



MODELING THE INDIRECT COSTS TO MARKETS OF BANK REGULATORY REFORM

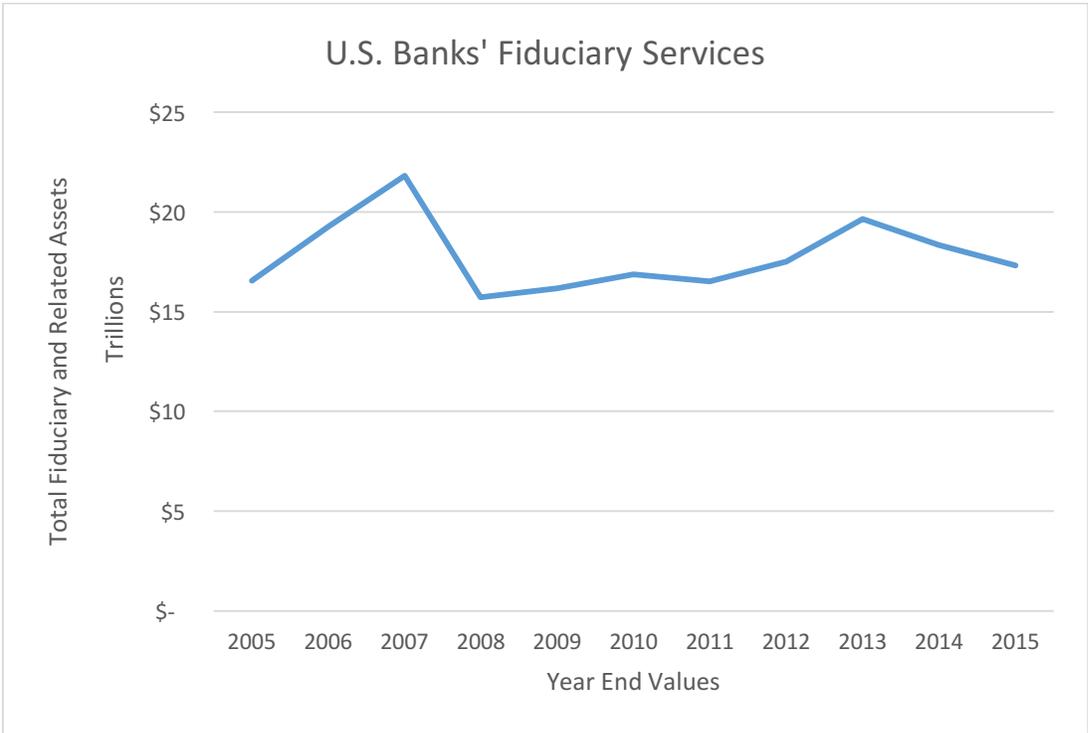
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Higher capital charges, combined with more restrictive operating rules, are forcing bank managers to consider limiting or even eliminating the fiduciary and related security services they now provide to market participants. Loss of these automated services would create market inefficiencies, that would force a complex set of indirect costs on society. These costs were not, and could not have been considered in the 2009 academic models used to justify the regulatory reforms.

This paper is a first-order, empirical attempt to identify variables for inclusion in a more complete dynamic model of the long-term economic impact of bank capital reforms.

Regulatory Pressure on Fiduciary Services

As reported by banks and tracked and by the FDIC, US banks provide many fiduciary and related services to investors. Among the most prevalent are those services which support trust accounts for individuals, employee benefit plans, corporations, endowments and foundations. US banks in 2015 had fiduciary responsibility for \$17.3 trillion in assets, earning \$32.9 billion in fees and net income of \$6.1 billion.



Source: FDIC, Statistics on Depository Institutions; U.S. banks' assets in managed and non-managed accounts.

