Research Note
Options for Constructing "Distress-Free" House Price Indexes

Background

Sales of bank-owned properties and short sales—collectively known as distressed sales—occur at significant discounts relative to other transactions. As has been discussed in previous FHFA publications,[1] price trends reflected in the FHFA HPI and other commonly-referenced real estate price metrics can be substantially influenced by such transactions. Fluctuations in the share of FHFA's data sample comprised of such sales will affect measured price trends. For example, if an unusually large percentage of FHFA's sample is comprised of distressed sales in a given quarter, the price change reported for the quarter, all else equal, will tend to show greater price weakness.

Some users of the FHFA HPI have expressed interest in having "distress-free" indexes estimated on data samples that exclude distressed transactions. Prices for properties sold in distress tend to be lower because of poorer property condition and stronger-than-usual seller motivation—factors that, for some purposes, might be appropriate to exclude. For example, when estimating home values and associated statistics such as the loan-to-value ratio for homes whose homeowners are not in financial distress, a distress-free measure might be more relevant.

Mechanics of Identifying Distressed Sales

Producing distress-free indexes is not straightforward because identifying all types of distressed transactions is difficult. Identifying real estate owned, or REO, sales can be done by examining seller names in public record data—a task that requires a fair bit of effort because seller names must be electronically scanned for a myriad of indicative terms such as "bank," "thrift," and "N.A." More difficult is identifying short sales. This requires either knowing whether the seller is in financial distress, something that can be inferred with mortgage-level data, or by having another indicator of mortgage delinquency. One option is to use public record indications of financial distress. "Notice of Default" (NOD) and "Lis Pendens" (LP) filings made with county recorder offices indicate that mortgage payments have been late and that borrowers are having problems with their payments. Property sales occurring shortly after such filings thus might be reasonably inferred to be short sales.

FHFA plans on releasing a set of distress-free indexes in the coming months. FHFA is in the process of evaluating various options for identifying distressed sales. The use of mortgage-level data in connection with county courthouse records is one option, but it does have drawbacks. In particular, it requires additional data that FHFA does not currently have at its disposal. FHFA has REO data from Fannie Mae and Freddie Mac

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[1] As an example, see Leventis, Andrew. "The Impact of Distressed Sales on Repeat-Transactions House Price Indexes," FHFA Research Paper, May 27, 2009, available at: http://www.fhfa.gov/webfiles/2916/researchpaper_distress%5b1%5d.pdf. Also, last quarter's HPI release included a "Highlights" article showing the impact of certain distressed sales on index revision patterns.

(the Enterprises) but does not have county recorder NOD and LP filings. The filings data would need to be licensed,[2] as would data showing seller names. Licensing costs for such data might not be trivial and, given that many types of real estate data are not available for small counties, geographic gaps in coverage would likely exist.

Identifying Distressed Sales with New Appraisal Dataset

An alternative way of identifying distressed sales exists and is illustrated here. The method makes use of a new dataset comprised of appraisal records available to the Enterprises. In connection with a large-scale effort to streamline and standardize document submissions from lenders and appraisers, beginning in late 2011, the Enterprises began receiving a significant share of mortgage appraisal information in database format. The Uniform Appraisal Dataset (UAD) initiative provides an online portal through which appraisers directly input appraisal values, property addresses, and all other data fields that are submitted with the standard Uniform Residential Appraisal Report. Use of the online portal became mandatory beginning on March 19, 2012; thereafter *every* appraisal submitted to the Enterprise was to be submitted through the portal.

Prior to the UAD initiative, only select information (e.g., the final appraised market value of appraised properties) was available as electronic data usable for research. With the UAD electronic submissions, all information from appraisals—including street addresses and transactions amounts—became available for research.

In the context of identifying distressed sales, the UAD database is useful because appraisers must indicate whether the subject property is being sold as an REO or short sale. In addition, when describing the chosen "comparable" properties, appraisers note whether those properties were sold in distress. In total, a given appraisal record thus tends to provide transaction prices, transaction dates, and indicators of distress for three or more transactions (i.e., the "subject" transaction as well as transactions for comparables).

