Pricing Market-Specific Bubbles

WE JUST CONDUCTED A GOOGLE™ SEARCH ON "house price bubbles" and discovered more than 1 million hits. Obviously, concern about the possibility of a serious house-price decline is on the minds of many. Like many prognosticators on house-price trends, we are less concerned about the bursting of a national house-price bubble. This seems remote since, in our view, house prices are driven by and large by local supply-and-demand conditions.

Now a new tool is available to spot markets at heightened risk of home-price declines. This could generate a new form of risk-based pricing.

However, we do see evidence in some metropolitan statistical areas (MSAs) of house-price levels above those likely to be sustainable given the current or most-likely scenarios for economic fundamentals. In these MSAs, the bursting of "tiny bubbles" is a distinct possibility. (We are writing this article in Hawaii, and assign inspiration for this term to the memorable song "Tiny Bubbles," which was written and performed by popular Hawaiian singer Don Ho.)

Our purpose in this article is to offer a specific metric to quantify concerns about these tiny bubbles in particular markets. The proposed metric is a credit-risk spread (CRS), and is an illustration of the ongoing and great innovation that is transforming mortgage markets today—risk-based pricing of mortgages.

Normally, risk-based pricing refers to the additional yield or spread that lenders require in order to make a loan to a subprime borrower with a low FICO® score or for loans with high loan-to-value (LTV) ratios. However, we adapted the notion of risk-based pricing and the CRS to address the following question: How much additional spread would a lender require in a market with a greater likelihood of a tiny bubble bursting, than in one in which house prices seem more in line with the fundamental drivers of house prices?

Owing to the wide variations in economic conditions and house-price levels among major metropolitan areas, we expect larger credit spreads in those markets with the most house-price uncertainty and highest probabilities of severe house-price declines. Couched in these terms, risk-based pricing for the uncertainty associated with the future direction in house prices also seems to us to be an attractive alternative to what we call the "nuclear option"—complete withdrawal by a lender from markets considered especially ripe for a bursting of bubbles (tiny or otherwise).

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The specific **CRS estimates** are generated by a model with **three** main **components.**

Framed this way, our measure depends upon all of those variables that affect mortgage losses due to borrower default. These include: loan characteristics; borrower characteristics; behavioral equations that drive mortgage prepayment, default and loss severity; assumptions regarding economic capital and its required rate of return and, especially, our forecasts of future house-price growth. Our CRS incorporates all of these components and provides lenders and investors with a comprehensive measure of the risk of house-price uncertainty in a particular market and an alternative to the nuclear option.

More on the credit-risk spread

The credit-risk spread is defined as an annualized yield or spread above what a lender would charge for a 30-year, fixed-rate mortgage (FRM) to a very high-FICO borrower with a low LTV ratio in a very safe market.

The CRS is defined as the sum of two components: expected annual losses (EL) from default and the cost of capital needed to protect against extreme or highly unexpected losses (iK). That is, CRS = EL + iK where i is the required after-tax return to capital (we assume 12.5 percent) and K is the amount of capital set aside by the prudent lender (or required by bank regulators). (For additional discussion of this concept, see "The Asset Correlation Parameter in Basel II for Mortgages on Single-Family Residences," Board of Governors of the Federal Reserve System [2003], by Paul S. Calem and James R. Follain, at www.federalreserve.gov/generalinfo/basel2/docs2003/assetcorrelation.pdf.)

The specific CRS estimates are generated by a model with three main components.

The first is a set of equations used to compute the losses to the lender generated by a mortgage default. The equations are adapted from those generated by Anthony Pennington-Cross and available on the Office of Federal Housing Enterprise Oversight (OFHEO) Web site (www.ofheo.gov/media/pdf/03-1subprime.pdf).

The second is a set of rules to compute economic capital or the losses due to default in stressful economic scenarios. We use the rules associated with the proposed Basel II Capital Accord.

