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STRUCTURAL AND POLICY CONSIDERATIONS**

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*HKIMR Working Paper No.24/2011*

August 2011



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# Can Securitization Work? Economic, Structural and Policy Considerations\*

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August 2011

## Abstract

Structured asset securitization is capable of generating a number of economic benefits, including liquidity provision, an increased ability to manage risk, and value enhancement through the pooling and partitioning of cash flows. But the recent financial crisis has exposed numerous structural flaws, which has led many observers to question whether asset- and mortgage-backed securities should be classified as financial “weapons of mass destruction” that require strict containment and possibly even elimination. This paper considers the fundamental economic tradeoffs associated with securitization, with an eye towards policy development, concluding that asset securitization can work. Whether it actually will work depends on how policymakers respond to the significant challenges of reregulating the financial system. Finally, the specific case of securitization in China is considered in the context of institutional and political realities.

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\* This paper was started while visiting the Hong Kong Institute for Monetary Research in March 2010. I gratefully acknowledge the HKIMR for providing space and financial resources to make this research possible. I particularly wish to thank Hongyi Chen, Lillian Cheung, Dong He, Cho-hoi Hui, Charles Leung, Albert Wong, and Wenlang Zhang for their valuable input provided at the early stages of this project. I am particularly grateful to Ann Rutledge of R&R Consulting for her insights on securitization markets and Chinese finance. I would also like to thank a large number of colleagues and seminar/conference participants, who are too numerous to name individually, for their comments and insights. Any and all errors and shortcomings in this paper are, sadly, my own responsibility.

# 1. Introduction

Structured asset securitization, particularly private label residential mortgage securitization, contributed mightily to the decline and fall of systemically important financial institutions during the market meltdown of 2008. This has led many to question whether securitization can work in a properly balanced market environment. This paper considers that question, primarily from the U.S. perspective, addressing in detail whether securitization can enhance economic efficiency in terms of the organization and allocation of financial capital that in the end improves real consumption and investment outcomes.

In considering this issue, I will provide historical perspectives and a conceptual framework for understanding the economic benefits and costs of securitization relative to traditional balance sheet lending. By traditional lending, I mean a vertically integrated loan production and servicing process. In this process the lender underwrites the loan, funds the loan from its own resource/deposit base, continues to own the loan as an asset on its balance sheet, services the loan, and addresses issues of borrower financial distress should the situation arise.

Securitization breaks some or all of the links in the production chain. Most critically, a necessary condition for securitization to occur is that the loan is effectively sold, implying that the loan as previously constituted is removed from the balance sheet of the originating lender. The loan sale may or may not have been anticipated at the time of loan origination. Securitization often, but not always, also assigns other functions such as loan underwriting and servicing to a specialist.

A loan sale is not sufficient for a securitization to occur, however. The liquidated loan must also be legally transformed into something other than the original mortgage loan. A typical transformation in the U.S. involves placing assets into a special purpose vehicle (SPV), or bankruptcy remote entity, in preparation for securitization. Thus, a loan that is sold on the secondary market is not defined as a securitization if it is simply purchased and held "whole" on the balance sheet of another financial institution (such as Fannie Mae). In this case it is a secondary market sale.<sup>1</sup>

Economic feasibility of securitization can be formulated as follows. Securitization introduces a number of agents along the disintegrated supply chain that must be paid for their services. Even when securities production is efficiently organized, it is likely to be more expensive than production of traditional balance sheet loans. Economic feasibility implies that, in order to offset higher loan production costs, the cost of capital sourced through external capital markets (including the benefits of engineering cash flows to attempt to increase security issuance proceeds) must be sufficiently lower than the cost of bank capital

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<sup>1</sup> Some might argue that a mortgage held on the balance sheet of Fannie Mae or Freddie Mac is bankruptcy remote due to the government's guarantee, but since there is no explicit transformation I will treat it simply as a secondary market sale. See Gorton [2009] for evidence of an increasing rate of non-mortgage loan sales in recent years.

used to fund balance sheet lending. So, for example, suppose that securitization costs 200 more basis points of total asset pool value to create than an identical group of loans held on the balance sheet of a bank. Further suppose that the loans live for five years. This implies that the annual cost of capital advantage to securitization must exceed 40 basis points for securitization to work.

In terms of assessing economic tradeoffs, discussion will be organized around three themes: the *good*, the *bad*, and the *ugly* of securitization. The *good* considers the positives of securitization. The *bad* and the *ugly* focus on the negatives. The *bad* addresses challenges in managing a vertically disintegrated loan production and servicing process, and the *ugly* corresponds with securitization's systemic linkages to the broader financial system.

Policy implications are considered (as of the time of this writing, April 2011). My perspective in formulating policy recommendations is driven largely by two basic guiding principles: 1) a social contract in the U.S. that emphasizes opportunity and entrepreneurship, and 2) an economic structure in the U.S. that embraces transaction-based financial intermediation relative to relationship-based approaches. These principles cause me to favor market-based policy responses that emphasize increasing market transparency, information production, and accountability of agents along the supply chain. These mechanisms can bring effectiveness and time consistency to a transaction-based and very complex financial system.

At the bottom of all this is reform across *all* bond markets, bringing them more in line with regulation and structure seen in equity markets. Finally, with these reforms—along with reasonable and reasonably non-distortionary capital adequacy rules—there must be attention paid to regulation that causes investors act more responsibly, particularly the institutional investment community. I am especially concerned about pension funds being the potential flash point for the next financial crisis.

The penultimate section of this paper considers the case of China. Given China's relatively undeveloped financial markets, together with concerns about the "controllability" of securitization within the formal and shadow banking systems, I conclude that securitization is unlikely to become a meaningful financing channel in the near future.

## 2. The Development of Securitization Markets in the United States

Transforming "dead" capital into "live" capital, that is, conducting secondary market loan sales, has been around for centuries (see De Soto [2000]). Historically it has been a big step from the secondary market loan sale to securitization, however. There is evidence of West Indies plantation mortgage and government bond securitization occurring in Holland in the middle to late 1700s (Goetzmann and Rouwenhorst [2005, Chapters 1 and 15]), and mortgage securitization occurring in the U.S. as far back as

1850 (Riddiough and Thompson [2010]). Other pooled or single-asset mortgage securitizations occurred through the latter half of the 1800s and into the early 1900s, particularly in the 1920s (Goetzmann and Newman [2010]). But these securitizations have received relatively little attention to date, as they apparently did not occur on a large enough scale to assume systemic importance.

The foundation for institutional-based securitization was laid in the 1930s with the creation of Fannie Mae, known initially as the Federal National Mortgage Association.<sup>2</sup> At the time, Fannie Mae was a state-owned enterprise set up to purchase (only) qualified residential mortgages from originating lenders in the secondary market. As originally structured, it was not in the business of securitizing the loans. Instead, Fannie Mae kept the purchased whole mortgages on its (that is, the U.S. government's) balance sheet.

