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FEDERAL HOUSING FINANCE AGENCY

[No. 2015-N-10]

Notice of Establishment of Housing Price Index

AGENCY: Federal Housing Finance Agency.

ACTION: Final notice.

SUMMARY: On May 27, 2015, the Federal Housing Finance Agency (FHFA) published a Notice and Request for Input (Notice) describing a method for assessing the national average single-family house price for use in adjusting the maximum conforming loan limits of Fannie Mae and Freddie Mac (the "Enterprises"). The Notice responded to section 1322 of the Federal Housing Enterprises Financial Safety and Soundness Act of 1992 (12 U.S.C. 4501 et seq.) ("Safety and Soundness Act") which required FHFA to "establish and maintain a method of assessing the national average 1-family house price for use in adjusting the conforming loan limitations." The Notice indicated that FHFA intends to use its existing "expanded-data" house price index (HPI) for such purpose and invited public feedback.

In line with the proposal in the original Notice, after reviewing the public feedback, FHFA has decided to use the expanded-data HPI for annual loan-limit adjustment. Specifically, FHFA will use the seasonally adjusted, expanded-data HPI for the United States.

DATES: Effective Date: [INSERT DATE OF PUBLICATION IN FEDERAL REGISTER].

FOR FURTHER INFORMATION CONTACT: Questions about the expanded-data HPI and the implementation of the conforming loan limit rules can be addressed to Andrew Leventis, Principal Economist, 202-649-3199, Andrew.Leventis@fhfa.gov, or Jamie Schwing, Associate General Counsel, 202-649-3085, Jamie.Schwing@fhfa.gov, (not toll-free numbers), Federal Housing Finance Agency, 400 Seventh Street, SW., Washington, DC 20024.

SUPPLEMENTARY INFORMATION:

A. Background

The "Notice of the Establishment of Housing Price Index" that FHFA issued in May[1] announced that the agency intended to use its expanded-data HPI for the purpose of satisfying section 1322 (12 U.S.C. 4542) of the Safety and Soundness Act.[2] Section 1322 requires FHFA to "establish and maintain" a house price index that tracks the average U.S. home price. May's Notice detailed FHFA's rationale for the choice of the expanded-data index over other measures. The Notice discussed the advantages and disadvantages of several metrics and outlined the various considerations FHFA found most compelling in choosing the index. Identifying the seasonally adjusted, expanded-data HPI for the U.S. as the selected index, the Notice invited public input and provided for an input period that extended through July 27, 2015. This Final Notice summarizes the input submissions received and responds to questions and concerns that were raised in the submissions.

B. Overview of Input Submissions Received

FHFA received a total of 20 submissions in response to the Notice. Submissions were received from private citizens, trade associations, a think tank, and one private company.

[1] See 80 FR 30237 (May 27, 2015).
[2] Section 1124(d) of the Housing and Economic Recovery Act of 2008 (HERA), 122 Stat. 2693, amended the Safety and Soundness Act to include this section.

Twelve of the submissions did not address the issue on which input had been requested: the appropriateness of the chosen home price measure. In most cases, these submissions opined on the desirability of having higher conforming loan limits, rather than FHFA's choice of index.

In general, the eight responsive submissions were favorable to FHFA's proposed use of its expanded-data index for loan limit adjustment. Most submissions supported the basic underlying methodology used in the index construction and appreciated the breadth of the data sample used in forming the index. More generally, submitters agreed that reliance on an agency-produced measure (as opposed to a privately produced index) would be beneficial in that it would ensure continued publication of the reference index. They also concurred with FHFA's belief that its control over the reference index would ensure that undesirable modifications to methodology would not be made (as might happen if the agency relied on an external measure of home prices).

Five of the eight responsive submissions were generally supportive of the use of the expanded-data index as-is. The remaining three did not object to the use of the expanded-data index, but suggested modifications to the process or augmentations. In particular, the proposed adjustments recommended the use of multiple price indexes and, in one case, the consideration of other mortgage market factors.

For the purpose of summarizing and addressing the responsive submissions received, this Final Notice divides them into two groups: "Supportive" and "Other." This classification is for convenience; as will be clear in the discussion, responses in both categories were not uniform. For instance, in some cases, the "Supportive" submissions included questions or expressed modest concerns. Meanwhile, the "Other" submissions often included strong praise for certain characteristics of FHFA's proposal.

C. Discussion of the Five Responsive "Supportive" Submissions

1. Summary

Three of the five "supportive" submissions were wholly in agreement with the proposed use of the expanded-data index for tracking the average U.S. home price. None of the three, which were all submitted by trade associations, provided any material criticism. They expressed strong support for FHFA's choice and, to varying degrees, the principles FHFA used in evaluating measures.