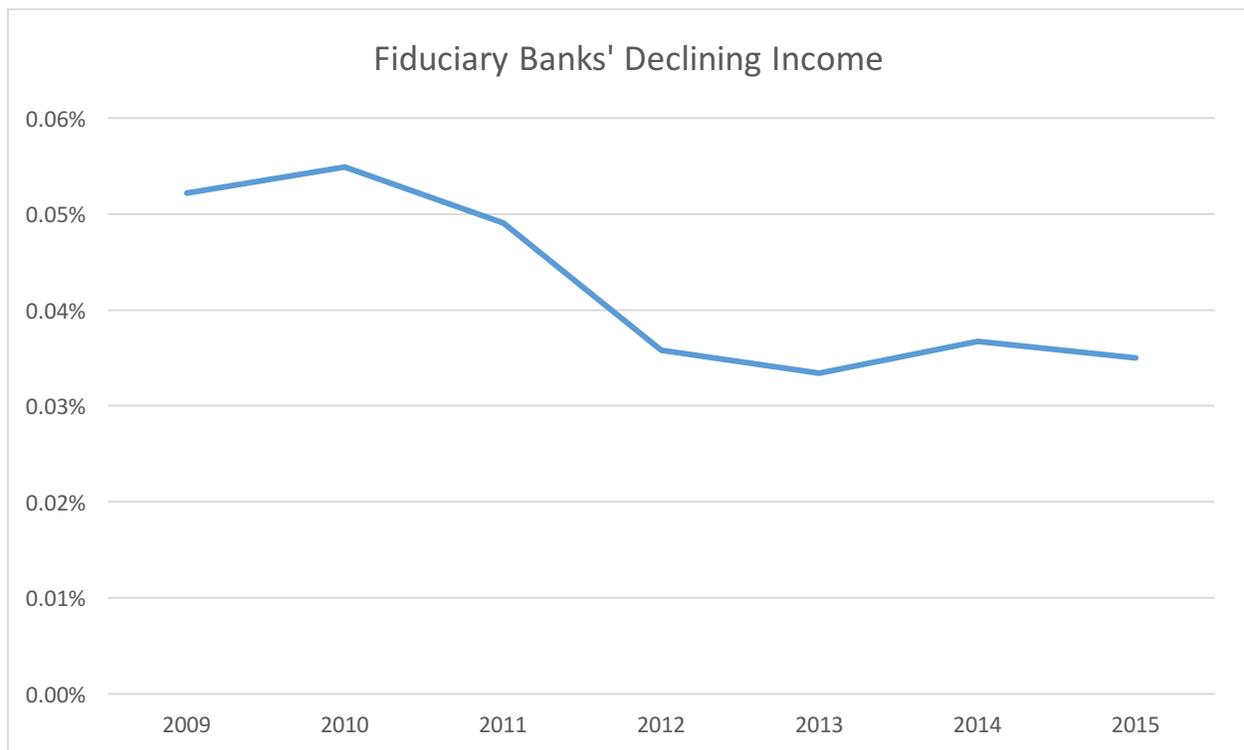
In addition to acting as trustees and money managers, banks also provide custody and safekeeping services on a non-managed, administrative basis for a worldwide market. In this latter capacity, US banks administered more than \$80 trillion in assets as of year-end 2015.¹

Without these securities services, institutional investors could not diversify their holdings, corporations could not pass along earnings to their investors, and investment companies could not even keep track of their investments -- or their investors. In short, markets could not function without these essential services.

¹ Three U.S. banks alone control almost two-thirds of the market: State Street, JPMorgan Chase, and BNY Mellon.

With increasing frequency, the managers of these banks have publicly stated that the weight of regulatory reform is forcing them to make hard decisions about the economic viability of all their services. In particular, the new leverage and liquidity ratios are seen as most onerous for their fiduciary and related securities services. As a result, banks, especially those which cannot pass on higher costs to their customers, may well abandon the services altogether.

If banks were to raise prices or abandon these markets, other entities might enter to compete and fill the void.² However, new entities might not come under the purview of market supervisors, and their services might not be as tightly integrated with the depository, payment, clearing and recordkeeping systems of regulated banks.



Source: FDIC, Statistics on Depository Institutions; U.S. banks' net fiduciary activities income, computed by the author as a percentage of total fiduciary assets.

If securities services are degraded, the costs would likely be felt by the social economies served by their capital markets. Yet, the only social costs being considered by banking regulators are those of increased borrowing costs. In the current academic models, banks have been expected to raise lending spreads to offset the increased costs of regulatory capital. That is because banks are seen by academic advisors primarily as credit intermediaries and only rarely as market service agents. In none of the academic models cited by bank regulators or market

² This has already occurred in certain corporate trust services. Computer service bureaus were formed to compete with custodian banks and brokerage firms in processing corporate actions, especially for the proxy voting process.

supervisors to justify the long-term economic impact of reform has there been a consideration of the possibility of increased operational costs or losses in market efficiency.

Academic papers do not usually explain in detail the reasons that their authors ignore certain lines of inquiry. Indeed, failure to include operational costs in academic models might not have been an oversight. That might have been unavoidable. In practice, banks often price their services on a relationship basis. That means that the expenses of custody services are covered by profit margins on related services, such as investment management, recordkeeping or securities lending. For example, it is well known that foreign exchange and securities lending services offset much of the costs of safekeeping services.

As a result of relationship pricing, it has been extraordinarily difficult even for bank managers to isolate the net profit margin for individual securities services. Therefore, it is not surprising that academics and regulators cannot measure the relative significance of bank securities services in the market. However, an approximation may be possible using revenue statistics from the FDIC. This paper is an attempt to begin such a process.

Many fiduciary services are seen as "commodity services" by customers, meaning there is no real distinction as to capabilities. As a result, there is little or no pricing power available to service providers. Only by achieving economies of scale³ can banks gain competitive advantage on profit margins. And, since costs are embedded in unpriced service functions within the context of a typical account relationship, it is only through service revenues that we find the best metric of relative significance for securities services among all fee-based banking services.