Federally sponsored mortgage insurance was another relevant innovation that came out of the Great Depression. This mortgage insurance, provided by the Federal Housing Association (FHA) and paid for by the borrower, allowed for relatively low downpayments on a mortgaged home purchase. The insurance guaranteed timely principal and interest payment to the owner of the loan in the event of borrower default, which facilitated the sale of mortgages into the secondary market. This particular insurance was available only for first-time home buyers, however. By the early 1950s, there was increasing pressure to create a secondary market for non-FHA mortgage loans. This led to the creation of private mortgage insurance companies, and ultimately the birth of a brother organization to Fannie Mae called Freddie Mac (originally the Federal Home Loan Mortgage Corporation).

By the late 1960s, as a result of increasingly large budget deficits from funding the Vietnam war and Great Society initiatives of the Johnson administration, there was increased policy interest in removing the billions of dollars of mortgage loans from the balance sheet of the U.S. government. This caused Fannie Mae and Freddie Mac to be quasi-privatized, morphing into Government *Sponsored Enterprises* (or GSEs). Most importantly for our purposes, these two firms, along with Ginnie Mae, were also now allowed (in fact, encouraged or required) to repackage and resell their purchased mortgages to third-party investors. Thus, in two short years from 1968 to 1970, approximately 120 years after the first primitive attempts were made to package and sell mortgages on Wall Street, loan securitization began to happen in a big way in the U.S.

Mortgage-backed securities had very simple designs at first, more resembling a secondary market sale than a contemporary structured security. Thirty-year fixed-rate prepayable mortgages were pooled, with securityholders offered pro rata shares (undivided interests) of the total cash flow pool. Because of mortgage insurance and the back-stop guarantee of the issuing GSE, securityholders did not have to

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<sup>2</sup> See Green and Wachter [2005] for a detailed history of the development of the secondary mortgage market in the U.S.

concern themselves with the risk of principal loss due to borrower default.<sup>3</sup> Rather, in addition to the usual term risk associated with holding a fixed-rate security, the only risk for the investor to analyze was that of mortgage prepayment.

There was a natural market for these early securities—namely, the financial institutions that operated in retail mortgage markets. In effect, these institutions engaged in a circular game of asset transformation and liquidity creation. Whole mortgage loans were delivered into the secondary market and transformed into mortgage-backed securities, only to be repurchased by the same originating lenders. Loan pooling added a measure of diversification to the loan portfolio, since the mortgages backing the securities were from a geographical cross-section of the U.S.

This transformation allowed lenders to manage their balance sheets in new and more flexible ways. For example, they could gain national mortgage loan exposure if they wanted it, with the option to rebalance their asset portfolio at low cost, thanks to an active secondary market for these security interests. Authors have empirically estimated the benefits of mortgage securitization as related to mortgage pooling and liquidity creation. They have found borrowing costs to be reduced by up to 50 basis points relative to costs associated with traditional portfolio mortgage lending (see, e.g., Hendershott and Shilling [1989]). Fifty basis points in the loan rate of a multi-trillion dollar business is a non-trivial benefit to society. There are additional social benefits to securitization on the capital supply side to the extent that liquidity creation and asset diversification benefits are public goods.

The middle 1980s was a time of significant financial innovation on Wall Street. One of the most important innovations was the CMO—the collateralized mortgage obligation. This innovation made the critical distinction between principal and interest components of mortgage cash flow, creating securities whose payoffs specifically favored one or the other component part. It turned out, for example, that securities whose cash flows were tied to the interest payment component of cash flow had very different valuation characteristics as a function of interest rates than securities whose cash flows were tied to principal payments. This was important because risk could now be divided and reallocated in ways that could not be effectively replicated with the existing set of securities available to investors.

With the CMO came the beginnings of structured finance and asset pool-based financial engineering. Markets could be readily found for most of these new structured securities, but not all. To see why, consider the analogy of cutting up a chicken. There are viable markets for the breast meat, the wings, the legs, and thighs. But many fewer people are interested in the neck, the feet, and the innards (at least in the U.S.). Consequently, these latter parts are often either thrown away or are hidden in some other

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<sup>3</sup> An additional aspect of isolating credit risk is the special purpose vehicle (SPV) that establishes bankruptcy remoteness of the sponsoring enterprise. Because of the GSE's implicit government guarantee, establishing a clear SPV structure was not necessary in the early stages of securitization. The SPV structure was subsequently clarified and refined beginning in 1977 and continuing through the 1980s as the private label market for mortgage-backed securities developed.

concoction like sausage. The high-risk residual pieces of structured financial products are analogous to chicken parts that nobody wants, and have been a persistent sticking point in the development of these markets.

The 1990s coincided with the creation of the Basle capital standards that placed rating agencies at the forefront of determining credit-based capital reserve requirements across regulated financial institutions. Wall Street took the CMO pooling-structured finance concept and combined it with the junk-bond model to create the senior-subordinated asset backed security. After some experimentation with more complicated designs, the senior-subordinated security structure became more or less standardized with the use of a “tranching waterfall” design. With this structure, the most senior bonds are given priority on the repayment of principal as it flows into the pool, while the more junior bonds receive interest only while they wait to move up the priority ladder.

The sub-prime residential mortgage-backed securities market began its modern development in the U.S. during the 1990s. Bank regulation and government policy motivated much of this market development. Regulatory changes in the 1970s allowed banks to offer alternative mortgage instruments, and further policy changes in the 1970s, 1980s, and 1990s created incentives for banks to originate home-mortgage loans for borrowers traditionally excluded from the prime mortgage market. In the early days of sub-prime mortgage market development (during the middle 1990s), mortgages were standard 30-year maturity fixed rate or adjustable rate loans. Because these were non-prime loans (i.e., not “eligible” for purchase by Fannie Mae or Freddie Mac), mortgage insurance generally could not be obtained at the individual loan level. The development of the senior-subordinated structured securities markets had shown, however, that additional structure could be introduced to address the missing insurance market problem.

A final wave of new “securitized” products became important by the middle 2000s. The two most prominent were the collateralized debt obligation (CDO) and the credit default swap (CDS). Although neither was a brand-new innovation, they previously had relatively little impact in the market prior to 2004. The CDO was a hit largely because it provided a mechanism to manufacture AAA-rated securities (for which there seemed to be insatiable demand) out of non-AAA-rated securities (see Gorton and Metrick [2010] for additional background). CDS were important at a fundamental level because they provided security issuers and other market participants a mechanism to manage risks associated with credit-based structured securities.

Figure 1 summarizes milestone events in the development of modern securitization markets in the U.S.