The remaining two "supportive" submissions—one from a trade association and one from a private company—provided supplementary recommendations. The submissions addressed the following issues.

a. Data Inputs

Submissions urged FHFA to incorporate as much transaction data as possible in the formation of the expanded-data index.

b. Distressed Sales and Gaps between House Price Indexes

Submissions asked that FHFA track the impact of distressed sales[3] on index estimates over time, while also monitoring divergences between the FHFA index and other home price measures.

c. Transparency and Data Releases

The submitter recommendation was that FHFA publish additional details about the underlying data used for index construction.

d. Constraints on Historical Index Values

One submission asked FHFA to consider constraining the historical index series. That is—the request was that FHFA consider not permitting revisions in prior

[3] "Distressed sales" include short sales and sales of properties that have gone through foreclosure.

index estimates. Like all of FHFA indexes, the expanded-data HPI has historical values that are regularly updated to account for new data.

e. Geometric vs. Arithmetic Index

Without veering from its support of the expanded-data index, one submission also noted a theoretical bias in the expanded-data index's measurement of trends in average home prices. In particular, the submitter stated that the underlying methodology used in forming the expanded-data index will create indexes that track the geometric average home price as opposed to the arithmetic average home price.[4] In doing so, as a theoretical matter, the index reportedly would grow somewhat more slowly over time than would an arithmetic index. The letter conceded that the differences will be small over the short term (e.g., on an annual bias), but worried about long-term compounding effects. The letter noted that the CoreLogic-produced indexes track arithmetic average home prices and thus are not susceptible to this bias.

2. FHFA Response

a. Data Inputs

With respect to the submitter interest in having FHFA increase the amount of data used in calibrating the expanded-data index: FHFA agrees that this is a desirable goal. In the context of tracking overall home values across the country, more data will tend to provide more precise estimates of price changes. While the database currently used is extensive and

[4] The geometric average of a set of numbers is computed by multiplying the numbers together and then raising the product to the power of one divided by the number of observations. Although not necessarily the case, the geometric average can be close to the median value. The arithmetic average is formed by adding numbers together and dividing by the number of observations.

Although the "arithmetic" average is probably the most common interpretation of the term "average," it is not the only recognized meaning of the term, and the statutory text does not make explicit which type of "average" the index is supposed to track. Which type of average to use is thus left to the judgment of FHFA, as the agency charged with administering and interpreting the statute.

incorporates a wide array of transaction data, FHFA will continue exploring opportunities for increasing the sample size.[5] As stated in the Notice, to the extent that new data become available and are incorporated, FHFA will communicate the effects of those changes to the public.

b. Distressed Sales and Gaps between House Price Indexes

With respect to monitoring of distressed sales and divergences between the FHFA index and other metrics: FHFA concurs that these are reasonable activities. FHFA, in fact, has been doing this type of monitoring for many years and has published a number of papers showing the results of its work.[6] Also, FHFA publishes "distress-free" house price indexes for twelve large cities so that it and the general public can review the localized impact of distressed sales on price measurement. FHFA plans to continue such releases and, more generally, will continue evaluating price movements across multiple measurements.

c. Transparency and Data Releases

A longstanding tradition in HPI production has been to communicate relevant summary data about the data sample to the public. Accordingly, FHFA appreciates the submitter interest in maximizing the transparency of the data used in index calibration. FHFA regularly publishes information about the share of the overall data sample comprising refinance loans and, for the expanded-data index, identifies index estimates that have been

[5] For instance, opportunities may exist for supplementing the existing data sample with sales data from Multiple Listing Services and electronic appraisal data.

[6] See, for instance, Andrew Leventis, "Revisiting the Differences between the OFHEO and S&P/Case-Shiller Housing Price Indexes: New Explanations" OFHEO Research Paper, January 2008, available at http://www.fhfa.gov/PolicyProgramsResearch/Research/PaperDocuments/20080115_RP_RevisitingDifferencesOFHEOSPCaseShillerHPI_N508.pdf; Andrew Leventis, "The Impact of Distressed Sales on Repeat-Transactions House Price Indexes," FHFA Research Paper, May 27, 2009, available at http://www.fhfa.gov/PolicyProgramsResearch/Research/PaperDocuments/20090527_RP_ImpactDistressedSalesHPI_RP_508.pdf ; and Will Doerner and Andrew Leventis, "Working Paper 13-1: Distressed Sales and the FHFA House Price Index," FHFA Working Paper, August 2013, available at http://www.fhfa.gov/PolicyProgramsResearch/Research/PaperDocuments/2013-08_WorkingPaper_13-1_508.pdf.