The Erosion of Securities Lending and Finance

As one example of these fiduciary services, banks place loans of portfolio securities as contract lending agents between brokers and large institutional investors.⁴ To protect their institutional beneficiaries, banks monitor the loans and promise to replace any securities that are not returned by the borrowing broker. The securities loans allow brokers to avoid operational breakdowns and satisfy short selling regulations, while the income to lenders supplements their portfolio investment returns.⁵

The new regulations require banks to reserve capital against the risk of borrower default. In effect, trust and agency assets are treated as if they were consolidated on the bank's balance sheet. No capital had been reserved under previous regulations, partly because the loans are

³ For more than a generation, banking operations managers have built highly automated processing plants based on the principle of economies of scale. That is, average costs are expected to decline as more and more assets are brought under the same administrator.

⁴ Securities lending is considered to be part of the shadow banking system. See Pozsar et al, "Shadow Banking," p. 3. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr458.pdf

⁵ For more on the benefits of securities lending see Ed Blount, Testimony to the United States Senate Special Committee on Aging, March 16, 2011 <http://www.aging.senate.gov/imo/media/doc/hr232eb.pdf>.

2% to 5% over-collateralized with cash and marked-to-market daily; and (perhaps) partly because there had never been a reported loss from borrower default in 40 years of bank-managed securities lending services.⁶

In light of the new rules, many bankers feel that the cost of capital indemnification will be too expensive going forward. The indemnification service is expected to be withdrawn. At present, many institutional customers are said to be weighing their options and deciding whether to continue lending their securities.

If securities are no longer available to borrow in quantity, then short selling strategies will be limited, markets will be more volatile and valuations will be susceptible to price bubbles.⁷

Prime brokers, many of whom are now subsidiaries of bank holding companies, are subject to the same restrictive leverage rules as their parents. Therefore, when financing their hedge fund customers' trading strategies, prime brokers are required to consider any cash collateral as a short-term liability. That counts against their net stable funding ratio. As a result, brokers are turning away customers, including those hedge funds that provide price arbitrage services to markets.

Both banks and their brokerage subsidiaries are shedding short-term funding sources in order to limit their risk-weighted capital and net stable funding charges. The result of both constraints is an impairment of price discovery and a loss of liquidity in markets. That loss of liquidity results in fragmented and volatile markets, which increases risk not only for the participants, but also for their dependent economies.

Repo Liquidity: Demoted to a "Loss-leader"

Dealers in repurchase agreements, *i.e.*, repo traders, can provide much-needed liquidity to investors in a turbulent market. A November 2015 study by the International Capital Markets Association presented a chilling forecast of the impact on repo markets that is expected once the full weight of capital reform arrives.

Nothing is transforming and reshaping the structure and dynamics of the repo market more than Basel III. Each of its four components – Risk Capital Requirements, Leverage

⁶ Blackrock, Inc., the world's largest money manager, reports that, "In the more than 30 years since BlackRock and its predecessor entities started our securities lending program, there have been three instances of Borrower default in our program (and four instances in the industry in total). In each instance, BlackRock (including its predecessor entities) has held collateral sufficient to fund the repurchase of securities on loan and has never had its indemnification agreements triggered or had to use its own monies to repurchase a security on a client's behalf." <https://www.blackrock.com/corporate/en-us/literature/publication/sec-lending-borrower-default-indemnification-may-2014.pdf>

⁷ For more on the market dynamics of securities lending see Ed Blount, et al, [Expert Testimony to the Securities & Exchange Commission](http://www.sec.gov/news/openmeetings/2009/roundtable-transcript-092909.pdf), at: www.sec.gov/news/openmeetings/2009/roundtable-transcript-092909.pdf

Ratio, Liquidity Coverage Ratio and Net Stable Funding Ratio – impact the repo market in different, yet cumulative ways, significantly adding to the cost of capital required to run a repo trading book... Many banks now provide repo liquidity to preferred clients as a loss-leader to support other, more profitable businesses and services.⁸

Participants in the ICMA study included 45 of the largest global financial firms, ranging from banks and broker-dealers to asset managers, triparty agents, central clearing counterparties and agency lenders. Their views were affirmed by the IMF's October 2015 Global Financial Stability Report, in which analysts described the impact on market risk from reduced activity in the repo markets, as "less funding available for hedge funds to arbitrage away discrepancies in asset prices; more difficult to trade short positions, affecting market efficiency; more difficult to hedge market risk; likely sporadic 'snapbacks' in some asset prices as dislocations are corrected."⁹

Derivative Rule cuts EU Sovereign Bond Liquidity

In November, 2012, the European Union banned the purchase of uncovered sovereign credit default swaps, fearing that these trades were equivalent to short sales and could add downward pressure on values for the national debt of the weakest European countries.

