Can Capital Markets Replace Banks for Funding Community Development?

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Securities markets depend on data. In the absence of data, it is not possible to underwrite risk, and judgments about risk are crucial to securities pricing. This essay discusses the sort of data that would be necessary to make underwriting decisions for community development funding.

In principle, it is possible to securitize anything. Securities based on underlying real goods go back at least as far as the development of modern futures markets for commodities with the opening of the Chicago Board of Trade in 1848. In particular, farmers at the time they planted their crops wanted to have confidence in the price that they would receive when they sold their crops. Even in the absence of price fluctuations, farming was and remains a risky business. Farm output was determined in part by farmer effort, but also by climate and insects.

In light of their production risks, farmers looked to shed at least price risk, and so the commodity futures market was born. Securities markets help complete markets: they allow investors with different risk tolerances to share risk, and they allow capital markets to fund all manner of economic activity. As such, economists have some confidence that securities markets are generally welfare improving.

This essay will discuss the extent to which securities markets may be used to fund idiosyncratic community and mixed-use development. It begins by describing the more "old-fashioned" model for financing projects: bank, or more generally, depository, based finance. It will discuss both the benefits and pitfalls of such a financing system, and how it came to be largely replaced, at least in the conventional conforming mortgage market, by a securitized system.

It then discusses the securitized model, and the strengths and weaknesses of that model. Finally, it speculates on the data requirements for developing a securitized model of community development, and whether such requirements are feasible.

The Banking Model

Let us take a very brief time to describe how a bank finances local development projects. Banks have short term liabilities (deposits) which are used to fund loans. Banks are not allowed to lend all their funds available–they must also keep capital. Banks earn profits on the spreads between their loans and their cost of funds; the cost of funds is the weighted average of returns to depositors (i.e., deposit rates) and returns to capital (which may be thought of as the difference between required return on equity and a safe rate, such as a short term treasury rate).

Banks must concern themselves with three things beyond the spread: default probability and severity, default volatility, and capital requirements.[1] The impact of default probability is obvious: for banks to profit on a loan, it must earn a greater spread if it considers default probability to be high. Moreover, if a project has a, say, 20 percent probability of default and a 20 percent loss severity, it is difficult to make it feasible under any circumstance. There is also a point at which the spread required to compensate for risky loans is so high that, by itself, it makes the loan riskier.

Modern computing has allowed banks (and other financial institutions) to correlate default probabilities in some circumstances. For example, models can predict default probabilities on conventional conforming mortgages with some accuracy. But for more complicated types of loans, the available models are still somewhat rudimentary, in part because of the data issues that we will discuss later in this essay.[2] In the absence of models, bankers rely on judgment in "estimating" default probabilities for various types of mortgages. This may be why banks shy away from unconventional projects. In the absence of experience with such projects, bank loan committees decide that discretion is the better part of valor and pass up the opportunities to fund what may be economically positive projects.[3]

Beyond default, volatility of default is an issue. For a particular loan, a five percent default probability does not translate into every loan going five percent bad–it rather means that individual loans go bad five percent of the time. Imagine for a moment that twenty banks each hold one loan. Nineteen will be fine, but the one that is stuck with the bad loan might well go out of business. If one bank owns all twenty loans, though, risk becomes manageable, as the level of losses becomes more predictable. Thus large banks serve some similar functions to securities–they diversify risk, and as such make loss prediction more certain.

The third concern facing banks is capital. In part because bank deposits are backed by the U.S. government, banks are required to hold capital, and the level of capital they are required to hold is a function of the riskiness of the portfolio of loans.[4] When banks invest in securities such as AAA Corporate Bonds and agency backed mortgage backed securities, banks only need to hold 1.6 percent capital (assuming they are above the minimum capital requirement). But when banks make whole loans to businesses, they must hold eight percent capital. Thus by regulation, business loan and community development loan funding is more expensive than other types of investments for banks. Recent events in the subprime

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1   When banks were local institutions, capital requirements were a more serious impediment, because the flow of capital came from a limited area. Now that banks are national and even international institutions, this has become less of an issue.

