REGULATING OR REDESIGNING FINANCE? MARKET ARCHITECTURES, NORMAL ACCIDENTS, AND DILEMMAS OF REGULATORY REFORM

Marc Schneiberg and Tim Bartley

ABSTRACT

Existing financial market architectures combine astonishing complexity with tight coupling, making them prone to systemic crises or "normal accidents" and placing extraordinary demands on regulation. In light of this, we consider two routes for regulatory reform. A "high modernist" possibility attempts to regulate financial markets as currently designed. This path means not only increasing the capacities of regulators and rating agencies to estimate complex risks *but also designing systems that can manage more radical forms of* uncertainty*, through dynamic learning and bargaining arrangements. We consider a series of proposals and challenges that lie down this path. An alternative possibility takes seriously the notion that regulation constitutes markets and uses the current crisis to rethink market architectures themselves, especially their complexity and tight coupling. Preventing failures from spiraling into systemic crises may involve using regulation to simplify financial products*

Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A
Research in the Sociology of Organizations, Volume 30A, 281–307

ISSN: 0733-558X/doi:10.1108/S0733-558X(2010)000030A013

and their interconnectedness but also to create redundancies and hedge bets through specialized financial subsectors organized around alternative principles – that is, recapitalized community banks, credit unions, mutuals, and public financial institutions.

In an odd twist of fate, neoliberalism and globalization have created new demands for making and reforming markets, bringing in their wake both a renaissance of regulation and a resurgence of scholarship on this topic (Schneiberg & Bartley, 2008). The recent financial crisis has only accelerated this trend. Yet as scholars and policymakers struggle to rethink neoliberalism and re-engage regulation, they take several features of current financial market architectures as inevitable, desirable, or both: (1) their global character, (2) the integration of finance across different sectors, (3) securitization, and (4) a reliance on private, for profit provision. For many elites in academia, policy and the business world, these are the natural, necessary facts with which regulatory reform must work. Any departures from this baseline are dismissed as undermining efficiency, growth, profitability, and the vital innovative dynamism of existing financial market architectures. Indeed, proposals for reform tend to be overwhelmingly incremental and to call mainly for regulation to improve financial markets without disrupting their dynamism, erring in any instances of uncertainty on the side of furnishing broad scope for innovation.

We take issue with such proposals on two counts. They present a remarkably narrow vision of what regulation is and does, and they as natural or given an architecture of markets with troubling structural characteristics. As currently designed, financial market architectures bear a disturbing resemblance to the kinds of organizational systems that Charles Perrow (1984), Stephen Mezias (1994), and others have shown are prone to systemic collapse, crises, and "normal accidents." They are astonishingly complex and tightly coupled systems. As such, they place extraordinary (and possibly unmanageable) demands on regulatory systems and their reform.

At a minimum, managing a securitized, globalized, and integrated financial system requires order of magnitude increases in the autonomy and capacity of internal risk management departments, rating agencies, and the public regulators who oversee them. The failure of rating agencies in the lead up to the current crisis is now especially well known, but to our knowledge, few reform proposals have gone beyond first steps toward imagining independent and effective systems for rating the complex network of social

relations implicated in securities. We seek to broaden this discussion by considering the multiple dimensions of autonomy/capacity in regulatory organizations and the complex, networked character of the securities that rating agencies evaluate.

However, the problem of complexity posed by securitization is only partly about managing risk – that is, of estimating and disclosing underlying unknown but knowable probabilities. In a financial system organized for profit-seeking, rapid innovation in financial instruments, and creative destruction, regulation faces problems of *uncertainty* that go beyond "getting rules right." In this context, even reformers who accept existing architectures must take seriously the challenge of allowing regulators and regulated to learn about rapidly changing properties of securities and to adjust rules in light of their discoveries. Uncertainties in complex, coupled systems also necessitate ways of managing recovery when learning and calculation fails – effectively reorganizing firms, bargaining over the absorption of losses, and so on. Unfortunately, what we know about the capacity of the American state and transnational governance to support orderly and equitable bargaining over reorganizations and systemic shocks and loss is not encouraging.

The alternative is to challenge, rather than take as inevitable, a complex, integrated, and securitized system of finance, and to consider possibilities for redesigning financial infrastructures themselves. If we take seriously the notion that regulation constitutes markets, rather than merely intervening in markets "after the fact," then the current moment becomes an opportunity to rethink market architecture, in light of the problems of complexity and tight coupling. Reconfiguring market architecture might involve implementing Glass–Steagall measures that re-segment financial markets; promoting decentralization, localism, and communities of fate in finance; and simplifying the kinds of securities traded by financial firms. To minimize the extent to which failures spiral rapidly into crises, it might also make sense for regulation to create redundancies and hedge bets by promoting finance organized around different principles – that is, recapitalized community banks, credit unions, mutuals, and even publicly owned financial institutions. Although pursuing this strategy is not without cost, it may be the price of avoiding the obvious and perhaps spiraling costs of the current "normal accident" in financial markets.

We proceed by using and analysis of normal accidents to shed new light on the recent financial crisis. We then develop three lines of argument about regulatory reform. The first two preserve existing market architectures but seek, respectively, to upgrade the rating of risk and to manage the

uncertainty produced by complex, coupled systems. The third takes seriously the possibilities for using regulation to reconstitute market architectures and recompose the system, reducing the chances of normal financial accidents.

FINANCIAL MARKET ARCHITECTURES, REGULATORY REFORM, AND NORMAL ACCIDENTS

Current discussions of regulatory reform often call for updating the ''rules of the road'' to more effectively govern finance without impeding its dynamism and innovation. In a rich and thoughtful essay, Eichengreen (2010) takes this path. He links the financial crisis to several features of the current financial market architecture. These include the rise of ''originate and distribute'' securitized mortgage systems, which severed links between issuers, borrowers, and banks; a reliance on self-regulatory mechanisms like internal risk portfolio models and external rating agencies that underestimated correlated risks of mortgage-backed securities (MBSs) and their derivatives; and proliferation of hedge funds, structured investment vehicles (SIVs), and off-balance sheet activities operating outside the sphere of prudential regulation.

Eichengreen also offers ideas for far reaching regulatory reform. He proposes fostering independence and competition among rating agencies, moving derivatives trading into organized exchanges to subject non-banks to capital requirements, and consolidating financial market regulation. He also proposes a series of measures to mobilize banks as disciplinary agents for hedge funds, SIVs, and other entities dependent on bank credit (''the magic of counterparty risk management''). Central here are measures that subject banks to capital requirements based on risk portfolios models (as in the Basel II accord) and on multiples of bank investments (as in the Basel I accord), tie capital rules to collateral values and growth rates, and force off-balance sheet transactions onto banks' books.

At the same time, however, Eichengreen rejects efforts to restrict brokerage, reimpose ''originate and hold'' mortgage systems, require simplicity in securities, or otherwise tamper with the core principles of current financial market organization. These ''back to the 60s measures,'' he argues, not only ignore economic realities and try to put the genie back into the bottle but will also stifle innovations that have helped absorb risk and lower costs of credit. Today's problem is akin to the dawn of the automobile

age, with ever more powerful machines, novices that "have a troubling tendency to run off the road or collide with other vehicles" (p. 439) and the need to harness capabilities through the right mix of roads and rules. In this, Eichengreen falls squarely within a class of analyses, exemplified by Stephen Breyer's (1982) classic, *Regulation and Its Reform*, that casts the problem of reform as one of selecting regulatory systems that best fit the kind of market or market defects at issue.

