

**EXTRACTING NONTRANSPARENT SAFETY NET SUBSIDIES BY  
STRATEGICALLY EXPANDING AND CONTRACTING A FINANCIAL  
INSTITUTION'S ACCOUNTING BALANCE SHEET**

Edward J. Kane  
Boston College

Early in my career, I sorted information on the evolution of financial markets into file folders labeled: (1) technological change; (2) regulatory change; (3) innovative ways of booking or executing traditional business; (4) new powers and products; (5) interstate operations; (6) foreign operations; and (7) antitrust issues. In the antitrust folder, the subfolders were labeled: barriers to entry and exit; entry by differently chartered and foreign firms; and mergers/acquisitions.

About thirty years ago, this filing system broke down. It became clear that the interaction of the first two forces were producing chains of events that could not be consigned to a single folder. Technological and regulatory changes were feeding an expanding supply and demand for reliable techniques of regulatory arbitrage (Kane 1977, 1981, and 1984).

Regulation is best understood as a dynamic game of action and response, in which either regulators or regulatees may make a move at any time. In this game, regulatees tend to make more moves than regulators do. Moreover, regulatee moves tend to be faster and less predictable, and to have less-transparent consequences than those that regulators make.

Thirty years ago, regulatory arbitrage focused on circumventing restrictions on deposit interest rates; bank locations; charter powers; and deposit institutions' ability to shift risk onto the safety net. Probably because regulatory burdens in the first three areas

have largely disappeared, the fourth has become more important than ever. Today, loophole mining by financial organizations of all types focuses on using financial-engineering techniques to exploit defects in government and counterparty supervision. By supervision, I mean efforts to observe, price, and discipline loss exposures (including interest-rate risk). Supervision is especially difficult for complicated positions that in adverse circumstances allow a large or complex institution (a “megabank”) to shift responsibility onto contractual counterparties or onto the financial safety nets of home or host countries.

Even in financial-center countries, authorities have been slow to confront the complex ways in which any large financial organization can expand its access to implicit safety net subsidies: (1) by transforming traditional credit and interest-rate risks into counterparty risk merely by shifting *formal* responsibility for particular loss exposures onto another entity’s accounting balance sheet, and (2) by increasing its portfolio size, balance-sheet complexity, or geographic footprint.

The FDIC Improvement Act of 1991 (FDICIA) sought to make it difficult for federal regulators to subsidize distressed institutions by granting them capital forbearance and subsidized credit support. However, since August 2007, central banks in the US and Europe have kept credit flowing to institutions that were significant originators of bad loans and/or sponsors of undercapitalized conduit vehicles. These originators engaged in structured securitizations whose highest-quality tranches were lightly subordinated and grievously overrated. In the US, unprecedented expansions of Federal Reserve liquidity facilities and Federal Home Loan Bank advances helped important conduit sponsors and originators of poorly underwritten loans to avoid asset sales that would have triggered

net-worth write downs and “prompt corrective action” under FDICIA. This experience demonstrates that, in times of financial-sector distress, authorities can and will circumvent FDICIA constraints to assist bank and nonbank institutions that they regard either as too big and too complex to fail and unwind or at least as too big to discipline adequately (TBDA).

Some theorists argue that the implicit subsidies that flow to TBDA firms can be minimized by maintaining constructive ambiguity about precisely which firms might be able to extract safety net subsidies in adverse circumstances. But this argument neglects the extent to which a large institution’s ability to command safety net subsidies lies in its own hands. Even for relatively small firms, the perceived value of safety net benefits increase monotonically with increments in size, complexity, and political clout. The result is that constructive ambiguity removes from policymakers’ close control the extent to which creditors and investors perceive a particular firm to be either too difficult to fail and unwind (TDFU) or TBDA (Stern and Feldman, 2004).