### 3. Economic and Structural Considerations: Some Preliminary Comments

Securitization has a number of positive characteristics. Indeed, the positive characteristics, at least in concept, are so compelling that they contributed to a conventional wisdom that developed prior to the financial crisis. That is, many believed that a Great Moderation had occurred and that “this time it’s different” (Reinhart and Rogoff [2009]). The financial crisis has caused a revision of this conventional wisdom.

In order to establish a conceptual foundation for further discussion, I will briefly review some recent and not-so-recent macroeconomic characterizations of finance and financial markets. A neo-classical economic view of finance is that it is a zero-sum game, where all that matters is what happens in the real economy. The presumption is that profitable real investment opportunities will always find funding at an appropriate risk-adjusted price. Modigliani and Miller [1958] most clearly articulated this view in the context of the corporation. A more nuanced view, which can be labeled as the Friedman monetarist view, is that finance matters, but only in the sense of trying to make sure it doesn’t screw things up in the real economy. For example, in response to the issue of the existence of complex financial products, some feel that anything complicated must indicate a game of “hide the sausage” and “find the greater fool”, invariably leading to resource misallocations.

The consequences of the financial market crisis certainly validate the monetarist view to some extent. But that view misses a very important fact: There is a credit channel in the economy (Bernanke and Gertler [1989]). In normal times, certainly in bad times, and even in good times, many firms and most consumers are financially constrained. This means that productive and utility-increasing activities, which might have occurred, did not have the opportunity to occur because there was no money available to finance them. They are truly very important dogs that don’t have the opportunity to bark. Financial market frictions thus have first-order effects in the real economy, and cannot be assumed away.

A credit channel implies that financial innovations which mitigate financial market frictions are potentially an economic “good”. This is the great promise of securitization, which is considered in the next section.

### 4. Securitization: The Good

The following is a laundry list of the economic “goods” offered by securitization. Some have been identified and analyzed extensively in previous work, so my discussion on those topics will be brief. On other issues that have not been emphasized previously, I will spend more time elaborating.

- *Liquidity Provision:* As noted by De Soto [2000], liquidity allows lenders to refinance themselves, transforming dead capital into live capital. A secondary loan market alone is capable of supplying significant liquidity to the financial system. Individual banks can better manage their balance sheets by having the option to sell loans into the secondary market. Liquidity imbalances affecting the whole of the financial system can be more easily managed. Loan sales alone are, however, unlikely to completely solve liquidity imbalances. There is a limited appetite for individual or even undivided bundles of loans that remain on the balance sheets of financial institutions. This is particularly true with residential mortgage lending, as there is simply too much product to fund on the balance sheets of regulated financial institutions. Securitization is a vehicle that efficiently aggregates cash flows with unlimited flexibility to prioritize those flows into securities for sale into the broader capital markets. Securitization can thus provide further liquidity benefits, resulting in a lower cost of loan capital for borrowers.
- *Completing an Incomplete Market:* This is the classic demand-side incomplete market argument for the creation of structured financial products (see, e.g., Allen and Gale [1988]). Structured finance excels in establishing allocation rules that redistribute pooled cash flows into securities with unique risk-return characteristics.
- *Satisfying Unmet Investor Demand:* It is one thing to create new securities that provide insurance-hedging benefits across the vast market of available investment opportunities. It is another thing to produce a sufficient quantity of existing securities to meet investor demands. Prior to the financial crisis, the demand for AAA-rated securities seemed insatiable. A good part of this demand appears to have been associated with distortions created by Basle II, where firms and investors engaged in a widespread game of regulatory arbitrage. Generating securities to satisfy this type of demand is not a good, but rather is a bad that misallocates resources.

But the demand for information-insensitive securities also appears to have a fundamental component, suggesting that there will be continued pressure for production of such securities. Insurance companies and pension funds have prudent motives for holding high credit quality assets on their balance sheets to aid in funding long-term liabilities. In a global financial marketplace, non-local capital is looking for a competitive return at reasonable risk. Evaluating risk is increasingly difficult with distance. As a result, there are investor incentives to seek out high-grade securities for their “Good Housekeeping seals of approval.” The global economy continues to evolve towards service and brainpower industries. With a limited stock of high-quality collateral assets, such as centrally located land, the premium placed on manufactured collateral will continue to increase.

- *Reductions in Risk Concentrations:* The financial crisis has taught many of us that, even though securitization allowed for the creation of “unique” securities with finely tuned risk-return

characteristics, it did not necessarily imply a reduction in the concentration of risk in systemically important financial institutions. Still, risk transfer and redistribution provide significant promise with securitization, particularly in the context of concerns over certain institutions being too big to fail.

- *Alleviating Market Failure:* It is well known that information asymmetries can block the development of loan markets (e.g., Stiglitz and Weiss [1981]). Consider for example a private market for student loans, where rationing has historically occurred because it is nearly impossible to credibly pledge human capital as collateral in modern U.S. society in order to relax financial constraints. There are other similar examples of loan markets for which investment has the potential to generate positive spillovers for society at large, such as small business investment and low income housing. Securitization, potentially augmented with complementary funding mechanisms, offers a method to address the problem. For example, the creation of a senior-subordinated security from a risky asset pool allows for the diversification of idiosyncratic information risk. The residual (systematic) information risk is concentrated in the subordinated security (Riddiough [1997]). As a result, the senior security can sell for a high price due to its information insensitivity. This in turn allows investors with the expertise and risk appetite to participate in the subordinated bond market.
- *Increased Competition and Borrower Choice:* Traditional lending is imperfectly competitive due to information and search frictions, with a limited set of loan products available with which to finance consumption or investment. Securitization does two things to address these limitations. First, it increases competition by introducing a new source capital through new marketing channels. Second, and perhaps more importantly, securitization provides borrowers a loan product or set of products that have different characteristics than the existing set of loan products. This provides borrowers with options and the ability to self-select into the loan product that it prefers. As long as suppliers are aware of this self-selection (and borrowers are sufficiently well-protected by regulation), borrower choice enhances efficiency.

When considered all together, this list of benefits appears to be formidable, and helps explain securitization's role in forming the conventional "Great Moderation" wisdom prior to the crisis. But, as we now know, the cost side of the ledger presents some formidable tradeoffs of its own. In particular, as Merton Miller [1986] correctly observed 25 years ago, most financial innovations occur in response to changes in tax and regulatory policy. To the extent that taxes and regulation are distortionary, financial innovations can also be economic "bads" in the sense that they amplify distortions. These "bads", the bad and the ugly of securitization, will be considered in the following two sections.

## 5. Securitization: The Bad

Lending has apparently remained vertically integrated for centuries for good reason. As the financial market crisis revealed, there were numerous flaws in the “originate-to-distribute” model of loan production. Thus a first-order issue is whether disintegrated loan production can be organized to function effectively. Although I believe that it can, harnessing the benefits of specialist-based loan production while minimizing the costs is by no means trivial. The following is an analysis of “bads” that can go with a securitized loan production chain.