Indeed, current reform proposals quite commonly take existing market architectures as financial state of the art, casting the regulatory problem as getting the right rules for those structures. Calls for consolidating regulatory authority to avoid fragmentation and venue shopping take this approach, as do reforms that focus primarily on capital regulation, fraud, or consumer protection after the fact of securitization. While going further than most, proposals to regulate "leverage cycles" (Geanakoplos, 2010) or create financial protection agencies (Warren, 2010) likewise take for granted securitization, integration and other key features of existing market architectures. President Obama has also framed the challenge in these terms, calling for "strong rules of the road to guard against the kind of systemic risks that we've seen … rules [that] must be developed in a way that doesn't stifle innovation and enterprise" (Remarks by the President on Financial Rescue and Reform, September 14, 2009).

We take two issues with this basic stance. First, it is deeply at odds with some core insights and findings in political economy and the organizational and economic sociology of markets (Abolafia, 1996; Balleisen, 2010; Campbell & Lindberg, 1990; Carpenter, 2010; Eisner, 2010; Fligstein, 2001). Markets are not pre-given and exogenous to regulation but are rather constituted by states, regulation, and non-state governance. Moreover, decisions about regulation are decisions about the kinds of industrial orders and economies we will produce and even the paths of economic development, variety of capitalism, level of inequality, and type of class structure we can or will sustain (Berk, 1994; Schneiberg, 2002). There are important trade-offs between regulating finance as an industry, where the key aspirations lie with promoting growth, innovation and risk taking, and regulating finance as an essential *infrastructure*, which instead emphasizes stability, reliability, prudence, and the fostering of particular types of economic development. At this moment, when old settlements are under debate, it strikes us as a mistake to limit the discussion and foreclose regulatory possibilities that entail a more substantial reconfiguration of finance.

Second, casting the key issue as the failure to perfect or effectively regulate otherwise appropriately organized financial markets downplays

ways in which the current crisis flows from the basic architecture of those markets. Specifically, proposals such as Eichengreen's and Obama's do not grapple with the tendency of some organizational systems to induce "normal accidents" in which disruptions spread rapidly, and negative feedbacks breed large-scale catastrophes (for related analyses, see Mezias, 1994; Palmer & Maher, 2010; Guillén & Suárez, 2010).

Charles Perrow's (1984, 1999) classic account of such systems identifies complexity as one of two central conditions for normal accidents. Complex systems are characterized by extensive, multiplex interdependence, and relations among elements that are poorly understood, non-linear, variable, and idiosyncratic. Under these conditions, many interactions will remain hidden, and oversight will yield false alarms and warning systems that are routinely ignored or rationalized away. By all accounts, current financial market architectures are remarkably complex. This is true even if we consider just the sheer number of actors, transactions, and instruments involved and their proliferation over time in a system of continual innovation.

Even more importantly, the rise of globalized, securitized finance, bank mergers, and the integration of investment and commercial banking have generated extraordinary interconnectedness across markets, organizations, and products. In so doing, they forged proximities, common-mode dependencies, and pathways for reciprocal influence that lie at the heart of complex "interactivity" in systems. The sources of this interconnectedness are numerous. In the 1970s and 1980s, securitization, brokered deposits, and conversions led to the integration of S&Ls, mortgage markets, and Wall Street. The 1999 Gramm–Leach–Bliley Act (a partial repeal of the Glass–Steagall Act) let commercial banks underwrite and trade in MBSs and collateralized debt obligations (CDOs), fueling a proliferation of linkages between organizations (banks, investment houses, mutual funds, mortgage consolidators, brokers, insurers, hedge funds) and markets (commercial paper, mortgage, "repo," municipal bond, general securities, brokered deposits). Industry concentration has meant that millions of transactions are channeled through the top five investment banks, three to four government-sponsored enterprises (e.g., Fannie Mae), a handful of mortgage consolidators, and a few insurance companies. Moreover, this consolidation, ostensibly to enable American firms to compete with foreign financial institutions, has been accompanied by the growth of funds and firms sufficiently large that their portfolio decisions could make and unmake rather than take market prices. Globally, the accumulation of capital in rapidly growing countries such as China and India and its diversion to American investments led to further integration (Prasad, 2009).

Securitization itself introduced new forms and levels of complexity and interconnection. These include not just the characteristics and relationships among derivatives at any given point in time, which result from recombinatorial processes and require sophisticated models for pricing and risk analysis. They also include the constant development of new securities and derivatives, and the continual combination, division, and recombination of assets, securities, submarkets, and income flows. As Eichengreen (2010, p. 435) puts it, "Concocting ever more complex derivatives is the bread and butter of financial engineers." And in earning that daily bread – in developing new products, in dividing, combining, and recombining mortgages assets into MBSs, CDOs, and then CDO^2s – financial engineers AU :2 concocted ever more complex systems of claims and relations.

There are in fact multiple levels of interactive complexity contained in a financial system based on integration, securitization, globalization, and private provision. In linking previously segregated markets and financial intermediaries, current architectures forged new and deepening ties between Wall Street and Main Street and other forms of *field*- or *market*-level interconnection. Existing architectures also brought with them remarkable increases in *inter-organizational* ties through new trades and products and progressively more elaborate chains of transactions, claims, and indebtedness. Moreover, the "concocting of ever more complex derivatives" is itself a process in which financial engineers decompose, recombine, pool, and package other financial assets, yielding *products* that are themselves increasingly complex and interconnected combinations of claims, income flows, obligations, and transactions. Derivatives are in this sense *nodes of networks of social* relations, products that link assets, asset holders, claims, obligations, and income flows in remarkably complex and evolving systems of interdependence with their own as yet poorly understood emergent properties and dynamics.

Normal accidents become more likely when complexity combines with tight coupling, meaning that errors or failures in one part of a system, if not detected and resolved immediately, cascade rapidly and widely into system-wide crises and collapse. As Mezias (1994), Perrow (1999), and Palmer and Maher (2010) point out, prevailing architectures and practices left financial markets quite tightly coupled, with few buffers or firewalls between subsystems, and virtually no slack or cushion against adversity. This tight coupling also has multiple sources. These include continuous trading on a global basis, and a securitization regime that combines extraordinary leverage, tight margin call deadlines, and reliance on continually rolling over day loans to finance investments. Tight coupling also flows from financial

integration, securitization, and the growing linkages they forge between what had been de-coupled markets, organizations, and products. Once home values began to fall, failures cascaded astonishingly rapidly through the system and its interconnected parts, fueling accelerating cycles of asset downgrades, balance sheet adjustments, margin calls, asset sales, demands for payment on loans and credit swap contacts, and wholesale declines in abilities to deliver. This is indicative of a structure with tightly linked chains of transactions, claims, and indebtedness. Although such structures supported innovation, they also rendered financial markets vulnerable to volatility, cascades, and wholesale uncertainty (Beunza & Stark, 2009; Choi, 2009).

There are, of course, some issues to address in applying normal accident arguments to financial market architectures. Normal accident arguments treat complexity and coupling as independent characteristics, but they are quite closely intertwined in the production of the financial crisis. Linkages resulting from production of derivatives, CDOs, and CDO^2s through the pooling, division, and recombination of assets and income flows themselves contributed to tight coupling among actors, organizations, and markets. In addition, the normal accident framework was developed for systems that are deliberately designed or planned, rather than those like the financial services industry, which was assembled in an ad hoc and largely piecemeal series of innovations and policy decisions. Furthermore, there is lively debate over the relative contributions to the financial crisis of wrongdoing by identifiable actors (or ''agency'' more generally) versus systemic features such as complexity and coupling (Perrow, 2010; Palmer & Maher, 2010).