Empirical research on economies of scale and scope in banking shows that increasing returns obtain only for relatively small firms. Large firms exhibit constant returns to scale. Because safety net subsidies increase with size and complexity, offsetting diseconomies must exist in the operation of large institutions. This implies that, as institutions approach and attain TDFU or TBDA status, value maximization leads them to trade off diseconomies from becoming inefficiently large or complex against the safety net benefits that increments in scale or scope can offer them. Arguably, Citigroup has been the poster child for this kind of behavior.

Along with investments in political clout, an institution can obtain and hold TDFU and TBDA status by (1) moving highly leveraged loss exposures formally off its accounting balance sheet, and (2) maintaining an aggressive program of mergers and acquisitions. Over time, either strategy makes a large institution ever more gigantic, ever more complex, and ever more politically influential. The profitability of undertaking these dialectical responses to FDICIA tells us that the current wave of financial-institution consolidation and convergence is not just (or even principally) an efficiency-enhancing Schumpeterian long-cycle response either to past overbanking or to secularly improving technologies of communication, contracting, and record-keeping. This is because mergers that involve a TDFU or TBTDA organization have been shown to increase the capitalized value of the implicit government credit enhancements imbedded in their capital structure (Kane, 2000; Penas and Unal, 2004; Brewer and Jagtiani, 2007). Consolidation and convergence create additional value for large institutions. Mergers can reduce the contestability of the markets in which such institutions operate. Mergers eliminate competitors, strengthen a firm's capacity for exit resistance, and can extend its branch networks preemptively into locations that might otherwise be able to attract unrelated new entrants.

Similarly, one has to wonder how rapidly the market's appetite for structured securitizations would have grown if opaque off-balance-sheet vehicles such as Structured Investment Vehicles (SIVs) had not offered implicit safety net benefits and supervisory cover to their sponsors. Controlling safety net subsidies to risk-taking by opaque and nimble financial firms is tough enough. But it is fiendishly difficult for incentive-conflicted agency leaders to control risk-shifting at firms that capital markets perceive to

be macroeconomically, politically, or administratively too difficult to close and unwind. For TDFU firms, the Basel approach of setting capital requirements only against well-understood and easily measurable exposures is massively inadequate. To mimic the methods by which private counterparties keep opportunities for risk-shifting under control, deposit insurance premiums or capital requirements at TDFU firms would have to introduce special surcharges designed to increase both with an institution's size and with the opacity of its deal making (Kane, 2007).

#### I. A Multi-Equation Model of Nontransparent Safety Net Subsidies

Financial-institution theory (e.g., Buser, Chen, and Kane, 1981) assumes that managers maximize the value of a firm's economic capital ( $K$ ). An institution's economic capital has two components: enterprise-contributed capital ( $K_{EC}$ ) and government-contributed capital ( $K_{GC}$ ). The variable  $K_{GC}$  represents the discounted present value of current and future access to safety net subsidies. Its value may be modeled in part as a function of portfolio size ( $A$ ), portfolio complexity or opacity ( $O$ ), political clout ( $P$ ), and implicit and explicit regulatory premiums ( $R$ ):

$$K_{GC} = K(A, O, P, R). \quad (1)$$

This formulation may be justified by assuming that a regulator's supervisory capacity and budget are fixed in the short run and that increases in  $A$ ,  $O$ , and  $P$  undermine effective supervision by raising budgetary costs and creating deficiencies in the skillsets of regulatory personnel.