- *The Broker-Borrower Relationship:* Residential mortgage (and certain other consumer) loan contracts are complicated, with significant commitment and financial obligation. Some consumers do not have the experience nor perhaps the mental ability to comprehend the implications of long-term debt contracting. Brokers and other primary points of contact with the borrower have certain legal and perhaps ethical obligations to: 1) Not cause the borrower to incur unnecessary/unstated costs at the time of loan origination, and 2) Assist in screening out potential borrowers that should not take on debt at all or under redefined circumstances.

But broker compensation creates a potential conflict, as brokers are generally paid based on volume. Because securitization is a transactional business, it is particularly susceptible to the volume-conflict problem. That said, while some sub-prime borrowers were improperly treated or misled by brokers, many other sub-prime borrowers were not unsophisticated nor sub-marginal credit risks. Rather, they consciously ratcheted up their risk by using their housing asset to access liquidity for other consumption or investment purposes. Many other first-time homeowners actually benefitted greatly from the ability to access credit through the sub-prime market and own a home. Consequently, in this context the real “bad” is bad broker behavior, not sub-prime lending or securitization *per se*.

- *The Loan Underwriting Process:* How does a securities issuer incentivize a loan underwriter to exercise appropriate care in qualifying borrowers and matching them with appropriate loan products when the underwriter is paid a piece rate and has no further financial stake in the transaction? This is perhaps the singular challenge of the originate-to-distribute model of securitization. But, although this is a particularly difficult problem, it was not ignored in the design of most securitized loan production operations. Security issuers and investors do have legal recourse to the loan underwriter (based on representation and warranty provisions) if that underwriter materially and systematically violates stated guidelines. Enforcement is costly, however. The difficulty in enforcement is two-fold: 1) Underwriting guidelines are based on formal, or hard, information provision, while soft information can be important in assessing creditworthiness; and 2) Enforcement is imperfect and the underwriter may know how to game

the system. Improving certification, accountability, and enforcement is critical going forward, and will be addressed in greater detail in the policy section of the paper.

- *Loan Servicing*: Many technical problems have been associated with residential loan servicing, as exemplified by the “robo-signing” debacle. These problems seem to be easily correctable, however.
- *Regulatory Arbitrage and the Rating Agency Game*: Much has been written about this issue. Basle II distorted the demand for highly rated securities, with U.S. regulators punting on how to properly control the securities manufacturing process when it was under tremendous pressure to generate AAA-rated paper. Rather, the regulatory community *de facto* placed the rating agencies in charge, anointing them as the master arbiters of the securitization universe.<sup>4</sup>

Clearly, in hindsight, the rating agencies got things wrong, in many dimensions, in their assessment and grading of credit risk on structured securities. For example, they were too optimistic about the benefits of diversification, which led to too much of the structured asset pool being assigned a AAA-rating. The rating agencies were shopped and susceptible to capture, as they don't appear to have exerted enough independence and skepticism in their dealings with issuers. And they were conflicted, as rating structured securities was a lucrative business for them.

But, as noted above, I am not aware of anyone within the financial regulatory system that assigned formal responsibility to the credit rating agencies as the master regulator of the structured securities universe. If you ask a rating agency what it does, it will tell you it exercises free speech and makes a little money in the process—market participants can decide for themselves whether or not they believe the opinion or find it of value. Clearly the role of the rating agency was more important than this, but regulators did not bother to clarify that role. Thus, the whole certification piece of the security production process was muddled, and ultimately quite problematic. Going forward, one thing seems certain: most investors still value credit rating assignments as Good Housekeeping seals of approval, and they would like to have a system that serves their interests in obtaining informative and unbiased opinions of credit quality from independent and credible sources.

- *Can the Beast Be Tamed?*: Richard Posner [2009] suggests the beast is Wall Street, not just securitization. Wall Street has been the live creature behind securitization, in the sense that it was

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<sup>4</sup> Regulators have for many years placed restrictions on investment and applied capital reserving rules based on bond ratings. What was different this time around was Basle II as well as the emergence of fundamental economic factors that significantly distorted the demand for highly rated securities. In the old days, incentives were such that rating agencies could more or less police themselves. In the new environment, self-policing became impossible and regulators did not appear to recognize that the change had occurred.

Wall Street that organized the production process that aggregated the asset pools that were then repackaged and redistributed to investors as securities. Posner posits that we should not be surprised that the beast (a lion in his book) chases down and kills zebras (which presumably represents profit opportunity). That is, don't blame the beast for doing what comes naturally. Rather, if there is a public interest in saving zebras, it is essential to separate the beast from the zebras.

Wall Street made a lot of money from securitizing assets in the 1990s and 2000s—firms ate what they killed, and they killed and ate a lot. Given that Wall Street and the securitization process seem to be joined at the hip, both historically and going forward, a central policy issue is whether the beast can be controlled, and if so, how to exercise that control. One key element is compensation and governance, where the major firms are now all publicly traded with large bonus structures. The tradeoff within these firms has more recently favored scale and access to financial capital over reputational capital (Morrison and Wilhelm [2007]), with not-so-surprising results.

- *Where Have All the Toxic Securities Gone?:* As noted earlier, one of the thorniest issues with structured securitization is the creation of the high-risk or toxic securities that result when risk is reallocated within a capital structure of a structured asset pool. These securities sometimes stay on the balance sheet of the issuer, which is not necessarily a bad thing as it avoids having to sell them at a discount. Residual ownership can also signal quality as well as create an alignment of interests. But it also results in concentrated risk vis-à-vis embedded leverage which, if combined with leverage on the liability side of the balance sheet, can result in highly risky financial organizations.

A strong case can be made for selling the toxic stuff. But who will buy it? Again, as noted earlier, after 2003 a significant amount of it was repackaged into CDOs. This appears to be especially true in the sub-prime ABS market. But who ended up owning the toxic pieces of the CDO, since risk does not simply disappear with another round of securitization. At this point nobody knows for sure, but they are best owned by dedicated buy-and-hold specialists that have the appetite for risk and the wherewithal to comprehend the risks. There is evidence, however, that some unsophisticated investors were duped into buying the stuff, and that some very sophisticated investors purchased the toxic securities in an attempt to manipulate the retail mortgage market (an especially interesting story involves a Chicago-based hedge fund called Magnetar, see (Pro-Publica [2010])).

- *Foreclosure and Rigidities in Special Servicing:* Loan foreclosure can be inefficient when deadweight costs are significant or when negative externalities occur as a result of foreclosure (say, with housing at the neighborhood level). With traditional lending, if a borrower finds him or

herself in financial distress, a straightforward bilateral negotiation can presumably occur in an attempt to work things out. Renegotiation is not so simple in the securitized market. Security investors delegate the task of renegotiation to an agent (e.g., a special servicer), hired for its presumed expertise in renegotiating loans and dealing with financial distress. In almost all cases, this agent has absolutely no preexisting relationship with the borrower. Moreover, as is the case with financial distress in the corporate world, multiple securityholders create coordination problems in terms of arriving at negotiated outcomes. On top of that, tax and accounting rules impose rigidity, in the sense that there are restrictions on management decision-making discretion. Because designing complete contracts is a notoriously difficult thing to do, coordination problems combined with a lack of discretion implies a tendency towards favoring foreclosure over renegotiation (see, e.g., Riddiough [1997] and more recently Piskorski *et al.* [2010], among others).