calibrated with limited county recorder data.[7] For the purchase-only indexes, flags identify states having small sample sizes. Highlights articles and Technical Notes in the past have provided information about the data samples as well. Aside from the FHFA-provided data, relevant information is also available from the Enterprises. Because few data filters are applied to the data sample before the indexes are estimated, index users seeking information about the Enterprise portion of the expanded-data transactions can benefit from reviewing loan-level summary statistics regularly published by the Enterprises.[8]

Although a great deal of information is already available, FHFA will continue evaluating opportunities for enhancing its release of summary data. In reviewing those opportunities, FHFA will weigh the likely value of the additional detail against the required resource demands. It must also consider whether the release of more data would violate the terms of any applicable data licenses or would inappropriately release confidential data.

d. Constraints on Historical Index Values

The suggestion that FHFA should contemplate constraining historical values of the expanded-data HPI is motivated by a concern that historical index revisions might cause confusion among some index users. The submitter recognizes that the entire historical index series is revised with each new index release, but it expresses concern that such revisions will make it difficult for the public to evaluate price changes.

Although FHFA understands the argument, it does not believe that artificial constraints on historical values are warranted. The suggestion, which was not a matter of particular stress in the submitter's letter, would entail a significant departure from the basic repeat-transactions indexing model and would require a significant re-tooling of the

[7] See the downloadable expanded-data HPI estimates and the "loan type" table at http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx.
[8] See, for instance, Fannie Mae's quarterly "Credit Supplement" and Freddie Mac's quarterly "Financial Results Supplement."

programming code. Furthermore, historical index revisions tend to be relatively small, particularly over short periods of time. The index constraints would also necessarily reduce the accuracy of the index estimates. Finally, many—if not most—users of FHFA's suite of public indexes are already accustomed to the fact that historical index values are always subject to revision.

e. Geometric vs. Arithmetic Index

Regarding the theoretical biases associated with FHFA's use of an index that tracks the geometric average home value: FHFA appreciates the feedback and understands the issue. As a geometric index, FHFA's expanded-data measure will tend to correlate somewhat more closely with changes in median home values as opposed to arithmetic-average home values and, in theory, will grow slightly more slowly than an arithmetic-based price index would. Recognizing the theoretical issue, FHFA notes that growth rate differences will likely be small and increases in a geometric index in practice can actually exceed increases for an arithmetic measure.[9] A conversion to an arithmetic-average index would also inconvenience those index users who find the existing FHFA methodology superior for their applications. Coupled with the fact that a conversion to an arithmetic-average index would require a significant expenditure of internal resources (to change programming code and perform model validation), these considerations lead FHFA to believe that continuing with the existing methodology is appropriate.

D. Discussion of the Three Responsive "Other" Submissions

1. Summary

[9] See page 118 of Robert Shiller, "Arithmetic Repeat Sales Price Estimators" Journal of Housing Economics 1, 1991, pages 110-126.

As mentioned above, the three "other" responsive submissions suggested various modifications to the proposal described in the initial Notice. None of them expressed outright disapproval of the use of the expanded-data HPI and, indeed, incorporated it into their proposals. Submitters felt that adjustments were necessary to address perceived shortfalls, however.

The first of the "other" submissions expressed support for the use of the expanded-data index, but worried that the index does not adequately reflect price trends for new homes. It noted that the underlying repeat-transactions approach used in forming the index is calibrated using homes that have had two or more historical sales. The upshot of reliance on homes with multiple transactions is that price trends for brand new homes will not be incorporated into the index.

To mitigate the perceived problem, the submitter suggested that FHFA form a weighted index that incorporates the expanded-data measure as well as the price index for new homes published by the Census Bureau—the Constant Quality House Price Index (CQHPI). The change in the new combined index would be calculated as the weighted average of the changes in the FHFA expanded-data HPI and the change in the CQHPI, where the weights would be the relative shares of existing-vs-new home sales. So, for instance, if 15 percent of all property sales in a year were sales of new homes, then the growth in the combined index would be 85 percent times the change in the expanded-data index plus 15 percent times the change in the CQHPI.

