



FEDERAL RESERVE BANK *of* NEW YORK

FEDPOINT

The New York Fed: Who We Are and What We Do

- **At the direction of the Federal Open Market Committee (FOMC), the top monetary policy-making group of the Federal Reserve System, the New York Fed conducts open market operations on behalf of the Federal Reserve System. The president of the New York Bank is a permanent voting member of the FOMC.**
- **The New York Fed and the 11 other Federal Reserve Banks supervise depository institutions by issuing regulations and examining member banks to check their financial soundness.**
- **The 12 Federal Reserve Banks provide depository institutions with various payment services, including collecting checks, electronically transferring funds, and distributing and receiving currency and coin.**
- **The New York Fed engages in foreign exchange operations on behalf of the U.S. Treasury Department and the Federal Reserve System, as well as for some foreign central banks and international organizations. As part of its services for foreign and international institutions, the New York Reserve Bank stores monetary gold for dozens of countries.**

The Federal Reserve Bank of New York is one of 12 regional Reserve Banks which, together with the Board of Governors in Washington, D.C., the Federal Open Market Committee (FOMC), the Federal Advisory Council, the Consumer Advisory Council, and the member banks, compose the Federal Reserve System. As the U.S. central bank, the Federal Reserve is responsible for formulating and executing monetary policy, supervising and regulating depository institutions, ensuring the smooth flow of payments, and providing banking services to the U.S. government and depository institutions.

Each of the 12 Reserve Banks supervises and regulates bank holding companies and state chartered banks in its District that are members of the Federal Reserve System. Each Reserve Bank also provides services to depository institutions in its District and functions as a fiscal agent of the U.S. government. The services the Banks perform include putting coin and currency into circulation; electronically transferring funds; selling Treasury notes, bills, and bonds; processing savings bonds, and redeeming food stamps.

The New York Fed serves the Second Federal Reserve District, which encompasses New York State; the 12 northern counties of New Jersey; Fairfield County, Connecticut., Puerto Rico, and the Virgin Islands. Though it serves a geographically small area compared with those of most other Federal Reserve Banks, the New York Fed is the largest Reserve Bank in terms of assets and volume of activity.

The New York Fed has a branch office in East Rutherford, New Jersey. The Fed's state-of-the-art operations center in East Rutherford, which opened in 1992, processes cash for the metropolitan New York and New Jersey area.

Unique Domestic Policy Functions

While the Federal Reserve Bank of New York has largely the same responsibilities as the 11 other Reserve Banks, it also has several unique responsibilities associated with its presence in the financial capital of the United States.

At the direction of the FOMC, the Federal Reserve's top monetary policy-making group, the New York Fed executes domestic open market operations on behalf of the System. Open market operations—the buying and selling of U.S. government securities in the secondary market—are the principal means through which the System implements monetary policy. Although the FOMC decides what policy to follow, the System's portfolio is directed, on a daily basis, by the Manager of the System Open Market Account at the New York Fed. The Manager, along with the rest of the Open Market Department, constantly monitors bank reserves and acts to ensure that the FOMC's directive is being fulfilled.

The FOMC is composed of the seven Board governors and five of the 12 Reserve Bank presidents, and meets eight times a year in Washington, D.C. The president of the New York Fed is a permanent voting member of the FOMC and traditionally is selected as its vice chairman. The other presidents serve one-year terms on a rotating basis. All of the presidents participate in FOMC discussions, but only the five who are members of the Committee vote on policy decisions.

Unique International Functions

In addition to its domestic trading desk responsibilities, the New York Fed, at the direction of the FOMC and U.S. Treasury, conducts all foreign exchange trading for the Treasury and the Federal Reserve System. In this role, the New York Fed intervenes in foreign exchange markets to achieve dollar exchange rate policy objectives and to counter disorderly conditions in foreign exchange markets.

The New York Fed also is responsible for maintaining relations with, and providing financial services for, foreign central banks and international organizations. One of these services is the New York Reserve Bank's unique custodial responsibility for the gold reserves of various countries, central banks and international organizations.

Foreign official gold reserves have been held at the New York Fed since 1924 for numerous reasons, including the stability of the U.S. political system, the concentration of international trade and finance in New York City, and the convenience of centralizing gold holdings in a place where international payments can be made quickly.

July 2008

****EMBARGOED FOR RELEASE - October 18, 2010 at 10:00 a.m. EDT****

***New York Fed's New Small Business Poll Shows Evidence of Credit Demand;
Cash Flows for Small Businesses Key to Credit Approval***

New Fed study also reveals unmet credit needs remain an important issue for small businesses

The Federal Reserve Bank of New York today released *Access to Credit: Poll Evidence from Small Businesses* – results from a poll of small businesses in the region, as a part of the Bank's *Community Affairs: Facts & Trends* series. The results showed that during the first half of 2010:

- 59% of poll respondents applied for credit, demonstrating existing demand;
- Over two-thirds of poll respondents experienced sales/revenue declines, implying a broad weakening of small business finances; and
- Only half of small business applicants received credit, and 75% reported receiving only 'some' or 'none' of the credit they wanted.

Small businesses typically create more jobs than larger firms do at the start of economic recoveries. However, recent contractions in borrowing have limited the ability of small businesses to play this critical role. This small business report evaluates three potential causes of the recent decline in small business lending: weak demand, weakened applicant quality, and restricted credit availability. It finds evidence of existing demand, weakened business finances, and credit gaps. The report presents new data from 426 regional small businesses (NY, NJ, CT, and PA) on their financial well-being, credit needs, and recent borrowing experiences.

"Until now, we've only heard anecdotally about difficulties for regional small businesses in obtaining credit without any numbers to confirm this," said Kausar Hamdani, Senior Vice President and Community Affairs Officer at the Federal Reserve Bank of New York. "A main purpose of this poll was to hear directly from small businesses about their recent credit experiences and to analyze them systematically in order to learn more about where the largest obstacles exist."

Developed by the New York Fed's Community Affairs department, the Facts & Trends series provides analytical summaries intended to present key facts on topical issues to assist governments, community advocates and others to better understand, monitor and address specific economic concerns within the Federal Reserve's Second District. The data for this poll were collected on-line with the help of local public and nonprofit partnerships.

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Evidence on Small Business Borrowing: the Small Business Finances Poll >>
<http://www.newyorkfed.org/regional/commdev.html>

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FACTS & TRENDS

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Small businesses typically create more jobs than larger firms do at the start of economic recoveries. However, recent contractions in borrowing have limited the ability of small businesses to play this critical role. A poll of small-business finances finds evidence of comparatively strong credit demand, but weakened applicant quality, with borrowers continuing to perceive restricted credit availability.

Access to Credit: Poll Evidence from Small Businesses

Small businesses are vital to supporting the economic recovery. Small firms employ nearly half of all Americans, account for about 60 percent of gross job creation, and historically have created more jobs than larger firms at the start of economic recoveries.^{1,2} Yet recent contractions in business borrowing may be limiting the capacity of small businesses to play this critical role. As policymakers and stakeholders pursue measures to support sustainable lending to creditworthy firms, questions arise about how much of the credit decline may be attributed to weaker demand for loans; how much reflects weakened applicant quality; and how much is due to restricted credit availability. While all three dynamics undoubtedly contribute, further analysis could help stakeholders direct actions to meet credit gaps and remove barriers to borrowing.

To inform these discussions, the Federal Reserve Bank of New York's Community Affairs Office conducted a Small-Business Finances Poll in June-July 2010.³ The intent was to hear directly from businesses about their credit needs, their economic health, and their experiences seeking credit (see box). This issue of *Facts & Trends* presents the poll's results.

The Community Affairs Office thanks the local government and nonprofit organizations that distributed the poll to their members. These include: Accion USA, Ben Franklin Technology Partners of Pennsylvania, the Bronx Overall Economic Development Corporation, the Brooklyn Chamber of Commerce, the Business Council of New York State, Community Development Corporation of Long Island, Community First Fund, Cooperative Business Assistance Corporation, the Entrepreneurs Forum of Greater Philadelphia, the Manhattan Chamber of Commerce, New Jersey Economic Development Authority, New York Business Development Corporation, the New York City Council, the New York City Department of Consumer Affairs, the New York State Small Business Development Centers, Queens Economic Development Corporation, the Staten Island Chamber of Commerce, the Staten Island Economic Development Corporation, and Working Today—Freelancers Union.

1. See, for example, Giuseppe Moscarini and Fabien Postel-Vinay, "Unemployment and Small Cap Returns: The Nexus," *American Economic Review* 100, no. 2, May 2010: 333-7.

2. Recent research shows the important role of start-ups and small businesses in both gross and net job creation in the United States. See John C. Haltiwanger, Ron S. Jarmin, and Javier Miranda, "Who Creates Jobs? Small vs. Large vs. Young," NBER Working Paper no. 16300, August 2010.

3. Small businesses are defined as domestic businesses that are privately owned and operated, with a small number of employees (500 or fewer) and a relatively low volume of sales (less than \$25 million annually).

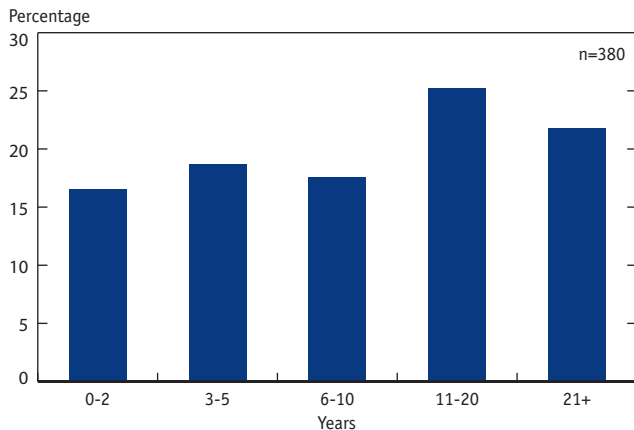
About the Numbers

In June-July 2010, the Federal Reserve Bank of New York's Office of Community Affairs polled 426 small-business owners on their recent business performance, financing choices, and borrowing experiences. The Small-Business Finances Poll was conducted online and distributed through a network of local government and nonprofit partners.

The charts present a breakdown of the poll results according to five important firm characteristics. To view the poll questions, visit http://www.newyorkfed.org/regional/2010_Facts_Trends_Vol_3_2_survey_questions.pdf.

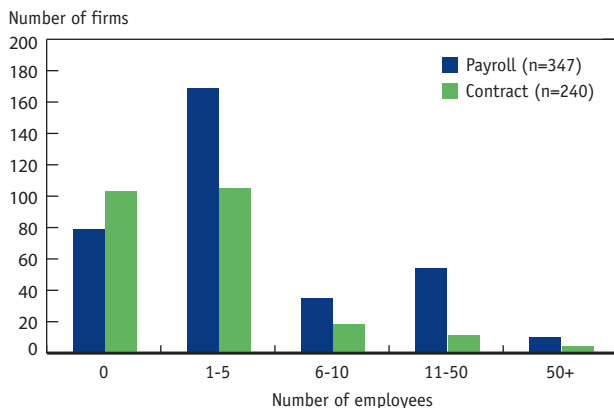
AGE: About half of the sample firms are ten years or younger, while half are older.

Respondents, by firm age



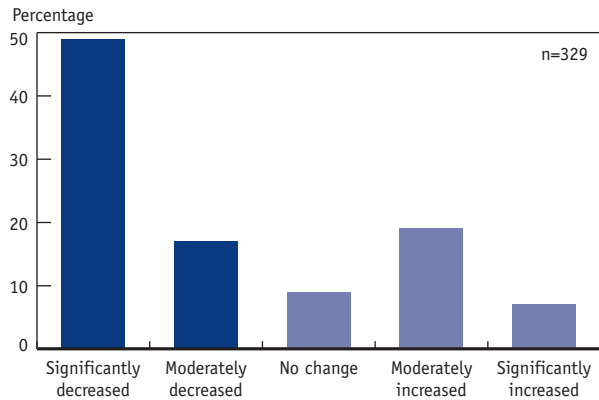
SIZE: Seventy percent employ fewer than five payroll workers, similar to the U.S. small-business population.

Respondents, by employment



SALES GROWTH: More than 60 percent have seen their sales/revenues decline during and immediately after the recession.

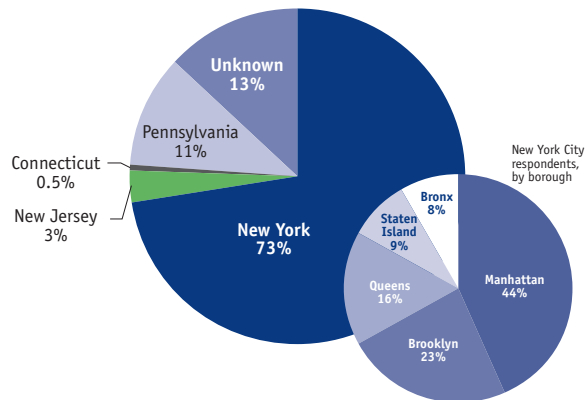
Respondents, by change in sales/revenues (spring 2008-spring 2010)



GEOGRAPHY: The New York City sample mirrors small-business density by borough.

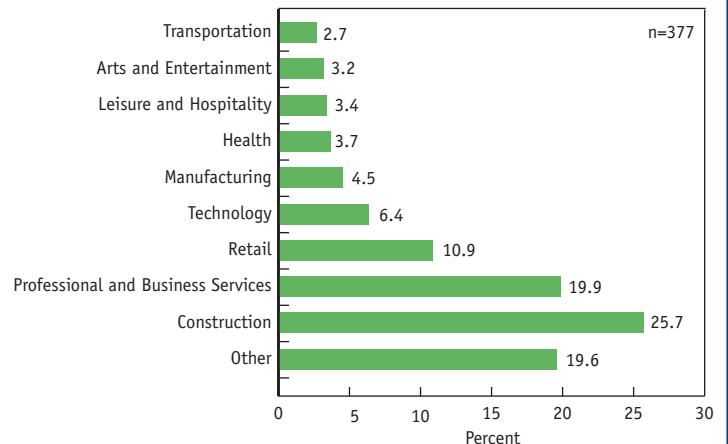
Small-business respondents, by state

n=426



INDUSTRY: Construction and retail are a larger share of the sample than their composition of local industry.

Respondents, by industry



Note: "Other" includes industries representing less than 3 percent of the sample, including education, finance, personal services, information, and wholesale.

We find:

- ▶ *Evidence of unabated demand for credit by small-business owners and widespread reports of unmet credit needs.* Fifty-nine percent of respondents applied for credit during the first half of 2010, compared with estimates of 40 percent from pre-recession national surveys. As to unmet credit demand, more than three-quarters of applicants received only “some” or “none” of the credit they wanted.
- ▶ *Indications of weakened financial performance during the recession.* Sixty-six percent of respondents reported sales/revenue declines over the last two years. Despite this result, neither strong nor weak financial performance was significantly correlated with a firm’s application for credit.
- ▶ *Continued perceptions of restricted credit availability.* Of the 59 percent of respondents that applied for credit, only half received it despite previous borrowing success. However, some applicants denied credit could become viable borrowers, especially if given access to “second-look” programs (described later) and business support services. The impact of such programs and services could be meaningful, potentially reducing the pool of applicants denied credit by half.

The caveats associated with the poll’s results are: potential selection bias, nonrepresentativeness of respondents, and difficulty benchmarking results because few comparable efforts exist.

Strength of Credit Demand: Credit Applications and Unmet Needs

One factor that could explain the decline in small-business borrowing is lack of demand for new or additional credit. In this section, we present evidence on the strength of small-business credit demand.

Credit Applications

We asked business owners about the number and types of credit applications they submitted, and if they obtained the credit they wanted or if unmet needs remained. Admittedly, these questions can provide evidence only on active credit seekers; they do not capture potential demand by discouraged borrowers that may have failed to apply because they anticipated denial of credit.