## 6. Securitization: The Ugly

When the production management “challenges” considered in the previous section are combined with systemic risks that seem to be associated with securitization, a case can be made to tightly regulate or even eliminate securitization. This section considers factors associated with securitization that directly or indirectly contribute to the systemic risks of the financial system.

- *The Dark Side of Complete Markets:* Securitization, and more broadly derivatives, are to financial markets what the Internet is to information technology—a vast network that connects everything and everyone. Part of the network effects occur within the plumbing of the financial system, where rehypothecation of high-rated securities results in numerous interconnected counterparties and complex funding chains (Gorton and Metrick [2010], Duffie [2010], Stulz [2010]). More generally, network effects happen through the partitioning and distribution of risk to diverse actors in the economy, with both negative and positive results. The classic Arrow-Debreu characterization of market completeness focuses on the positive external effects, where state contingent claims allow for better sharing of risk. The dark side of networking occurs when leverage, asset securitization, and complementary products such as CDOs are combined. Economic actors become like a line of closely spaced dominos. When one domino falls, the others fall quickly in succession.
- *Lost in Translation:* This is the security complexity issue. Gary Gorton [2009] has written eloquently on this topic, emphasizing that bad news can cause investors to suddenly question what is inside the “black box” of a financial intermediary. That is, information-insensitive securities backed by a complicated and opaque pool of assets suddenly become information sensitive after a significant negative economic shock. Revaluation matters the most with highly rated securities

due to their role in liquidity creation through the repo market. But revaluation is particularly difficult with higher-risk securities, where a lack of scale takes away incentives to incur the costs associated with revaluation. These problems are further exacerbated with complicated underlying assets such as sub-prime mortgages and CDOs, with true economic values getting completely lost in translation.

- *Correlation Risk:* Asset correlation structure is a central issue to structured securitization. When assets are pooled and then tranced, credit-based security performance will depend on how price changes on underlying collateral assets are correlated. Correlation matters because lower asset correlation implies more AAA-rated securities and hence greater proceeds at the time of security issuance. Correlation structure is itself uncertain, with unanticipated shocks being either idiosyncratic or common. Prior to the financial crisis, issuers, rating agencies, and investors all put significant weight on the occurrence of idiosyncratic shocks, leading to a higher proportion of senior/AAA-rated securities. However, in the financial crisis, correlations went to one due to the commonality of the systemic shock. The result is that senior/AAA-rated securities did not have enough protection in the subordination level, causing revaluation and distress (information sensitivity is introduced), which fed back to exacerbate the panic.
- *Good Liquidity-Bad Liquidity:* As with market completeness, there are tradeoffs to the increasing liquidity that goes with securitization and secondary market trading. Liquidity is often associated with an increase in flexibility and ability to manage risk. But there is a dark side to liquidity, which can be illustrated as follows. Military brass long ago noticed that when soldiers crossed a bridge to fight an enemy, and the bridge were subsequently destroyed, the soldiers fought harder. Bridge burning at first seems paradoxical, since a valuable, potentially life-saving option is eliminated (namely, retreat). But the possibility of retreat creates a moral hazard. The same principle applies to liquidity. Liquidity decreases commitment, and commitment can have value (Myers and Rajan [1998]). For example, if I can sell my mortgage into a security, do I have the same level of commitment? If I can sell my security into a CDO, do I have the same level of commitment? If I can hedge my firm's losses due to financial distress, do I have the same level of commitment? The liquidity-commitment problem has first-order systemic risk implications.
- *Embedded Leverage and the Toxic Asset Problem:* Excess leverage is at the center of every financial crisis. Securitization, and more generally derivatives, potentially allow for the creation of socially useful insurance products. However, many of these products contain significant embedded leverage that can be easy to overlook and disguise. Add into the mix some debt (particularly short-term debt that is maturity mismatched) to finance the asset with embedded leverage, do it on a large scale, and you have a recipe for trouble.

- *The Land Myth*: Diamond and Rajan [2009] have made the point that investors love bonds backed by high-grade collateral. This is especially true of collateral such as real estate, which has commitment value. The love of real estate as collateral in financing transactions is not new. For example, wars for centuries have been financed based on the expectation of acquired land providing gains large enough to repay war-time debt. In modern times, real estate, due to its durability and relative value insensitivity to operational factors, has been in high demand to collateralize debt. In the extreme, demand morphs into a Japanese-style land myth. When this happens, demand for real estate as collateral feeds back to cause a boom in land values, with higher land values leading to more leverage, et cetera, with the usual bad ending (e.g., Kiyotaki and Moore [1997], Reinhart and Rogoff [2009]).
- *Neglected Risks*: Gennaioli, Shleifer, and Vishny [2010] argue that certain risks, such as systemic collapse brought about by funding chains and shadow banking, can be (and were) neglected by investors. This behavioral “neglected risk” problem combines with excess demand for low-risk securities to create profit opportunities for financial innovators that result in the oversupply of the securities that contain the neglected risks. This in turn leads to financial fragility problems that can lead to market collapse when neglected risks become realized outcomes. What is particular compelling about this perspective to me is the authors’ focus on behaviorally based demand side distortions causing vulnerability in financial markets.
- *The Small Bank Problem*: Each and every SPV-protected securitized asset pool is analogous to a mini-bank. We know that the U.S. has had more financial panics than any other developed country in the last 200 years. We also know that the U.S. has had the most decentralized banking system in the world. Financial panics and decentralized banking thus seem to go together. Securitized asset pools are not so much about geographical isolation or decentralization, but instead more about a specialized loan product type. This type of focus may nevertheless increase susceptibility to negative spillover and panic, where small size decreases incentives of outsiders to incur the disproportionately high costs of monitoring and information acquisition when negative shocks occur.

## 7. Policy Implications

Although there clearly have been serious structural and systemic issues associated with securitization, I believe that many positive social benefits can be realized going forward if the markets are properly restructured and regulated. Achieving an appropriate regulatory balance is essential, however. Specifically, I believe that regulation should be structured so that securitized asset markets have the flexibility to adapt to changing circumstances, while not imposing undue risk on the financial system as a

whole. I agree with Rajan [2010, p.178] who notes that, “Light effective regulation is less liable to have severe consequences in the event of mistakes.”