Yet thinking systemically in terms of complexity and coupling provides much needed leverage for understanding both the character of the crisis and the prospects for regulatory reform. The significance and consequence of wrongdoing depend profoundly on the social and organizational structure in which it takes place. Whether a particular form of wrongdoing remains an isolated event of little significance takes down a subsystem or spirals rapidly into a system-wide crisis, rests critically on the structural characteristics of systems as they currently stand. This holds regardless of how those structures came to be or whether actors ''should have known better.'' In fact, analyzing finance systemically in terms of complexity and coupling represents both a distinctive conceptual alternative to existing imageries of herding, ''systematic'' and ''correlated'' risk, and a tool for posing the dilemmas of regulatory reform more sharply.

If we preserve financial market architectures and the complexity and coupling they entail, regulatory reform faces an uphill battle, as the task would involve crafting regimes for effectively regulating normal accident

systems. In the next two sections, we discuss several challenges that lie down this path. As we show, regulating complexity and coupling in current financial architectures poses serious challenges for both the evaluation of risk and the management of uncertainty, challenges that may only be partly manageable in the current situation. Therefore, in our final section, we push beyond regulatory reform within existing financial architectures to consider the possibilities for using regulation to alter those architectures, highlighting strategies which reduce complexity and coupling through decentralization, alternative organizational forms, and redundancy.

PRESERVING ARCHITECTURES I: RISK, INDEPENDENCE, AND CAPACITY IN RATING AGENCIES

The failure of rating agencies such as Moody's, Standard & Poor's, and Fitch to adequately estimate and report the risks of a rapidly evolving array of financial instruments is perhaps the most widely agreed-upon aspect of the recent crisis. At some point, ratings of derivatives of subprime loans became astoundingly inflated (Fligstein & Goldstein, 2010), suspending market discipline and enabling an unprecedented run up of debt and housing values. Yet securitization and the recombination of financial products place an inescapable premium on assessing risk through rating systems, making it virtually inevitable that rating agencies will remain central to the governance of finance, both domestically and internationally. The Basel II international accord relies on a combination of banks' own modeling and the judgment of rating agencies, and reformers moving toward a "Basel III" agreement appear unlikely to replace rating with fixed capital adequacy standards (Eichengreen, 2010). Proposals flowing from the U.S. government and G20 aim at reform of the rating process rather than its elimination, nationalization, or systematic restructuring. In our view, however, current discussions generally fail to address adequately the demands that existing finance architectures place on risk assessment, rating agencies, and their reform.

Ongoing debates focus overwhelmingly on the market in which rating agencies operate and two consequent aspects of reform. First, for many observers, the failure of the rating agencies can be attributed to conflicts of interest based on their role as both advisors and raters. The solution thus involves simply splitting these functions (Eichengreen, 2010), much as the

accounting profession split auditing and consulting functions in the wake of the Enron scandal. At the 2009 G20 summit, major governments pledged to "extend regulatory oversight and registration to Credit Rating Agencies to ensure they meet the international code of good practice, *particularly to prevent unacceptable conflicts of interest*" (G20 final communiqué, April 3, 2009, emphasis added). A related line of thinking locates the conflict of interest in the fact that raters are employed by *issuers* of bonds and securities, rather than investors, creating an incentive for inflation. Having investors employ rating agencies might reduce raters' temptations to inflate ratings to please clients. As some have pointed out, however, it would be difficult to develop an efficient system in which investors employ rating agencies, due to the collective good character of ratings (i.e., their non-excludability, especially in an information-rich environment) (Partnoy, 1999). One could imagine a reform based on third-party associations of buyers – like institutional investors or pension funds – pooling resources to employ their own set of independent raters, which might mitigate the worst temptation. But such a reform may come with its own set of conflicts of interest (White, 2009), constitutes only one small step toward generating credible assessments of complex risks, and begs more fundamental questions about rating agencies' administrative and analytical capacities.

A second common diagnosis focuses on the lack of competition among raters and the oligopolistic character of the rating industry, driven by government recognition of a small number of firms (Moody's, S&P, Fitch, and the recently approved Egan-Jones Ratings Company) as Nationally Recognized Statistical Rating Organizations (NRSROs). Although ratings agencies are often presumed to be disciplined by their investments in reputation, their de facto oligopoly blunts this reputational mechanism (Eichengreen, 2010; Partnoy, 1999). For this reason, Partnoy has argued that rating agencies are less like truly private watchdogs and more like grantors of regulatory licenses, whose ability to stay in business depends much less on their credibility in the marketplace than with their privileged position with regulators. Under this diagnosis, the treatment lies in introducing more competition and allowing reputation mechanisms to discipline raters. Initial attempts to do so have barely had an impact, however. The pathway to become an NRSRO remains somewhat opaque, and SEC reforms in this area have stalled, partly because barriers to entry and first mover advantages remain substantial, and partly perhaps because large financial firms prefer the flawed current system to the uncertainties of reform (Eichengreen, 2010; Surowiecki, 2009). Concerns about oligopoly have also fed scholarly debates over whether complex financial markets

might function better if rating agencies were eliminated altogether (Hill, 2004; Hunt, 2009; Partnoy, 1999).

Prominent as they are, proposals for eliminating conflicts of interest and state-sponsored oligopoly fail to address two key issues involved in generating credible information about complex securities. First, far more than current debates recognize, improving the reliability of rating agencies is an organizational and cultural problem of building administrative capacities that can sustain independent evaluation and knowledge-production. Managing existing architectures rests on dramatic increases in the capacities of rating agencies and risk management departments. Second, reforming rating agencies raises new questions about the characteristics of what is being judged, and how regulators or raters can evaluate products that are themselves recombination of other products, claims, income flows, and obligations.

Strangely, recent discussions of regulating risk in finance have ignored a large and productive literature on administrative capacities (Evans, 1995; Skocpol & Finegold, 1982; Weir & Skocpol, 1985). This work has largely focused on state capacities. Yet it provides rich insights into the conditions under which administrative agencies can avoid capture, act autonomously, and exercise independent oversight while retaining sufficient embeddedness within industry to build the tacit-knowledge, information base and trust needed for effective governance. Synthesizing strands of this work, Carruthers (1994) highlights three dimensions of administrative capacity – resource-based, relational, and cultural – which shed useful light on the problem of reforming risk rating in the financial industry.

Debates over rating agencies have partly addressed resource-based aspects of administrative capacities, highlighting the dependence of raters on investors for funds and the importance of breaking those links to avoid specific conflicts of interest in risk assessment. However, resource issues in financial regulation also have important informational and structural components. By most indications, rating agencies not only lacked adequate databases for assessing risks associated with securities. They were also completely overwhelmed by the sheer volume of securities issues they had to process, suggesting quite clearly the importance for reform of wholesale improvements in rating agencies' data collection and informational processing capabilities. Moreover, the organizational maintenance, successes, and prestige of rating agencies depend individually and collectively on the vitality, growth, and well-being of the industries they are rating, regardless of how raters and their agencies are compensated or funded. If a critical mass of financial firms wants to deal in complex, opaque

investments with risks that are difficult to judge, and if these activities yield profits, growth, and employment, rating agencies would find it difficult to put the breaks on, absent either an independent resources stream or an alternative foundation for organizational maintenance, success, and relevance. To some extent, this structural dependence may be inevitable in any systems of rating, private or public. But its presence creates issues for reforming, shifting the question from "why did a particular rating agency perform poorly?" to "why did an entire set of rating agencies fail to 'sound the alarm'?"