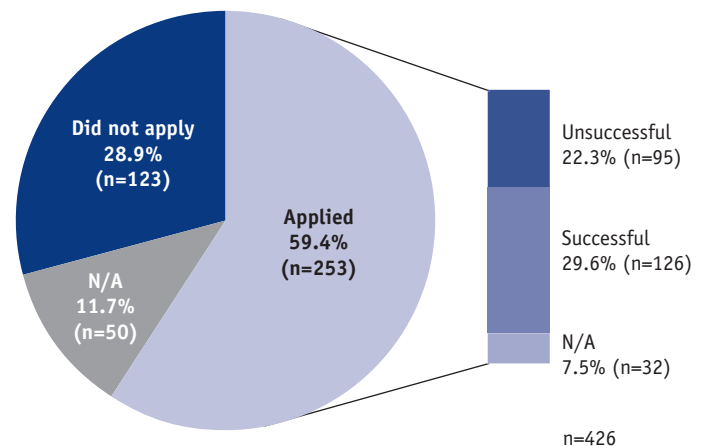
A direct measure of demand strength is the number of firms that applied for credit. Poll evidence suggests relatively strong demand: of the 426 respondents, 59 percent tried to borrow in the first half of 2010. To put this result into context, we note that the National Federation of Independent Business (NFIB), a small-business association that tracks business trends through regular surveys of its members, found that 55 percent of small firms had applied for credit in 2009.⁴ Similarly, the 2003 Survey of Small Business Finances found that 40 percent of firms had applied for credit.⁵

Unmet Credit Demand

An indirect measure of demand strength is the number of applicants seeking credit but not receiving it (Chart 1). As noted above, of the 59 percent of respondents that applied for credit, about half were successful obtaining at least one credit product and thereby met at least some of their credit needs. However, more than a third of applicants failed to obtain even one credit product, and three out of four applicants received “none” or only “some” of the credit they sought.

To contextualize our result, we again turn to evidence from other surveys. The National Small Business Association’s July 2010 survey also found evidence of

Chart 1
Credit Application and Success Rates



Note: Success is defined as being approved for at least one credit product.

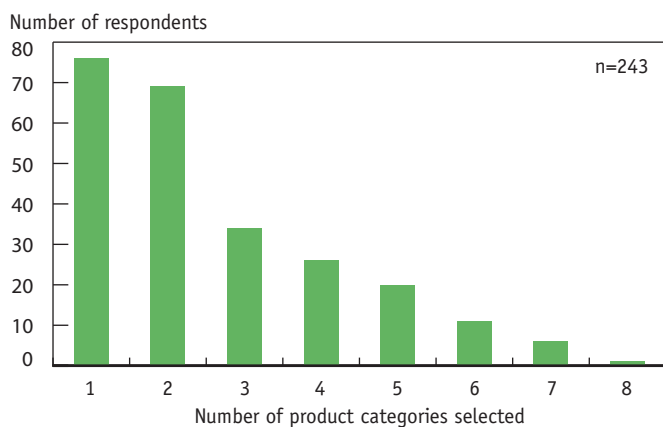
4. See William J. Dennis, Jr., “Small Business Credit in a Deep Recession,” National Federation of Independent Business Research Foundation, February 2010.

5. The survey is conducted by the Board of Governors of the Federal Reserve System, with the help of the University of Chicago’s National Opinion Research Center. See Rebel A. Cole, “Who Needs Credit and Who Gets Credit? Evidence from the Surveys of Small Business Finances.” In *Small Business in Focus: Finance. A Compendium of Research by the Small Business Administration Office of Advocacy*, July 2009: 95-133 (available at <http://www.sba.gov/ADVO/research/09finfocus.pdf>).

Chart 2

Number of Products Sought per Applicant

Question: During the last six months, did you apply for one or more types of credit?



Note: Ten applicants did not specify the number of products they requested.

unmet demand. The survey reported that 41 percent of its sample was unable to access adequate financing, up from 22 percent two years ago.⁶ Likewise, the NFIB's February 2010 survey found that 29 percent of respondents had unmet credit needs, compared with 10 percent in the early 2000s.⁷

To delve further into the nature of unmet demand, we asked respondents to identify the number and types of credit products they had applied for during the last six months (Chart 2).

While some respondents applied for up to eight types of credit, most applied for only one or two. Despite concerns that applicants were being denied because they might be applying somewhat indiscriminately for credit products, our poll results suggest that targeted applications were more common.

Another aspect of unmet credit needs is whether applicants, even successful ones, are receiving the type of credit product they seek. Poll evidence suggests the contrary: the most frequently requested credit product was a business line of credit, yet it had a denial rate of 63 percent. This result is similar to the NFIB's July 2010 finding of a 62 percent denial rate for a business line of

credit. With the exception of vehicle or equipment financing, products that require collateral pledges seem harder for applicants to obtain in an environment of depressed asset and real estate values.

Chart 3 shows the self-reported approval rates for a range of credit products.

Applicant Quality

Having found evidence for both relative strength of credit demand and unmet credit needs among poll respondents, we now look for what the poll can tell us about whether weakened applicant quality may be contributing to a decline in bank lending. We follow a two-step approach. First, we examine self-reported firm characteristics to identify which traits best describe firms that applied for credit. Second, we determine which firm characteristics were associated with successful applications. By comparing unsuccessful credit applicants with successful ones, we infer firm characteristics that might reflect lender criteria for creditworthiness in the current economic climate.

Applicant Firm Characteristics

Poll respondents were characterized by their firm's size, age, and industry. Respondents also rated their firm's economic health, types of credit products sought, and prior financing sources, including bank loans and retained earnings.

Based on statistical correlations, the firm characteristics associated with a small business having applied for credit are:

- *Firm borrowing history.* Seven of ten firms that applied for credit in the first half of 2010 had also borrowed from financial institutions in 2008.
- *Industry sector.* The construction and retail sectors—industries that were particularly hard-hit during the recession—made up one-third of total applicants.⁸
- *Firm use of retained earnings as a funding source in 2008.* Firms with earnings on hand were less likely to seek credit.

6. See National Small Business Association, "2010 Mid-Year Economic Report."

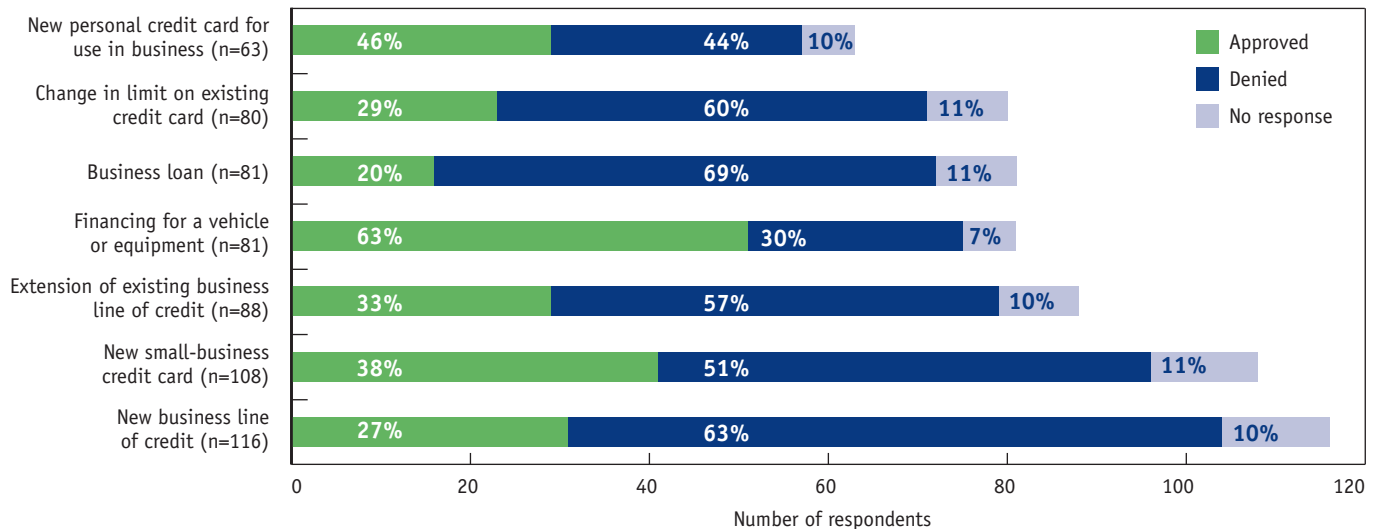
7. The NFIB and the Federal Reserve cite collateral depreciations and losses as major impediments to credit access. See "Small Business in a Deep Recession," National Federation of Independent Business, 2010, and Federal Reserve Chairman Ben S. Bernanke's testimony before the U.S. Senate's Committee on Banking, Housing, and Urban Affairs, Washington, D.C., July 21, 2010 (available at <http://www.federalreserve.gov/newsevents/testimony/bernanke20100721a.htm>).

8. Firms in these industries also represented one-third of the total sample. Although 59 percent of the total sample applied for credit, 68 percent of construction firms and 68.3 percent of retail firms submitted credit applications.

Chart 3

Credit Applications and Outcomes

Question: During the last six months, did you apply for the following types of credit and were you approved?



In contrast, other characteristics that we analyzed were not associated with applications. Neither the firm’s age as measured by the date the firm was established, nor its size as measured by full-time employees, nor its reported performance as measured by sales/revenue and employment growth were significantly correlated with the firm’s application for a credit product. This result casts doubt on suggestions that smaller, younger, financially weakened, or underperforming firms are drivers of credit demand in the current environment.

“Keys to Credit Success”—Implicit Creditworthiness Characteristics

We again used statistical correlations to identify which firm characteristics were associated with credit approval in today’s market. We call these traits the “keys to credit success,” but they may also be viewed as implicit creditworthiness standards.

Specifically, the three keys to credit success are:

- firm age, or years since establishment;
- positive financial performance (sales/revenue growth); and
- use of retained earnings as a financing source in 2008.

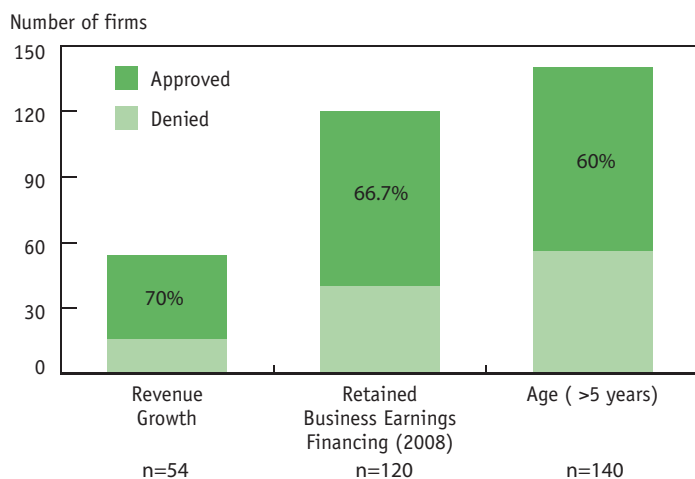
In other words, successful applicants were firms that had stood the test of time to demonstrate longevity of at least five years. Or, firms that had demonstrated the capacity to generate positive sales/revenue growth even during recessionary times. Or, firms that were sufficiently successful two years ago to be able to self-fund their needs through retained earnings and may even have brought forward a cushion from that period.

- Somewhat surprisingly, previous borrowing relationships did not appear to help applicants. Firms that used credit financing in 2008 were more likely to apply for credit in 2010; however, the existence of this prior banking relationship did not seem to help them obtain credit in 2010. While seven out of ten applicants for credit in the first half of 2010 had also borrowed from financial institutions in 2008, only half were approved—the same percentage as in the overall sample.⁹
- Although construction and retail firms applied for credit at a higher rate, they were neither more nor less likely to obtain credit than firms in other sectors. This result does not support perceptions of undue restrictions on certain sectors, particularly economically hard-hit ones such as construction and retail.

Chart 4 plots the population of firms with each creditworthiness factor and their success obtaining at least one credit product.

9. This calculation is based on the number of applicants who reported financing sources in 2008 (n=223).

Chart 4
“Keys to Credit Success” and Credit Approval



Note: Success is defined as obtaining at least one credit product.

Access to Credit

A third factor potentially contributing to the decline in borrowing is unduly restricted availability of credit. Reports from small-business owners of a credit gap have been both vocal and frequent. By defining the credit gap as small businesses that are potentially viable but currently not receiving credit, the poll results may help stakeholder efforts to ensure access to credit for viable firms.

Small-business owners were asked about their current borrowing outcomes as well as their ability to obtain credit in 2008. As reported earlier, while previous borrowers applied for credit more often in 2010, their prior borrowing relationship did not help them actually obtain credit. This group—nearly 70 percent of all applicants—is likely to be a source for those who feel that “credit was unfairly denied,” despite their previous relationship with a banking institution.

Another source of potentially viable firms is the nearly seven of ten unsuccessful applicants that reported “declining” or “stagnant” sales/revenue growth. Many small businesses and their advocates argue that lender emphasis on twelve or more consecutive months of positive sales/revenue growth, while an indicator of a firm’s immediate capacity to repay its debts, is too narrowly focused. They assert that by undervaluing prior banking relationships, strong repayment histories, and future profitability, lenders are likely overlooking credit applicants that are viable, or near-viable.

Bridging the Credit Gap: Unsuccessful Applicants

To make credit more available, some lenders have instituted a second-look program, whereby applicants denied credit are reevaluated, sometimes after receiving technical assistance with the credit application process and paperwork. Assuming that second-look programs may uncover potentially good customers, how large of an effect might they have, based on the poll data?

To assess this potential impact, we undertook a simple thought experiment using as filters the creditworthiness factors identified earlier. We asked how much might the 22 percent sample denial rate be reduced if credit were awarded to applicants that possessed one of the success criteria but had been denied credit.

For example, what if a second look were given to all applicants denied credit that reported sales/revenue growth to be nondeclining (either neutral or positive) in the recent period? This change would affect one out of five such applicants and, if they were accepted for credit, would lower the denial rate from 22 percent to 19 percent (see table).

Of the three keys to credit success we describe, providing a second look to firms established for more than five years would have the largest effect on easing credit availability. It would reach more than half of all applicants denied credit and reduce the overall denial rate by nearly 13 percentage points, to around 9 percent, approximately the value reported by the NFIB for the early 2000s.

Some caveats associated with this thought experiment are small sample sizes—there were often fewer than 100 respondents—and calculations that are suggestive of potential effects.

Bridging the Credit Gap: Nonapplicants for Credit

So far, our study has focused solely on applicants. However, small businesses that did *not* apply for credit are another potential source of credit demand. This group is sizable, representing 41 percent of all respondents.

The group may have several reasons for not applying for credit. Frequently heard explanations from small-business owners are that they already have financing, either from friends and family or retained business earnings, or that financing was obtained before the recession, when the credit climate was more expansive. Another explanation is that borrowers became

“Keys to Credit Success” and Candidates for Second-Look Programs
Percent

Keys to credit success	Share of unsuccessful applicants that would qualify for a second-look program	If eventually granted credit, the overall denial rate would decline from 22 percent to
Established firm (more than five years)	59	9
Retained earnings financing in 2008	42	13
Steady sales/income growth	17	19

discouraged—that is, they did not apply because they thought they would not qualify or the application process and paperwork would be too daunting. Regardless of their reasons, with time, this group may also need and seek credit. What understanding can the poll evidence provide about nonapplicants?

In the poll, about 7 percent of all respondents (and nearly 20 percent of all nonapplicants) are small businesses with zero employees that relied solely on business earnings for financing in 2008. This group is unlikely to need credit unless and until the firms decide to expand. At that time, as new borrowers they would be strong candidates for “beginner loan” programs and would benefit from various forms of technical assistance and business support services.

Another untapped market segment is small businesses that may be characterized as start-ups, that is, firms with five or fewer employees that have been established for five years or less. These firms make up 8 percent of the respondent pool (and 20 percent of all nonapplicants), and they too rely mostly on retained business earnings as a source of financing. Yet many demonstrate the keys to credit success: about a quarter reported positive sales/revenue growth, and another quarter reported an expanded full-time-employee headcount during the last two years. If these firms did not seek bank credit because they were discouraged, then they too would make strong candidates for beginner loan programs and technical assistance services.

Conclusion

Recent contractions in small-business lending have sparked debate about the extent to which weak business demand, declining creditworthiness, and restricted credit availability are at play. Our study of small-business owners finds evidence of comparatively strong demand but weakened applicant quality and continued perceptions of restricted credit availability.

Poll evidence suggests that although experienced borrowers sought credit more often than borrowers without recent credit financing, experienced firms were no more likely to win credit approval. Rather, cash flows and cash reserves, as evidenced by strong sales and retained business earnings, were the keys to obtaining credit. Using these credit characteristics as proxies for creditworthiness, the poll further suggests that segments of applicants denied credit and nonapplicants could become viable borrowers if given access to second-look programs and business support services.

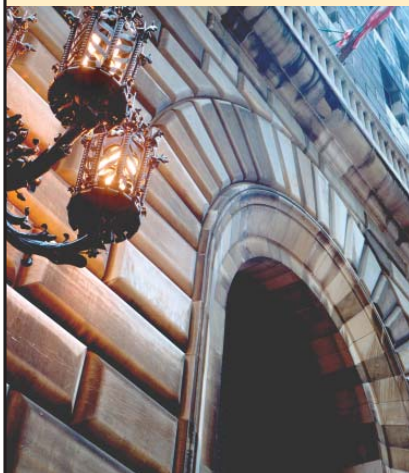


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The Homeownership Gap

Andrew Haughwout, Richard Peach, and Joseph Tracy

Recent years have seen a sharp rise in the number of negative equity homeowners—those who owe more on their mortgages than their houses are worth. These homeowners are included in the official homeownership rate computed by the Census Bureau, but the savings they must amass to retain their home or purchase a new home are daunting. Recognizing that these homeowners are likely to convert to renters over time, the authors of this analysis calculate an “effective” rate of homeownership that excludes negative equity households. They argue that the effective rate—5.6 percentage points below the official rate—may be a useful guide to the future path of the official rate.

