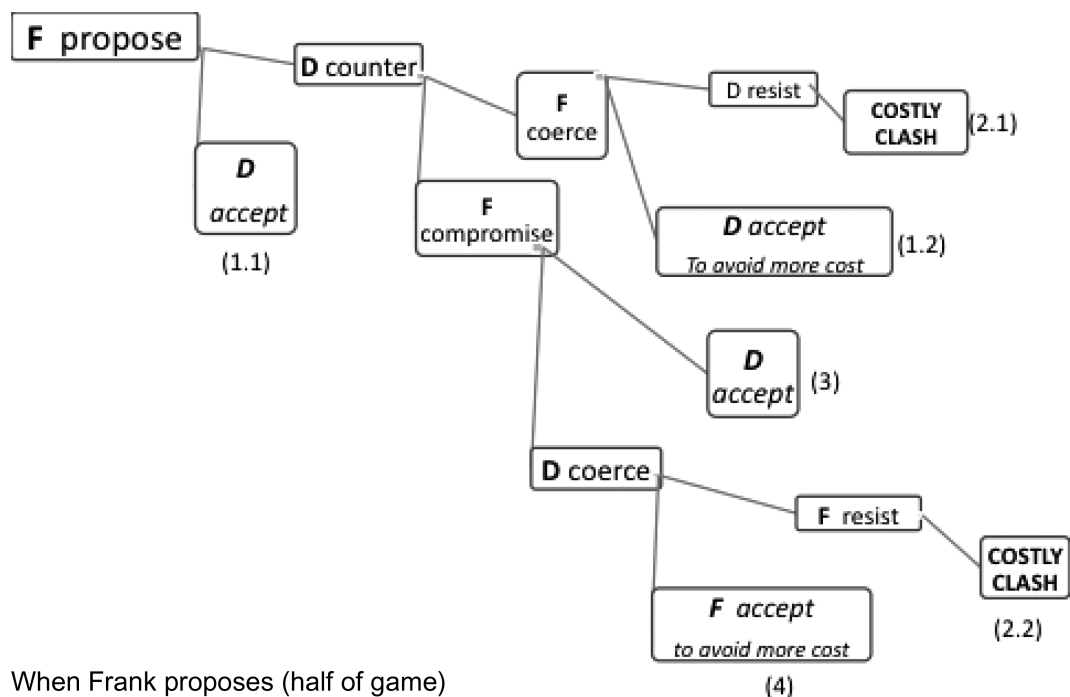


Figure 1: Possible bilateral negotiation dynamics in one of the rounds

Dodd followed by responses expressed by Frank. It is thus sufficient to describe one side of the sequential game. Suppose Frank (F) makes a proposal and Dodd (D) accepts. Then this round of the game ends with Dodd shifting position so that his coincides with that of Frank's proposal. Yet, if Dodd counters, then Frank may try either to coerce or instead to offer a compromise. Faced with coercion, Dodd may choose to accept Frank's proposal to avoid a costly clash that would reduce his expected payoff. Alternatively, Frank's coercion might invoke Dodd's resistance, which in turn results in a costly clash.

On the other hand, once Dodd counters Frank's proposal, Frank can offer a compromise, which Dodd can accept. If so, this bilateral round ends, with a compromise which differs from Frank's original proposal, and is likely to be closer to Dodd's original position. Finally, if Dodd attempts coercion, and Frank perceives resistance to be extremely costly, the final outcome of the Dodd–Frank round will coincide with Dodd's proposal. Otherwise, if Frank resists Dodd's coercion a costly clash will occur.

As Figure 1 illustrates, once a proposal is made, the following general outcomes are possible:

- (1) Frank's proposal is accepted by Dodd: either immediately (1.1), or when Dodd considers it too costly to resist Frank after Dodd countered Frank's proposal and Frank attempted coercion (1.2);
- (2) A costly clash results from (2.1), with Dodd resisting coercion by Frank, after Dodd countered Frank's proposal, or (2.2) Frank's proposal is countered by Dodd and Frank compromises, but

Dodd attempts coercion and this time Frank resists;

- (3) A compromise proposal emerges when Dodd accepts Frank's compromise offer to Dodd's counter-proposal; or
- (4) Dodd's proposal is accepted by Frank after Frank faces counter and coercion from Dodd.

In the BdM framework, all players engage in a sequence of round robin bilateral bargaining sessions. The game terminates when an equilibrium is reached, with all players being willing to maintain their positions, rather than shift.

In the BdM framework, inputs illustrated in Table 2 serve as parameters for preferences and beliefs. With the inputs specified in this section, the equilibrium outcome has an index of 54, which is somewhat stronger than the index of 50 associated with 'Weak CP, NL/NV, Weak TBF'. In this respect, consider the difference between two potential outcomes described in Table 1, the outcome with position 50 and the outcome with position 60. This comparison leads to a prediction that, relative to the outcome with position 50, the equilibrium outcome will feature stronger measures for regulating automobile dealers, or for imposing debit card fee restrictions.