Enhancing rating agencies' capacities also rests on addressing a second, relational dimension, such as flows of personnel ("revolving doors") between the regulator and the regulated, which are also serious threats to independent evaluation and action. Some observers have noted how "high levels of staff turnover …, modest salary levels and limited upward mobility" in rating agencies (Partnoy, 1999, p. 652) led to a "continuous 'brain drain' from the rating agencies to their clients" (Lo, 2008, p. 27). But few have considered the implications of this swinging door for reform. Improving rating agencies means building a stable cadre of experts outside the industry with viable career path in the watchdog sector, as well as cultivating and mobilizing independent sources of knowledge and expertise. Subcadres of this sort may already exist – in university departments of economics and finance, for example – so figuring out how to transfer or translate this expertise into the rating process might be one sensible way to proceed, as would developing programs for training new cohorts of rating and risk assessment specialists also be worthwhile avenues for reform. AU :3

Most neglected in current debates is the third, cultural dimension of administrative capacity, having to do with collective identity and the "organization's ability to generate its own legitimate cultural forms" (Carruthers, 1994, p. 24). At a minimum, building cultural capacity in rating agencies means developing a strong sense of purpose among raters, an "espirit de corps" that acts as a mobilizing and disciplining force above and beyond the dictates of reputation and government recognition. Going further, rating systems might be redesigned to incorporate dissent and alternative standards of evaluation. Research on private arbiters of trust in other settings has found that the effectiveness of consumer watchdogs and private monitors of labor and environmental conditions stems from their being part of social movements and their ability to combine necessary expertise *and* a broader social change frame (Bartley & Smith, 2010; Cashore, Auld, & Newsom, 2004; Rao, 1998). Alternative standards of evaluation (including those based on viewing finance as an infrastructure

more than an industry) could be introduced through such "mission-driven" actors or through "fire alarm" or whistle-blower systems within rating agencies. In either case, the consequence would be a rating system that would be forced to reconcile multiple criteria of evaluation, which we expect would enhance the quality of rating and amplify the beneficial effects of competition among raters.

Generating the requisite cultural forms may ultimately depend on combining mission, movements, and alternative standards of evaluation with the cultivation of theories of risk that do not toe the line of the financial industry. Given the brain drain and demoralization in rating agencies, and the unmatched prestige of financial wizards and engineers, what was "captured" in the run up to the crisis may very well have been the imagination, conceptual frameworks, and operating routines of the rating agencies. In addition, several contributions to this volume suggest that the "performativity" and "reactivity" of rating further undermined linkages between rating and underlying risks. Rona-Tas (2010) finds that issuers were sometimes able to game the rating system and "tweak the structure of their mortgage pools to their advantage." Similarly, Carruthers (2010) traces how publicly sharing new rating methods for subprime markets prompted issuers to alter their practices, and issuers and raters to engage in the "co-performativity of the models embodied within the rating methods," thereby contributing to the inflation of securities ratings.

Such observations indicate that developing the multiple dimensions of rating agencies' administrative capacities may prove far more important to regulatory reform than current discussions anticipate. They suggest that rating agencies will continue to fall short as watchdogs unless reforms to the market for raters are supplemented by a long-term project to create a stable cadre of experts, linked to a culture of independence and social purpose. They suggest, too, that rating agencies will fall short unless they can articulate, elaborate, and successfully defend their own models, analytical categories, and theories of risk. Cultivating such capacities might involve not only the professionalization of rating specialists but also the incorporation of diverse and dissenting voices (Balleisen, 2010), in a move toward more multi-stakeholder, multi-standard forms of assessment. Absent serious reforms along these lines – that is, absent a systematic investment in upgrading rating agencies' administrative capacities – it is not clear that introducing competition, eliminating material conflicts of interest or even nationalizing rating would make a big difference.

Finally, the rating problem may be traceable not just to the character of rating agencies but also to the problem of evaluating financial products

themselves. Here, too, debates over rating agencies and their reform overlook a critical issue for reform. Derivatives, MBS, CDOs, and CDO^2s are not simply pools of assets or bundles of properties whose values or likely behavior can be viewed in isolations. Rather, as suggested previously, such securities are nodes in networks of relations – that is, combinations of claims, income flows, and obligations created through the combination, decomposition and recombination of other financial products. Their performance and riskiness depend on their position in an increasingly complex network structure. And the dynamics of the overall network can sometimes rest on the performance of a fairly small number of nodes.

If this is correct, then rating "creditworthiness" of complex derivatives is not simply a matter of evaluating the properties of an asset, or even the ways in which financial products or their holders carry "correlated" or "systematic" risk, at least as currently understood. To the contrary, it means taking interconnectedness seriously. It means evaluating products that are combinations of claims, flows, and obligations; the products, intermediaries, and issuers associated with those claims and transactions; and the constellations of claims, flows, and transactions associated with those intermediaries and issuers. It means going beyond tracking leverage, capital ratios, and the like to invest in the analytical tools and data processing capacities needed to evaluate these product networks, track their evolution over time, analyze how specific constellations expose security holders to volatility, cascades, and unexpected risks, and to sound alarms when thresholds are reached. Moreover, it quite likely means undertaking these tasks both for financial products, tracking their network properties in order evaluate their risk, and for the network of relations as a whole, tracking how its structure and evolution creates new forms of systematic risk.

PRESERVING ARCHITECTURES II: UNCERTAINTY, LEARNING SYSTEMS, AND BARGAINING

Coupling and complexity put an extraordinary premium on the autonomy and analytical capacities of rating agencies and internal risk assessment departments. Without that enhancement, there is little leverage for market forces, institutional investors, banks (as counterparty risk managers), or regulators to value products, discipline participants, or restore confidence in financial markets. A critical brake on system's proclivities toward normal accidents will be absent.

Yet, the problem posed by existing financial markets is only partly a problem of *risk* – that is, of securing transparency in assets and estimating probabilities via actuarial methods, portfolio models, or rating schemes. It is also a problem of managing *uncertainty* in a financial system whose basic architecture promotes opportunism, continual innovation, complex patterns of interconnectedness, and the proliferation of new products, bundles, and services. This uncertainty raises serious issues for regulatory reform, which take us beyond discussions of capital requirements and rating systems to think about regulation as a dynamic process (see also Schneiberg & Bartley, 2008). It raises, as McDermott (2007b) suggests, both issues of flow, or managing a steady stream of credit, products and innovations, and issues of stock, or managing bad debts, wholesale collapses of asset values, and company reorganizations.

Managing uncertainty in complex financial architectures means crafting systems in which regulators and regulated can somehow (1) learn about the irreducibly novel and rapidly changing properties of securities and (2) routinely revise models, measures, and rules in light of what they discover to support and manage that flow. In a sector organized for continual innovation and creative destruction, it is not entirely clear what the right rules or measures are, whether these will hold over time, and how future innovation might exploit their loopholes. The basic properties of products, their combinations, and the relations between them are both complex and changing. Under these conditions, it is heroic to assume to that banks, private or public regulators, will know what the "right" capital structure for a bank or hedge fund is, what the right measure is for product quality, or how to assess the risk of various financial instruments. Regulators cannot just "set and forget" optimal rules, property rights, and self-enforcing incentives, and then disengage. Rather, the central design issue is to make it possible for regulators, rating bodies, investor groups, and other stakeholders to co-learn with investment banks, financial engineers, and economists, and to review, test, and rapidly update assumptions, measures, and rules as circumstances change. Regulation, in other words, involves learning races. If regulators, rating agencies and other key constituencies are not among "the smartest guys in the room," financial engineers will outstrip the regulatory regime, escaping oversight and fostering new cycles of boom, bust, and crisis. And if private and public regulators cannot experiment, deliberate, and revise rules and models as interdependencies shift or novel products emerge, then regulation will be undermined.