In formulating my policy guidelines, two basic principles drive my perspective: 1) a social contract in the U.S. that emphasizes opportunity and entrepreneurship, and 2) an economic structure in the U.S. that embraces transaction-based financial intermediation relative to relationship-based approaches. Europe has a very different social and business model, but European banking structure is currently in vogue in the U.S. My view is that we are not Europe, nor should we strive to be like Europe. A transaction-based system of finance in the U.S. is an endogenous response to creating real opportunity and encouraging real creativity with a heterogeneous mix of peoples and cultures. Moving away from this system is not realistic in my view when a credit channel exists that constrains the flow of finance to socially worthwhile “projects” that are often innovative and rather risky.

A huge but largely neglected issue is the increasing importance of bond markets in the U.S. and global economy. Equity and bond markets used to be quite distinct in terms of risks and structure. But in the last 30 years, bond markets have grown tremendously and blurred. This has produced a continuum of risk between informationally insensitive bonds to highly sensitive equity share ownership. The underlying assets collateralizing the bonds in modern times are often opaque, in stark contrast to high-grade corporate bonds with actively traded shares that provide real-time informative price signals.

Fragmented bond markets remain highly inefficient, while equity markets—the ultimate expression of anonymous transaction-based finance—long ago established mechanisms to managed information sensitivity. These mechanisms are so integrated into our thinking that they are easy to overlook. And, although imperfect, they enhance transparency, standardization, accountability and governance.

A final key conceptual distinction underlying my views depends on mechanism design, which identifies *participation constraints* and *incentive compatibility constraints* as affecting outcomes. Financial market regulation is a complex, large-scale application of mechanism design. It can be tempting to emphasize imposing constraints on participation, as they can seem to be easier to monitor and control. But, like the flow of water that looks for the path of least resistance, financial capital in search of profit has a way of working around regulatory barriers. I believe that greater focus on simple but thoughtful approaches to enhancing incentive compatibility—attempting to channel the flow of capital rather than erect barriers—will be much more effective in our complex decentralized financial system than attempting to simplify systemic risk regulation by concentrating rather than dispersing risk throughout the economy.

Below is my short list of policy guideline suggestions as they relate to managing operational and systemic risks of securitized asset markets.

- *More Equity Capital:* Leverage and liquidity are flip sides of the same coin, as one typically implies the other in the run-up that precedes a financial crisis. Equity capital as an offset to leverage is really the only effective insurance against a liquidity crisis, as standard insurance mechanisms break down at such times. In addition to increasing core capital reserve requirements, there has been additional focus on contingent capital. I like much of this focus (but not all), and encourage regulators to consider contingent capital models like those that govern the private mortgage insurance industry. Core capital is contributed as equity at the time of “investment,” and a percentage of gross revenue flows is required to be held in reserve for a period of time (50 percent of premiums are held for 10 years in the case of mortgage insurers). Dividends can be paid out of contingent capital if financial performance meets specified hurdles. The trick, of course, is to develop sensible and simple capital retention rule. Ideally, these rules walk the fine line between providing appropriate incentives without imposing punitive requirements that make securities investment uneconomic.
- *Transparency and Information Production:* The recent financial crisis clearly demonstrated how much most of us did not know about the investment policies of systemically important financial institutions. Given funding chain effects and the existence of a large shadow banking structure, it is imperative that regulators and outside investors are able to access more and better information about investment risk at low cost. It is also imperative that there is better information on “who is connected to whom” in the financial system (see, e.g., the Symposia on Financial Plumbing published in the *Journal of Economic Perspectives*, [Winter 2010]).

That said, there are economic tradeoffs to costly information production and transparency (Grossman and Stiglitz [1980]). This has led some to argue that enforced opaqueness would facilitate trade, especially in secondary market trade with complex structured securities. I understand the principle but don't support the approach, preferring instead the opposite tack of trying to level the playing field with “full” information as a public good. Equity claims are highly information sensitive, and the social benefits of equity market transparency are well known. This is a critical issue, as failing to improve post-issuance information provision will, in my view, stall and perhaps kill market development.

Given the opacity of most underlying assets and mortgages, credit default swaps (CDS) have tremendous potential to improve the efficiency of structured securities markets. Although there is much publicly available information on publicly traded companies—not to mention the availability of stock prices to aid in information discovery—these kind of data are simply not available on the privately held assets that provide the collateral underlying structured security issuance. A well structured and transparent CDS market, particularly one that includes CDX that reference

homogeneous groupings of same-rated structured securities, is capable of generating invaluable publicly available prices and detailed trading data.<sup>5</sup>

- *Repo Debt and the Manufacturing of AAA-rated Securities:* Shadow banks require capital to invest in assets. Assets that most easily attract capital are low-risk and informationally insensitive. Securitization provides a mechanism to manufacture AAA-rated securities out of run-of-the-mill assets such as mortgages, credit card balances, and student loans. A common method of financing shadow banks is repo debt, which is a sophisticated form of demand deposits. The original repo financier can take the pledged collateral and replenish its capital stock by replicating (rehypothecating) the transaction with another repo lender (much like selling a mortgage into the secondary market), and so on. Soon a complex debt funding chain is created, where, when a large unanticipated negative shock occurs and everyone along the chain is making capital calls at the same time, it only takes one repo “fail” to cause problems for everyone involved (see Gorton and Metrick [2010] for more on this topic).

Policy focus as of late has been to attempt to erect a wall between formal banks and shadow banks that presumably protects formal banks against repo “runs” that might occur in the shadow banking world. I don’t think this will work – the walls are too easily breached. Rather than continue to be in denial about the nastier aspects of shadow banking, my preferred solution is to accept that shadow banking is a real and important part of the financial system. That way we can begin to develop methods to bring it under the regulatory umbrella.

*Risk Concentrations and Too Big to Fail:* Regulators are scared stiff about how to control shadow banks. As Tirole [2010] observes, “It is more or less virtually impossible for regulators to understand and invert the matrix of mutual exposures in the global financial system.” This reality has seemingly caused the regulatory community to conclude that the best way to minimize the impact of shadow banks is to make regulated banks bigger and hence more concentrated in terms of risk.

At the same time, there is a strong push for a covered bond approach to securitization. In essence, covered bonds allow security investors recourse to the balance sheet of the issuer in the event that credit losses occur. The covered bond initiative relates to risk retention, which began as an initiative to address conflict-of-interest problems associated with a disintegrated securitization production process (having “skin in the game”). But risk retention cuts against one

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<sup>5</sup> Part of my perspective on CDS market development is informed by experience of the commercial real estate market. Prior to 1990, equity interests in commercial real estate were not publicly traded (at least not at a sufficient scale so that anyone paid attention), and commercial real estate markets boomed and busted with predictable regularity. But after the severe bust following the Savings & Loan crisis in the late 1980s, a large market for publicly traded equity interests, the market for equity REITs, quickly developed. Since that time, real-time publicly available price information generated by that market has suppressed boom-and-bust tendencies. CDS can potentially accomplish a similar thing in other markets, provided that it is structured properly and people pay attention.

of the primary advantages of securitization, which is a reduction of bank concentration through the redistribution of credit risk. Covered bond initiatives indeed strike me as un-American, in the sense that they run counter to a transaction-based approach to financial intermediation. And these initiatives favor the more diversified balance sheets of large banks over smaller banks, resulting in even more concentration of risk in the financial system.