With respect to the Dodd–Frank difference about Too Big to Fail, the model predicts that Dodd will win out over Frank. Yet in other respects, according to the model, Senate Democrats will make significant concessions. As equilibrium is reached at the end point of the game, House Democrats, Senate Democrats and House Republicans' positions converge to the range 62 to 64. Nevertheless, House

Republicans' final position is at 50, the same as their initial position, and a half notch weaker than Senate Republicans whose final position is 55. Interestingly, the Administration's final position is at 56. Not surprisingly, financial firms' final position, at 37, is well below the levels of the other players. It also comes as no surprise that the pivotal coalition consists of House Democrats and Senate Democrats.

The prediction based on the illustrative inputs turns out to be quite robust to the choice of input parameters. Throughout this project several versions of the model were developed and it was interesting to see that the model consistently predicted that the provision in the final bill would be considerably weaker than that proposed by Democrats. Interestingly, the illustrative prediction is also in line with media articles which appeared during May and June of 2010, which suggested that the final bill would be far tamer than financial firms had initially feared (see Ellis).¹⁴ In this regard, notice from Table 1 that the position index of the equilibrium outcome is significantly lower (weaker) than either the House bill or the Senate bill. Indeed, it comes closest to the position favoured by Senate Republicans, and is consistent with the general guidelines laid out by the Obama administration in June 2009.

PREDICTION ACCURACY

Financial regulations are an important part of the environment in which risk managers operate. Over time, regulatory systems are dynamic, with predictable components. It has been described how risk managers can use analytical tools from political science to predict how the interaction of economics, finance,

psychology and politics impact regulatory systems over time.

In formal presentations of their predictions, the authors concluded with '2010 < 1933/34'. By this was meant that, although 2010 would be the year of most significant changes in financial market regulations since 1933 and 1934, the changes in 2010 would be much weaker than the Securities Act of 1933 and Securities Exchange Act of 1934.

Coincidentally, on 25th June, 2010, just after the authors completed the preceding sections of this paper, the conference committee completed its reconciliation process, voting to call the compromise bill the 'Dodd–Frank Bill'. In terms of political positioning, the votes were 20–11 among House negotiators and 7–5 among Senate negotiators, strictly along party lines. Republicans on the committee, who claimed to favour additional consumer protection and more regulation of derivatives, objected to the bill's provisions in these areas being too strong. The prediction of the model is that this criticism will have been voiced especially by House Republicans.

The model's predictions effectively capture the essence of the Dodd–Frank Bill.

- (1) Consumer Financial Protection: The regulator for consumer protection will reside within the Fed. This was in line with the authors' prediction, as was the stipulation that the regulator would not oversee auto dealers who make auto loans. In respect to debit card fees, Dodd–Frank indicates that the Fed can place a cap on these fees, a possibility regarded as plausible, but which was not predicted. In line with the authors' predictions, the bill requires that, before

- originating mortgages, lenders document borrowers' incomes and verify borrowers' ability to repay loans.
- (2) Derivatives/Financial Risk: As was predicted, the trading of many derivatives will move from being OTC to being exchange-traded with clearing, although with significant exemptions. In terms of the Volcker Rule, they predicted that Dodd–Frank would permit banks to engage in proprietary trading and own hedge funds; and it does. Nevertheless, Dodd–Frank also places limits on these activities, which is something that was not specifically predicted. In terms of the Lincoln provision, the authors predicted that financial firms would be able to continue their derivative operations, rather than spinning these off. And they can; however, they failed to predict the qualifying language of the bill which requires that the derivatives not be deemed excessively risky. Therefore, although the strongest elements from the Volcker Rule and Lincoln Provision were eliminated from Dodd–Frank, as predicted, weaker elements are indeed present.
 - (3) Too Big to Fail: As was predicted, Frank did accept the Senate version of Too Big to Fail, in which the FDIC secures a line of credit from the Treasury to pay for the liquidation of firms taken over by federal regulators. In turn, the FDIC will recoup any costs through the sale of assets, and if needed, by imposing fees on large financial firms. Dodd–Frank grants regulators the power to break up firms they judge not only to be 'too big' but which hold the potential to destabilise the financial system.
 - (4) General Issues: Regarding executive pay and severance packages, as was

predicted, Dodd–Frank provides shareholders with a non-binding advisory vote. In respect to credit-rating agencies, the Dodd–Frank Bill stipulates that, the Securities and Exchange Commission has two years to develop a system to match ratings agencies with firms that want securities rated. The authors predicted that this provision would be part of the bill, but without a delay. Notably, Dodd expressed concern that the provision might not be practicable. Therefore, the final bill provides for a two-year grace period to find a better alternative, and if none be found, then the original provision will come into force. In respect to the number of members on the oversight council, the House and Senate split the difference between nine and 11 by setting the number at ten. This was an easy prediction, which in retrospect was simply missed. An important issue which was not anticipated and which was not part of either the House or Senate bills is a proposed bank tax, in the amount of US\$19bn, to pay for the costs of the reform. This would be levied on the largest financial firms, especially those taking the most risk.