The appraisal transactions data can then be reviewed to determine whether transactions in FHFA's HPI estimation sample are distressed. To produce a distress-free measure, the identified distressed sales can be removed and the index is simply re-estimated on the remaining data.

Because appraisals are submitted for mortgages in all areas of the country, there are no geographic gaps in the UAD database. Some significant "gaps" do exist, however. The most notable deficiency is the fact that the UAD database is new and thus is only useful for identifying recent distressed sales. Millions of historical transactions from more than 20 years are used in estimating the HPI data sample, but because the UAD database

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[2] NOD data for California were licensed on an *ad hoc* basis in 2009 to support research that studied the effect of distressed sales in California.

only covers the most recent quarters, it can be used to flag distressed transactions in only the most recent periods.

Unfortunately, even for the latest quarter, the UAD database provides incomplete flagging of distressed sales. As indicated previously, submissions to the data portal only became mandatory on March 19. Also, transactions involving non-Enterprise financing are not always present and only become available with a lag. A distressed sale with non-Enterprise financing will only be present in the UAD database if it is used as a "comparable" sale in connection with an Enterprise appraisal. There is no guarantee that it will ever be used as a comparable and, even if it is, several months may elapse before it is used as such.

Test Case: Arizona

To assess the usability of the UAD database for the purpose of identifying distressed sales, FHFA has obtained a test data sample comprised of appraisal data from the state of Arizona. Fannie Mae has supplied FHFA with appraisal data that were submitted through the data collection portal beginning in mid-September 2011 and extending through early April 2012. Appraisal data for mortgages guaranteed by Fannie Mae and Freddic Mac are present in the sample, although—as noted previously—the dataset does not reflect all Enterprise mortgages before March 19.

The appraisal data are used to flag distressed sales in the two primary data samples FHFA uses to produce statewide house price indexes. FHFA's "purchase-only" HPI—which is calibrated using home values for Enterprise-guaranteed purchase-money mortgages—is analyzed, as is the "expanded-data" HPI. The latter index is estimated home values from Enterprise-financed homes, homes with FHA-endorsed mortgages, and transaction prices from county recorder offices.[3]

For the "purchase-only" and "expanded-data" samples, Table 1 shows the shares of transactions for which a corresponding appraisal can be found in the UAD database. The table reveals appraisal data are available for approximately 70 percent of transactions in the purchase-only data sample for the fourth quarter of 2011. This means that the distress status of the seller is known for roughly 7 out of 10 transactions in that dataset for that period. As use of the data submission portal increased in the first quarter, the table reports that distress status was known for almost eight out of 10 transactions in that period.

Because the use of the portal is now mandatory, the share of known distress status should increase to near 100 percent for the Enterprise (purchase-only) sample. The share for the expanded-data sample will not likely grow to that level given that the data portal is not mandatory for non-Enterprise loans. By virtue of the fact that non-

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[3] FHFA currently licenses these data from DataQuick Information Systems. Although the licensed transactions data are sourced from county recorder offices, as noted previously, the data do not show seller names. They also do not also include NOD and LP filings.

Enterprise transactions are often used as comparables in connection with appraisals for Enterprise mortgages, the share of the "expanded-data" transactions in the UAD sample is significant, however. Roughly six out of 10 "expanded-data" transactions in the first quarter have corresponding entries in the in the UAD sample and thus have distress status information.

Figures 1 and 2 show the HPI impact of removing identified distressed sales from the respective data samples. As indicated previously, the only difference between the standard and distress-free indexes is the distressed observations: the distress-free index is estimated using a data sample that omits REO and short sales (as identified in the UAD database). Quarterly price changes (not seasonally adjusted) are shown for the respective series.

It is tempting to infer the overall impact of distressed sales on the HPI from the difference between the quarterly price change estimates. This is problematic, however, because of the significant change in the coverage between the fourth and first quarters. Distress information is available for a smaller share of the fourth quarter transactions than the first quarter. In other words, a smaller percentage of all distressed sales are identified (and thus removed) in the fourth quarter than in the first quarter. The difference in coverage will produce larger estimated price declines than would be estimated with similar coverage across the respective periods.