Research on the organizational dynamics of regulation points to three possibilities for designing learning-based governance for finance. One option

is some version of "prior approval" systems, built by analogy to consumer products safety regulation (Warren, 2010) or perhaps more appropriately, FDA-style testing of pharmaceuticals (Carpenter, 2010). Such systems have their flaws, including industry control over seemingly independent studies and how long the process can take. It is also not clear what the analogy in finance would be to the randomized trial experiment in pharmaceutical testing. But the parallels to health and innovations in medicine are striking, particularly in coupled systems where errors spread. Simulations and limited, carefully controlled roll-outs for preliminary testing might partly approximate randomized trials. Overall, it seems sensible to discuss subjecting financial instruments to some process of systematic, disciplined testing using the best methods available to the scientific community before those instruments become widely adopted. As Buiter (2009) imagines it, "to get a new instrument or new institution approved, there will have to be testing, scrutiny by regulators, supervisors, academic specialists and other interested parties, and pilot projects. It is possible that, once a new instrument or institution has been approved, it is only available 'with a prescription'. For instance, only professional counterparties rather than the general public could be permitted."

Another option is to incorporate some variant of peer review into regulatory redesign. Academic peer review in the natural and social sciences is also not without critics. But it is indisputably a key element in systems of collective learning and quality control with a clear track record in fostering remarkable developments of knowledge and science (including the modeling technologies in financial markets). Among its virtues are its ability to induce discovery, systematic review, and debate; its emphasis on testing, replication, and proof; and its potentials for mobilizing independent judgment, relentless criticism, and dissent. Overall, peer review can foster a principled skepticism capable of sustaining both extraordinary efforts in revision and high rejection rates.

A third and related option is for regulatory redesign to incorporate forms of deliberative or experimentalist governance into financial markets (Fung, Graham, & Weil, 2007; McDermott, 2007a, 2007b; Sabel & Dorf, 1998; Sabel & Simon, 2006; Sabel & Zeitlin, 2008; Zeitlin, 2005). Experimentalist governance systems, often used for both transnational and national coordination, are responses to the impossibilities of fixing rules in advance (the "omniscient regulator problem") and a set of mechanisms for fostering deliberation and mutual learning among heterogeneous actors. Generally speaking, these are federated schemes designed for discovery and revision rather than simple rule enforcement. A central regulator, peer

inspectorate, or deliberative body articulates not uniform rules, but a set of guidelines, timetables, overall objectives, and performance indicators. It grants regulated organizations the authority and discretion, within those guidelines, to set their own targets for improvement, experiment with their own solutions, and develop systems for assessing how well solutions reach targets. In exchange, regulated organizations agree to provide detailed reports on their metrics, discoveries, methods, and performance to the central regulator, association or inspectorate. That body or association then pools the data, collaborates with individual units, and/or organizes deliberation and peer review among regulated organizations to compare solutions, share discoveries, and develop new metrics, methods, and benchmarks in light of what new discoveries reveal.

The power of these systems derives from combining decentralized experimentation and discovery with systematic scrutiny, mutual monitoring, and disciplined deliberation. Rather than assuming that regulators or participants know what to do or what the right rules are, experimentalist systems enable participants to learn and upgrade their capabilities and to incrementally revise rules and methods as their supervisory capacities improve and new possibilities emerge. Moreover, in deliberating together over what they and others have done and discovered, participants have to give reasons for their policies and proposals, which links learning and revision with accountability and oversight. And in generating and proving unanticipated possibilities, experimentation, discovery, and deliberation can prompt participants to reflect on their stances and sometimes profoundly revise their understandings of what their interests are in light of the new possibilities and capabilities revealed. Experimentalist systems thus also contain intriguing potentials for resolving political stalemates and seemingly intractable conflicts of immediate interests.

Admittedly, there are many devils in the details, particularly with regard to feasibility, implementation, and power imbalances among participants. Yet the problem of uncertainty posed by existing financial architectures makes it eminently worthwhile to consider how experimentalist regulation could be deployed to oversee securitization and the production of derivatives. It might conceivably be employed as a mechanism for regulating and upgrading managerial self-governance that links public agencies with financial organizations' risk assessment departments. It could be used as part of a prior approval system. Or it might serve as a platform for collaborative learning across national across national regulatory systems (see Sabel & Zeitlin, 2008).

Ultimately, however, even a fully realized system of learning, prior approval or peer review can only partly contain the uncertainty and

opportunism involved in existing market architectures. Managing uncertainty in financial markets thus has a second dimension, involving what McDermott (2007b) calls the problem of stock. This means crafting systems that enable participants and stakeholders to resolve bad debt, reorganize firms, replace and recruit new managers, and otherwise bargain, distribute, and absorb the losses flowing form normal crises when calculation and learning inevitably fall short. As is painfully clear in the present context, the problem is to manage the costs of a huge loss of wealth, and to share that loss and bail out the banking system without either rewarding those who brought us the crisis or producing too nasty and prolonged a transition. The solution, we argue, is to design regulation as a dynamic process that enables ongoing negotiations, deliberation, and bargained solutions over losses and work-outs.

In the current situation, for example, it is apparent that lenders, investors who hold MBSs and CDOs, taxpayers, and other affected stakeholders would be all better off in the aggregate if mortgages were renegotiated so that borrowers would not default. But fearing losses and moral hazards, bond holders and banks are all acting to preserve themselves as much as they can, and to protect themselves against possible losses, threatening litigation, dragging their feet, and jamming up the works. This is remarkably like the "free for alls" and "tug of wars" underlying the wage/price inflation spiral of the 1970s. Also, some observers fear, one foundations of Japan's lost decade, the inability to "clear" the market.

It is likewise apparent that TARP support for failed institutions, whereas arguably forestalling an even greater financial collapse neither encouraged nor compelled recipients to change their lending practices, reduce reliance on heavily leveraged derivatives trading, recapitalize subsidiaries, or help distressed homeowners renegotiate mortgages on homes under water. The program imposed strikingly few limits or requirements on banks as a condition for relief, leaving banks free to devote resources toward executive compensation, making derivative holders whole, underwriting new forms of securitization, and even lobbying. Even the equity requirements that TARP participants had to issue to the Treasury when they received funds were only for non-voting stock. This deprived regulators of potentially important levers for alternating financial practices, and left TARP plagued by troubling questions of moral hazard. AU :4

Here, too, what are needed are not just the right rules – though having precedents from the Resolution Trust Corporation and established routines for winding up bad banks certainly helps. The current set of dilemmas calls for systems that enhance the ability and willingness of groups to bargain,

share costs and burdens over a tough transition, act against their first best individual interests, and avoid free for alls in which everyone seeks to escape loss or exploit windfalls. (Note the sharp contrast to recent plans that are so reliant on the willingness of private investors to invest that they can hold up the process and shift all the costs onto taxpayers, homeowners, or those who would have retired.) We all have to eat some losses to pass the toxic waste out of the system, assets whose values will likely never fully recover. And parallels to core premises of modern bankruptcy law suggest that this process can only proceed with restraints on hold-up, roughly equal treatment of creditors and the like. Furthermore, since large-scale recapitalizations and asset purchases are perhaps inevitably part of the mix, managing collapse likewise calls for systems that can both impose specific requirements on failing institutions as conditions for support and adjust those requirements as circumstance change. Nor are these one-time issues for regulatory design, as preserving globalization, mass securitization, financial integration, and the emphasis on profit and innovation means accepting bubbles, bull markets, instabilities and normal accidents as financial engineers continually introduce instruments and markets, with new and unknown properties.