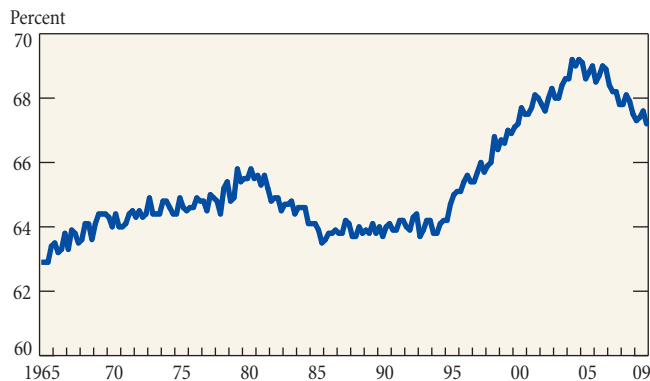
Homeownership is often seen as an integral part of the American dream, and encouraging homeownership has historically been an important feature of U.S. public policy. In 1995, the rate of homeownership in the United States began a steep rise and between 2004 and 2006, peaked at 69 percent (Chart 1).¹ The last three years, however, have seen a marked reversal of this trend. As the housing boom collapsed and the recession fueled a sharp rise in unemployment, the homeownership rate fell to 67.2 percent in the fourth quarter of 2009—its most recent reading and a reversion to its second-quarter 2000 level. Strikingly, the ongoing decline in the homeownership rate is approaching in magnitude the 2.3 percentage point slide observed in the early 1980s.

A question of broad interest is how large the decline in the homeownership rate will ultimately prove to be. In this edition of *Current Issues*, we assess the downward pressure on this rate and introduce the notion of a “homeownership gap” as a useful gauge of the possible extent of the rate’s decline over the next several years.

Our concept of a homeownership gap reflects the dramatic growth in the number of negative equity homeowners—those who owe more on their mortgages than their houses are worth—in the current housing market. While the official homeownership rate tabulated by the Census Bureau includes negative equity homeowners in its count of owner-occupied houses, our calculations suggest that these homeowners would need to ramp up their savings by formidable amounts in order to retain their homes or purchase a new home. Thus, we calculate an “effective” homeownership rate that excludes negative equity homeowners from the sum of owner-occupied houses and counts them instead as the renters they are likely to become over time. We find that the difference between the official and the effective rates—the homeownership gap—

¹ The U.S. Bureau of the Census tabulates quarterly homeownership rates for the nation and for individual states and metropolitan statistical areas. The measured home ownership rate is the ratio of the number of owner-occupied housing units divided by the total number of occupied housing units. Second homes and vacation homes are excluded from the calculation. In addition, properties that are currently vacant—even if previously owned or rented—are also excluded. See <http://www.census.gov/hhes/www/housing/hvs/annual08/ann08ind.html>.

Chart 1

Aggregate Official Homeownership Rate

Source: U.S. Bureau of the Census, Housing and Economic Statistics Division.

is significant, measuring 5.6 percentage points for the nation as a whole and rising as high as 39 percentage points for the metropolitan areas that have been hit hardest by the housing crisis. While such gaps have most likely existed before at the regional level, the current national gap has no apparent precedent in the postwar period.²

Taking our argument one step further, we contend that the current effective homeownership rate is a good guide to the future path of the official rate. That is, unless house prices increase substantially, many negative equity homeowners will in fact convert to renters in the years ahead, and the measured rate of homeownership will decline toward the effective rate.

We begin our analysis with a look at government initiatives to encourage homeownership, followed by a discussion of the rationale for this support. If homeownership rates do indeed decline in the coming years as we suggest, then the larger social benefits that arise when individuals have an equity stake in their homes and communities may be reduced.

Homeownership and Public Policy

Since at least as far back as President Roosevelt's New Deal, governments at the federal, state, and local levels have enacted policies to encourage people to become and remain homeowners. In response to the surge in mortgage foreclosures during the Great Depression, the government created the Federal Housing Administration (FHA) and the Federal National Mortgage Association (FNMA, or Fannie Mae) to establish a standard mortgage product—the thirty-year fixed-rate, fully amortizing mortgage—that would allow borrowers to make modest fixed payments over an extended period. Moreover, the FHA insured these mortgages, thus limiting expected losses for investors. During the same

² The gap is analogous in some ways to the developing country “debt overhang” problem, which received extensive analysis in the late 1980s. See Sachs (1990) for a discussion.

period, the government chartered a new financial institution devoted to providing mortgage credit—the thrift—and created the Federal Home Loan Bank System as a funding source that would help thrift institutions manage the problems associated with making fixed-rate loans scheduled to last for decades. After World War II, the GI Bill established the Veterans Administration (VA) mortgage program to provide veterans with high loan-to-value mortgage loans insured by the federal government.

In the late 1960s and early 1970s, as thrift institutions came under stress from rising inflation, the government played a central role in the creation of the market for mortgage-backed securities. The Government National Mortgage Association began issuing federally guaranteed mortgage pass-through securities backed by FHA and VA loans in 1970. Soon after, the Federal Home Loan Mortgage Corporation (Freddie Mac) started issuing mortgage participation certificates backed by conventional mortgages. Ultimately, the securitization of the bulk of new mortgage loans fell to the government-sponsored enterprises Fannie Mae and Freddie Mac, largely because of the implicit federal guarantee on the mortgage-backed securities and debt issued by these institutions.³

The tax code is another channel through which homeownership is encouraged. For homeowners, the gross imputed income from their home is not subject to taxation while the two major expenses of owning a home—mortgage interest and property taxes—are allowable itemized deductions. Moreover, most homeowners are now effectively exempt from taxes on capital gains realized on the sale of their home(s). Another feature of the tax code intended to spur homeownership is the ability of state and local governments to issue tax-exempt mortgage revenue bonds.

The Benefits of Homeownership

The case for government support for homeownership rests in large part on the view that ownership promotes “economically efficient” actions—actions that produce the greatest return for the resources invested. Because owners have a financial interest in their property, they have incentives to take measures that will maintain or increase the value of that property. Some of these measures—such as fixing a leaky roof—are closely related to the house itself. Others, such as investing resources in the betterment of the neighborhood and the community, have broader beneficial effects on the local area, creating what economists call “positive externalities.” All of these measures will be reflected, or “capitalized,” in stable or rising home prices.

The notion that these capitalization effects prompt homeowners to act in the best interest of the property and the community underlies the “homevoter hypothesis” advanced by William Fischel (2001). Asserting a close connection between homeownership and civic engagement (hence the term “homevoter”), Fischel argues that homeowners take an active interest in the policy decisions of the local government because these decisions affect the long-term value of their property. Homeowners will support

³ See McCarthy and Peach (2002).

efficient public policies and projects—say, those that do the most to enhance the quality of the services and schools in their communities and thus to maximize the value of their homes—in much the same way that a corporation’s shareholders will support private projects that have a positive net present value for the firm.

However, the incentives that, in this view, motivate most homeowners will not operate for one subset of homeowners—negative equity homeowners, or those whose mortgage balance exceeds the value of their home. For these homeowners, any increase in the value of their house will accrue not to them, but to the mortgage lender (up to the value of the mortgage). Thus, with little to gain, negative equity homeowners will be much less likely to pursue improvements in their homes or communities. Their situation is essentially analogous to that of renters, who have little incentive to make improvements to the homes they occupy since it is the landlord who reaps the economic benefits.

The homevoter hypothesis is compelling, but is there evidence for the view that house price capitalization induces homeowners to act in the best interests of the property and the community? Researchers have documented that homeowners typically spend several thousand dollars a year in maintenance and repairs to offset the depreciation of their house over time (Gyourko and Tracy 2006; Harding, Sirmans, and Rosenthal 2007). Conversely, negative equity homeowners have been found to *under-maintain* their property relative to other homeowners during regional house price declines (Gyourko and Saiz 2004). Also consistent with the homevoter hypothesis are studies showing that elderly homeowners who have no school-age children still support local education bond issues. While altruism may be a factor, the homeowners appear to be motivated mostly by a belief that backing local schools will increase the value of their house (Bergstrom, Rubinfeld, and Shapiro 1982; Hilber and Mayer 2009). Other research has demonstrated that children of homeowners are more likely to finish school than the children of renters and less likely to become teenaged parents (Green and White 1997). Finally, homeowners have been found to vote at higher rates in local elections and to be more aware of local issues and the identities of state and local civic leaders (DiPasquale and Glaeser 1999).⁴

To be sure, not all researchers are persuaded that homeownership leads to increased civic engagement or improved maintenance of homes and neighborhoods. Engelhardt et al. (2010) maintain that the measured benefits from homeownership stem from the fact that people who choose to buy homes are simply more likely than others to value investing in social capital. Contending that the homevoter hypothesis and similar arguments “overstate the impact of homeownership on political involvement,” the authors find that for the small sample of low-income households in their study, the effect is “zero or negative.”

⁴ Recognition that property ownership carries with it particular interests is as old as the republic itself. In Federalist 10, James Madison writes, “Those who hold and those who are without property have ever formed distinct interests in society. Those who are creditors, and those who are debtors, fall under a like discrimination.”

Still, although dissenting views exist, the preponderance of research evidence at this point upholds the social benefits of homeownership. And continuing public support for homeownership makes clear that policymakers regard the advantages for neighborhoods and communities as substantial.

Equity and the Homeownership Gap

The role of house price capitalization in encouraging homeowners to support economically efficient actions depends on the homeowner having positive equity in the house. For a homeowner in a negative equity position, this capitalization effect is likely small or nonexistent. If we assume that the homeowner will seek to move within five years,⁵ then unless that homeowner either expects to be back in positive equity by the time of the move or intends to use other assets to pay off the loan in full upon sale of the property, changes in the value of the house will only affect returns to the lender (or the investor, if the mortgage has been securitized).⁶

The idea that having a positive equity stake in one’s house is critical to the positive externalities from homeownership leads us to propose an alternative way to measure the homeownership rate. Specifically, we seek to calculate an *effective* homeownership rate, defined as the number of owner-occupied housing units in which the household has a positive equity stake divided by the total number of occupied housing units.⁷ This measure of homeownership assumes that negative equity owners are, in effect, renters—hence the notion of an effective homeownership rate. Owners with negative equity create a split between the official homeownership rate compiled by the Census Bureau and the effective homeownership rate—a split that we term the homeownership gap.

Since the homeownership gap reflects the extent of negative equity in the housing market, it is also a gauge of the potential downward pressure on the official homeownership rate. Assuming that house prices do not appreciate over the next several years, negative equity households will very likely convert to renters when they move out of their current homes because they will be unable to save enough to cover the negative equity, the transaction costs of selling their existing home, and a down payment on another home.⁸ As these transitions from owning to renting take place, the homeownership gap will narrow, with the

⁵ According to the most recent U.S. census, nearly half (47 percent) of all homeowners moved in the last five years.

⁶ The extent to which the capitalization effect is shut off may be a function of the magnitude of the negative equity position.

⁷ Thus, we remove negative equity homeowners from the numerator of the official homeownership ratio but retain them in the denominator.

⁸ If the homeowner either defaults on the mortgage or negotiates a short-sale with the lender, then the damage to the homeowner’s credit will likely prevent him or her from buying a house for several years, even if sufficient funds are available for a down payment.

Table 1
Number of Months Required for Debt Amortization to Lower the Nonprime LTV Ratio to 94

Current LTV	Percentiles				
	10th	25th	50th	75th	90th
> 100	69	99	145	198	242
> 105	95	120	161	208	249
> 110	114	137	174	216	256

Note: Calculations assume constant house prices.

official homeownership rate dropping toward the effective rate.⁹ In this sense, the effective homeownership rate is a useful guide to the future course of the measured homeownership rate. Of course, negative equity homes that come onto the market may be purchased by individuals who are currently renters—an outcome that would mitigate the effect on the official homeownership rate. However, the number of foreclosed houses purchased by former renters is likely to be limited.

Measuring the Extent of Negative Equity

To construct the effective homeownership rate, we need to estimate the extent of negative equity across local housing markets. We start with loan-level data on nonprime mortgages from First America LoanPerformance (LP) and on prime mortgages from Lender Processing Services (LPS) Applied Analytics (formerly McDash). These data indicate the loan-to-value (LTV) ratio for each mortgage at origination.¹⁰ We update the loan-to-value ratio by adjusting the loan amount(s) to account for debt amortization—the reduction in mortgage balances that accompanies scheduled payments—and to reflect changes in the value of the house as indicated by a repeat-sale price index for the metropolitan statistical area (MSA) or, if the property is located outside an MSA, for the state.¹¹ The house price data are updated quarterly, allowing us to construct a quarterly estimate of the current LTV ratio for every mortgage in our data. We restrict our equity calculations to owner-occupied primary residences since these are the homes captured in the numerator of the Census Bureau’s homeownership rate.

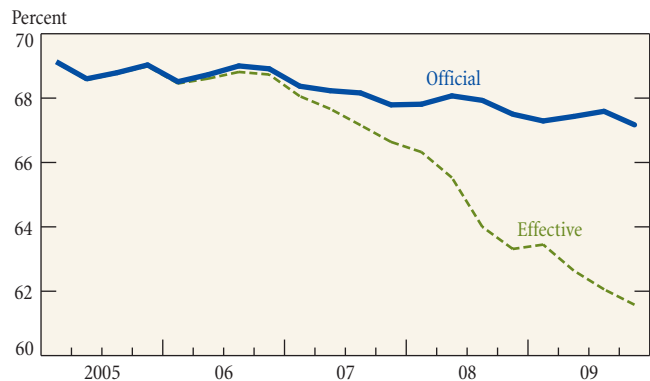
Having constructed the estimates of LTV ratios, we need to specify the level of the current LTV ratio that is associated with

⁹ Public policy initiatives such as mortgage modification and the tax credit for first-time home buyers can affect the speed of the decline in the official rate.

¹⁰ The LTV ratio is measured as the cumulative value of the mortgage balance across the first lien and any subordinate lien mortgages divided by the value of the house. We capture subordinate liens for nonprime mortgages exclusively and only if the lien was present at the origination of the first lien. If the value of the mortgage(s) equals the value of the house, we set the LTV to equal 100 (rather than a value of 1).

¹¹ We use the Office of Federal Housing Enterprise Oversight/Federal Housing Finance Agency (OFHEO/FHFA) repeat-sale price indexes. A widely cited alternative set of repeat-sale price indexes, discussed later in the article, are the S&P/Case-Shiller indexes, which are available for only twenty MSAs.

Chart 2
Aggregate Official and Effective Homeownership Rates



Sources: U.S. Bureau of the Census; LPS Applied Analytics and LP data; authors’ calculations.

an owner behaving more like a renter. By convention, a mortgage is judged to be in negative equity if the current LTV exceeds 100, but a key consideration is the value of the current LTV that would allow a household to break even when it eventually sells its home. Therefore, some additional factors need to be taken into account.

First, we need to consider the transaction costs involved in selling a house.¹² If we assume that these costs amount to 6 percent of the sale price, then the LTV at the date of the sale would need to be no higher than 94 for the household to break even on the sale. Second, for mortgages whose current LTV is above 94, we need to assess how long it would take to bring the ratio down to 94 through scheduled debt amortization, assuming no further net changes in the price of the home.¹³ Our findings for nonprime borrowers are presented in Table 1, which divides the negative equity mortgages of this group into percentiles on the basis of the number of months that would be required to bring the LTV down to 94. The distribution reflects both the differing magnitudes of negative equity and the remaining payment periods for mortgages in our data. Of the nonprime mortgages whose current LTV is greater than 100, 90 percent would take longer than five years to reach an LTV of 94 through the scheduled debt pay-down process. The median mortgage in this group would take more than twelve years to reach an LTV of 94. If we look at mortgages with even higher current LTVs, the length of time required to reach the break-even point would increase quite significantly.