The third and most critical component for this illustration is a set of future house-price scenarios. Fidelity Hansen Quality LLC, San Diego, has been generating estimates of this type for its customers for the past several years (Carl Bonham, University of Hawaii, and Norm Miller, University of Cincinnati, have been long-time consultants to Fidelity Hansen Quality and have played major roles in the development of the equations generating these forecasts). They are

Figure 1 **Summary Statistics for All Metropolitan Statistical Areas (MSAs)**

	Case 1	Case 2
Loan-to-Value (LTV)	80	95
FICO®	740	680
Sigma (%)	7.5	7.5
Average	12	45
Median	12	37.5
Standard Deviation	1.5	19.7
Maximum	20	144
Minimum	10	31

SOURCE: FIDELITY HANSEN QUALITY

Figure 2 **Sixteen MSAs with the Largest Credit-Risk Spreads for Case 2**

	Case 1	Case 2
LTV	80	95
FICO	740	680
Sigma (%)	7.5	7.5
Santa Barbara–Santa Maria–Lompoc, CA	20	144
Vallejo–Fairfield–Napa, CA	16	124
Providence–Warwick–Pawtucket, RI	13	119
Orange County, CA	17	114
San Francisco, CA	17	100
Salinas, CA	15	99
San Luis Obispo–Atascadero–Paso Robles. CA	14	99
San Diego, CA	15	95
San Jose, CA	16	90
Santa Rosa, CA	14	89
Stockton–Lodi, CA	13	89
Honolulu, HI	14	87
Santa Cruz–Watsonville, CA	15	83
Ventura, CA	13	79
Los Angeles–Long Beach, CA	13	76
New York, NY	14	75

SOURCE: FIDELITY HANSEN QUALITY

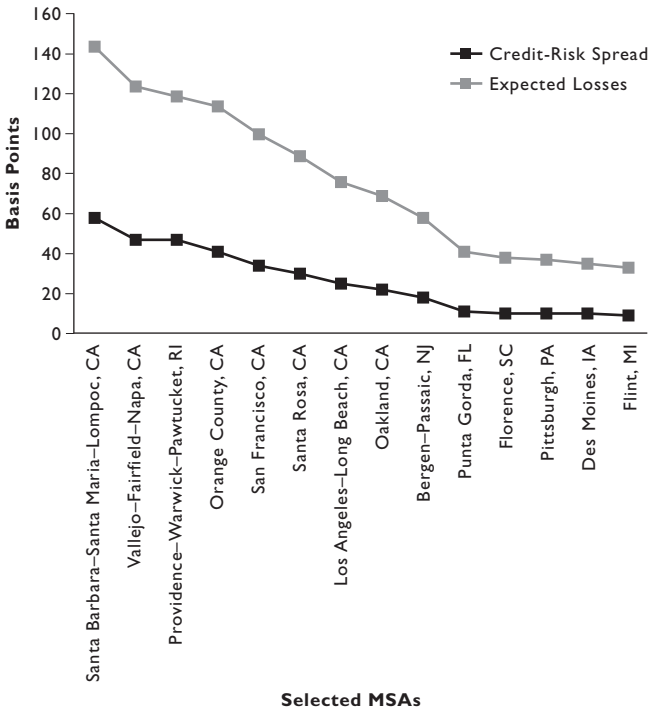
Not surprisingly, many of the **MSAs** we consider to be most **at risk** from future house-price movements are **in California.**

driven by various income, employment and interest-rate forecasts meant to capture the mean forecasts as well as paths one and two standard deviations around the mean paths. The CRS is based upon projected house-price paths and losses over five years.

Case 1

We present results for two types of prime 30-year, fixed-rate loans. The first case is a relatively low credit-risk loan—80 percent LTV and borrower FICO score of 740. The spread for this loan averages about 12 basis points per year among the 168 MSAs analyzed in this article; the estimates for particular MSAs all fall within the range of 10 to 20 basis points (see Figure 1). As such, this suggests that the credit risk to a lender for a new loan of this type—or, more generally, for portfolios of seasoned loans that have benefited from the recent house-price appreciation—is low and varies very little among MSAs.