A few months later, the International Monetary Fund wrote that the EU's rule was a mistake that could "result in unintended consequences that could negatively affect market liquidity and cause dislocations in other markets." The IMF added that the European action would hurt other, less developed markets. Overall, the IMF said, the rule "appears to move in the wrong direction."

By 2015, research had shown that the IMF's early concerns were well placed. "The EU's ban [on derivatives] also reduced liquidity in the European sovereign bond market," reported the IMF.¹⁰

Trade Finance Impairments on a Global Scale

International trade, apart from fiduciary and capital market services, is another critical domain in which experts believe the new regulations are having unanticipated adverse consequences. Both earlier versions of the Basel capital rules provided for favorable treatment of short-term trade finance. But, in 2011, Basel III imposed a 100% non-risk based credit conversion factor for trade finance assets in computing the new leverage ratio.

⁸ International Capital Markets Association, "The European Repo Market: Perspectives from the Eye of the Storm; An Initiative of the ICMA European Repo Council," November 2015, London, p. 3.

⁹ International Monetary Fund, "Global Financial Stability Report: Vulnerabilities, Legacies, and Policy Challenges: Risks Rotating to Emerging Markets," IMF World Economic and Financial Surveys, Washington, D.C., October 23, 2015, page 65. Hereafter, the "2015 GFSR."

¹⁰ IMF, 2015 GFSR, p 36.

By 2014, the International Chamber of Commerce had gathered a war chest of trade finance statistics from a credit risk perspective. Citing the data, the World Trade Organization argued that the Basel Committee had overlooked the key role of collateralization in managing trade finance risks. The WTO showed that the default rate on letters of credit was a mere 0.02%. Even for those deals which fail, recoveries are very high. "Since over 50% of the loss is recovered through the sale of the underlying merchandise," explained the WTO, "the total loss on these products is 0.01% or less."¹¹

After much negotiation, the Financial Stability Board, an affiliate of the Basel Committee, lowered the conversion factor to 20%, but only for commitments which could be unilaterally canceled by the bank. However, it is the *irrevocable* letter of credit that is the bedrock of trade finance. Some experts complained that the concession was meaningless.

If global trade is impaired when the leverage ratio takes full effect, as many fear, the new regulations may foster social instability in less developed countries -- one more unanticipated adverse consequence.

Practitioners ask: Are regulators flying blind?

When regulations are imposed on banks to dampen their influence on market-level, systemic risks, the rule-makers often justify their logic using large-scale, cost-benefit analyses. Such was the case in 2010, when the Basel Committee published its study of the long-term economic impact of the capital solvency rules, called "The LEI Report."¹²

At the macroeconomic level, benefits were defined as the avoidance of stunted GDP output caused by periodic banking crises. Costs were defined as an increase in the net spreads of bank intermediation, all of which would be passed along to borrowers. At the bank level, the new rules were expected to result in lower ROE due to increased shareholder equity and lower debt funding. Reduced leverage would be achieved by raising the capital required to be held against risk-weighted assets, while constraining total assets against an aggregate, non-risk sensitive leverage ratio. Increased liquidity would be gained by the addition of a liquidity coverage ratio and a "net stable funding ratio." Other risk-reduction steps included counterparty exposure limits and a half-dozen additional rules.

¹¹ Auboin, Marc and Isabella Blengini, "The Impact of Basel III on Trade Finance: The Potential Unanticipated Consequences of the Leverage Ratio", Economic Research and Statistics Division, World Trade Organization, Rue de Lausanne 154, CH-1211 Geneva, Switzerland, p.5.

¹² Basel Committee on Banking Supervision, "An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements," BCBS 173, Bank for International Settlements, Basel, Switzerland, August 2010. Hereafter, the "LEI Report."

Models were used in the LEI Report to correlate higher levels of capital to diminishing degrees of banking crises, but not to consider the possibility of damage to markets from excessively restricted liquidity, itself resulting from constraints on bank collateral management services. In other words, the more powerful calculus was applied to test the intuitive preconception that greater regulatory capital and liquidity in banks must be good for the economy. In truth, the extreme leverage that was achieved through securitization and off-balance sheet financing, would be hard to reject as an accelerant to market distress. Yet the possible dilution of this force was not considered relative to the diversifying effect of many thousands of banks lending assets across dozens of sovereignties. In other words, neither the most negative nor positive (best case vs. worst case) forces were considered in arriving at a consensus for capital reform.

The principal objective of the modeling exercise was to define a correlation algorithm: *just how much more capital would result in what degree of crisis avoidance*. No consideration was given to the possibility that constraints on banking activities might actually damage the market system. It was assumed that the only costs to the economy would be felt through higher lending rates. Those costs were expected to be more than offset by the socio-economic benefits to be gained from less-frequent banking crisis. Net-net, it was a wash to the banking system. But the indirect cost to the market system from less-efficient operations was not factored.