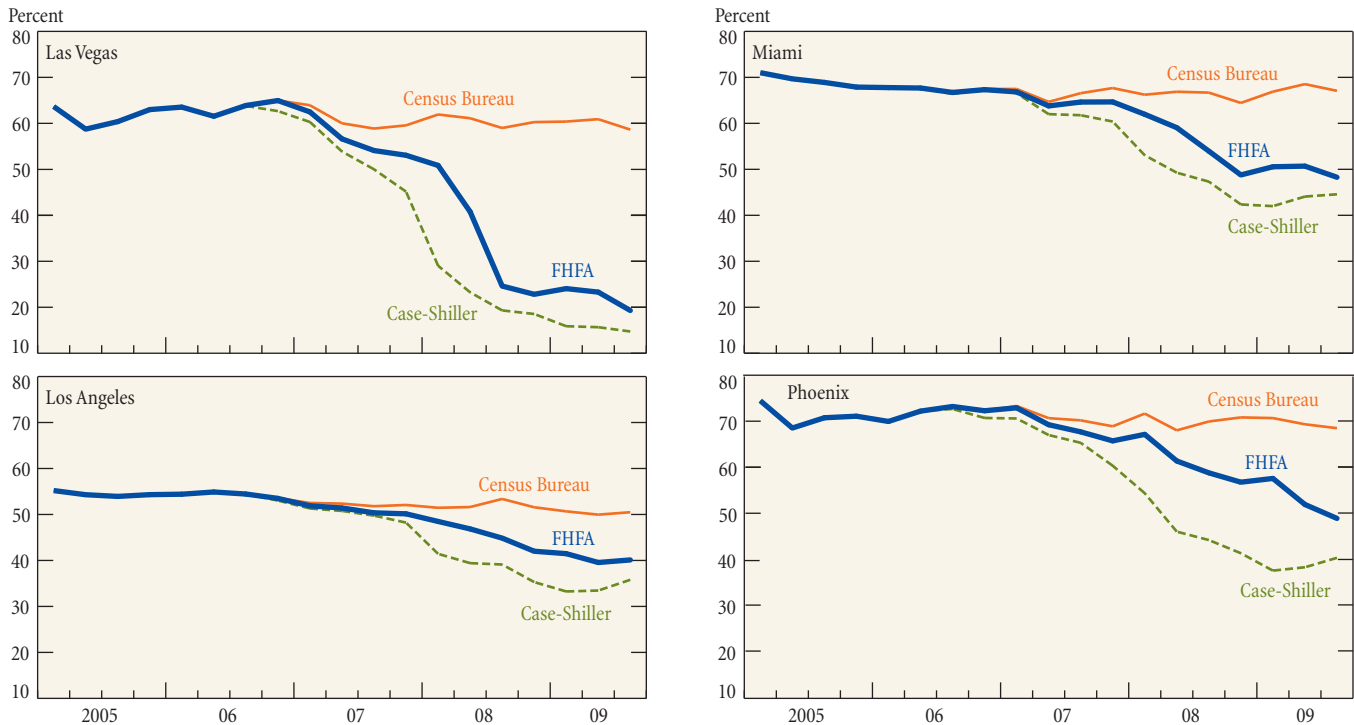
For the purpose of constructing our alternative homeownership rate, we conclude that the incentives to behave like an owner are very weak if the benefits from this behavior require living in the house for more than five years. Thus, we identify a current LTV of 100—that is, the standard definition of negative equity—as our marker for households that are likely to behave more as

¹² These include the fees to brokers as well as taxes and transfer fees.

¹³ This is consistent with house prices continuing to decline over the next year but then recovering by the sale date.

Chart 3

Official and Effective Homeownership Rates: Metropolitan Statistical Areas Hit Hard by Volatile House Prices



Sources: U.S. Bureau of the Census, Current Population Survey; LPS Applied Analytics and LP data; authors' calculations.

Note: The FHFA (Federal Housing Finance Agency) and Case-Shiller rates are effective rates.

renters than owners. Using this definition, we calculate quarterly estimates of the number of owner-occupied prime residences in negative equity over the period from the first quarter of 2005 to the first quarter of 2009. We then subtract these negative equity households from the quarterly counts of owner-occupied housing units in the official homeownership rate to arrive at the aggregate effective homeownership rate over the same four-year period.

The effective rate that we compute follows a very different path than the official homeownership rate (Chart 2). The effective rate begins to diverge from the official rate in 2006. This homeownership gap widens in 2007 as the pace of the house price decline accelerates, pulling more households into negative equity. By the end of fourth-quarter 2009, the effective homeownership rate has fallen to 61.6 percent, creating a homeownership gap of 5.6 percentage points.

Significantly, the homeownership gap in Chart 2 may *understate* the true gap for two reasons. First, the price indexes that we use to calculate the updated LTVs—repeat-sale indexes put out by the Office of Federal Housing Enterprise Oversight (OFHEO) and the Federal Housing Finance Agency (FHFA), hereafter termed the FHFA indexes—have declined considerably less from their recent peaks than have competing home price indexes. The methodology

used by FHFA to construct these price indexes involves measuring price changes for houses financed with prime, conforming mortgages purchased by Fannie Mae and Freddie Mac at two or more points in time. However, in many metropolitan areas in the weakest housing markets, nonprime mortgages became much more prevalent in the first half of this decade, while more recently foreclosures have emerged as an important component of overall housing transactions. In contrast to the FHFA indexes, the S&P/Case-Shiller (hereafter Case-Shiller) repeat-sale price indexes cover homes financed with nonprime as well as prime loans and cover most foreclosure sales.¹⁴ The second reason that our estimate may understate the homeownership gap is that the coverage of subordinate liens in our database is most likely incomplete, since it excludes all subordinate liens on prime mortgages and some subordinate liens on nonprime mortgages.¹⁵

The gap between the official and effective homeownership rates is even more striking when we turn our attention from the nation to metropolitan areas that experienced a severe collapse in housing prices (Chart 3). Measured from the FHFA indexes, the

¹⁴ Specifically, the Case-Shiller methodology includes all “arms-length” housing transactions.

¹⁵ See footnote 10.

Table 2

Official and Effective Homeownership Rates for Large Metropolitan Statistical Areas

Metropolitan Statistical Area	Official Homeownership Rate (Percent)		Effective Homeownership Rate (Percent)		Homeownership Gap (Percentage Points)	
	Peak	Current	FHFA	Case-Shiller	FHFA	Case-Shiller
Atlanta	70.8	66.4	61.3	57.4	5.1	9.0
Boston	67.7	66.5	64.2	64.3	2.3	2.3
Charlotte	69.1	68.0	66.9	63.2	1.1	4.8
Chicago	71.3	69.5	64.2	61.6	5.3	7.9
Cleveland	78.6	74.2	71.4	69.8	2.8	4.4
Dallas	64.5	62.8	62.4	61.6	0.4	1.2
Denver	72.0	63.3	60.8	59.8	2.4	3.5
Detroit	78.4	75.2	59.1	48.9	16.1	26.3
Las Vegas	65.0	58.6	19.3	14.7	39.3	43.9
Los Angeles	55.2	50.5	40.1	35.8	10.4	14.7
Miami	71.0	67.1	48.3	44.6	18.8	22.5
Minneapolis	74.8	71.2	64.1	56.5	7.0	14.6
New York	55.9	51.2	48.7	47.5	2.5	3.7
Phoenix	74.7	68.8	49.1	40.6	19.6	28.2
Portland	72.7	67.6	63.3	61.9	4.4	5.7
San Diego	63.3	55.3	39.3	35.0	16.0	20.3
San Francisco	61.7	58.3	49.1	43.4	9.2	14.9
Seattle	65.7	60.8	55.8	53.4	5.0	7.4
Tampa	74.1	67.6	56.1	51.2	11.4	16.3
Washington, D.C.	70.9	66.5	58.8	52.3	7.7	14.2

Sources: U.S. Bureau of the Census, Current Population Survey; LPS Applied Analytics and LP data; authors' calculations as of 2009:Q3.

effective homeownership rates for Los Angeles, Miami, Phoenix, and Las Vegas ranged from 10 to 39 percentage points below the corresponding official rates in the third quarter of 2009. The smallest homeownership gap—that for Los Angeles—was almost *double* the size of the homeownership gap for the country as a whole. Moreover, like the estimates of the national homeownership gap, these metro area estimates might understate the difference between the official and effective rates. As Chart 3 makes clear, the MSA homeownership gaps calculated from the Case-Shiller house price indexes are much larger than those produced using the FHFA house price indexes.

Significantly, very large homeownership gaps are not confined to just a few metro areas. The effective homeownership rates for half of the metro areas covered in the Case-Shiller indexes are at least 10 percentage points below the corresponding Census Bureau homeownership rates (Table 2).

Implications of the Homeownership Gap

Earlier in this article, we suggested that homeownership gives individuals a financial stake in the long-run outlook for their homes and communities. If this is the case, then the homeowner-

ship gaps that we have documented for the nation and some metro areas may have significant implications for civic welfare.

Consider, for example, that the Case-Shiller-based effective homeownership rates for the four metro areas shown in Chart 3 and for Detroit, New York City, San Diego, and San Francisco (Table 2) are all under 50 percent. That is, the median household in these areas is in a negative equity position and no longer has strong financial incentives to behave as an owner. While the effects will vary with the distribution of negative equity households across the municipalities within these metro areas, a high share of these households could result in reduced maintenance of the housing stock, an increased risk of housing vacancies, and less stable neighborhoods over time—developments that could have repercussions for local law enforcement.¹⁶ Moreover, the predominance of “non-homeowners” in these metropolitan areas could lead to a decline in citizen participation in local affairs, with a concomitant loss of vigilance over the quality and efficiency of public services and institutions.

¹⁶ See, for example, Millman (2009).

Table 3

Savings Required to Remain an Owner If Moving in Five Years

	Monthly Savings per Household (Dollars)	Total Annual Savings (Billions of Dollars)
All borrowers with LTV > 100	1,222	92.3
Borrowers with 100 < LTV < 111	602	22.7

Sources: LPS Applied Analytics and LP data; authors' calculations as of 2009:Q4.

Note: The total annual savings are for the full sample of negative equity households.

The large homeownership gaps that have emerged during this housing market crisis will likely have significant effects on the macroeconomy as well. One possible consequence is an increase in the national saving rate. Homeowners seeking to escape a negative equity mortgage and purchase a new residence will need to make a substantial commitment to save. They must remain current on their mortgage payments and pay off any remaining negative equity balances upon the sale of their current home. In addition, they will need to provide cash to cover the down payment on a new home as well as the transaction costs of the purchase. Given the large number of households currently in negative equity, a broad-based movement among these households to increase saving would have the potential to boost the nation's savings significantly.

To shed light on the magnitude of this increase, we estimate how much the negative equity households in our sample would need to save in order to close out their existing mortgage and buy a new home. The amount will depend, of course, on the value of each household's current and prospective homes, the lending standards in effect at the time the household moves, and the cost of the transaction. For our analysis, we assume that the household's "desired" down payment equals 20 percent of the current value of its existing house,¹⁷ and that transaction costs total 6 percent of that value.

Note that even absent any house price appreciation, homeowners who remain current on their mortgage payments build their equity position through debt amortization. For each negative equity homeowner in our sample, we can project the reductions in debt balances that result from making the scheduled payments for a given period of time, and then incorporate these reductions in our analysis. Of the households that continue to make payments, more than a third (36 percent) will assume a positive equity position within three years, and more than half (51 percent) within five years.¹⁸ For these borrowers, housing equity could serve as part of a down payment on a new home.

¹⁷ Our assumption would allow the household to purchase a residence of equivalent value under the current tight lending standards. Since a new home could be more expensive, this is a conservative assumption.

¹⁸ Of course, house price appreciation would hasten this process of equity gains, while continued price declines would slow it.

By contrast, households whose regular debt amortization will not reduce the mortgage balance sufficiently will need to save enough to pay off the current mortgage before buying again.

Table 3 reports the net savings required for the average negative equity household in our sample to buy a new home in five years. Again, these figures represent the sum of the amounts required to make a new down payment, pay all transaction costs, and pay off (or receive) the difference between the current house price and the mortgage balance at the time of sale. Even accounting for the benefits of debt amortization on the borrower's equity position, we find that the typical household must save more than \$1,200 more per month if it wishes to buy again in five years. (For a detailed example of the calculations underlying Table 3, see the appendix.) Because we estimate that more than 6 million households are in negative equity, these figures imply an annual savings increase for the nation of \$92 billion for five years. Personal saving as defined in the National Income and Product Accounts averaged roughly \$465 billion during 2009, yielding an average personal saving rate of 4.3 percent. All else equal, we calculate that for these borrowers to remain homeowners under our assumptions, personal saving must rise about 20 percent a year for five years. The personal saving rate would have to rise about 0.8 percentage points, to 5.1 percent.

Since the savings required are so large at both the household and aggregate level, it seems unlikely that all of today's negative equity households will be able to remain owners unless they defer moving for several years. The second row of Table 3 reports similar figures for the "better" half of the negative equity distribution—that is, homeowners with LTVs below 111, whose chances of remaining owners seem more realistic. Even here, however, the average monthly saving requirement, at \$602, is quite large.

Another implication of the homeownership gap for the larger economy is that household mobility is likely to be significantly reduced. Negative equity households that are saving for a new down payment need to delay a move during the period they are rebuilding their savings. Studies of past regional housing cycles suggest that household mobility may fall by as much as a third for households in a negative equity position.¹⁹ Recent Census Bureau data confirm the downward trend in mobility, putting the number of households moving at its lowest level since the 1960s. While many factors are likely weighing on household mobility now, the prevalence of negative housing equity is surely high on the list.

It is hard to predict with much precision how the homeownership gap will ultimately affect measured homeownership, savings, and mobility. Our analysis suggests that either savings must rise and mobility must fall or, more likely, the official homeownership rate will decline toward the effective rate, narrowing the homeownership gap.

¹⁹ See, for example, Ferreira, Gyourko, and Tracy (2008).

Conclusion

The severe decline in house prices in the last few years, combined with the large number of borrowers who had little or no equity at the origination of their mortgages, has led to a dramatic rise in homeowners with negative equity. This rise in turn has opened a large gap between the Census Bureau's official homeownership rate and a measure that we term the effective rate. The effective rate recognizes that negative equity homeowners are likely to convert to renters over time and thus excludes them from the count of owner-occupied housing. The effective homeownership rate for the nation is currently 5.6 percentage points below the Census Bureau rate, and in some of the metropolitan areas hurt most by the housing crisis, the effective homeownership rate falls short of the official rate by a striking 20 to 39 percentage points.

Public policy has long promoted homeownership, and subsidies for owner-occupants are a key feature of the tax code. But these recent developments present many challenges to policymakers. Absent any action, the high saving requirements for remaining an owner make it likely that the current effective homeownership rate will foreshadow the future official rate. A drop in the homeownership rate may create a large set of residents who are less invested in the long-run outlook for their homes and communities—an outcome that could lead to lower

levels of home maintenance and civic participation, as well as more short-sighted decisions in local affairs. While the national saving rate may well rise as negative equity households who prefer to own their own home try to save up a down payment on a new house, the task of setting aside sufficient funds will be daunting for these households.

Public policy initiatives such as mortgage modification can help to support the homeownership rate by reducing foreclosures and easing conditions for negative equity borrowers to save for a future down payment. However, the efficacy of these modification programs depends in part on their structure. Programs that encourage principal write-down will do more to support the homeownership rate than those that focus solely on the monthly mortgage burden to the borrower, and will allow maintenance of homeownership without producing steep declines in consumption.²⁰ Addressing the problems of negative equity and low effective homeownership rates is most important for those metropolitan areas that suffered the worst house price declines. The current large homeownership gaps in these housing markets will make it especially difficult to maintain the broader social benefits that stem from a high homeownership rate.

²⁰ See the comparison of mortgage modification programs in the appendix.

Appendix: When Negative Equity Mortgage Holders Save for a New Home

For negative equity mortgage holders, remaining a homeowner requires a substantial saving commitment, but mortgage modifications—particularly those that reduce the principal balance—can help.

Negative equity borrowers who want to remain owners but already have difficulty meeting their mortgage payments may find that saving for a down payment on a new home is not feasible. Mortgage modification programs can assist these households, to a degree, by reducing the required monthly mortgage payment, thus freeing up funds that can be saved for a new down payment. But the structure of the modification program is important. Modifications that reduce interest rates alone will lower the monthly payment, while those that also reduce principal balances lower the monthly costs and provide for additional saving through debt reduction.

For example, consider a household whose home is currently worth \$181,818 (see the first column in the top panel of the appendix table). The household has a nonprime thirty-year fixed-rate mortgage at a 7 percent interest rate that was originated two and a half years ago, and has a current balance of \$200,000.¹ The household's monthly income is \$4,474. The required monthly mortgage payment is \$1,367, and the monthly taxes and insurance are \$333. This gives the household a fairly high ratio of debt service to income (DTI) of 38 percent, so this household is financially stretched in its current mortgage.