2   In a recent paper, Y. Liu, G. Jabbour and R. Green, "The Performance of Option-Based Default Risk Models on Commercial Mortgages: An Empirical Investigation," *Journal of Fixed Income,* (Fall 2007), discuss the problem of developing default probability models for commercial real estate.

3   To use the parlance of capital budgeting, banks do not always fund positive Net Present Value projects.

4   There are two types of capital requirements: minimum capital and risk based capital. For a bank to be considered well capitalized by the Federal Reserve Board, it must have five percent minimum capital and eight percent risk-based capital.

and commercial paper markets suggest that these regulatory requirements are entirely appropriate, but they also tend to discourage banks from making unconventional loans.

Before we begin discussing securitization, however, it is worth discussing three advantages banks have relative to securities markets: local and personal expertise, servicing, and flexibility. All of these things actually relate to one and other.

We begin with local expertise. Consider a loan for the purpose of developing a retail center in an area in, say, Lodi, that is on the border between improving and deteriorating. It will be difficult for an investment analyst in London or Tokyo or San Francisco to make a judgment about likelihood of success or failure. It is probably also not worth the analyst's time to get on an airplane, and meet the series of people she would need to meet in order to make a judgment. A banker in the community may well be in a better position to make a judgment about whether a loan will fly or not. Note that part of the issue here is a lack of systematic data about the characteristics that help predict the path of a community's economy—let alone how a particular project might affect that path.

Second is the issue of servicing. This is an issue that has risen to prominence in the wake of the subprime crisis. Banks have an incentive to service their problem loans, because each dollar they lose on a loan is a dollar lost by their shareholders. As we shall discuss below, the financial issues of servicers and securities holders in the subprime mortgage market have often diverged from each other. Servicers are paid a fee conditional on default, but not a fee that is perfectly correlated with loan performance. Among other things the subprime crisis has taught us is that servicers do not have the infrastructure in place to deal with mass foreclosures, in part because they do not have an incentive to invest in such infrastructure.

Third is flexibility. Often it is the case that when a loan goes sour, it is better for both borrowers and lenders to do a workout, which can include payment extensions, re-amortization, rate changes, and haircuts. Because banks live and die with their loans, they cannot focus on the sunk cost of their loans, and negotiate terms on problem loans in a forward-looking manner.[5] Clearly, good servicing practices and flexibility are connected.

Securities

In at least one lending market in the United States, securities have taken substantial business away from banks: the residential mortgage market. Figure 1, which is based on the Federal Reserve Board Flow of Funds data, shows how depositories' share of residential mortgages has fallen precipitously.

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5   A paper by T. Riddiough and S. Wyatt "Wimp or Tough Guy: Sequential Default Risk and Signaling With Mortgages," *Journal of Real Estate Finance and Economics*, Special Issue on Information and Screening in Real Estate Finance, vol. 9 (November, 1994): 299-321, though, shows that sometimes banks have an incentive to be tough on their borrowers because of reputational issues: they are better off losing more money that they might on an individual loan in order to maximize returns over a total portfolio of loans.