For convenience, we may define a bank's annual subsidy as the difference between the amount of interest ( $R^*$ ) the bank would have to pay on its debt if  $K=K_{EC}$  and

the reduced interest costs (C) the institution can enjoy because of its access to implicit and explicit safety net benefits. Let  $R_E(K)$  represent the rate that the bank must pay to raise private equity capital. For a given loss exposure (L), safety net benefits lower this rate of return as well. To establish a simple benchmark model, we suppose initially that loss exposures and warranted returns on bank debt and equity remain unchanged over time. In this case,  $K_{GC}$  may be modeled as a perpetuity:

$$K_{GC} = \frac{R^*(L, K_{EC}) - C(L, K)}{R_E(K)}. \quad (2)$$

To illustrate the magnitude of this baseline subsidy, let us suppose that across its balance sheet the annual interest saving for a bank with \$1 trillion in deposit and other debt averages 15 basis points and  $R_E(K)$  is 15% per annum. Then,

$$K_{GC} = \frac{(.0015)\$1,000\text{Bil.}}{.15} = .01(\$1,000\text{Bil.}) = \$10\text{Bil.} \quad (3)$$

Of course, in times of turmoil  $K_{GC}$  and the interest saving may be expected to increase temporarily above the benchmark  $C-R^*$ , especially for TDFU investment banks, such as Bear Stearns or Merrill Lynch. This means that, to model  $K_{GC}$  fully, equation (1) needs to add an option-like return (Allen and Saunders, 1993). To capture this additional value, one might include a shift variable T that captures the ex ante value of incremental safety net support that is understood to be available in treacherous times:

$$K_{GC} = K(A, O, P, R) + T. \quad (1')$$

The variable T would not only be a function of A, O, and P, but also of  $K_{EC}$  and the volatility of asset returns  $\sigma_V$ . Drawing on Merton's model (1977) of deposit insurance, we might write this option value as:

$$T = T\left(\frac{A}{K_{EC}}, \sigma_V; O, P\right). \quad (4)$$

The variables after the semicolon express the idea that, in times of turmoil, opacity and clout would slow efforts to measure and resolve a developing insolvency and amplify the support that a TBFU firm could command.

Substituting (4) into (1') and the result into the sum of enterprise and safety net capital gives us an objective function for very large firms that may not have a finite maximum. In the absence of managerial or stockholder risk aversion, limits on how big, complex, and politically influential a firm becomes and how much leverage and volatility it is willing to embrace have to come from regulatory and supervisory restraints that seek to hold C close to R\*.

Opacity measures the extent of the (possibly different) informational advantages that regulatees have over regulators and private counterparties in estimating the values of the value-creating instruments  $K_{EC}$ , A, P, and  $\sigma_V$ . Opacity grows with the complexity of a firm's product line and complexity grows with asset size. In practice, opacity may be used opportunistically to support a campaign of disinformation designed to induce a firm's counterparties and government supervisors to *overestimate* enterprise capital and to *underestimate* the firm's leverage and volatility. This implies that perfect transparency is not in a regulatee's best interest.

It is convenient to suppose that supervisory activity seeks to keep the true value of each firm's  $K_{GC}$  below a target threshold  $K_{GC}^*$ . For this strategy to be successful, regulators and supervisors first must recognize that their current monitoring technologies produce upward-biased estimates ( $\hat{K}_{EC}$ ) of  $K_{EC}$  and downward-biased estimates of  $K_{GC}$ .

They must also recognize that this bias grows with firm size and that investing in ways to increase the bias over time is in most regulatees' long-run interest. These hypotheses imply that safety net subsidies cannot be adequately controlled without developing observable proxies for the bias (i.e., for opacity) and designing an appropriately flexible mix of explicit or implicit premiums (e.g., supplementary capital requirements) whose value can be linked realistically to these proxies.

## II. How the Model Can Help Us to Understand the Structured Securitization Crisis

In this model of the regulatory environment, supervisors do not track or respond to changes in the bias with which they measure capital. They deploy various policy instruments summarized by the control variable  $R$  (capital requirements, on-site examinations, etc.) to keep  $\hat{K}_{GC}$  from rising above the target value  $K_{GC}^*$ . Knowing this, TDFU institutions restructure their economic balance sheets over time both to increase the bias and to become ever more difficult to fail and unwind.