Now assume that the household would like to buy a new home in five years and that the value of its current house will not change over this period. To be able to make a 20 percent down payment on a new house of equivalent value, the household needs to accumulate \$36,364. The household also anticipates that the sale of its existing home will entail a 6 percent transaction cost, or \$10,909. The household is currently in a negative equity position of \$18,182; five years of payments on the original mortgage will reduce its negative equity to \$3,823. To be able to sell the house, pay off its mortgage, and make a down payment on a new house, the household must accumulate \$51,096 in savings.

Assuming that the household tries to save this amount over a five-year period and that it earns 1.6 percent on its savings, it would have to set aside an additional \$819 per month. This additional claim on the household's income would raise

its DTI to 56 percent—a level that would necessitate a significant reduction in consumption and is likely to be unsustainable. Even if the household is not straining to meet its current mortgage payments (if, say, it has a DTI of 28 percent rather than 38 percent), saving to remain a buyer would push its DTI to a high level (46 percent).²

Now, consider the benefit to the household if it qualifies for a loan modification program. Suppose that there are two programs that target a DTI of 31 percent and so reduce the monthly payment from \$1,367 to \$1,049. The first program accomplishes this by reducing the interest rate to 4.8 percent and extending the mortgage term an additional thirty months, to thirty years. The household remains in a negative equity position, but the lower interest rate allows the household to build equity slightly more quickly, so that after five years the remaining mortgage balance will exceed the house value by \$1,312. If the household wants to save for a new down payment over this five-year period, it must accumulate \$48,585, for an effective DTI of 48 percent—lower than the 56 percent without the loan modification, but still quite high.

The second modification program, like the first, lowers the interest rate on the existing mortgage and extends the term of the loan; in addition, however, it reduces the principal balance to the current value of the house. Under this program, the principal declines by \$18,182 and the new interest rate is 5.6 percent. The new monthly payment is the same as under the first modification program. To save for a new down payment over a five-year period, the household must accumulate \$33,885—markedly less than under the first program. Moreover, this amount of required saving would raise the household's effective DTI to 43 percent—again, a level lower than the 48 percent under the interest-rate-only modification program.

Clearly, a loan modification program that lowers the principal balance on a mortgage will do more to support homeownership than a program that simply eases the terms of the loan. And the demand it places upon a household to cut consumption is appreciably less than that imposed by the interest-rate-only program. Still, even a reduced DTI of 43 percent will leave households financially stretched, and it is unlikely that many negative equity mortgage holders will be able to sustain the high rate of saving needed to remain a homeowner.

¹ In this example, then, the current LTV is 110, very close to the median LTV (111) among negative equity mortgages in the fourth quarter of 2009.

² This example assumes that the household has no other financial assets that it can use to help fund its next purchase.

Appendix Table

Modifying Negative Equity Mortgages for Affordability

Dollars Except as Noted

Household and Mortgage Characteristics	Original	Modification Program 1	Modification Program 2
House value	181,818	181,818	181,818
Mortgage balance	200,000	200,000	181,818
Interest rate (percent)	7.0	4.8	5.6
Mortgage principal, interest, taxes, and insurance (PITI)	1,700	1,382	1,382
Monthly income	4,474	4,474	4,474
Debt service-to-income (DTI) ratio (percent)	38	31	31
<hr/>			
Saving for a New Down Payment	Original	Modification Program 1	Modification Program 2
Borrower equity after five years ^a	(3,822.83)	(1,312.06)	13,387.86
Down payment to buy a house of this price	36,363.64	36,363.64	36,363.64
Transaction cost at 6 percent	10,909.09	10,909.09	10,909.09
Savings required to buy again in five years	51,095.55	48,584.78	33,884.86
Savings per month (over five years, assuming 1.6 percent interest rate)	818.55	778.33	542.84
“Full” housing cost-to-income ratio (percent) ^b	56.3	48.3	43.0

^a Values presented assume no house price growth.^b Full housing cost includes both the mortgage PITI and the savings required to purchase a new home of equal value in five years.**References**

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RECENT FEDERAL RESERVE BANK OF NEW YORK RELEASES ON THE HOUSING MARKET

A longer, more technical version of this *Current Issues* article appeared in the Research and Statistics Group's working paper series. See Andrew Haughwout, Richard Peach, and Joseph Tracy, "The Homeownership Gap," Federal Reserve Bank of New York *Staff Reports*, no. 418, December 2009.

Other recent New York Fed publications and papers consider additional dimensions of the housing crisis: the rating of mortgage-backed securities, the regional experience of house price volatility, and the effects of mortgage modification on re-default rates:

MBS Ratings and the Mortgage Credit Boom

Adam Ashcraft, Paul Goldsmith-Pinkham, and James Vickery
Federal Reserve Bank of New York *Staff Reports*, no. 449,
May 2010

The authors study credit ratings on subprime and Alt-A mortgage-backed securities (MBS) deals issued between 2001 and 2007, the period leading up to the subprime crisis. They find that the amount of credit enhancement increases with the amount of mortgage credit risk (measured either ex ante or ex post), suggesting that ratings contain useful information for investors. However, the authors also find evidence of significant time variation in risk-adjusted credit ratings, including a progressive decline in standards around the MBS market peak between the start of 2005 and mid-2007. They observe, conditional on initial ratings, underperformance (high mortgage defaults and losses and large rating downgrades) among deals with observably higher-risk mortgages based on a simple ex ante model and deals with a high fraction of opaque low-documentation loans. These findings hold over the entire sample period, not just for deal cohorts most affected by the crisis.

Bypassing the Bust: The Stability of Upstate New York's Housing Markets during the Recession

Jaison Abel and Richard Deitz
Federal Reserve Bank of New York *Current Issues in Economics and Finance* 16, no. 3, March 2010

Over the past decade, the United States has seen real estate activity swing from boom to bust. But upstate New York has been largely insulated from this volatility, with metropolitan areas such as Buffalo, Rochester, and Syracuse even registering home price increases during the recession. An analysis of upstate housing markets over the most recent residential real estate cycle indicates that the region's relatively low incidence of nonprime mortgages and the better-than-average performance of these loans contributed to this stability.

Second Chances: Subprime Mortgage Modification and Re-Default

Andrew Haughwout, Ebiere Okah, and Joseph Tracy
Federal Reserve Bank of New York *Staff Reports*, no. 417,
December 2009

Mortgage modifications have become an important component of public interventions designed to reduce foreclosures. This paper examines how the structure of a mortgage modification affects the likelihood of the modified mortgage re-defaulting over the next year. Using data on subprime modifications that precede the government's Home Affordable Modification Program, the authors focus their attention on those modifications in which the borrower was seriously delinquent and the monthly payment was reduced as part of the modification. The data indicate that the re-default rate declines with the magnitude of the reduction in the monthly payment, but also that the re-default rate declines relatively more when the payment reduction is achieved through principal forgiveness as opposed to lower interest rates.

INFORMATION ON THE FORECLOSURE CRISIS AVAILABLE ON NEW YORK FED WEBSITE

The Federal Reserve Bank of New York's U.S. Credit Conditions website (data.newyorkfed.org/creditconditions) offers detailed, timely data on the incidence of mortgage foreclosures and delinquencies in the nation and in individual states and counties. The information, presented through charts, interactive maps, and spreadsheets, is designed to help government agencies, community groups, commercial institutions, and other practitioners better understand and respond to local conditions associated with failed and troubled mortgages.

The site offers a range of informative features. Visitors can compare delinquency rates across geographical areas and across types of mortgages—for example, prime, subprime, or Fannie Mae and

Freddie Mac loans. Red and green "heat maps" illustrate whether conditions have worsened or improved over the past year. In addition, a sequence of charts shows the likelihood that subprime and Alt-A mortgages will roll from their current status to thirty days late, from sixty to ninety days late, or from ninety days late to foreclosure. The roll rates are presented in terms of the number of mortgages likely to roll from one status to the next and in terms of dollar volumes.

The goal of the U.S. Credit Conditions website is to provide information that will help public and private sector decision makers identify the best strategies to resolve the delinquency and foreclosure problem and to mitigate its impact on communities.

Second District Highlights

Bypassing the Bust: The Stability of Upstate New York's Housing Markets during the Recession

Jaison R. Abel and Richard Deitz

Over the past decade, the United States has seen real estate activity swing from boom to bust. But upstate New York has been largely insulated from this volatility, with metropolitan areas such as Buffalo, Rochester, and Syracuse even registering home price increases during the recession. An analysis of upstate housing markets over the most recent residential real estate cycle indicates that the region's relatively low incidence of nonprime mortgages and the better-than-average performance of these loans contributed to this stability.

The United States experienced a sizable boom in real estate activity between 1998 and 2006, followed by a sharp contraction. Home prices rose on average more than 8 percent per year between 2000 and 2006—but have been falling more recently at an average annual rate of 4 percent.¹ In states such as California, Arizona, and Florida, the collapse in home prices has been particularly severe. Somewhat surprisingly, however, many parts of the country have not experienced dramatic declines in housing prices, with some regions even registering price increases since the recession began. Upstate New York is one such region. Despite upstate's long-term weak economic growth and population loss, Buffalo, Rochester, and Syracuse all ranked in the top 10 percent of metro areas in terms of home price appreciation in 2009, with Buffalo ranking sixth overall.

In this edition of *Second District Highlights*, we assess the performance of upstate New York's housing markets during the most recent residential real estate cycle. We analyze the extent to which the region has been insulated from the boom-bust pattern in housing prices seen in many parts of the country since 2000 and compare the pattern of real estate activity for the region with patterns for U.S. metropolitan areas. We also examine the extent of lending activity in the riskiest segment of the residential mortgage market—"nonprime" mortgages—and compare the regional and national penetration and performance of these loans.

¹ Figures reflect the four-quarter price change in the Federal Housing Finance Agency (FHFA) All Transactions house price index as of second-quarter 2009. The index is based on conventional and conforming loans and includes both repeat purchases and refinances; it is available for 383 metropolitan areas/divisions. We rely on the FHFA index rather than the more volatile S&P/Case-Shiller house price index because of its broader geographic coverage. See Calhoun (1996) and Leventis (2008) for more details on the construction of the FHFA house price index and how it differs from the S&P/Case-Shiller index.

We find that upstate New York's housing markets have been relatively stable during the U.S. recession, with many metro areas outperforming the nation. Moreover, fewer nonprime loans originated in the region than was typical across the country, and upstate's nonprime loan performance was better than the U.S. average, with lower rates of delinquency and foreclosure. These mortgage dynamics, together with upstate's relatively steady economic performance during the recession, help explain the recent stability of the region's housing markets.

The Housing Boom in the United States and the Trend in Upstate New York

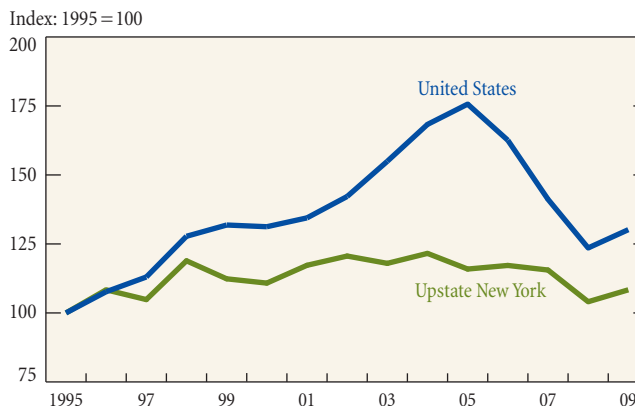
The United States experienced a housing boom in the mid-1990s that lasted until 2006. Sales of existing homes rose significantly between 1995 and 2000, followed by an even sharper increase in activity into 2005 (Chart 1). After sales peaked in 2005, activity declined sharply into 2008, then turned up modestly in 2009. In contrast, residential real estate activity across upstate New York was relatively flat throughout the period. Indeed, while existing home sales increased more than 75 percent between 1995 and 2005 in the United States, sales rose only 15 percent in upstate New York. Although sales activity in the region trended well below that of the nation during this period, the subsequent decline in home sales was less pronounced upstate. Between 2005 and 2008, home sales fell only 10 percent there, compared with an approximately 30 percent decline nationwide. Other indicators of housing activity, such as residential building permits, display similar patterns for the relative performance of upstate New York and the country.

Just as the boom in home sales was subdued upstate, home price appreciation was limited (Chart 2). The rate of appreciation in the region was well below that of the nation until early 2007, with home price declines registered occasionally during the 1995-2000 period.² From 2004 to 2006—the period of most rapid appreciation in the United States—the pace of appreciation in upstate New York also rose significantly, although it remained consistently below the country's. The rate of U.S. home price appreciation declined dramatically beginning in 2006. In 2007 and 2008, upstate's rate of price growth outpaced the nation's, and prices continued to climb into 2009—despite a nearly 4 percent decline in home values nationwide in the first half of 2009.

² Our aggregate upstate New York house price index is calculated using data on existing single-family home sales in the nine major metropolitan areas in the region: Albany, Binghamton, Buffalo, Elmira, Glens Falls, Ithaca, Rochester, Syracuse, and Utica. Our data sources are the National Association of Realtors and Moody's Economy.com. To construct the index, we follow the same methodology used by the FHFA to compile its national house price index. Specifically, we set our index to equal 100 in first-quarter 1995 and adjust it each successive quarter based on the weighted average quarterly price change for the nine upstate metropolitan areas, with the weights based on the contemporary share of one-unit detached properties in each metropolitan area. For more detail, see <http://www.fhfa.gov/>.

Chart 1

Existing Single-Family Home Sales

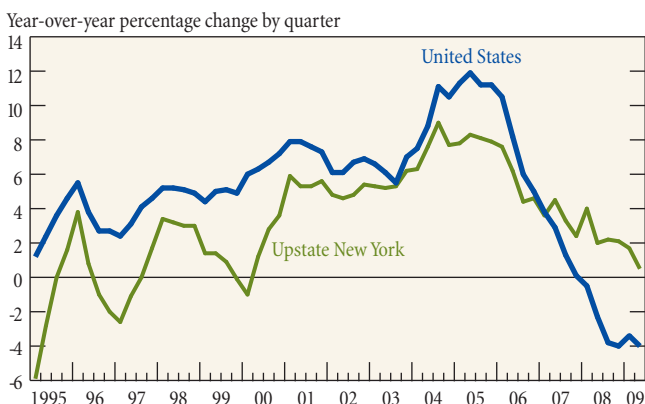


Sources: National Association of Realtors; Moody's Economy.com estimates.

Note: Upstate New York is an aggregate of the Albany, Binghamton, Buffalo, Elmira, Glens Falls, Ithaca, Rochester, Syracuse, and Utica metropolitan statistical areas.

Chart 2

Change in Home Prices



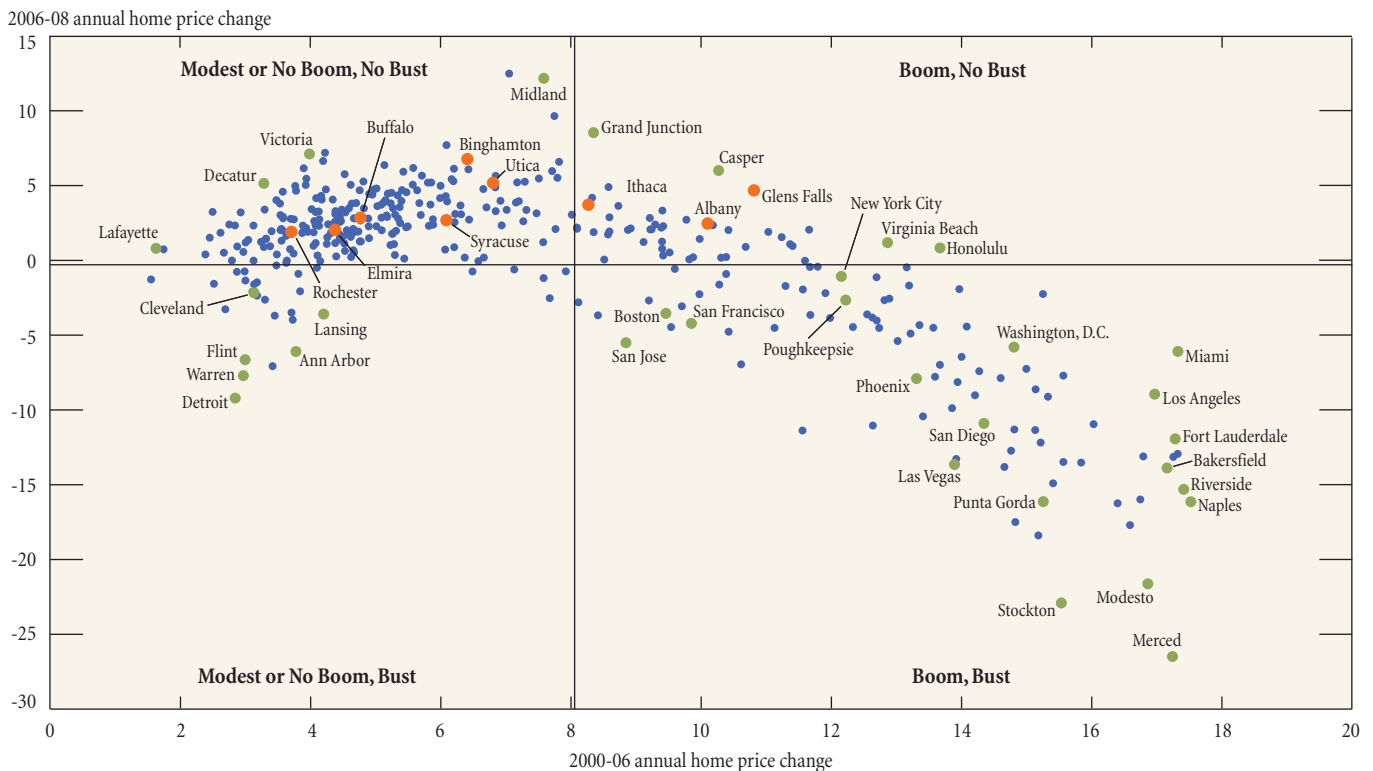
Sources: Federal Housing Finance Agency (FHFA), All Transactions index; U.S. Census Bureau; Moody's Economy.com; authors' calculations.