Figure 3 **Credit-Risk Spreads and Expected Credit Losses for Selected MSAs**
(Case 2: 95 LTV and 680 FICO)



SOURCE: FIDELITY HANSEN QUALITY

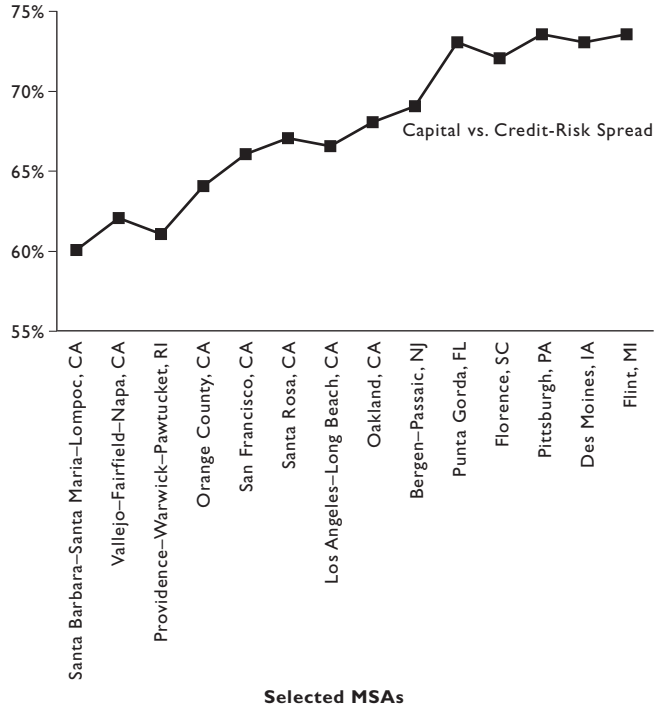
Case 2

A very different picture is generated when you examine a more risky loan. This loan has a 95 percent LTV and a borrower FICO score of 660. Here we find that the average credit-risk spread ranges from about 31 basis points to 144 basis points (see Figure 1). The simple average spread is 45 basis points among the 168 MSAs. Sixteen MSAs have spreads greater than or equal to 75 basis points (see Figure 2) and seven have spreads of 99 basis points to 144 basis points.

Not surprisingly, many of the MSAs we consider to be most at risk from future house-price movements are in California. Indeed, 13 of the 16 MSAs with the largest credit-risk spreads are in California. The exceptions are the Providence, Rhode Island; Honolulu; and New York MSAs.

The distribution of the credit-risk spreads for selected MSAs highlighted on the horizontal axis underscores the highly skewed nature of the credit risk and the MSAs most susceptible to the bursting of house-price bubbles (see Figure 3) (our list includes the top five and those ranked 10th, 15th, 20th, 25th, 50th, 75th, 100th, 125th and 150th).