Quite specifically, the LEI Report endorsed the academic theory that "the main channel through which changes in capital and liquidity regulation affect economic activity is via an increase in the cost of bank intermediation."¹³

Amazingly, the most important analysis in the recent history of bank regulatory reform focused *only* on higher lending rates as the sole cost to society from tighter solvency regulations. The Committee failed to consider the beneficial role that banks play in monitoring collateral movements through financial sectors or the impact of lost risk management services from banks.

Perversely, the Committee decided to impose penalties when the collateral moved through banks' balance sheet. As a result, the new regulations created disincentives for banks to continue providing these low-margin collateral management services that many believe are so important for market stability.

The Unanticipated Consequences of Regulatory Reform

As regulatory staff continue to study the effects of the new rules with respect to collateral linkages, some are now recognizing the secondary and tertiary effects of banking regulations on the global economy. A few are agreeing with critics' claims that regulators are handicapped in

¹³ Basel Committee, LEI Report, p. 53.

their understanding of global banking because academics cannot create models that consider the totality of bank services, along with unconventional monetary policy, when postulating the effects of regulatory reform.

One of the thought leaders among regulatory staff is IMF senior economist Dr. Manmohan Singh, who argues that quantitative easing has "interfered with financial plumbing" by forcing the highest quality, most liquid assets out of normal trading channels. In a presentation at the Brookings Institute on February 23, 2015, Singh told policy analysts that a combination of the new regulations with unconventional monetary policy are "likely to lead to unintended consequences."

RMA data cited by Singh at RMA's February 2016 Pan Asian Securities Lending conference in Singapore, shows that regulations are already having a dramatic effect on markets. The total value of collateral managed through securities lending services fell from \$1.7 trillion in 2007 to \$1.0 trillion in 2013. Singh presented additional IMF research showing that the movement of collateral through the system has decelerated by at least one-third. That slower turnover of collateral can lead to markets that are more prone to breakdowns.

"The re-use of collateral is fundamental to bridging the gap between supply and demand," said Singh. "Academia has so far ignored this aspect in their models."

IMF Model: Contagion is Possible, Perhaps Likely

"Financial contagion could surface," warned the IMF, "should asset price movements be amplified by low market liquidity and fragile market structures."¹⁴ It follows then, that any regulations that impair market liquidity or make market structures more fragile would also increase the risk of financial contagion.

The IMF bases its views on a model which considers three channels through which turmoil in financial markets can accelerate the destabilization of a country's "real economy."

- A) Rising long-term rates along the yield curve cause households to save more, companies to cut investments and raise dividends, and governments to pay more to service their debts;
- B) Higher targets for risk-adjusted returns put pressure on real equity prices, causing households to reduce consumption and companies to curtail investments again; and,
- C) Increases in money market fund rates accelerate the shift of household consumption to savings, and further reduce company investment by raising the cost of bank loans.

¹⁴ IMF, 2015 GFSR, p 6.

Active repo markets can dampen the transmission of risk-premium adjustments by adding liquidity along the yield curve, while active securities lending and collateralized finance markets can also make existing liquidity that much more resilient by providing safe harbors for money market fund assets in a financial firestorm.

In the absence of such cushioning, banks operate (in the IMF model) to try to pass their higher funding costs along to customers. However, falling demand hurts profits and reduces capital buffers. The situation is made even worse in emerging economies, since deterioration in currency exchange rates can raise debt servicing costs for commodity producers. As the vicious cycle continues, customers in developing markets start to default at ever-increasing rates leading to "suppressed economic risk taking worldwide."¹⁵

NY Fed: 'Further Research is Needed'

In September 2015, William C. Dudley, president of the Federal Reserve Bank of New York, acknowledged the critics' claims that tighter regulations were hurting markets, but credited those claims only as "a noteworthy assertion [not] well-supported by the available evidence." The evidence is "mixed", he said, but "even if higher capital and new liquidity requirements were found to result in greater transaction costs, these costs would need to be assessed against the benefits of having a more robust and resilient financial system and a reduced risk of financial crises in the future."