When enacted in 1991, the prompt corrective action provisions of the FDIC Improvement Act simultaneously cut back the number of TDFU firms and their access to safety net subsidies. Since then, opportunistic organizations have aggressively expanded their access to such subsidies in two ways: by openly increasing their size, complexity, and geographic footprint and by covertly decreasing  $K_{EC}$  and increasing the volatility of their portfolios. Although our equations do not model the generation of political clout explicitly, it is reasonable to assume that a larger geographic footprint expands a firm's political influence by bringing it into closer competition with out-of-state and foreign

institutions and thereby puts its managers into better position to pit politicians and regulators in different jurisdictions against one another.

The ex ante subsidies that come from depleting private capital cannot expand endlessly without undergoing occasional interruptions. Whenever TDFU firms are perceived to be accumulating considerable losses, the claim to these subsidies is bound to be tested ex post by counterparties and creditors of TDFU firms.

In the events of 2007-9, the test took the form of surging yields on assets that could not be sold off without registering losses. Booking losses would reveal a shortage of  $K_{EC}$  at numerous firms. Similarly, in the savings and loan (S&L) mess of the 1980s, inflation-driven interest-rate increases affected yields across the board. In the securitization mess, yields fell on Treasuries, but yields increased substantially on instruments whose default risk had previously been understated. Enterprise net worth went down sharply at any firm that explicitly or implicitly held a large leveraged position in these instruments. It is easy to show that --as measured by the duration of their net worth-- a highly leveraged, short-funded conduit whose asset duration is even a few months longer than that of its asset-backed liabilities can easily develop more exposure to interest-rate risk than an old-fashioned S&L.

It was a mistake to characterize the resulting turmoil as a liquidity crisis caused by fire-sale pricing and to try to cure the turmoil by auctioning off central-bank loans. Multiple-tranche securitization (and resecuritization) of highly leveraged loans has revealed itself to be less about risk transfer than about risk shifting: i.e., undercompensating counterparties for the risks they assumed. The TDFU originators of leveraged loans and TDFU sponsors of securitization conduits transformed traditional

default and interest-rate risks into hard-to-understand counterparty and funding risks that in distressed times pass back for reputational reasons from securitization vehicles. The critical point is that off-balance-sheet vehicles that booked complex swaps and structured securitizations created reputation-driven loss exposures for sponsors that managers and accountants knew *lacked transparency* for supervisors and creditors. The victims were investors who accepted inflated estimates of the credit quality of the instruments they purchased and the safety net managers and taxpayers who are stepping up to clean up the mess.

Besides confusing investors, complex forms of structured finance expand risk-shifting possibilities by making it easy for authorities to neglect the safety net implications these positions generate and to exempt complex loss exposures from appropriate capital discipline. An information system that can compile meaningful data on risk exposures may or may not exist at individual TDFU firms, but it surely does not exist anywhere in the supervisory community.

Opportunistic risk shifting emerged at every stage of the financial-engineering process. Lenders collected upfront fees for originating and selling poorly underwritten and poorly documented loans without accepting responsibility for subsequent defaults. Securitizers sliced and diced the cash flows from such loans without demanding appropriate documentation or performing adequate due diligence. Insurers and credit-rating organizations (CROs) used poorly tested models and issued (along with accountants) aggressive legal judgments about whether nonrecourse “true sales” of the underlying loans had actually taken place. At a minimum, CROs should have discounted their ratings on these instruments for sampling bias and for modeling and documentation

risks inherent in structured finance. Moreover, supervisory authorities should have monitored the costs that CRO grade inflation was imposing on the safety net. Finally, servicers accepted responsibility for working out troubled loans without assembling an appropriate information system or training a staff large enough to deal with the delinquencies and defaults they might face.