Work in comparative institutional analysis emphasizes three political-institutional conditions that can support these activities (Atkinson & Coleman, 1985; Balleisen, 2010; Eisner, 2010; McDermott, 2007a, 2007b; Streeck & Schmitter, 1985; Weir & Skocpol, 1985). First, they are more likely in settings that are associationally dense, in the sense that key participants are organized into associations or systems of "co-regulation" that can temper members' short-term interests, articulate and represent their broader interests in bargains with other groups, and hold members to those bargains. Associational systems force incorporated groups to recognize and take account of other interests in their deliberations, and can encourage members to develop broader and longer term understanding of their interest. Notably, it is the unionization of GM and Chrysler's workforces that allowed some bargaining over losses in the American auto sector (though the unions are in a weak position and losses might ultimately prove catastrophic). And it is quite apparent that everyone would be much better off if commercial banks and other financial institutions took more seriously their own collective and long term interests in working out bad debt, improving credit rating, and the like.

Second, the relevant state agencies must have the autonomy, administrative capacity, and embeddedness not only to foster a broader vision and orchestrate bargaining. They must also able to subject participants to credible threats of worst case consequences if they fail to abandon first best

strategies, negotiate in good faith, or deliver on agreements. There are obvious parallels here to seizing banks and nationalization as means for inducing financial institutions to rethink their immediate, individual interests and absorb a share of the burden.

Finally, as McDermott's (2007a, 2007b) analysis of bank crises in Eastern Europe makes clear, participants' ability to manage losses and pull off large scale work-outs are substantially enhanced by regulatory regimes that are participatory, collaborative, and ongoing, rather than depoliticized, technocratic, and of a one-shot "set and forget" character. In cases where private and public actors adopted one-shot, depoliticized, arm's-length approaches to bank crises, banks recovered slowly, supervisory functions remained undeveloped, and governments supplied capital and loan guarantees with no strings attached. In these cases, repeated bailouts were necessary, or the sector remained vulnerable to collapse. But where banks, regulators, and other stakeholders were forced to collaborate closely, deliberate over restructuring, and continually share information about restructuring efforts, government officials could not only make recapitalizations and write-offs conditional on reasoned, informed and thoughtful reforms, both in bank operations and in bank relations with troubled firms. They were also able to substantially enhance their supervisory capabilities, develop cadres of restructuring specialists in work-out units, and more generally improve bank crisis resolution.

Overall, the systems of learning and bargaining just discussed can provide powerful leverages for managing the problems of uncertainty generated by current financial architectures. However, we fear that the political-institutional conditions for such reforms are lacking. We are not encouraged by the organizational fragmentation in the US political system, the lack of representation for working people, homeowners or other stakeholders, the gutting of SEC regulatory agencies staff and analytical capacities, and the reluctance of the American state to force investors and banks to the bargaining table to carry their share or even deliberate over conditions of restructuring. The "shotgun behind the door" of direct regulation or nationalization has not been well oiled and is not a threat that can be credibly sustained beyond – or even during – the immediate crisis. We are likewise not encouraged by the potential of transnational governance systems to sustain equitable bargaining, foster deliberation and absorb or distribute losses. In the end, we fear that a lack of regulatory capacities and disorganization may preclude effectively meeting the regulatory demands of our complex and tightly coupled financial system, resulting in stalled situations, an unequal sharing of burden, and repeated crises. We therefore

turn finally to regulatory strategies that alter – and foster alternatives to – existing financial architectures themselves.

BEYOND CURRENT MARKET ARCHITECTURE: PRINCIPLES OF REDESIGN

If regulatory decisions are ultimately decisions about the fundamental design of markets, then discussions of regulatory reform ought to go beyond a discourse of "intervention" to consider a far-reaching restructuring of financial markets. As we have argued, the magnitude of the current crisis is at least partly traceable to the high degree of complexity and tight coupling that has evolved over the past several decades. During the "perfect calm" that preceded the crisis (Crotty, 2008), this system may have functioned smoothly. But it quickly spiraled into crisis as the housing bubble burst. Observers are beginning to ask the crucial question of why this bubble caused a rapidly spreading crisis while others have not – or "why does one crash cause minimal damage to the financial system, so that the economy can pick itself up quickly, while another crash leaves a devastated financial sector in the wreckage?" (Gjerstad & Smith, 2009). Surprisingly, however, few have given this question and its potentially profound implications the central position they deserve in discussions of regulatory reform. (For one exception, see Buiter (2009), whose list of reform proposals includes an expanded role for mixed and cooperative ownership of financial institutions, "public utility banking," and even a rethinking of limited liability for investment banks.)

Following from our analysis of normal accidents, we see three possibilities for market redesign. First, regulation could directly reduce complexity by restricting the type of securities that could be traded or held by core financial institutions, and by forcing derivatives trading onto regulated and licensed exchanges. An FDA-style testing and approval system, as discussed above, could be one step in this direction. Carpenter (2010) argues that the FDA's regime produces a limited number of high-quality, low-variance products – in effect, avoiding both the lemons problem and reducing complexity. Such a regime would move finance from an ever-expanding menu of opaque derivatives to a well understood and limited set of instruments that allow for hedging and risk spreading the without losing sight of the nature of the gamble itself. It would also mean slowing down the runaway production of increasingly unmanageable systems of interconnections, giving regulators

and risk raters a chance to learn or keep up, while reducing the chances of producing an overall network structure prone to cascades or system collapse.

Another possibility is for regulation to shrink, disconnect or segment the complex networks that underlie current financial architectures, reducing the density of interconnections and the reach of the financial network. In many situations (like AIG), "too big to fail" appears also to mean "too interconnected" or "too centrally positioned in a network of claims" to fail. This might be combated with Glass–Steagall-style regulation that re-separates investment and commercial banking and with measures that limit market concentration or firm size. Or as Baker and Moss (2009) propose, it might be combated by subjecting intermediaries that pass size or interconnectedness thresholds to additional, more stringent regulations regarding capital, reserves, and leverage. Such a two-tiered policy would avoid outright limits on size or concentration but provide financial institutions with disincentives to grow or deepen their interconnections in ways that increase the risk of normal accidents. One could even imagine regulatory practices of tracking the evolution of networks among products and firms and then intervening selectively to target problematic nodes, remove certain ties, place a hold or recall on certain products, or alter the holdings of banks or other intermediaries.

Going further, we might minimize tight coupling by creating specialized subsystems for housing finance and promoting a round of decentralization among financial intermediaries. For all its limitations, localism in the form of community banking, credit unions, mutual savings, and loan associations – as well as insurance mutuals, electrical cooperatives and more – have historically produced some surprising benefits in the United States (Schneiberg, 2002; Schneiberg, King, & Smith, 2008). They fostered economic communities of fate between lenders, borrowers, and local communities; imposed discipline on loan selection, risk selection and investments; and left key stakeholder groups less vulnerable to forms of opportunism associated with "investor owned enterprise" (or in current parlance, shareholder value). Such localism helped to discipline for-profit firms and expand, upgrade, and reconstitute markets in insurance, electricity, and banking in some remarkably productive ways. It also helped to support the steady expansion of key infrastructure industries, to promote more regionally balanced, decentralized forms of economic development, and to foster small stakeholder forms of capitalism, grounded in the middle class. Conceivably, it might be possible to loosen coupling and forge communities of fate by mobilizing some strategy of localism globally. Again, there are myriad devils in the details, and we are not comfortable with creating

balkanized national capital markets via controls on cross- border investment. But if we take regulatory reform as market redesign seriously, it seems sensible to at least consider regulatory measures that would temper the vast pyramiding of funds into of global pools of capital, and that would more aggressively encourage the retention and reinvestment of some of those funds into local and regional development in China, India, and so on.