SURPRISE ENDING

The conference committee's intent was to allow enough time for the full House and Senate to pass the measure and send the bill to President Obama for his signature by 4th July. The next opportunity would not come until at least mid-July, after a Congressional break. The authors' expectations were that they would be writing about the President signing the bill into law on 4th July. As the authors were writing this

section of the paper on 29th June, media reports indicated that the House was expected to vote on Dodd–Frank on Wednesday, 30th June, with the Senate planning to take up the bill shortly thereafter. Expect the unexpected. Sadly, on 28th June, Democratic Senator Robert Byrd died at age 92. (Byrd had not actually cast a vote at the time the Senate bill was passed.) His death meant one less Democratic vote. It also meant a funeral for the longest serving Senator in history, an event which will compete for time with legislators’ efforts to deal with the shift in relative political strength. In particular, Republican Senator Scott Brown, who had earlier supported the Democrats’ effort to pass the Senate bill, indicated his surprise and great displeasure at the inclusion of the bank tax. Brown stated that he would not support a bill that included this provision, because of his belief that the costs would be passed onto consumers. Both of these events represented threats to the bill being signed into law on 4th July.

Can you use the model to predict how this end game drama will turn out? The authors conducted a sensitivity analysis on 29th June. The model told us that, if Senate Republicans’ influence were to increase from its value of 60 in Table 2 to 65 or 70, then the equilibrium outcome would be little affected. Yet, if Senate Republicans’ influence rises to 75, in contrast to Senate Democrats’ influence of 80, then the length of the game will indeed increase, and the index of the equilibrium outcome will decrease from 54 to 52. The scenario just described is indeed consistent with the elimination of the bank tax, and the bill being signed into law after 4th July.

To what extent has Republicans’ influence increased? At least one Democratic Senator, Russ Feingold, who voted against the Senate bill when it was passed, has indicated that he will not vote for Dodd–Frank. His stated reason was that the bill was too weak and would not prevent another financial crisis. As the authors write, on 29th June, 2010, one other Democratic Senator, Maria Cantwell, who voted against the Senate bill, has refrained from comment. Also refraining from comment are three Republican Senators who voted for the Senate bill, except to express displeasure with the bank tax.

Passage of the bill by the full Senate will take 60 ‘yes’ votes. Because Senate Democrats can only count on support from 57 of their own, they will need three Republicans to join them, if they are to overcome a filibuster on the bill. In terms of the model, the Republicans’ influence would be interpreted as having increased dramatically.

According to media reports on 29th June, the conference committee has reconvened to discuss an alternative to the bank tax, a combination involving funds from the Troubled Asset Relief Program (TARP) and increased premiums for federal deposit insurance. Writing on 29th June, the authors’ intuition suggests that it is more likely than not that Dodd–Frank will be passed into law on 4th July. But it is a close call, and the model predicts that Dodd–Frank will come in for some dilution in terms of the bank tax.

CONCLUSION

The authors wrote this concluding section on 21st July, 2010.

During the last week of June, the President called for the House and

Senate both to pass the bill in time for a 4th July signing. The model predicted that the bill would indeed be passed into law after the 4th July recess, in a somewhat weaker form than the conference committee bill. In the end, the full Senate passed the bill on 15th July. Republican Senators Scott Brown, Olympia Snowe and Susan Collins voted for the bill, while Democratic Senator Russ Feingold did not. President Obama signed the bill into law on 21st July, stating; 'These reforms represent the strongest consumer financial protections in history'.¹⁵

As mentioned in the second section, analysis features only six players to represent the authors' key interest groups, Bueno de Mesquita's own applications tend to feature many more players and, in his comments to the authors, he indicated that he was surprised at the accuracy of the predictions given the degree of aggregation. A more disaggregated analysis would have involved players as specific people such as Dodd, Frank, Brown, Snowe etc.

Bueno de Mesquita recommends that users of his model check their intuition at the door.¹⁶ In late June, the authors' intuition was that the President would sign the bill into law on 4th July. In line with Bueno de Mesquita's general advice, it was the model's prediction, not the authors' intuition, which proved correct on the timing issue.

In summary it was found that the provisions of Dodd–Frank are in line with the BdM model's general prediction, namely that the bill which emerged out of conference committee was weaker than both the House and Senate versions. In this regard, the authors do agree with Senator Russ Feingold's assessment about the bill being

far too weak to prevent another financial crisis. Moreover, the model accurately predicted that, after the death of Senator Robert Byrd, there would be a weakening of the conference committee version of the bill, with passage of the bill occurring after 4th July. The general conclusion for risk managers is that Bueno de Mesquita's framework provides a valuable tool for assessing risk associated with political events, especially those pertaining to financial markets.

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