I instead favor maintaining a “pure” form of SPV-bankruptcy remoteness. But this also requires creating incentives for issuers to play by the rules in terms of capital reserving, information production, and the like (see Gorton and Metrick [2010] for some ideas along these lines). Somewhat ironically given my concern about concentration of risk within big banks, I simultaneously favor creating incentives to issue larger pools of SPV-protected securities, as assets pools are analogous to the creation of “mini-banks”. As previously discussed, investors realized they did not know what was really inside the asset-backed securities and CDOs when negative economic shocks occurred. Furthermore, they had little or no incentive to try to find out due to the costs of information production. Trade and issuance subsequently came to a complete stop. Price discovery depends on incentives for investors to gather information about these opaque “firms,” where size is a critical element in the process due to security-level scale economies in information production. While increasing the size of individual asset pools and their associated securities might seem like advocating for risk concentration, the difference between increasing an asset pool from \$1 billion to say \$2-3 billion pales in comparison to doubling the size of the balance sheets of the larger banks in the U.S.

- *Increased Accountability Along the Securities Production Chain:* Agency issues associated with a disintegrated loan production process were discussed in detail previously (“bad incentives plus bad information equals bad outcomes”). Better monitoring and information production of post-issuance asset-securities prices and performance would benefit securitization markets as well as improve the quality of the entire production process. Establishing compliance procedures along the production chain—e.g., requiring the loan underwriter to issue a signed underwriting compliance document for each and every loan originated and included in an asset pool, (with explicit recourse provisions in case of breach)—is a good direction. Increased transparency and accountability along the production chain will increase standardization and improve information flows to the benefit of market development. These changes can also substitute for other mechanisms such as co-investment requirements.
- *Monitor and Provide Incentives to Establish a Dedicated B-piece Investment Market:* One of the central challenges in establishing viable markets for structured securities is selling the higher-risk tranches, or the *b-pieces*, at a reasonable price. Doing so in a sustainable manner requires *b-piece* investors to possess an appetite for risk as well as an ability to assess the relevant risks. Scrutiny of asset-pool risk by a dedicated *b-piece* buyer market can both complement and

substitute for credit ratings by certified credit rating agencies. And these investors can mitigate residual agency and information concerns associated with the securitization production process.<sup>6</sup>

- *Increase Back-end Structural Flexibility:* Tax law has required that special purpose vehicles which house the assets for securitization be static, *automon* “firms” that exercise little or no managerial discretion in the post-issuance period. This rigidity can be costly *ex post* when unanticipated negative shocks occur. Specifically, flexibility can have high value in addressing the consequences of deep asset price shocks that leave an entire sector in financial distress. I believe that building more flexibility into the SPV structure up-front, rather than having to change the rules of the game after the fact, merits serious discussion.
- *Investor Responsibility:* Most of the focus on policy reform has been on the supply side of financial markets, and rightly so. But investors must also be incentivized to pay attention to the products they purchase, which in turn requires minimizing distortions associated with demand-side regulation. A viable and sustainable market for structured securities cannot work unless both sides of the market function efficiently with securities prices reflecting true investment risks.

The relative lack of policy emphasis on the demand side of the market is surprising to me, however, particularly as it applies to the institutional investment community (by which I primarily mean pension fund managers). Frankly, I am concerned that the seeds are being sown for the next financial crisis, where ground zero could well be the pension funds that have come under extraordinary pressure to meet unrealistically high return hurdles.

Pension funds are governed (or in other cases influenced) by regulation created in the U.S. in the middle 1970s to encourage prudent investment activities by fiduciaries acting on behalf of future pensioners. The regulation in essence states to institutional investors that, if you are to lose lots of money, then you should do so with a great deal of company. Not surprisingly, these guidelines have caused a herd mentality that can distort securities markets—particularly less liquid securities markets. It is also a prescription for agents not to do their investment homework in a meaningful way, as long as everyone else is behaving in a similar fashion.

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<sup>6</sup> To illustrate how this can work successfully, a small group of dedicated buy-and-hold b-piece investors existed in the commercial mortgage-backed securities (CMBS) market for many years until the CDO market encouraged entry by “flippers” that purchased the b-pieces with the intent to sell them into CDOs. This original dedicated b-piece group was about five firms that monitored asset pool quality closely, thus complementing as well as substituting for credit rating agencies as certifiers of credit quality. Personnel at these firms had deep expertise in structured securities as well as commercial property markets, and were also often “special servicers” hired to address loans that became financially distressed. In short, a consortium of firms provided discipline to the market because they had the experience and expertise to make prudent investment decisions on these “toxic” securities.

These distortions were fairly benign when institutional investment was primarily focused on stocks, Treasury securities and high-grade corporate bonds. But, over time, allocations to real estate have increased, as have allocations to hedge funds and private equity to fund “opportunistic investment”. That is, many pension funds are silent equity partners in shadow banks large and small. And through these funds, investment into structured securities has increased many times over. These opaque low-liquidity investment funds also tend to employ leverage. The reason for this reach in return is clear—many pension funds are under-funded, and desperation causes them to continue to move out the risk curve. The bottom line: To help head off a future crisis, it may be time to reexamine regulations that govern institutional investor incentives.

## 8. Policy Considerations for China in the Development of Securitized Asset Markets

Economic and policy discussion to this point has been generic and primarily focused on the U.S. economy, which has the most advanced (and currently most problematic) securitization structure in the world. Certain other countries have highly functional securitization markets with distinctive legal, social, political and economic institutions, implying that a one-size-fits-all policy prescriptions are unhelpful, if not outright dangerous.

A particularly interesting and important case to consider is China. Economic development over the last 20 years has been profound. Yet, for all of the real economic and social change, China retains a rudimentary financial system that can be characterized as bank dominated with a high degree of centralized planning and control. Rapid economic change and development have often outpaced the central government’s ability to efficiently fund the productive needs of China’s consumers and the “private” business sector. Funding problems and liquidity imbalances exist throughout the economy, perhaps most importantly in the housing sector. At the same time, household consumption in China has lagged behind its overall economic development, where savings rates remain at very high levels.

China is wary of securitized market development, due in no small part to the role that mortgage-backed securities played in triggering the financial market meltdown of 2007-08. Yet, even modest steps toward securitization market development have the potential of enhancing welfare for a large number of consumers and businesses without imposing undue risk on the financial system as a whole. With these caveats and issues in mind, I will now attempt to offer some insight and advice on specific issues related to securitization market development in China.