Finally, a key to prevent minor shocks from spiraling into crisis is to loosen coupling by incorporating redundancy, slack, and cushioning into the financial system. Even a concerted effort to reduce interactive complexity and interconnectivity will leave us with a system (or at least large segments of a system) that is still prone to normal financial accidents. The question then becomes how we can minimize the fallout. Currently, increasing capital requirements appears to be the main shock absorber under consideration, though proposals to regulate leverage in a counter-cyclical fashion provide another promising move in this direction (Geanakoplos, 2010). We suspect that increasing organizational diversity and fostering alternative enterprise forms and locally embedded systems of finance could play a crucial role here as well. To the extent that regional finance systems, local credit unions or community banks operate on a different set of principles – minimizing securitization of mortgages and holding them locally, for instance – their fates may be tied more to local economic conditions than to housing prices in other cities or countries. The existence of robust pockets of alternative financial organizations could then serve as a safety valve, a functional form of redundancy or parallelism, and perhaps even a backup source of capital for those whose riskier investments go bad. They could even serve as an additional pathway for governments to recapitalize banks, restore flows of credit, and aid distressed borrowers, letting regulators bypass or prod giant, for-profit financial institutions when that part of the system freezes up and bailouts of firms to big to fail themselves fail to revive credit flows. The key idea is to stabilize financial systems through parallel structures that duplicate some architectural elements.

There are striking precedents in the United States for regulatory interventions that deliberate fostered parallelism as a strategy of hedging regulatory bets, expanding provision, and upgrading markets. During the Progressive era, the American states included provisions that promoted mutual alternatives to stock companies as part of the rate regulation regime for property insurance markets. Such policies introduced new forms of competition into the industry, prodding stock insurers to provide new kinds of services and sell insurance to classes of insureds they had previously neglected. And during the New Deal, the federal government's Rural

Electrification Administration (REA) combined central state financial and infrastructure support with the local self-organization of electrical cooperatives, yielding a parallel system of enterprise that thoroughly restructured the geography of electricity markets and let public officials bypass investor owned utilities to promote infrastructure for rural development.

Overall, strategies that reconstitute, rather than patch, financial architectures would significantly rebalance regulatory trade-offs between innovation, growth, and creative destruction in the financial industry, on the one hand, and prudence and reliability in providing financial infrastructure to homes, businesses, and government bodies, on the other. Of course, such reforms might increase the immediate cost of credit and subject less diversified subsystems to additional risks. Some observers may see them as naïve or nostalgic attempts to turn back the clock. But it is not at all clear that promoting financial systems capable of funding rows of (now empty) McMansions, sprawling communities, and completely lopsided income growth at the top is ultimately any more desirable than more constrained, less dynamic, but perhaps more reliable systems from either a policy or efficiency perspective, once social costs are considered. If the cheap credit generated by securitization has mainly flowed into housing investment – a quite unproductive form of capital – or credit card debt, we wonder whether this is a collectively rational choice. The politics of this type of fundamental redesign are certainly challenging. But proposals to reduce complexity and coupling in finance can build on growing localist responses to the mortgage meltdown and financial crisis, such as the recent "Move Your Money" campaign, which asks consumers to shift to local banks and credit unions.

We do not mean to suggest a one-or-the-other scenario that replaces global, complex systems with local, simple ones. That would indeed be "back to the 1960s" fancy. Nor do we see it as sufficient to reduce only one of the two main factors – complexity and coupling – leading to normal accidents. Rather, our goal has been to provoke serious discussion of how systems could be redesigned to reduce complex interconnectedness and hedge bets through multiplicity and loose coupling. Such questions become crucial if one takes seriously the notion that choices about regulatory reform are choices about the architectures of markets.

ACKNOWLEDGMENTS

For useful comments and suggestions, we thank John Campbell, Gerry McDermott, Michael Lounsbury, Paul Hirsh, David Moss, Edward

Balleisen, Bruce Carruthers, the other participants in the ''Markets on Trial'' and ''Governments and Markets'' workshops at the Kellogg School of Management and White Oak Conference Center. The usual caveats apply. This research was supported in part by the Tobin Project, and first appeared as a working paper for the Project's ''Governments & Markets: Ferment and Crisis'' workshop, April 2009, White Oak, Florida.

REFERENCES

Abolafia, M. (1996). *Making markets: Opportunism and restraint on Wall Street*. Cambridge: Harvard University Press.

Atkinson, M., & Coleman, W. (1985). Coporatism and industrial policy. In: A. Cawson (Ed.), *Organized interests and the state* (pp. 22–45). Beverley Hills: Sage.

Baker, T., & Moss, D. A. (2009). Government as risk manager. In: D. A. Moss & J. Cisternino (Eds), *New perspectives on regulation* (pp. 87–110). Cambridge, MA: The Tobin Project.

Balleisen, E. (2010). The prospects for effective coregulation in the United States: A historian's view from the early twenty-first century. In: E. Balleisen & D. A. Moss (Eds), *Government and markets: Toward a new theory of regulation* (pp. 443–481). New York: Cambridge University Press.

Bartley, T., & Smith, S. (2010). Communities of practice as cause and consequence of transnational governance: The evolution of social and environmental certification. In: M.-L. Djelic & S. Quack (Eds), *Transnational communities: Shaping global economic governance*. Cambridge University Press. AU :5

Berk, G. (1994). *Alternative tracks: The constitution of American industrial order, 1965–1917*. Baltimore: Johns Hopkins Press.

Beunza, D., & Stark, D. (2009). Reflexivity and systemic risk in quantitative finance. Paper presented at the Politics of Markets conference, Berkeley, August.

Breyer, S. (1982). *Regulation and its reform*. Cambridge, MA: Harvard University Press.

Buiter, W. (2009). Regulating the new financial sector. Available at http://www.voxeu.org/index.php?q = node/3232. Retrieved on March 9, 2009.

Campbell, J. L., & Lindberg, L. N. (1990). Property rights and the organization of economic activity by the state. *American Sociological Review*, *55*, 634–647.

Carpenter, D. (2010). Confidence games: How does regulation constitute markets? In: E. Balleisen & D. A. Moss (Eds), *Government and markets: Toward a new theory of regulation* (pp. 164–192). New York: Cambridge University Press.

Carruthers, B. G. (1994). When is the state autonomous? Culture, organization theory, and the political sociology of the state. *Sociological Theory*, *12*, 19–44.

Carruthers, B. (2010). Knowledge and liquidity: Institutional and cognitive foundations of the subprime crisis. In: M. Lounsbury & P. M. Hirsch (Eds.), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Cashore, B., Auld, G., & Newsom, D. (2004). *Governing through markets: Forest certification and the emergence of non-state authority*. New Haven: Yale University Press.

Choi, J. N. (2009). Risk vs. return: The effects of centrality in hedge fund networks. Paper presented at the Politics of Markets conference, Berkeley, August.

Crotty, J. (2008). *Structural causes of the global financial crisis: A critical assessment of the "new financial architecture"*. Working Paper no. 180. University of Massachusetts Amherst PERI.

Eichengreen, B. (2010). Origins and regulatory consequences of the subprime crisis. In: E. J. Balleisen & D. A. Moss (Eds), *Government and markets: Toward a new theory of regulation* (pp. 419–442). New York: Cambridge University.

Eisner, M. A. (2010). Markets in the shadow of the state: An appraisal of deregulation and implications for future research. In: E. Balleisen & D. A. Moss (Eds), *Government and markets: Toward a new theory of regulation* (pp. 512–537). New York: Cambridge University Press.