After mentioning other possible reasons for lower liquidity, President Dudley considered that quantitative easing may also have impaired the traditional liquidity tests upon which he and others were relying. Recognizing the uncertain realities, he called for more research into the problem of regulatory liquidity:

Only through much more careful study and data analysis can we thoughtfully address the two most important questions—not whether regulation should be rolled back in order to return to the liquidity conditions prior to the financial crisis, but instead:

- whether there is a diminution of liquidity and/or an increase in liquidity risk that is costly or poses risks to financial stability or macroeconomic performance; and, if this is the case,
- whether financial market regulation could be altered in a way that improves the balance between the benefits of tougher regulation in terms of enhanced financial stability versus the costs of such regulation, including any adverse impacts on market liquidity provision. In addition, whether microstructure reforms aimed at improving the functioning of markets could be promising in that respect.¹⁶

¹⁵ IMF, 2015 GFSR, p 42

¹⁶ Dudley, William C., "Regulation and Liquidity Provision," Federal Reserve Bank of New York, remarks before the Securities Industry and Financial Markets Association, September 30, 2015

Modeling the Indirect Impact of Regulatory Change

Five years after most of the capital rules were laid out, the results of compliance are now being felt in the banks and the international economy. The conclusion seems inescapable that tightening of banking regulations, to no one's fault, was justified with a distorted view of the net economic benefits. Industry experts now argue, among other points, that the limitation of securities financing services by global banks is making markets more volatile, and therefore riskier; and that new restrictions on trade finance services will soon impede global economic development and increase the risk of social instability.

Ultimately, the net social benefit is the key metric for justifying the new regulations, as laid out in the LEI Report. Yet, the benefits would have been overstated if market risks *grew* as a result of banks withdrawing capital support from their own trading and securities lending desks, while curtailing operational services to repo traders and others who stabilize liquidity and pricing. Going forward, any remaining social benefits may be further eroded by the loss in global productivity caused by declining trade finance services.

More research and reevaluation is clearly warranted. The IMF, WTO and others have raised the alarm. And, as the Basel Committee itself admitted in 2010, "backward-looking correlations may not accurately represent future relationships or causal links."

Given these preliminary considerations, it seems certain that collateral linkages and management services must be among those that have not been factored into past academic and regulatory models.

The Need for Better Samples

Drilling down, we find that the testing template of the LEI Report was the balance sheet of an average bank in 13 of the 20 national members of the Basel Committee. Such a model could not possibly have been used to replicate the kind of systemically important global bank that regulators are trying to harness with their solvency rules. Nor could that composite have modeled the global collateral management services that are now being seen as critical to market efficiency. Yet, the composite was used to compute the net social cost-benefit of more capital and less leverage. So, clearly, regulators could not have been alerted to the potential for much greater social risks and systemic costs due to interruption of the collateral linkages and forced abandonment of the services that banks provide to help preserve market stability.

Given the pervasive sense of urgency in 2010, it can be no surprise that the regulators had to rely on limited, outdated academic models that were originally intended for other purposes. Yet time has not improved the scope and depth of the models. The updates used to test various capital theories, called "quantitative impact studies," continue to be severely limited. For example, only 41 banks provided data on their internal desk structures in the December 2014

study that was used to estimate the impact of new capital charges for the trading book.¹⁷ Among those banks, nearly half reported having fewer than 20 trading desks – hardly representative of a bank too-big-to-fail.

Metrics for Nonlinear Feedback Loops are *Sine Qua Non*

Economists are sometimes criticized for getting caught up in the details and missing the big picture. In the case of capital reform, it is the details that are being missed. Macroeconomic models are built using estimated or calibrated correlations among economic components. They do not consider the degree to which elements of banks' balance sheets are associated with market services that form the latticework of its infrastructure. For example, regulations that require banks to hold high quality liquid assets do not consider the degree to which those assets, formerly used as collateral by other market participants, will become warehoused on bank balance sheets. This removes them and slows down the market system's liquidity functions.

Models are used by central banks to predict the effect of policy changes. For obvious reasons, the models available to the Basel Committee in 2010 did not, and could not consider the effects of unconventional monetary policies, such as quantitative easing, much less the influence of *negative* interest rates on bank services.

It is patently undeniable that the regulatory models have no empirical foundation. That is, they have never been validated before being placed into operation.

Linkages are Crucial

The examples of unanticipated adverse consequences suggest that regulations which fail to account for the complexity of global finance may create forces that are actually more damaging than those they were targeted to prevent. These examples also showcase the force of collateral linkages as a risk accelerant (or mitigant) in the global financial system.

In each instance above, one financial sector was connected to another through collateral assets: loaned securities of mutual funds were linked to their reinvested money market instruments in the cash collateral pools; derivative credit default swaps were linked to their related sovereign bonds; and export letters of credit were linked to their trade merchandise.

In its 2015 Annual Report, the Office of Financial Research at the U.S. Treasury emphasized that "market liquidity risk remains a pocket of vulnerability in the financial system." Among a variety of possible contributing factors, the OFR listed new bank capital regulations and structural changes, such as the rise of automated trading systems and the decline of investor

¹⁷ Basel Committee on Banking Supervision, "Fundamental Review of the Trading Book – Interim Impact Analysis," d346, Bank for International Settlements, Basel, Switzerland, November 2015 p. 10.

risk appetites. However, "The relative importance of these factors is difficult to measure," concluded the report in a fairly discreet understatement.¹⁸

The cross-market flows of liquidity are exceedingly complex. In June 2014, the New York Fed released a study describing how global banks react to liquidity shocks in quite different ways from their domestic competitors.¹⁹ Those banks with foreign affiliates move to quickly shift funds internally, shoring up their home markets with available funds from less important (to them) markets. As a result, the damage can be magnified abroad, especially in those markets with a significant foreign banking presence.