Holdings of Mortgage Debt Outstanding by Type of Institution
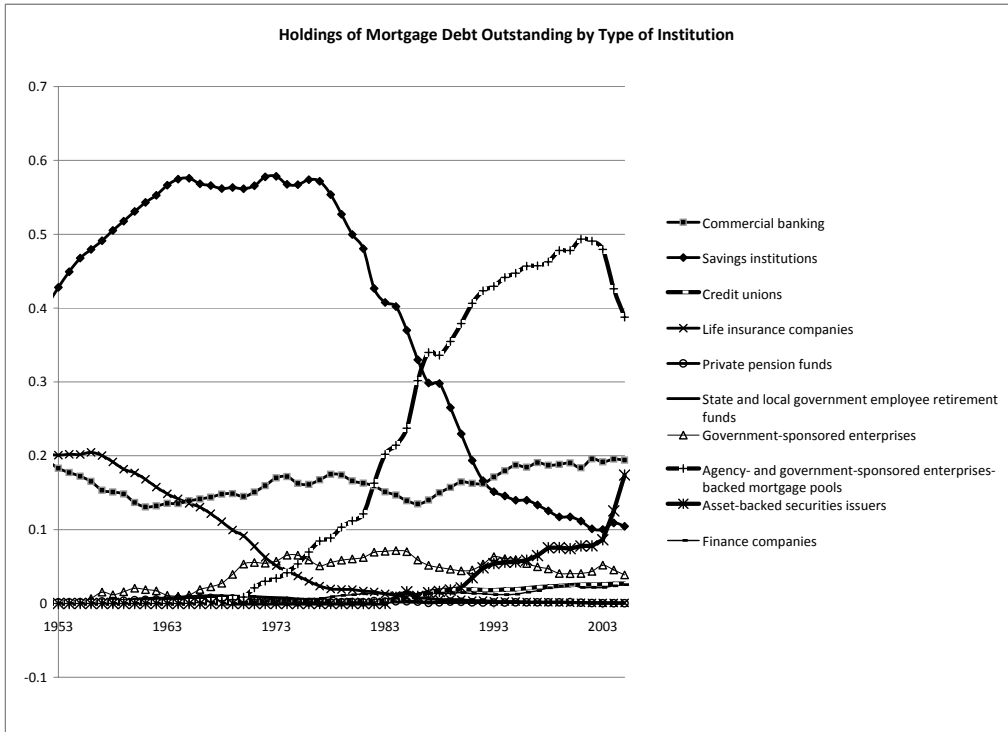
Until the 1980s, commercial banks and savings and loans financed about three-quarters of the mortgages in the United States. They now fund about 30 percent. The difference was funded by Government Sponsored Enterprises (Fannie Mae and Freddie Mac), which issued guaranteed securities or purchased loans for their own portfolios, and by the "private-label" mortgage backed securities market.[6]

There were three precipitating events that led to the spectacular growth in securitization. First, as Figure 2 shows, the yield curve turned sharply negative. This essentially took depositories out of the mortgage game. Short term funds (such as deposits) were more expensive than long-term funds (such as mortgages), so spreads on existing books of business became negative, which led, among other things, to insolvency for many savings and loans. For investors who did not hold short term liabilities, however, the prospect of holding long term mortgages that might guarantee long term returns was attractive.

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6   Also Ginnie Mae, which purchases FHA and VA mortgages. Ginnie Mae securities are backed by the full faith and credit of the US Government.

10-Year to One-Year Treasury Spreads: 1953-2007
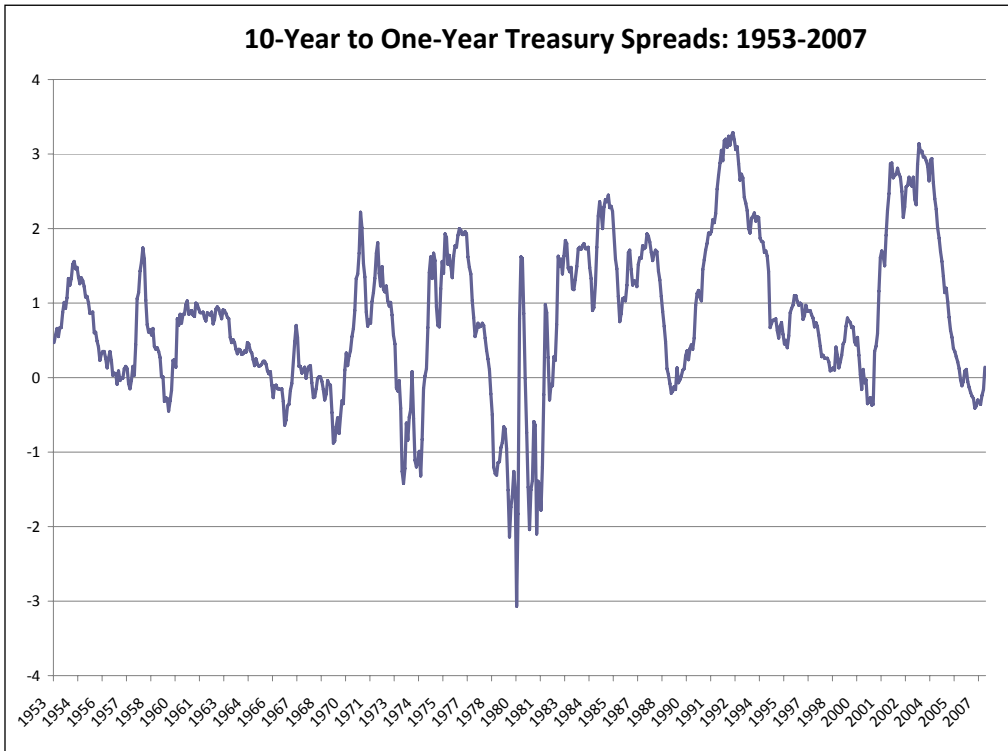
Second, Freddie Mac invented an ingenious instrument, the Mortgage Participation Certificate. This financial innovation allowed mortgage originators and savings and loans to package mortgages into a security and sell pieces of the security to investors. This allowed (relatively) small investors to purchase effectively small shares of large numbers of mortgages, and as such, produced diversification benefits.