Evans, P. (1995). *Embedded autonomy: States and industrial transformation*. Princeton: Princeton University Press.

Fligstein, N. (2001). *The architecture of markets: An economic sociology of twenty-first century capitalist societies*. Princeton: Princeton University Press.

Fligstein, N., & Goldstein, A. (2010). The anatomy of the mortgage securitization crisis. In: M. Lounsbury & P. M. Hirsch (Eds), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Fung, A., Graham, M., & Weil, D. (2007). *Full disclosure: The perils and promise of transparency*. New York: Cambridge University Press.

Geanakoplos, J. (2010). *Solving the present crisis and managing the leverage cycle*. Cowles Foundation Discussion Paper No. 1751, Yale University. Available at http://ssrn.com/abstract = 1539488

Gjerstad, S., & Smith, V. (2009). From bubble to depression? *Wall Street Journal,* April 6.

Guillén, M. F., & Suárez, S. L. (2010). The global crisis of 2007–2009: Markets, politics, and organizations. In: M. Lounsbury & P. M. Hirsch (Eds), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Hill, C. A. (2004). Regulating the rating agencies. *Washington University Law Quarterly*, *82*, 43–95.

Hunt, J. P. (2009). One cheer for credit rating agencies: How the mark-to-market accounting debate highlights the case for rating-dependent regulation. *South Carolina Law Review*, *60*.

Lo, A. W. (2008). Hedge funds, systemic risk, and the financial crisis of 2007–2008. Written testimony, prepared for the U.S. House of Representatives Committee on Oversight and Government Reform November 13, 2008 Hearing on Hedge Funds. Available at http://ssrn.com/abstract = 1301217

McDermott, G. (2007a). The politics of institutional renovation and economic upgrading: Recombining the Vines that Bind in Argentina. *Politics and Society*, *35*, 103–143.

McDermott, G. (2007b). Politics, power, and institution building: Bank crises and supervision in East Central Europe. *Review of International Political Economy*, *14*, 220–250.

Mezias, S. J. (1994). Financial meltdown as normal accident: The case of the American savings and loan industry. *Accounting, Organizations and Society*, *19*, 181–192.

Palmer, D., & Maher, M. (2010). A normal accident analysis of the mortgage meltdown. In: M. Lounsbury & P. M. Hirsch (Eds), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Partnoy, F. (1999). The Siskel and Ebert of financial markets: Two thumbs down for the credit rating agencies. *Washington University Law Quarterly*, *77*, 619–712.

Perrow, C. (1984). *Normal accidents: Living with high-risk technologies*. New York: Basic Books.

Perrow, C. (1999). *Normal accidents: Living with high-risk technologies* (2nd ed.). Princeton: Princeton University Press.

Perrow, C. (2010). The meltdown was not an accident. In: M. Lounsbury & P. M. Hirsch (Eds), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Prasad, M. (2009). Three theories of the crisis. *Accounts: ASA Economic Sociology Newsletter*, *8*.

Rao, H. (1998). Caveat emptor: The construction of nonprofit consumer watchdog organizations. *American Journal of Sociology*, *103*, 912–961.

Rona-Tas, A. (2010). The role of ratings in the subprime mortgage crisis: The art of corporate and the science of consumer credit rating. In: M. Lounsbury & P. M. Hirsch (Eds), *Markets on trial: The economic sociology of the U.S. financial crisis: Part A*. Research in the Sociology of Organizations. Bingley, UK: Emerald.

Sabel, C., & Dorf, M. (1998). A constitution of democratic experimentalism. *Columbia Law Review*, *98*, 267–473.

Sabel, C., & Simon, W. H. (2006). Epilogue: Accountability without sovereignty. In: G. De Búrca & J. Scott (Eds), *Law and new governance in the EU and the US By* (pp. 395–411). Oxford: Hart.

Sabel, C., & Zeitlin, J. (2008). Learning from difference: The new architectures of experimentalist governance in the European Union. *European Law Journal*, forthcoming. AU :6

Schneiberg, M. (2002). Organizational heterogeneity and the production of new forms: Politics, social movements and mutual companies in American Fire Insurance, 1900–1930. *Research in the Sociology of Organizations*, *19*, 39–89.

Schneiberg, M., & Bartley, T. (2008). Organizations, regulation, and economic behavior: Regulatory dynamics and forms from the 19th to 21st century. *Annual Review of Law and Social Science*, *4*, 31–61.

Schneiberg, M., King, M., & Smith, T. (2008). Social movements and organizational form: Cooperative alternatives to corporations in the American insurance, dairy and grain industries. *American Sociological Review*, *73*, 635–667.

Skocpol, T., & Finegold, K. (1982). State capacity and economic intervention in the early new deal. *Political Science Quarterly*, *97*, 255–278.

Streeck, W., & Schmitter, P. C. (1985). Community, market, state and associations? In: Streeck & Schmitter (Eds), *Private interest government: Beyond market and state* (pp. 1–29). Beverly Hills: Sage.

Surowiecki, J. (2009). Ratings downgrade. *The New Yorker*, September 28.

Warren, E. (2010). Redesigning regulation: A case study from the consumer credit market. In: E. Balleisen & D. A. Moss (Eds), *Government and markets: Toward a new theory of regulation* (pp. 391–418). New York: Cambridge University Press.

Weir, M., & Skocpol, T. (1985). State structures and the possibilities for "keynesian" responses to the great depression in Sweden, Britain, and the United States. In: P. Evans, D. Rueschemeyer & T. Skocpol (Eds), *Bringing the state back in* (pp. 106–168). Cambridge: Cambridge University Press.

White, L. J. (2009). Agency problems – and their solution. *The American – the Journal of the American Enterprise Institute*, January 24, 2009. AU :7

Zeitlin, J. (2005). Conclusion: The open method of coordination in action: Theoretical promise, empirical realities, reform strategy. In: J. Zeitlin & P. Pochet (Eds), *The open method of coordination in action: The European employment and social inclusion strategies* (pp. 447–503). Bruxelles: P.I.E.-Peter Lang.

AUTHOR QUERY FORM

	Book: RSO-V30A **Chapter: 9**	**Please e-mail or fax your responses and any corrections to:** **E-mail:** **Fax:**

Dear Author,

During the preparation of your manuscript for typesetting, some questions may have arisen. These are listed below. Please check your typeset proof carefully and mark any corrections in the margin of the proof or compile them as a separate list.

Disk use

Sometimes we are unable to process the electronic file of your article and/or artwork. If this is the case, we have proceeded by:

☐ Scanning (parts of) your article ☐ Rekeying (parts of) your article

☐ Scanning the artwork

Bibliography

If discrepancies were noted between the literature list and the text references, the following may apply:

☐ **The references listed below were noted in the text but appear to be missing from your literature list. Please complete the list or remove the references from the text.**

☐ ***UNCITED REFERENCES:*** **This section comprises references that occur in the reference list but not in the body of the text. Please position each reference in the text or delete it. Any reference not dealt with will be retained in this section.**

Queries and/or remarks

Location in Article	Query / remark	Response
AU:1	Please check whether the running head is OK.	
AU:2	Please check whether 'CDO^{2}s' is OK in the sentence 'And in earning that daily bread'.	
AU:3	Please check whether the sentence 'Subcadres of this sort avenues for reform' as changed is OK.	

AU:4	Please define TARP.	
AU:5	Please provide the location of the publisher in ref. Bartley & Smith (2010).	
AU:6	Please update ref. Sabel & Zeitlin (2008) with volume number and page range.	
AU:7	Please provide the volume number and page range in ref. White (2009).	