Figure 4 **Capital Costs as Share of Total Credit-Risk Spread**



SOURCE: FIDELITY HANSEN QUALITY

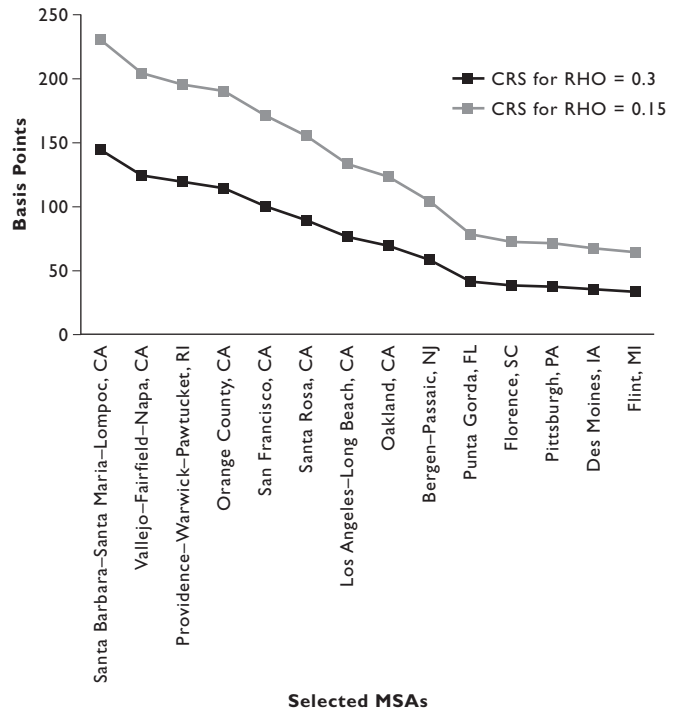
The **credit-risk spreads** that a regionally concentrated institution would charge are roughly **twice** those for the nationally diversified institutions in most MSAs.

Our analysis also provides insights about an important and brewing issue regarding the potential cost advantage of a financial institution with a portfolio of mortgages from all regions of the country (i.e., a nationally diversified portfolio versus one that holds a more regionally concentrated portfolio of mortgages). The potential advantage stems from the likelihood that all regions will not falter at the same time; bad times in one will be offset by good times in another. The regionally concentrated investor does not have this protection and, all else being equal, must hold more capital and face higher capital costs.

The first insight pertains to whether the nationally diversified lender can avoid risk-based pricing. We think not. The reason is that the share of the CRS attributable to expected credit losses is often large and varies considerably among MSAs (see Figure 4). Alternatively stated, local market fundamentals influence the risk and, ultimately, the expected profitability of mortgage lending in a particular market even for investors with nationally diversified portfolios.

The second insight has to do with the specific cost advantage enjoyed by a financial institution with a nationally diversified portfolio of mortgages. Owing to the greater vulnerability of a regionally concentrated institution to a regional economic turndown, it must hold more capital than its nationally diversified competitor. We compute the spreads for a regionally concentrated portfolio and report them in Figure 5 and alongside those for a nationally diversified portfolio.

Figure 5 **Credit-Risk Spreads and Regional Concentration**



SOURCE: FIDELITY HANSEN QUALITY

The credit-risk spreads that a regionally concentrated institution would charge are roughly twice those for the nationally diversified institutions in most MSAs. Clearly, in our view, this suggests that regionally concentrated lenders may have to provide something extra in order to compete effectively with the nationally diversified institutions (e.g., better customer service and more efficient operations).

What this all means

We have proposed a means of risk-based pricing for the credit risk associated with variations in house-price forecasts for a large number of MSAs. The typical prime mortgage requires little pricing adjustment among MSAs for this kind of risk. Substantial adjustment, however, is appropriate for the top 10 or so MSAs in our study; California MSAs, in particular, are the ones for which we would recommend increasing the credit-risk spreads. Absent such increases, lenders are likely to fall short of their expected returns. We are in the process of building new models for other products. We are particularly interested in subprime products, where we suspect the variation among MSAs is even starker and the case for MSA-specific risk-based pricing is strongest. We are also investigating the critical role of the accuracy of the appraised values of house prices underlying mortgage loans.

One of our main lines of business-property valuation via automated valuation models (AVMs)—already demonstrates wide variation among MSAs and within MSAs in appraisal accuracy. For example, our AVM estimates are typically within plus or minus 10 percent of the market price, but this range can expand to plus or minus 20 percent or more in areas with, for example, incomplete data records and few similar comparable properties. We are working to translate such uncertainty into our credit-spread metric. Many lenders would benefit from any and all available means to better match mortgage pricing to risks in these uncertain times. The likelihood of market price declines is certainly no exception. **MB**

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