Notes: Upstate New York is an aggregate of the Albany, Binghamton, Buffalo, Elmira, Glens Falls, Ithaca, Rochester, Syracuse, and Utica metropolitan statistical areas. Upstate was aggregated using housing unit weights in a process similar to that employed by the FHFA to create its U.S. index.

Differences in the patterns of home price appreciation in part reflect upstate's relatively poor economic performance leading up to the housing peak and better-than-average performance during the recession. Between 2000 and 2007, for example, employment in upstate New York declined at an average rate of 0.1 percent per year, compared with a national increase of 0.6 percent. By contrast, between the December 2007 start of the recession and October 2009, upstate shed 2.1 percent of its jobs, compared with 5.2 percent in the nation. Note, however, that the upstate economy tended to outperform many of its peer economies in the Great

Chart 3

Metro Area Home Price Appreciation, 2000-08



Sources: Federal Housing Finance Agency, All Transactions index; Moody's Economy.com.

Lakes region during both periods. For example, Cleveland and Detroit experienced employment declines of 0.8 percent and 2.2 percent in the period leading up to the recession, but from the onset of the recession through October 2009, they lost 6.7 percent and 8.2 percent of their jobs, respectively.³

To illustrate the pattern of upstate New York's home prices relative to the rest of the country, we examine in more detail the regional dimension of house price dynamics.

House Price Appreciation across Metropolitan Areas

One often hears that "all real estate is local." Consistent with this idea, the patterns of house price appreciation and decline over the most recent real estate cycle varied considerably among U.S. metropolitan areas. In general, however, regions that experienced the most significant house price increases tended to suffer the most significant declines. This negative correlation is presented in Chart 3.⁴ The chart classifies metropolitan areas into one of

four categories based on where rates of appreciation fell relative to the national average. In the "boom, bust" metro areas (lower right quadrant), home prices increased faster than the average U.S. annual rate of 8.1 percent between 2000 and 2006, then fell at a more rapid pace than the U.S. rate of -0.3 percent between 2006 and 2008. In "modest or no boom, no bust" areas (upper left quadrant), prices increased less rapidly than the national average between 2000 and 2006 and declined less rapidly than the average (or increased) between 2006 and 2008. "Boom, no bust" metro areas (upper right quadrant) saw prices rise more rapidly than the national average during both periods. And in areas designated "modest or no boom, bust" (lower left quadrant), prices increased more slowly than the U.S. average (or decreased) during both periods.

As we observed, metropolitan areas with the fastest price appreciation in the earlier period tended to experience the sharpest declines over the later period (lower right quadrant). Geographic clustering is also apparent, with fourteen of the twenty-five most rapidly growing markets in the "boom, bust" areas located in California and ten found in Florida. Each of these areas saw about a 15 to 20 percent price appreciation per year on average during the boom. Once prices began to fall in 2006, the metro areas experienced very large price decreases between 2006

³ For more on upstate New York's economic performance relative to the nation and to the Great Lakes region leading up to the recession, see Abel and Deitz (2008).

⁴ A correlation is a statistic that measures how closely two variables move together. A positive correlation indicates movement in the same direction, while a negative correlation points to movement in opposite directions.

Table 1

Annual Percentage Change in Home Prices

Area	2000-06	2006-08	2008:H1-2009:H1
United States	8.1	-0.3	-3.7
Upstate metropolitan areas			
Glens Falls	10.8	4.7	-1.3
Albany	10.1	2.5	-1.0
Ithaca	8.3	3.7	-0.4
Utica	6.9	5.2	0.7
Binghamton	6.5	6.8	1.8
Syracuse	6.2	2.7	1.0
Buffalo	4.8	2.8	2.3
Elmira	4.5	2.0	6.0
Rochester	3.8	1.9	1.4

Sources: Federal Housing Finance Agency, All Transactions index; Moody's Economy.com.

Note: 2008:H1 and 2009:H1 refer to an average of the first two quarters of the year.

and 2008, averaging around 15 to 20 percent per year, with prices in Merced, Stockton, and Modesto, California, all declining at an average annual rate exceeding 20 percent.

Perhaps somewhat surprisingly, most U.S. metro areas actually experienced more moderate increases in house prices than the nation between 2000 and 2006. In fact, 249 of the 383 metropolitan areas tracked by the Federal Housing Finance Agency saw price increases below the national rate of 8.1 percent during the boom. Outsized increases, by contrast, tended to occur in large, highly populated metro areas; the average rate for the nation as a whole strongly reflects the experience of these places. Most areas also outperformed the nation, which had a 0.3 percent rate of decline, over the 2006-08 period.⁵ Indeed, 220 metropolitan areas experienced below-average house price appreciation between 2000 and 2006, and then performed better than the nation between 2006 and 2008—and thus fall into the “modest or no boom, no bust” category. Most upstate metro areas—including Binghamton, Buffalo, Elmira, Rochester, Syracuse, and Utica—are in this group (Table 1).

The twenty-nine worst-performing metropolitan areas had lower rates of appreciation than the nation during both periods (lower left quadrant). Ten of the eleven largest home price declines over the 2006-08 period occurred in Michigan. The best-performing metropolitan areas had faster-than-average house price appreciation in both periods (upper right quadrant). These areas include Honolulu and Virginia Beach, together with Albany,

⁵ Across all 383 metropolitan areas, the median annual price change was 5.8 percent between 2000 and 2006 and 1.9 percent between 2006 and 2008, compared with the national price change (roughly equivalent to a weighted mean of the metropolitan areas) of 8.1 percent and -0.3 percent, respectively, as measured by the national FHFA house price index.

Glens Falls, and Ithaca. In fact, based on home price appreciation in each period, Glens Falls and Ithaca were among the top-performing metropolitan areas in this quadrant.

The map shows the geographic concentration of these different groups. “Boom, bust” metropolitan areas appear in three regions of the country: along the west coast, in Florida, and along the northeast corridor. Areas classified as “modest or no boom, bust” cluster along the Great Lakes and dot Colorado and Arkansas. Metro areas in the “modest or no boom, no bust” category populate much of the country, while “boom, no bust” areas appear in parts of upstate New York, along the eastern coastline, in the Northwest (including areas surrounding Seattle and Portland), and in several other states.

These home price dynamics in part reflect relative differences in economic performance among regions, although lending activity likely played a role as well. To provide a deeper understanding of the relative performance of upstate New York's housing markets, we examine the prevalence and performance of more risky, nonprime loans.

Regional Penetration and Performance of Nonprime Loans

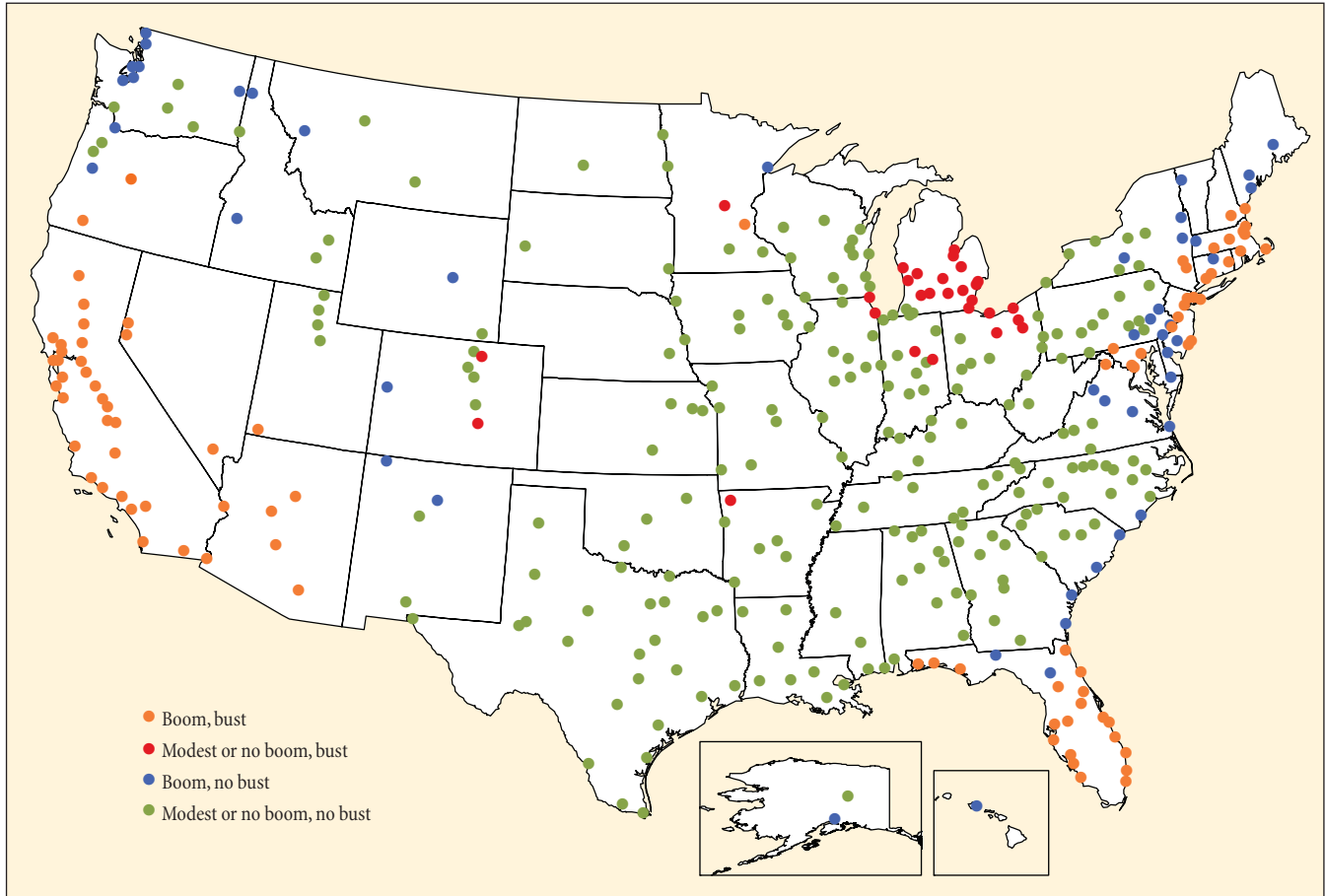
The proliferation of nonprime mortgages has been a significant feature of the recent housing cycle. Nonprime mortgages are loans that are considered more risky than traditional loans, for a number of reasons.⁶ This increased risk may stem from the loan's large size or nontraditional structure, or from borrowers who have a poor credit rating, have a higher ratio of debt to income, do not provide full documentation of income or assets, or borrow close to (or more than) the value of the property on which the loan is based.

As the economy and the housing market weakened at the start of the recession, a significant share of nonprime mortgages began to perform relatively poorly, particularly those originated between 2005 and 2007, a pattern that resulted in rising delinquencies and foreclosures (Haughwout, Peach, and Tracy 2008). The relationship between nonprime lending activity, loan performance, and housing market dynamics at the regional level is critically important when assessing regional housing market performance during the recent cycle. Accordingly, we examine the prevalence and performance of nonprime loans across metropolitan areas, including upstate New York, and the extent to which these factors were associated with regional housing market dynamics.

Our data source is First American CoreLogic's LoanPerformance data set (LP Data). As of mid-2009, these data include

⁶ Nonprime loans consist of subprime and alt-A loans. Subprime loans are typically of smaller value than prime loans and are made to borrowers with an imperfect credit history, while alt-A loans are typically larger value loans made to borrowers who may choose not to provide the full documentation of income or assets usually required to obtain prime mortgages.

Geographic Distribution of Boom/Bust Metropolitan Areas



Sources: Federal Housing Finance Agency, All Transactions index; Moody's Economy.com.

monthly loan-level information for nearly 5 million active, securitized nonprime loans with total balances of more than \$1 trillion. While the LP Data capture more than 90 percent of securitized nonprime loans after 1999 and nearly all such loans beginning in 2003, they exclude all loans held in bank portfolios (Mayer and Pence 2008). Such exclusions necessarily omit some of the nonprime loans made during our study period, so our estimates of the penetration of these loans may be understated. Furthermore, the performance of loans in bank portfolios may differ from the performance of loans that we can observe from the LP Data. Nonetheless, these data capture the majority of nonprime lending activity and offer valuable insight into the pattern of nonprime lending activity and loan performance across the country.

Penetration of Nonprime Loans

To measure the prevalence of nonprime lending across metropolitan areas, we calculate the number of nonprime loans per 1,000 housing units, using data from 2006—when activity

peaked.⁷ This metric captures the extent of nonprime lending activity in the overall housing market. Table 2 shows the penetration of nonprime loans in the United States by the four boom-bust groupings assigned earlier and for the individual metropolitan areas in upstate New York. It reveals that nonprime lending activity was much lower upstate than it was nationwide. Nationally, there were 55.5 such loans per 1,000 housing units—more than double the number for most of upstate New York's metro areas. Within upstate New York, nonprime penetration was highest in Albany and Glens Falls and lowest in Ithaca. With a penetration rate of 81.6 loans per 1,000 households, nonprime lending activity was strongest in the “boom, bust” regions. In contrast, with a penetration rate of 47.0, nonprime lending

⁷ To avoid double counting multiple loans on the same property, we report the number of first-lien loans only. While LP Data include information on subordinate-lien loans, it is not possible to match these loans to their corresponding first-lien loans. To assess nonprime penetration, we use information on total housing units published by the U.S. Census Bureau's population estimates program (<http://www.census.gov/popest/estimates.html>).

Table 2

Nonprime Loan Penetration and Performance

Area	2006		2009		
	Nonprime Loan Penetration	Delinquency Rate (Percent)	Foreclosure Rate (Percent)	Delinquency Penetration	Foreclosure Penetration
United States	55.5	13.2	12.6	5.2	5.0
Modest or no boom, bust	58.3	15.1	11.3	5.7	4.3
Modest or no boom, no bust	47.0	11.9	6.8	3.7	2.1
Boom, no bust	52.1	11.5	8.9	4.2	3.2
Boom, bust	81.6	14.3	17.1	8.8	10.5
Upstate metropolitan areas					
Albany	31.3	12.5	12.0	2.8	2.7
Glens Falls	28.6	12.5	10.1	2.8	2.2
Elmira	24.7	9.4	7.1	1.9	1.4
Rochester	24.6	10.7	8.1	2.0	1.5
Buffalo	21.2	10.3	6.5	1.7	1.1
Syracuse	20.0	11.0	9.7	1.7	1.5
Binghamton	19.7	10.5	7.1	1.7	1.1
Utica	17.5	11.2	7.0	1.6	1.0
Ithaca	9.4	11.5	6.5	0.8	0.4

Sources: First American CoreLogic, LoanPerformance data; U.S. Census Bureau.

Notes: *Penetration* measures the number of loans in each category per 1,000 housing units. *Rate* measures the number of loans in each category as a percentage of total nonprime loans. A loan is considered delinquent if it is ninety or more days past due. A loan is considered in foreclosure once it has entered the foreclosure process.

activity was lowest in metropolitan areas classified as “modest or no boom, no bust.”

These penetration patterns suggest that areas with more nonprime lending activity would have had stronger home price appreciation through the housing peak, along with more significant price declines during the subsequent period. To assess this correlation more formally, we plot nonprime loan penetration relative to the increase in home prices between 2000 and 2006 for every metropolitan area (Chart 4, top panel). The chart confirms a strong positive correlation between nonprime lending activity and house price appreciation during this period.