All but two of the eleven sources cited in this liquidity study were released after the 2010 justification study and therefore would have been unavailable to the Basel Committee. In retrospect, it seems clear that the original models were unlikely to predict how global banks would respond to tightening and, perhaps more importantly, how the markets would react to their departure.

The U.S. Treasury has described the conduit role of central banks in providing liquidity during the crisis. In October, 2015, the Treasury's Office of Financial Research (OFR) reported that the European banks' U.S. branches were some of the largest beneficiaries of Federal Reserve lending. Additionally, the OFR described European banks as having drawn down heavily from the FRB-ECB swap line, as well as directly from the European Central Bank.

One wonders how much borrowing in European markets was intended to offset the effects of transfers home by American banks, and vice versa from U.S. to European markets. Unfortunately, such a metric was unavailable then and now. And, even though U.S. regulators imposed a new liquidity reporting rule in 2014, the study went on to explain how the underlying ratio could be distorted by the effects of arbitrage positions that can be created by the global banks' trading desks.

That rule, the liquidity coverage ratio, seems vulnerable to innocent maneuvering in the derivatives market by sophisticated banks. As a result, it is less than reliable, say OFR analysts. According to the Treasury report, "the LCR could have unintended negative effects on interbank funding and interest rates through interactions with monetary policy. Banks' secured funding transactions with the central bank could alter their LCRs and potentially complicate the implementation of monetary policy."²⁰

¹⁸ U.S. Office of Financial Research, "2015 Annual Report to Congress: Threats, Research and Data, Mission," United States Treasury, Washington, D.C., p. 17.

¹⁹ Correa, Ricardo, Linda Goldberg, Tara Rice, "Liquidity Risk and U.S. Bank Lending at Home and Abroad," Federal Reserve Bank of New York, Staff Report No. 676, June 2014

²⁰ Cetina, Jill, and Katherine Gleason, "The Difficult Business of Measuring Banks' Liquidity: Understanding the Liquidity Coverage Ratio," OFR Working Paper, Office of Financial Research, United States Treasury, October 7, 2015, p.1.

Hurdle Rates Are Very High for All Non-Interest Income Sources

Bank managers evaluate the viability of non-interest income, that is, fee-based services such as fiduciary, securities and trade finance, within the context of a threshold rate of return set by all other fee-based sources. Clearly, when trying to shoehorn the most important business lines into an increasingly constrained business model, senior bankers will choose those services which contribute the greatest return on (regulatory) assets.

To illustrate, U.S. banks in 2015 reported \$220.4 billion in non-interest income, as sourced from activities other than fiduciary services. Total bank assets were reported at \$16.1 trillion. Therefore, the non-fiduciary, non-interest contribution hurdle rate was 137 basis points.

By contrast, for total fiduciary and related assets, banks reported revenue of \$32.9 billion on fiduciary assets of \$17.3 trillion. As a result, those services generated only 3.5 basis points in 2015 contribution to bank assets. Critically, many of those services were linked within a relationship pricing model to far more profitable, interest-generating services and assets. To bankers, that's a real headache. Historically, relationship strategies, along with competitive pressures, have forced banks to retain low-margin services in order to maintain their standing with important customers. However, that may well change under the evolving regulatory regime.

By increasing the financial pressure on fiduciary, trade, and other financing services provided by banks, regulators risk forcing those banks to step away from those business lines. There is already evidence that dislocations are underway in important markets.

As suggested by the FDIC data in Appendix I, the onset of new regulations combined with (merely the prospect of) new leverage and liquidity regulations may well have contributed materially to changes in the profitability and relative rankings for the largest fiduciary banks in the nation. And, as shown in the last table, nine of the thirteen largest fiduciary banks are projected to report revenues in 2016 below the 3.9 basis point average for all FDIC banks. That implies that those banks have lower returns than average on the fiduciary services that only large banks can provide. Those services, which many consider to be important for systemic stability, may be very difficult to recover if abandoned by their service providers.

To avoid the possibility of further unintended adverse consequences of regulatory reform, political leaders and regulatory officials would be well served if their academic advisors improved the next generation of econometric models to consider the implied costs to markets of impaired or abandoned fiduciary, securities and trade finance services.