Given the absence of sales and distress information for prior periods, the coverage problem afflicts prior estimates as well. Without having similar coverage rates across periods, a distress-free index produced by simply removing identified distress sales will produce an index that is not a reliable facsimile of a true distress-free measure. While the UAD coverage will certainly improve sharply in coming quarters, this problem hampers interpretation of price change estimates in the interim.

One option for mitigating this problem would be to construct the index using only transactions that are known definitively to be nondistressed. The idea is effectively the converse of the prior methodology: instead of removing distressed sales from the data sample (the prior approach), one can estimate a distress free index using only transactions that can affirmatively be identified as nondistressed.

This approach is an improvement from the prior methodology because it makes use of the data that are available in the UAD database for prior periods. Although not particularly plentiful, transactions data are available for select sales prior to the fourth quarter. These observations reflect "comparable" sales occurring in prior periods, but referenced in 2011Q4 and 2012Q1 appraisals. As a share of the estimation data sample, UAD appraisal data (i.e., distress indicators) are available for 36 percent of transactions from the third quarter of 2011, 14 percent of transactions for the second quarter and about 5 percent of transactions for the first quarter.[4] Appraisal data are available for less than one percent of transactions in earlier quarters.

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[4] The shares represent the fraction of the "expanded-data" sample. The shares are slightly higher for the "purchase-only" (i.e., Enterprise-oriented) data sample.

While theoretically a good solution, given the current UAD database, this approach suffers from insufficient sample sizes for all but the most recent quarters. The estimation data sample is less than one-tenth the size of the prior dataset and index values are, as a result, extraordinarily volatile for early periods. The small sample sizes would also mean that there would likely be large index revisions with subsequent releases; that is, the "distress free" measure would likely be changed substantially as new data become available. As a final concern, given that few data points that are available for prior periods are, by construction, unusual—that is, they reflect situations where recent comparable sales were not available—it is reasonable to wonder whether such transactions act as unbiased indicators of price trends for all sales.