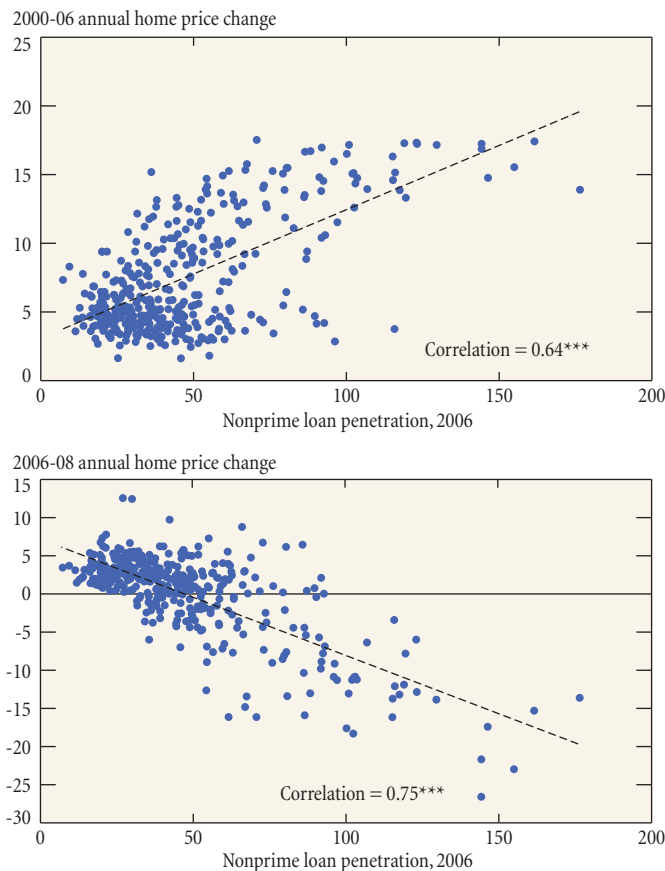
Why might this correlation hold? It is likely that causation runs in both directions—an increase in nonprime lending led to more significant home price appreciation, and more rapid home price appreciation led to a rise in nonprime lending. As for the first relationship, the availability of nonprime loans would have expanded the supply of credit by providing financing opportunities to those unable to obtain prime mortgages. This trend in turn would have brought more buyers into the housing market, driving up the demand for housing and, all else equal,

increasing home prices.⁸ However, home price appreciation itself may have contributed to the spike in nonprime lending. Lenders may have been more willing to make loans on properties whose value was increasing and expected to continue to rise, especially when the price increases were rapid. Under these circumstances, loans on properties with rising values would appear less risky. One primary determinant of risk from the lender’s perspective is the balance of the loan relative to the value of the property, often referred to as the loan-to-value ratio, or LTV. As the value of a home rises, the LTV falls, and a low LTV loan is considered less risky than a high LTV loan. The reason is that borrowers are less likely to default on a low LTV loan, primarily because they have more to lose, as their equity would be potentially surrendered upon default. Even if a default were to occur, a rising home value provides a valuable cushion to mitigate any potential losses the lender may incur when taking possession of a property after a loan fails. Moreover, homeowners experiencing rapid house price appreciation may be more likely to refinance their mortgages to gain access to their home equity.

⁸ To some extent, an increase in home prices may have led to more new home construction, which would dampen any rise in prices.

Chart 4

Nonprime Loan Penetration and Home Price Changes



Sources: First American CoreLogic, LoanPerformance data; Federal Housing Finance Agency, All Transactions index; U.S. Census Bureau; Moody's Economy.com.

Notes: Loan penetration is the number of nonprime loans per 1,000 housing units. The dashed line represents a linear trend line.

*** Statistically significant at the 1 percent level.

Indeed, recent empirical research confirms that the relationship between nonprime lending and house price appreciation runs in both directions. Mian and Sufi (2009) show that the expansion of credit through nonprime lending resulted in more rapid home price appreciation at the Zip code level, while Wheaton and Nechayev (2008) and Goetzmann, Peng, and Yen (2009) show that metropolitan areas with faster home price growth saw greater demand for nonprime mortgages. However, because these relationships are self-reinforcing, it is difficult to determine the extent to which these different dynamics were at work or the relative importance of each dynamic in contributing to the pattern of house prices observed during the current cycle. In upstate New York, the relatively low penetration of nonprime mortgages likely contributed to the region's more modest home price appreciation, but it may also reflect the response of lenders

to the region's relatively slow home price appreciation leading up to and during the boom years.

Despite this outcome, it is clear that nonprime lending activity was positively correlated with home price appreciation through the peak in housing activity, and it is apparent that areas with a higher penetration of nonprime loans in 2006 had more significant price declines in the 2006-08 period (Chart 4, bottom panel). This correlation is not surprising given that price appreciation in the 2000-06 period is negatively correlated with price appreciation in the 2006-08 period. The relatively poor performance of nonprime loans during the recession was a likely contributor to this dynamic. To study these relationships in more detail, we examine the performance of nonprime loans across U.S. metropolitan areas and in the upstate New York region and analyze the connection between nonprime loan performance and the pattern of home price changes.

Performance of Nonprime Loans

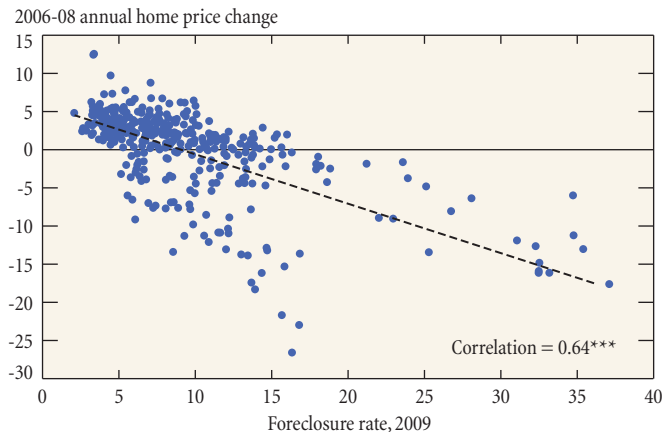
By calculating current delinquency and foreclosure rates, we can assess the performance of nonprime loans at the metropolitan area level.⁹ We measure delinquencies as loans that are ninety or more days past due and foreclosures as loans that have entered the foreclosure process. As expected, the performance of nonprime loans systematically differs across metropolitan areas (Table 2). The highest delinquency and foreclosure rates are in the "boom, bust" and "modest or no boom, bust" areas, and the lowest delinquency and foreclosure rates are in the areas that did not undergo a housing bust.

In general, metropolitan areas with more significant home price declines tended to have relatively poor nonprime loan performance (Chart 5). A strong negative correlation is apparent between nonprime foreclosure rates and the average annual change in home prices in the 2006-08 period.¹⁰ There are several reasons for this correlation. First, homeowner equity tended to decrease in areas where home prices fell. As previously outlined for the case when prices are increasing, declining house prices in areas that experienced a housing bust raised LTVs and increased the risk of default and foreclosure. In extreme cases, home prices declined so much that homeowners fell into a negative equity position, where the balance on a mortgage exceeded the value of the home, providing a strong incentive for borrowers to abandon mortgages rather than continue to make payments. Indeed, recent estimates suggest that as many as 29 percent of all nonprime mortgages were in a negative equity position by the end

⁹ Here we use LP Data as of August 2009.

¹⁰ Policy actions at the regional level designed to mitigate foreclosures, such as foreclosure moratoriums, may reduce foreclosure rates in some metropolitan areas. Thus, such actions could understate the "true" relationship between home price declines and the amount of foreclosure activity.

Chart 5

Foreclosure Rates and Home Price Changes

Sources: First American CoreLogic, LoanPerformance data; Federal Housing Finance Agency, All Transactions index; U.S. Census Bureau; Moody's Economy.com.

Notes: Loan penetration is the number of nonprime loans per 1,000 housing units. The dashed line represents a linear trend line.

*** Statistically significant at the 1 percent level.

of 2008 (Haughwout and Okah 2009). This dynamic was probably most visible in “boom, bust” metropolitan areas in states such as California, where price declines were among the most severe. Further, the poor loan performance in these areas may be the result of households’ reduced ability to repay their debt in states such as Michigan, where unemployment rates are high. Poor loan performance, especially when leading to foreclosure sales, along with recessionary pressures tends to dampen housing prices. This dynamic most likely played a role in “modest or no boom, bust” metropolitan areas such as Detroit. In any case, these mechanisms tend to reinforce one another.

As one might expect, upstate New York’s rate of delinquencies and foreclosures on nonprime loans was lower than the national average, and in many instances noticeably lower (Table 2). The delinquency rate for the nation was 13.2 percent, compared with a high among upstate metropolitan areas of 12.5 percent in Albany and a low of 9.4 percent in Elmira. Similarly, the nation’s foreclosure rate was 12.6 percent, while rates in upstate metro areas ranged from 12.0 percent in Albany to 6.5 percent in both Buffalo and Ithaca. Again, Albany and Glens Falls stand out among upstate New York’s metropolitan areas as being closer to U.S. figures. Delinquency and foreclosure rates there were near the national averages, suggesting that nonprime loans were riskier in these two areas than across upstate.

The combination of lower nonprime loan penetration and lower delinquency and foreclosure rates suggests that upstate New York has been less affected than other parts of the country by the more distressing aspects of the nonprime mortgage market. To measure the extent to which the region has been affected by foreclosures, we calculate the number of foreclosures per 1,000 housing units (Table 2). This metric measures the degree to which nonprime loan delinquencies and foreclosures penetrate the region’s housing markets. We find that nonprime delinquencies and foreclosures have affected a smaller share of the housing market in upstate New York than in the nation. Delinquency and foreclosure penetration rates upstate are less than half of those observed nationally and less than a third of those observed in the “boom, bust” metropolitan areas. This pattern of relatively low nonprime loan penetration and relatively strong nonprime loan performance helps explain the stability of the region’s housing markets during the recession.

Conclusion

During the past decade, the United States has experienced a significant boom and bust in residential real estate activity. In contrast, the housing markets in upstate New York have remained relatively stable. Indeed, since the U.S. housing market began to decline in 2006, residential real estate activity upstate has remained relatively flat, and home prices continued to rise through 2009. During the housing boom of 2000-06, home prices in Binghamton, Buffalo, Elmira, Rochester, Syracuse, and Utica did not appreciate as rapidly as the national average, although prices in Albany, Glens Falls, and Ithaca outpaced it. Since then, home prices in every upstate metro area have risen faster, or fallen more slowly, than the national average.

One factor that likely contributed to the stability of upstate New York’s housing markets in the last decade is its low incidence of nonprime mortgages. The penetration of these relatively risky loans in upstate New York was far less significant than the penetration in other parts of the country, particularly when compared with metropolitan areas that experienced a housing bust. Moreover, the loans have performed better upstate than they have nationally. In contrast, metropolitan areas with a higher penetration of these loans by 2006—when activity peaked—experienced faster home price appreciation, but also saw a relatively rapid decline in values once the reversal began. Accordingly, a larger number of the nonprime loans that originated in these areas have entered delinquency or foreclosure. These patterns of nonprime lending activity help explain why housing markets in upstate New York fared better than those in other parts of the country during the most recent recession.

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Long Island counties contain some of the country's highest concentrations of distressed nonprime mortgages. Moreover, at-risk loans attributable to negative borrower equity are clustered in the same small number of neighborhoods already facing distress. These factors may drive additional demand for critical counseling and related services.

Long Island Mortgage Distress: Analysis at the Neighborhood Level

New York State's relatively low share of homes with distressed nonprime mortgages is masking a more troubling reality on Long Island.¹ While New York's overall ratio of distressed mortgages to housing units is below that of many states, Long Island's Suffolk and Nassau counties have some of the highest ratios in the country. Furthermore, the majority of distressed loans in the two counties are concentrated in a small number of Zip codes. Accordingly, housing practitioners and program administrators grappling with this reality at the local level would benefit from information that systematically identifies the variation in severity and highlights the extent of the distressed mortgage problem in the neighborhoods that they serve.

This issue of *Facts & Trends* examines nonprime mortgage conditions in Long Island neighborhoods by using Zip-code-level data. We focus on the severity of Long Island's overall nonprime mortgage distress relative to other regions of the country and identify the specific Zip codes with greatest distress. We also consider the potential effect of falling home values on mortgage distress in these neighborhoods. This part of our analysis applies the concept of *negative equity*—a condition that occurs when a house is worth less than what is owed on the loan—and builds on national studies suggesting that borrowers with negative equity have a higher risk of defaulting on their mortgage.² Applying this concept at the neighborhood level, our analysis offers a fresh perspective on local mortgage distress by using a new data set that allows us to match housing values and first-lien loan balances by Zip code.³

Our study reveals that Nassau and Suffolk counties indeed have high concentrations of nonprime mortgage foreclosure and delinquency relative to New York State and the nation. Moreover, at-risk loans—attributable to negative borrower equity—are located primarily in those neighborhoods where distressed mortgages are already concentrated. These findings suggest that housing practitioners and program administrators may anticipate additional demand for counseling and other services among nonprime mortgage borrowers concentrated in the areas that are currently hardest hit.

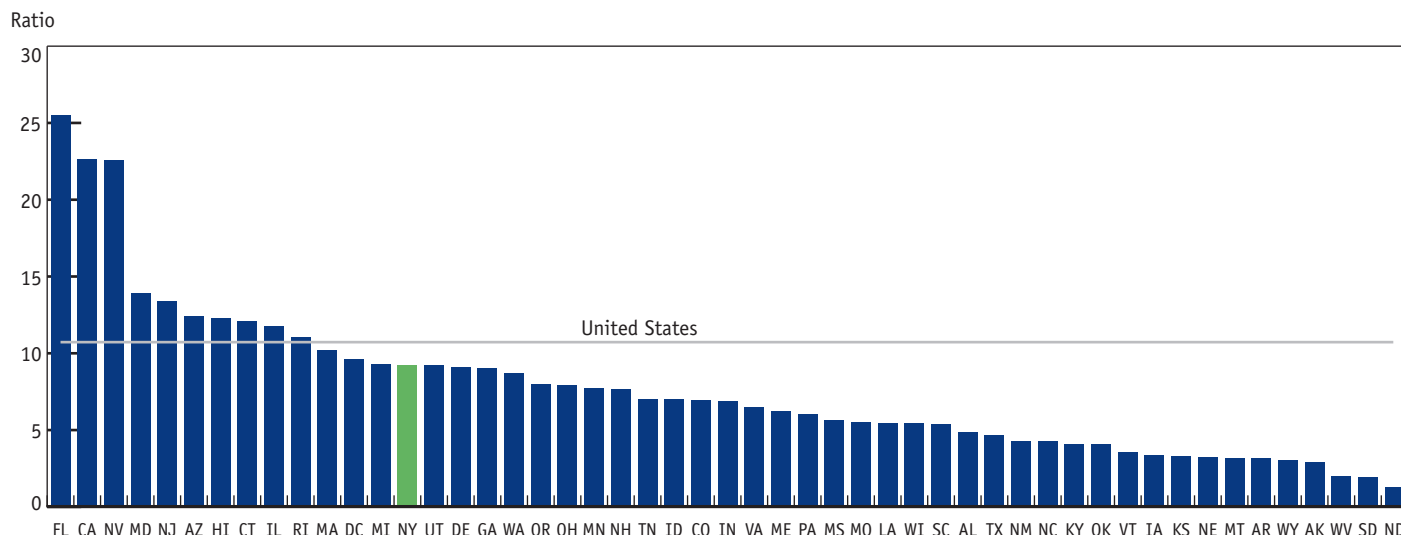
Long Island's Distressed Nonprime Mortgages

Delinquencies and foreclosures among nonprime mortgages are widespread across the United States, but they occur with varying levels of severity across regions. Our examination of these spatial patterns relies on certain key data and definitions:



Chart 1

Ranking of States by Distressed Mortgage Ratio



Sources: First American CoreLogic, LoanPerformance data; GeoLytics.

Note: The distressed mortgage ratio (DMR) is the ratio of nonprime distressed mortgages per 1,000 housing units.

- ▶ Our data source for mortgages is a rich national data set that includes securitized, first-lien nonprime residential mortgages—both subprime and alt-A—as of February 1, 2010 (see “About the Numbers”). The data set does not capture the entire market of nonprime mortgages and, as a consequence, the results of this analysis are limited to relative comparisons among neighborhoods.
- ▶ Our calculations of negative equity include only first liens because second liens are not consistently available for all loans. Consequently, our calculations are likely to underestimate negative equity. Inclusion of second liens would potentially raise debt and lower borrower equity.
- ▶ Our Long Island data set contains about 61,000 active nonprime mortgages, of which nearly 40 percent are distressed: 18 percent are at least ninety days delinquent, 21 percent are in foreclosure, and 2 percent are REO. Thus, we measure a stock of distressed loans at a particular time.
- ▶ To measure the severity of distressed mortgages, we use a ratio of nonprime distressed mortgages to housing units (DMR), calculated as the number of such mortgages per 1,000 housing units. This ratio is useful for comparing places of varying size and housing density, because numerous distressed mortgages might reflect the large size of a region rather than a high underlying distress severity. Note, however, that we do not control for the length of the

foreclosure process, which, for legal and other reasons, varies by state.