On the grounds that they were helping innovative US firms to compete effectively in global markets, federal supervisors refused to take on the political and practical challenge of establishing and maintaining their ability to see and to discipline complicated risk exposures. As in the S&L insurance mess, when outsized losses began to emerge, the Federal Reserve and the Federal Home Loan Banks relaxed collateral requirements and undertook giant programs of lending to loss-making “zombie” institutions. Authorities refuse to acknowledge that these programs are taxpayer “bailouts” and justify the loans (without convincing statistical support) as acts of mercy that were necessary to prevent insolvency at TDFU firms from spreading through the financial sector and forcing the economy into a deep recession.

### III. Improving the Safety Net Loss-Control System

Safety net managers can impose losses on taxpayers because the norms governing their performance allow authorities to paper over rescue costs in times of turmoil. For a government safety net manager, we can **benchmark** efficient loss control by identifying the contracting measures that a **parallel private guarantor** would incorporate to control a guaranteed institution’s ability to shift loss exposures onto the guarantor.

Effective guarantee management combines three elements: (1) ***Vision***: disclosure obligations combined with effective monitoring rights and procedures; (2) ***Enforceable Intervention Rights***: building and exercising a capacity to deter and price risk-shifting; and (3) ***Incentives for Intelligent Dynamic Adaptation***: being encouraged to build and preserve vision and deterrent rights in the face of banking-industry innovations that are specifically designed to reduce vision and enforceability. Private guarantors insist on and enforce contractual covenants that prevent good assets from being collateralized without the guarantor's explicit prior approval and prevent counterparties from enforcing claims to collateral without triggering appropriate cross-default rights for the insurer. Private guarantors also insist on deterrent rights to price or otherwise control ex ante all loss exposures that off-balance-sheet entities and unverified outside warranties might impose on the insurer.

Federal bank examiners are trained to recognize potential signs of financial deterioration and to report them up the chain of command. Red flags include: rapid and concentrated growth in risky and opaque innovative activities or strategies; concentrations of risk accompanied by weaknesses in verification and underwriting procedures; aggressive accounting for loss exposures; resistance to using market valuations; and outsourcing of due diligence to entities that merely "Represent and Warrant" use of proper procedures. Ironically, history shows that top supervisory officials that respond in a market-mimicking way to these signals at TDFU firms must expect to be pilloried rather than praised both in congressional hearings and in the press.

To minimize the costs of rehabilitating a damaged firm, a private rescuer (whose behavior can be typified by capital assistance provided by JP Morgan-Chase and

sovereign investment funds during the current turmoil) begins by poring over the damaged firm's books to establish a solid knowledge of unrealized losses and continuing loss exposures. Armed with that knowledge, private rescuers force rescued stockholders to accept a deal that gives the rescuer a claim to the incremental future profits that the rescue might generate. This tells us that to control moral hazard, government rescuers need resolution powers sufficient to see that when a TDFU firm becomes a zombie, shareholders can be wiped out. To ensure that taxpayers receive fair compensation for their preservation effort in salvageable firms, government rescuers must be made accountable for establishing for their agency (and ultimately for taxpayers) an appropriately large **equity or warrant position** on the upside of the rescued firm.

#### IV. Why are TDFU Subsidies Politically and Economically So Robust?

It is no accident that authorities systematically underestimate the frequency of crisis. For government rescuers, flexible performance norms encourage improvisation and are myopic and counterproductive for taxpayers in the long run. The supervisory norms that the financial industry supports emphasize treating troubled firms generously and minimizing at all costs the risk of short-term contagion. If the financial industry wanted to lobby for efficient and antiegalitarian safety net subsidies, it could long ago have urged federal regulators to install on the books of supervisory agencies a system of fair-value accounting for measuring and justifying intangible safety net subsidies and to work out a fund of deferred compensation that heads of supervisory agencies would have to forfeit if a crisis occurred within three or four years of their leaving office. Far from working to control subsidies, in deciding how and where to book risky positions TDFU

firms choose regulators and jurisdictions in part for the supervisory loopholes they are willing to tolerate and for their willingness to sustain a TDFU firm's existence when outsized losses ensue.

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