On a related, more general note: the repeat-transactions index methodology that is used in forming the HPI assumes that transaction pairs—price changes for the same property over identified intervals—are unbiased measures of market-wide price changes. Because the UAD appraisal data are only available for very recent periods, any "distress free" transactions pairs formed with the data tend to be short duration pairs. That is, little time would have elapsed between the transactions. To the extent that "short hold" pairs have different appreciation patterns that other properties (with longer holding intervals), until longer time series of appraisal data become available, complexities will exist in interpreting index estimates.
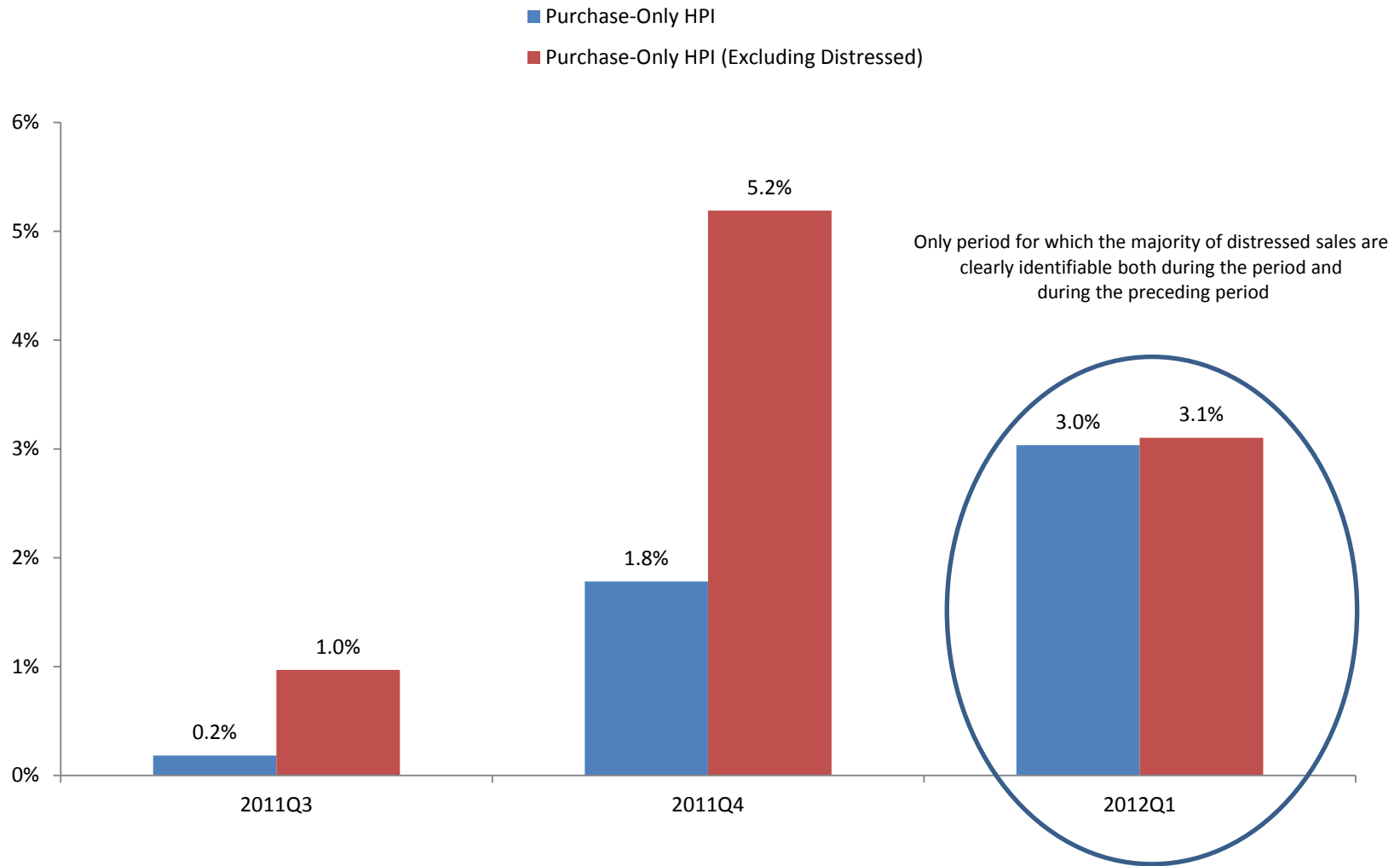
Commentary

FHFA will continue evaluating various options for producing distress-free indexes. In the coming months, "developmental" distress-free indexes will be made available on FHFA's website for a few select geographic areas. FHFA welcomes comments or suggestions regarding approaches that might be used for forming such measures. Comments should be addressed to Andrew.Leventis@fhfa.gov.

Table 1: Fraction of Arizona Property Sales for which Appraisal Data Can be Used to Identify Distressed Sales