State-Level Data Mask Severity of Distressed Mortgages in Nassau and Suffolk

Our national comparison of DMRs reveals that New York is not among the states with the highest levels of distressed mortgages (Chart 1).

- ▶ New York’s DMR of 9 is near the middle of the range across states; it is below the U.S. DMR and well below the DMRs of the top three states: Florida, California, and Nevada.

New York’s mid-range DMR masks considerable intrastate variation in severity, a condition that is especially notable on Long Island. Our comparison of 544 U.S. counties with at least 1,000 active loans reveals that Suffolk and Nassau rank in the top 10 percent by DMR (Table 1).

County-Level Data Mask Severity in Certain Long Island Zip Codes

Variations in the severity of distressed mortgages also occur within Long Island, where DMRs range from 0 to slightly more than 100. The map groups Long Island’s Zip codes into three tiers of severity: those with DMRs of 32 or less, 33 to 66, and more than 66. We refer to the latter two tiers as “hotspot” Zip codes, because of their relatively high concentrations of distressed mortgages.⁴

Table 1

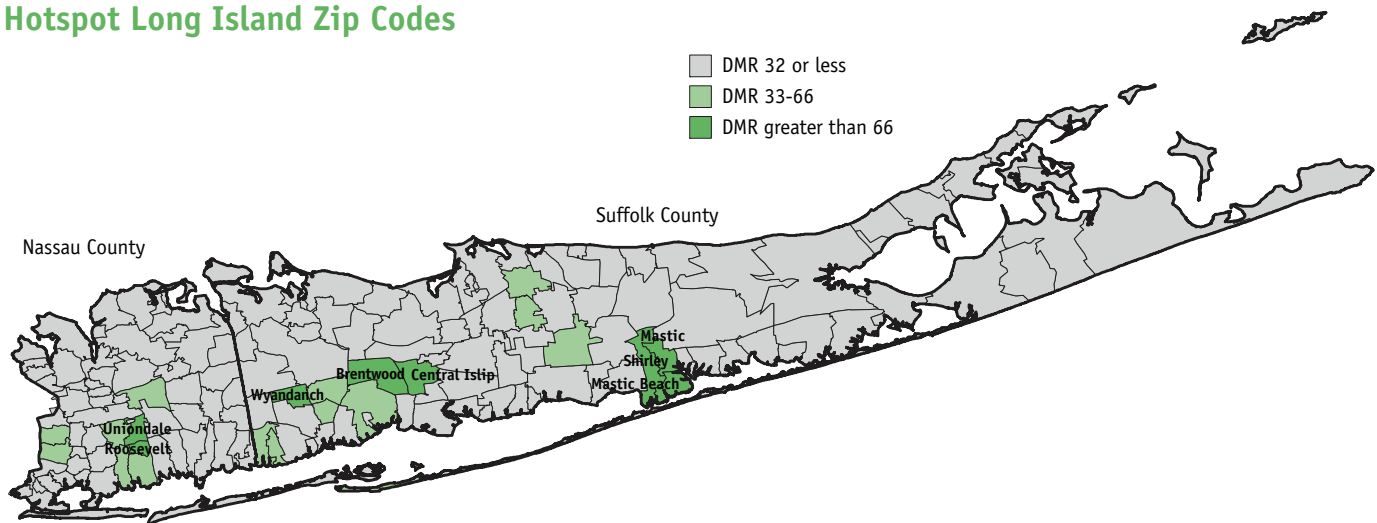
U.S. Counties Ranked by Distressed Mortgage Ratio

Ranking	State	County	Number of Distressed Mortgages	Number of Housing Units	DMR
1	FL	Miami-Dade	46,811	934,889	50.1
2	FL	St. Lucie	5,260	112,427	46.8
3	CA	San Bernardino	28,869	676,749	42.7
4	FL	Osceola	3,575	93,408	38.3
5	FL	Broward	30,991	817,076	37.9
6	CA	San Joaquin	8,377	224,490	37.3
7	CA	Riverside	28,056	752,141	37.3
8	CA	San Benito	610	17,028	35.8
9	FL	Flagler	1,572	44,151	35.6
10	FL	Lee	11,881	342,686	34.7
21	NY	Suffolk	15,025	548,771	27.4
44	NY	Nassau	9,488	458,642	20.7
		New York State	73,246	7,944,478	9.2
		United States	1,326,494	128,071,864	10.4

Sources: First American CoreLogic, LoanPerformance data; GeoLytics.

Note: The distressed mortgage ratio (DMR) is the ratio of nonprime distressed mortgages per 1,000 housing units.

Hotspot Long Island Zip Codes



Sources: First American CoreLogic, LoanPerformance data; GeoLytics.

Note: DMR is the ratio of nonprime distressed mortgages per 1,000 housing units.

- The twenty-two hotspot Zip codes account for half of all Long Island nonprime mortgages in distress (47 percent), but only a fifth of housing units (21 percent).
- The rest of the Zip codes, with DMRs ranging from 0 to 32, contain the remaining half of all mortgages in distress and four-fifths of housing units.
- The hotspot Zip codes include Hempstead and Central Islip, towns with some of Long Island’s lowest median incomes.

Falling Home Values Contribute to Emerging Risk

Having identified concentrations of nonprime mortgages where the borrowers are in distress, we turn to concentrations of *non*distressed borrowers who may be at risk of default because of recent declines in home values. When home values depreciate, borrowers can find themselves with negative equity. Because nonprime borrowers typically have little equity to begin with, even a small decrease in home values can leave them with negative equity. Borrowers with second mortgages are

Adjustments to Borrower Equity

To identify the nondistressed negative equity borrowers, we calculate an adjusted loan-to-value ratio for each loan in our sample. A ratio larger than 1 indicates that the balance owed on the loan exceeds the value of the home, which represents negative equity. For the numerator of our ratio (*L*), we use the reported outstanding balance on each loan as of February 1, 2010. For the denominator (*V*), we adjust the origination sales price (for purchases) or appraisal value (for refinancings) using a Zip-code-level House Price Index (HPI). For properties in Zip codes that do not have an index, we use a county-level HPI. To mitigate small-sample concerns, we use a three-month moving average of the HPI that includes all sales in the Zip code, including distressed sales.

even more likely to have negative equity.⁵ While not all nonprime borrowers with negative equity will default, one study finds that such borrowers are “twice as likely as those in positive equity to be seriously delinquent, or in default, on their first-lien mortgage.”⁶

Negative Equity and Default

Borrowers with negative equity are at greater risk of mortgage default largely because they have a limited range of options should they want or need to sell their home. For example, if a borrower loses her job, ordinarily she might sell the house, pay off the mortgage, and move to less expensive housing or to an area with better employment prospects. However, if she has negative equity, she is left still owing on the mortgage if she sells her house. With no clear path out of the mortgage obligation, she faces considerable obstacles whether she stays or leaves, and her possibility of default increases.

Even borrowers who can afford to continue paying their mortgage may have a weakening motivation as their equity declines and turns negative. If better housing options are available, borrowers with no home equity to lose might opt to default on the loan rather than continue to pay. These borrowers are sometimes called “strategic defaulters” or “walk-away homeowners.”

At-Risk Borrowers on Long Island

Given the link between negative equity and heightened mortgage default risk, we consider how recent declines in home values may have created a pool of negative equity borrowers, or “NEBs,” and whether these borrowers are concentrated in certain neighborhoods.

To identify the at-risk NEBs, we first isolate nonprime borrowers in our database whose mortgages are not distressed (that is, the individuals are current or less than ninety days late on their payments). We then account for changes in home values using a house price index. This allows us to calculate an adjusted equity amount for each nondistressed borrower and determine whether the amount is negative and, if so, by how much. Our calculations of negative equity are based on the month in which the loans were made and changes in home values at the Zip-code level. (The methodology is explained in the box.)

Next, we calculate the number of nondistressed loans for Suffolk and Nassau counties and New York State as well as the shares of NEBs (Table 2). The table also presents the percentages of nondistressed homes that decreased in value and the amount by which they changed.

- In Suffolk County, 82 percent of nondistressed borrowers’ homes have declined in value since mortgage origination, with a median value decrease of 18 percent. However, only one in five of the nondistressed borrowers are NEBs.

Table 2

Calculations of Negative Equity and Changes in Home Value

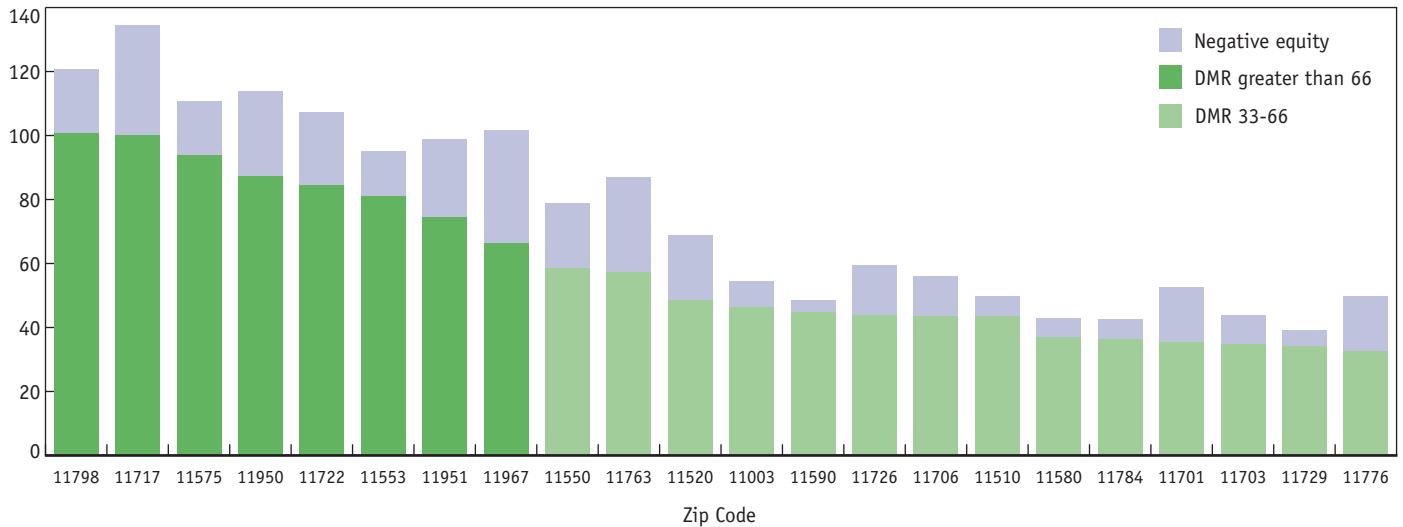
	Suffolk County	Nassau County	New York State
Number of nondistressed nonprime loans	20,782	15,634	135,888
Percentage with decreased home values	82	78	62
Percentage with negative equity	20	14	12
Change in home market values since loan origination			
Median percentage decline	18	16	15
Median percentage increase	10	9	11

Source: First American CoreLogic, LoanPerformance data and LoanPerformance House Price Index.

Chart 2

Mortgage Distress and Negative Equity in Hotspot Long Island Zip Codes

Loans per 1,000 housing units



Sources: First American CoreLogic, LoanPerformance data and LoanPerformance House Price Index; GeoLytics.

Note: DMR is the ratio of nonprime distressed mortgages per 1,000 housing units.

- In Nassau County, 78 percent of nondistressed borrowers’ homes have declined in value since loan origination with a median value decrease of 16 percent. Consequently, 14 percent of nondistressed borrowers have negative equity.
- Both Suffolk and Nassau counties have higher percentages of NEBs than New York State’s 12 percent.

Concentrations of At-Risk Borrowers on Long Island

We now consider how defaults on negative equity loans in Long Island might add to mortgage distress at the local level. Focusing on the hotspot Zip codes, we illustrate the potential effect of declining home values on these neighborhoods (Chart 2).

We start by assuming that present patterns of mortgage distress will persist. (The DMR bars, shown in light and dark green, correspond to the two hotspot tiers of severity in the map). We then consider how the concentration patterns would change if NEBs were to default. While the percentage of NEBs who might default is unknown, one assumption is that they all default (shown in blue in Chart 2).⁷ This assumption is not inconceivable, because second liens are not included in our calculations of negative equity. In any case, the relative pattern of negative equity by Zip code

points to concentrations of borrowers who may be at risk of default because of recent declines in home values.

- Grouping loans by Zip code, we find more than half of negative equity borrowers (53 percent) in areas where mortgage distress is already the most severe: the twenty-two hotspot Zip codes identified earlier.
- Even in areas where negative equity loans are less concentrated, defaults by NEBs could result in large proportional increases in mortgage distress and in demand for services.

Conclusion

Delinquency and foreclosure among securitized, nonprime first-lien mortgages affect a large share of housing units on Long Island compared with most other counties in the United States. The severity of this problem, however, is masked by New York State’s relatively low share of housing with mortgages in distress. Our study finds that variation extends down to the Zip-code level, where about half of Long Island’s distressed mortgages are on properties located in just 22 of the 221 Zip codes that make up Suffolk and Nassau counties. The detailed information derived from this type of local-level analysis can be useful for neighborhood housing program administrators and others who work to provide critical and timely homeowner assistance.

Our study also considers the relationship between declining home values and mortgage distress. When home values depreciate, borrowers can wind up with negative equity and be at greater risk of default. We find negative equity concentrated primarily in those Long Island neighborhoods where mortgage distress is already highest. Going forward, further research, along with the “ground-level” insight of housing practitioners, can build on our analysis by examining other factors that contribute to mortgage distress. These factors include high levels of consumer debt, rising unemployment, overly flexible underwriting terms, and the growing level of distress among borrowers with prime mortgages.

About the Numbers

Our loan data source is First American CoreLogic’s LoanPerformance data set. Loan figures are based on February 1, 2010, data for active mortgages on one-to-four-unit residential properties that have been pooled and packaged into securities assigned a grade of either subprime or alt-A. The underlying data do not represent every nonprime mortgage. We exclude balances on second liens. As of February 1, 2010, the data set provided monthly loan-level information on approximately 4.1 million active securitized loans with total balances of more than \$1 trillion. While the LoanPerformance data set captures more than 90 percent of securitized nonprime loans after 1999 and nearly 100 percent of the crucial 2003-05 vintages, it excludes all loans held in bank portfolios—loans that may look substantially different. Total housing units data are 2008 estimates prepared by Geolytics (<http://www.geolytics.com>). The map was created using ESRI software (<http://esri.com>). The House Price Index is from First American CoreLogic.

Notes

1. Our analysis uses a broad concept of distressed mortgages, which we define as nonprime mortgages that are severely delinquent (at least ninety days), currently in foreclosure, or REO (real-estate-owned by a financial institution). Nonprime mortgages consist primarily of subprime and alt-A loans. Compared with prime mortgage loans, subprime mortgages are typically of smaller value and made to borrowers with some blemish on their credit history. Alt-A, or “near-prime,” mortgages are typically larger value loans made to borrowers who, for a variety of reasons, may not choose to provide the documentation of income or assets usually required to obtain a prime mortgage.
2. See, for example, Andrew F. Haughwout and Ebiere Okah, “Below the Line: Estimates of Negative Equity among Nonprime Borrowers.” Federal Reserve Bank of New York *Economic Policy Review* 15, no. 1, July 2009.
3. For a local-level analysis of nonprime mortgages in New York City, see Ebiere Okah and James Orr, “Subprime Mortgage Lending in New York City: Prevalence and Performance.” Federal Reserve Bank of New York *Staff Reports*, no. 432, February 2010.
4. To identify the hotspots, we choose Zip codes with DMRs of 33 and above and with at least 200 distressed loans. We exclude data for which a Zip code was determined to be invalid.
5. However, recall that second mortgages are not included in our analysis, so our calculations of the amount of negative equity on Long Island are likely to be conservative.
6. Haughwout and Okah (2009).
7. Our analysis assumes that loans currently in distress will not be prepaid, or in some other way resolved, as additional loans become distressed. It also assumes that all negative equity borrowers want, or need, to sell; thus, the fact that these borrowers have not yet defaulted does not indicate that they are no longer at risk.

Additional resources, including tables, maps, and charts, are available at <http://www.newyorkfed.org/regional>.



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