APPENDIX I**Fiduciary Banks**

	TOTAL FIDUCIARY AND RELATED ASSETS		
	2009Q4	2016Q1	GAIN/LOSS
Ranked by 2009 Fiduciary Assets			
State Street Bank and Trust Company	\$ 4,088,276,109	\$ 6,341,762,834	\$ 2,253,486,725
The Bank of New York Mellon	2,740,971,000	2,083,883,000	(657,088,000)
The Northern Trust Company	1,468,902,384	1,511,096,644	42,194,260
Fidelity Management Trust Company	1,292,106,211	NA	NA
Citibank, National Association	1,202,872,000	843,447,000	(359,425,000)
Wells Fargo Bank, National Association	692,638,000	1,011,352,000	318,714,000
U.S. Bank National Association	631,497,428	809,855,256	178,357,828
JPMorgan Chase Bank, NA	605,090,000	985,224,000	380,134,000
Bank of America, National Association	596,619,486	484,186,000	(112,433,486)
Bank of New York Mellon Trust Co, NA	574,353,756	360,232,937	(214,120,819)
Wachovia Bank, National Association	150,257,000	NA	NA
Deutsche Bank Trust Co Americas	148,041,000	172,835,000	24,794,000
PNC Bank, National Association	129,821,116	NA	NA
ALL FDIC BANKS	16,157,839,770	16,872,286,446	714,446,676

Notes:

1. Selected banks, as appeared on the 2009 Q4 FDIC listing, are subsidiaries of bank holding companies and report separately. Banks omitted from the 2016 listing are no longer reporting.

2. Annual income for 2016 is estimated by the author, based on the March 21, 2016 FDIC reports.

3. Source: Federal Deposit Insurance Corporation, Statistics on Depository Institutions. Values in \$000.

APPENDIX I

Fiduciary Banks

	GROSS FIDUCIARY ACTIVITIES REVENUE		
	<u>2009</u>	<u>2016 (e)</u>	<u>GAIN/LOSS</u>
Ranked by 2009 Fiduciary Assets			
State Street Bank and Trust Company	\$ 3,898,548	\$ 4,470,876	\$ 572,328
The Bank of New York Mellon	3,467,000	4,900,000	1,433,000
The Northern Trust Company	1,688,037	2,911,116	1,223,079
Fidelity Management Trust Company	193,584	NA	NA
Citibank, National Association	1,627,000	1,444,000	(183,000)
Wells Fargo Bank, National Association	981,000	1,888,000	907,000
U.S. Bank National Association	989,542	1,115,860	126,318
JPMorgan Chase Bank, NA	2,729,000	3,844,000	1,115,000
Bank of America, National Association	1,468,701	1,768,000	299,299
Bank of New York Mellon Trust Co, NA	388,674	546,388	157,714
Wachovia Bank, National Association	613,000	NA	NA
Deutsche Bank Trust Co Americas	415,000	440,000	25,000
PNC Bank, National Association	598,804	NA	NA
ALL FDIC BANKS	24,554,038	32,261,956	7,707,918

Notes:

1. Selected banks, as appeared on the 2009 Q4 FDIC listing, are subsidiaries of bank holding companies and report separately. Banks omitted from the 2016 listing are no longer reporting.

2. Annual income for 2016 is estimated by the author, based on the March 21, 2016 FDIC reports.

3. Source: Federal Deposit Insurance Corporation, Statistics on Depository Institutions. Values in \$000.

APPENDIX I

Fiduciary Banks

	REVENUE ON FIDUCIARY ASSETS		
	<u>2009</u>	<u>2016 (e)</u>	<u>GAIN/LOSS</u>
Ranked by 2009 Fiduciary Assets			
State Street Bank and Trust Company	0.095%	0.070%	-0.025%
The Bank of New York Mellon	0.126%	0.235%	0.109%
The Northern Trust Company	0.115%	0.193%	0.078%
Fidelity Management Trust Company	0.015%	NA	NA
Citibank, National Association	0.135%	0.171%	0.036%
Wells Fargo Bank, National Association	0.142%	0.187%	0.045%
U.S. Bank National Association	0.157%	0.138%	-0.019%
JPMorgan Chase Bank, NA	0.451%	0.390%	-0.061%
Bank of America, National Association	0.246%	0.365%	0.119%
Bank of New York Mellon Trust Co, NA	0.068%	0.152%	0.084%
Wachovia Bank, National Association	0.408%	NA	NA
Deutsche Bank Trust Co Americas	0.280%	0.255%	-0.026%
PNC Bank, National Association	0.461%	NA	NA
ALL FDIC BANKS	0.152%	0.191%	0.039%

Notes:

1. Selected banks, as appeared on the 2009 Q4 FDIC listing, are subsidiaries of bank holding companies and report separately. Banks omitted from the 2016 listing are no longer reporting.

2. Annual income for 2016 is estimated by the author, based on the March 21, 2016 FDIC reports.

3. Source: Federal Deposit Insurance Corporation, Statistics on Depository Institutions. Values in \$000.