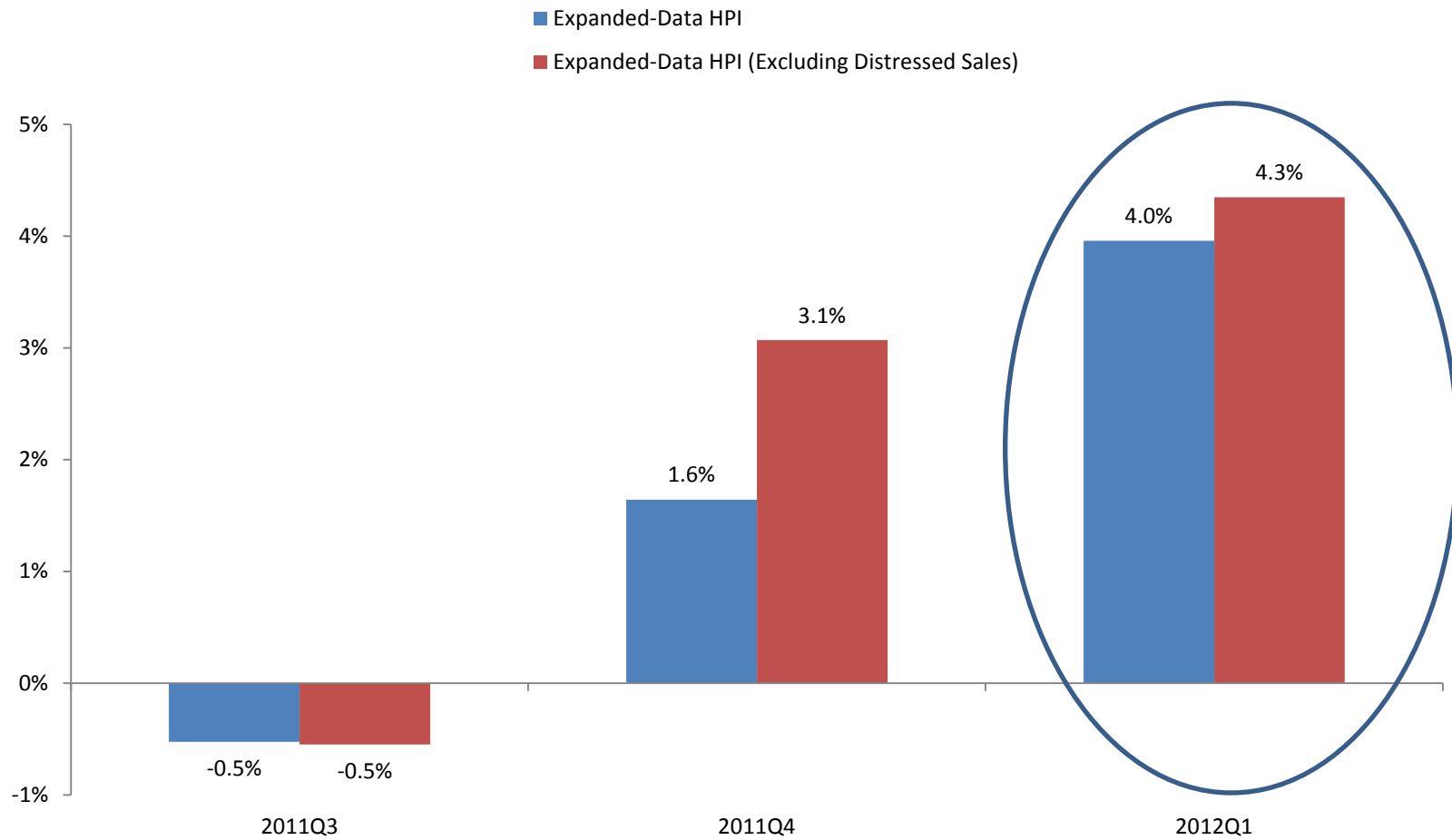| Data Sample	Fourth Quarter 2011	First Quarter 2012
"Purchase-Only" HPI (Transactions financed with Enterprise-Guaranteed Purchase-Money Mortgages)	70.9%	77.0%
"Expanded-Data" HPI (Transactions financed with Enterprise mortgages and FHA-endorsed loans as well as county recorder data)	59.8%	58.0%

Sources: Uniform Appraisal Data, Enterprise HPI data submissions, DataQuick Information Systems

Figure 1: Quarterly Price Change (Not Seasonally Adjusted) Estimated with Purchase-Only HPI for Arizona:
Standard Index vs. "Distress-Free" Metric

■ Purchase-Only HPI

■ Purchase-Only HPI (Excluding Distressed)

Only period for which the majority of distressed sales are clearly identifiable both during the period and during the preceding period

5.2%

3.0%   3.1%

1.8%

1.0%

0.2%

2011Q3   2011Q4   2012Q1

Sources: Enterprise HPI Data Submissions, UAD Database

Figure 2: Quarterly Price Change (Not Seasonally Adjusted) Estimated with Expanded-Data HPI for Arizona:
Standard Index vs. "Distress-Free" Metric

■ Expanded-Data HPI
■ Expanded-Data HPI (Excluding Distressed Sales)

Only period for which the majority of distressed sales are clearly identifiable both during the period and during the preceding period

Sources: Enterprise HPI Data Submissions, UAD Database, DataQuick Information Systems, Federal Housing Adminstration.