Third, and most important to the ultimate discussion of this paper, was that Fannie Mae and Freddie Mac's special status enabled them to have the market power necessary to impose standardization on the mortgage process and on mortgage documents. This produced a trove a data that became the underpinning of the modern residential mortgage underwriting system.

All who apply for a conventional conforming loan—one that is eligible for purchase by Fannie Mae or Freddie Mac—fill out the same set of forms. The appraiser that they use to estimate the value of the house also fills out a specific form. This means that every loan purchased by the GSEs has a set of measurable characteristics.[7] Among the most important of these are loan-to-value ratio, FICO scores, and payment-to-income ratio. Fannie and Freddie then develop models based upon millions of loans to determine the relationship between loan characteristics and default and delinquency rates. For a loan to qualify for a Fannie or Freddie pool, it must generally have a very low predicted probability of default.

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7   In practice, nearly every (not every) loan is fully documented. No institution is flawless in form filing.

The homogeneity of collected GSE loan characteristics essentially makes GSE mortgage backed securities commodities, and so they trade in highly liquid markets. This homogeneity is almost certainly among the reasons that spreads on conventional conforming loans have not risen much during the subprime crisis.

It is here that the contrast with subprime loans is pronounced. Subprime loans are heterogeneous, in part because many of them were poorly documented.[8] To get around this problem, investment banks created complicated securities structures whereby investors who wanted to reduce risk would get paid first (and take a lower coupon) while those who had a greater appetite for risk would get paid later. The problem was that because the subprime market was relatively new, and sometime sparsely underwritten, investors were really operating in an environment of uncertainty, rather than risk.

There is an important lesson here as we contemplate securitization for such things as business loans, economic development loans, community reinvestment loans, and so on: it may be the case that for a securities market to be successful, the object being securitized should likely be homogeneous.[9]

A Securities Market for Community Development Loans?

The lynchpin of securities markets is modeling.[10] For example, in the residential mortgage backed securities market (at least that part of the market that is not currently in crisis), underwriting decisions are based on dichotomous choice models: models in which a set of variables is used to predict a dichotomous outcome, such as delinquency and nondelinquency, or default and nondefault. These models are usually based on normal or logistical distributions: models based on the normal distribution are called "probits," and those on the logistical are called "logits."

To demonstrate how they work, let us look at residential mortgages. Mortgage companies, such as Fannie Mae, Freddie Mac, Citibank and Wells Fargo, observe performance on millions of mortgages. They investigate how a set of variables predicts mortgage default: the most important variables are loan-to-value ratio, borrower credit history, and payment to income ratio. Statistical models then place weights, or coefficients, on these characteristics to produce predicted likelihood of default (LTV and borrower credit history get particularly substantial weights). Lenders then choose a cut-off point for acceptable default probability.

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8   There were also clear instances where adverse selection issues contributed to loan heterogeneity.