- *Establish a legal-institutional framework that facilitates market development:* There are two layers of financial distress and bankruptcy that are relevant to security investors—one at the asset pool level and one at the borrower level. The experience of the U.S. relative to other parts of the world

suggests that limited recourse at both levels facilitates securitization market development. Limited recourse at the asset pool level, which generally requires setting up a structure for the creation of bankruptcy remote entities, is structured to protect investors from broader problems that might occur with a securities issuer. The SPV approach is currently out of favor, however, with covered bonds providing recourse to the balance sheet of the issuer. A covered bond approach would in my view be an important intermediate step toward market development. The other layer is borrower bankruptcy protection. Streamlining bankruptcy at the borrower level, which can be done with contracting that specifies well defined priority and recovery rules in the case of borrower default, can also aid in market development.

The larger issue is the development of a broad legal-regulatory framework that can guide securitization market development. A big advantage of being a follower rather than a leader in market development, particularly when a system is being built almost from scratch with no legacy or institutional rigidity problems that create path dependency, is that one can observe what seems to work and what doesn't when building a structure.<sup>7</sup>

- *Consider creating a “transformational” quasi-governmental financial intermediary, perhaps along the lines of Fannie Mae/Freddie Mac, to address liquidity imbalances and funding shortages.* Setting up an intermediary or intermediaries to purchase loans (such as residential mortgages), which are then packaged into securities, can address liquidity-funding imbalances. It can also provide a way to begin to learn about securities production without having to create private-label conduit lending programs from scratch. Then, once it can be demonstrated that such a system works, the institutional structure can be modified or allowed to evolve towards a more sophisticated model of secondary market lending and securities packaging.
- *Allow for the creation of alternative mortgage and loan instruments that conform to the needs of consumers and businesses.* Securitization markets, and capital markets more generally, have proven exceedingly adept at assessing the risk and return attributes of alternative loan contracts, loan pools and their securities. Even in light of the financial market meltdown, it remains true that demand for debt is not one-size-fits-all and that capital markets are useful relative to traditional bank loan markets to provide for such debt instruments.

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<sup>7</sup> Ann Rutledge has suggested to me that, “Uniquely, China has a very successful format for implementing wholesale economic reforms by carrying out economic experiments on a small scale before promulgating them on a larger scale. China may be able to resolve some of the ugly, systemic issues related to asymmetric knowledge and lack of coordination seen in the West by applying its pragmatic, staged approach to market construction and leveraging its political mechanisms for coordination and consensus-building. It may be easier for China to design a securitization market platform from scratch than it is for the U.S., with its vested interests, to fix the bugs of its own platform; and it is probably easier politically for China to shut down a market in disarray, before it spread to other markets, than it has been for regulators in the West to do the same. [Private correspondence, April 28, 2010]

The more general issue is that securitization markets can spur financial innovation and competition in response to needs of consumers and businesses in a dynamic and complex real economy. If properly constrained and monitored, gains are achievable due a better match of financial claim characteristics with asset and income characteristics.

Another related issue is that creating new markets for consumer and business debt can help consumers and businesses to learn how to utilize and manage leverage to increase welfare and profits.

- *Use tranching to satisfy investor demand and to develop leverage management skills:* As discussed earlier in this paper, tranching can be used to satisfy demand for securities with specific risk-return characteristics. This is particularly true with the creation of lower-risk, higher credit-rated securities, which can be purchased by institutions to match against longer-term liabilities such as traditional insurance contingencies and pension obligations (as they begin to occur at a larger scale). The manufacturing of higher-risk, lower credit-rated securities is often less attractive to investors, but may fit well into concurrent financial market evolution such as the development of mutual funds and possibly hedge and private equity funds which invest in pools of assets or undertake higher-risk investment strategies.
- *Use securitization to help fill gaps in particular loan markets:* Banks tend to be geographically specific but often service a number of different customer types. Particular customer niches, such as certain types of small business or consumer lending, may as result be underserved. In contrast, securitization tends to be geographically diversified but product focused. This difference is important in a country as large and as diverse as China. The pooling of a particular loan type across a number of lenders and regions, possibly concurrent with tranching to create securities with a variety of risk-return characteristics, can allow for the diversification of idiosyncratic risks, including borrower specific information risks, that can make a market for loans when a viable market previously failed to develop.
- *Use the development of securitization markets to increase domestic expertise in supply of finance and credit management.* Doing so will gradually diminish the need to rely on outsiders to supply such expertise, and add depth and maturity to China's financial markets.

One can view this previous discussion as a securitization "wish list", presuming that China is at a stage of financial development to consider such initiatives. It appears that other more basic financial market development must occur prior to the introduction of securitized asset markets, however. It took the U.S. 35 years to move from the creation of Fannie Mae in the mid 1930s to the introduction of mortgage securitization in 1970. It then took another 15 to 20 years for senior-subordinated structured securities markets to develop. At this point in time, investing in financial market infrastructure that establishes liquid

and high-functioning equity and high-grade corporate bond markets, along with establishing a framework for consumer-friendly money market and mutual funds, seems like a more logical focus than the introduction of securitization. For example, “standard” bond markets are relatively primitive in China at the moment, so it is hard to imagine leaping forward in the next couple of years to the introduction of sophisticated structured securities markets.

## 9. Conclusion

This paper has considered economic tradeoffs associated with securitization. In summary, I believe that securitization can work, and indeed must work given the realities of the complex financial system of the U.S. Evidence that securitization can work is provided by the resurrection of markets for credit cards and commercial real estate mortgages. The jury is still out on the residential mortgage side, however.

But I am less optimistic about whether securitization will work in this next iteration of financial market regulation. The tension is between addressing “too big to fail” in the formal banking sector versus “too hard to regulate” in the shadow banking sector. The current thinking (as of March-April 2011) seems to be that shadow banking is too hard to regulate, so instead allow big banks to get bigger, monitor them closely, and hope that shadow banking becomes less systemically important. I don’t think this approach is going to work very well, as favoring large banks makes regulatory capture likely, and there is little reason to believe that shadow banking is going to become any less important going forward.

As a final note, I would like to point out that it would be wonderful to figure out a way to create financial regulations that induce stability by completely eliminating banking panics. But doing so would come at great cost. For example, elimination of banking panics could possibly be accomplished by structuring an extremely simple financial system in which community and regional banks, hedge funds, private equity funds, financially oriented insurance companies and other shadow banks are eliminated. The costs associated with this approach would be immense along many dimensions, including the inability to adequately fund any number of start-up businesses and productive consumer activities. Unfortunately, at least over the short and medium term, it appears to me that panics and bubbles will be a fact of economic life. The policy challenge is to reduce the frequency and especially the severity of such episodes, while not choking off incentives and productive activities in a vast and complicated global economy.

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Figure 1. Timeline of Milestone Events in the Development of Modern Securitization Markets