9   By this I mean a debt market–equities are a completely different issue.

10 A classic work on credit modeling is D. Duffie and K. Singleton (2003), Credit Risk: Pricing Measurement and Management. Princeton University Press. In the mortgage context, works of particular note include J. Quigley and R. Van Order (1995), "Explicit Tests of the Contingent Claims Model for Mortgage Default," *Journal of Real Estate Finance and Economics,* 11(2): 99-117. For a different view on default, see: J. Kau, D. Keenan and T. Kim (1993) "Transaction Costs, Suboptimal Termination and Default Probabilities", *Real Estate Economics,* 21:247-263 and J. Kau, D. Keenan and T. Kim, (1994) "Default Probabilities for Mortgages", *Journal of Urban Economics,* 35:278-296.

The cut-off point is not zero—loans with some probability of default can still be expected to be profitable. Lender determination of the cut-off point is based in good part on risk tolerance—very conservative lenders will accept a lower default probability than more risk-loving lenders.

The reason these models underpin securities is that they allow for the sort of homogeneity necessary to commoditize the mortgages inside the security. While no model can predict the performance of an individual mortgage, it can be the foundation for accurate prediction of a pool of mortgages. We can make an analogy with life insurance. No model can predict whether an individual will die in a given year, but a model can do a very good job of predicting the share of the population that will die within a given year.

In principle, one could imagine developing a similar model for community development loans. Again, lenders would be seeking a model that could predict default; then they would pick a cut-off point. Because such a model does not so far as I know exist, one would have to begin with a set of variables presumed to be important. These would include:

(1) Some measure of the track record of the developer. This would be analogous to a borrower's credit history. A development company such as the Rouse Companies or Forrest City Development might get a very high score; a company that has no track record at all might get a low score.

(2) A loan-to-cost ratio. Because community development projects have difficult-to-project income, about the only measure of value available for underwriting is construction cost. Alas, costs can diverge dramatically from value—an uninhabited building can cost a lot of money to build and have no value. Still, a low loan-to-cost ratio implies lots of developer equity in a project, which is a powerful signal. If nothing else, high levels of developer equity reduce moral hazard.

(3) Some measure of community trajectory. These could include:

    a. Changes in Income
    b. Changes in Population
    c. Changes in Education Levels in the Population
    d. Changes in Local School performance

(4) Ideally, there would also be an indicator of "payment-to-income." In commercial real estate, this is called the debt cover ratio, which is net operating income divided by debt-service payment. This reflects the cushion that commercial projects have to meet their mortgage obligations. The problem, of course, is that it may be difficult to project income for new types of projects in communities without a track record of commercial rent levels.

One could think of other potential characteristics, but these are sufficient to make the point about the difficulty of developing a securities market for community development. Consider the first variable: developer track record. As noted, it would be possible to give

high scores to developers with strong track records and low scores to developers with little experience. It does not particularly matter what score we choose, because the purpose of econometric modeling would be to calibrate the arbitrary score to loan performance.

The difficulty is with the developers who have good but not sterling track records. How would we know who they are? How do we assign them scores? Again, to some extent econometric modeling can produce calibration, but as the first models are created, it will be necessary to assign arbitrary scores to developers, and those scores will be based on some sort of ad hoc judgment. We could make similar points with respect to the other variables.

But let us say we can solve the problem of measuring meaningful characteristics. The development of a securities market for community development loans faces two major impediments. First, to have a useful market, underwriting documents for community development loans would need to become standardized and data on the performance of loans would need to be collected. This would require cooperation among the various loan originators in the business. Note that Fannie Mae and Freddie Mac were able to impose standardization because they had market power that derived from their special status. In the absence of such institutions, it is not entirely clear what the mechanism would be that would lead to standardization.

The second impediment is the reality of the current market for securities. For investors to be comfortable with something new and unusual, they would need to have confidence in the evaluation of a rating agency. It is an understatement to say that the investment community lacks that confidence at the moment.

Moreover, the recent subprime crisis produces an interesting question: can investors a long distance away from a deal invest in heterogeneous products? Banks, who would have a better ability to evaluate an unusual deal, would have every reason to finance those that they find better than average while passing on those that they find worse than average. This means that the only deals that would be left for the securities markets would be those with difficult-to-measure unfavorable characteristics.

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