The second of the "other" submissions expressed no concerns about the absence of new homes in the data sample, but rather was troubled by the potential effects of distressed sales on index estimates. The submitter was concerned that variations in the volumes of distressed sales across geographic areas could inappropriately bias index estimates. To

mitigate this problem, the letter recommended that FHFA use both the expanded-data index and its traditional "purchase-only" index, which is calibrated using only Enterprise data. Specifically, it suggests that FHFA use the higher of the two appreciation rates—the rates reflected in expanded-data and purchase-only indexes—when adjusting the conforming loan limit. No indication is provided as to why a "higher-of" rule is better than some other type of rule (e.g., a simple averaging of the two numbers).

The same submitter asked that FHFA "explain and justify" its use of indexes that reflect changes in the geometric average home price. While endorsing the use of the expanded-data and purchase-only indexes, both of which rely on the geometric approach, the letter broadly worries about the same bias as was addressed earlier.

The third of the "other" submissions did not address the issue of the geometric index bias, but was otherwise similar in that it suggested the same "higher-of" rule for estimating price changes. It contends that a "superior alternative" to the use of the expanded-data index would be for FHFA to adjust the loan limits by the higher of the annual appreciation rates observed in the expanded-data and purchase-only index. FHFA has had difficulty following the justification set forth in the letter, but the rationale appears to rest on the assumption that, because of tightened credit availability, homes outside of the conforming market (e.g., expensive homes) will evidence relatively anemic price growth in the early stages of economic recoveries. By including homes financed with non-Enterprise loans, the expanded-data HPI reportedly will tend to exhibit lackluster price growth during recoveries.[10] The "higher-of" rule would ensure that the conforming loan limit grows by a reasonable rate during recoveries.

[10] The submitter showed that the expanded-data HPI grew more slowly than the purchase-only series in the latest recovery.

The same submitter presented the idea that a "more sophisticated" approach to loan limit adjustment might be taken. The alternative approach would take into account market factors beyond home prices when adjusting loan limits. Measures of loan "access," for instance, might be incorporated. The letter also suggests that in lieu of this "more sophisticated" measure, FHFA might simply use its purchase-only index—either in its existing form or in a value-weighted form.[11] As justification for the use of the purchase-only index, the letter simply indicates that "it grows faster during market's expansion through the housing cycle."

2. FHFA Response

None of the three "other" submissions expressed particularly strong sentiment against the use expanded-data HPI and, in evaluating the rationale for the proposed modifications, FHFA does not find the arguments to be particularly persuasive. In general, the suggested adjustments have limited support from both a statutory and statistical perspective.

a. Price Trends for New Homes

In assessing the criticism that FHFA's index—like other repeat-transactions indexes—does not specifically incorporate information about price trends for brand new homes, FHFA agrees that this may be a theoretical shortfall. However, FHFA does not believe that this will be a particularly significant problem in practice. First, while not capturing price trends for brand new home sales, the repeat-transaction model will reflect price changes for relatively new homes. This is because the underlying calibration dataset includes cases in which new homes were sold and then sold again within a relatively short period of time. The price change for these "young" homes will presumably be quite similar to price trends for brand new homes.

[11] The value-weighted index would track the arithmetic average home price.

In weighting by the share of sales for new homes, the submitter's proposal assumes that the index of interest should reflect price trends for homes that have recently sold. FHFA does not agree that this is appropriate in this context. FHFA's expanded-data index, like its other indexes, aims to track average home prices for all U.S. properties—the overall housing stock—and not just values for homes that were sold. To implement the right weighting, FHFA forms the national index by taking a housing-stock-weighted average of outcomes in the respective states.

To be sure, price changes in the individual states necessarily must be calculated using recent transaction prices. However, as evidenced by the fact that FHFA uses housing stock estimates when forming the national index, FHFA's goal is to reflect price trends for the overall housing stock.

Given this goal, the relevant statistic for evaluating the importance of new homes is the share of the housing stock that such homes comprise. New homes represent a very small proportion of the overall housing stock and thus the submitter's concern about the exclusion of new homes is not particularly problematic. Although new home sales constitute a reasonable share of transactions in a given year (according to the submitted letter, they have averaged about 17 percent of sales over the past 15 years), new homes are a very small proportion of the housing stock. In 2014, for instance, about 620,000 one-unit new homes were built.[12] For comparison purposes, estimates from the Census Bureau indicate that there were more than 89 million one-unit properties in the country in the preceding year.[13] New homes thus were substantially less than one percent of the housing stock in 2014. A stock-

[12] See new private new home "completions" in Table 5 of the New Residential Construction report (available at http://www.census.gov/construction/nrc/pdf/newresconst.pdf).
[13] See http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_1YR_B25024&prodType=table.

weighted combined index thus would place more than 99 percent of its weight on the price change reported by the expanded-data index.

b. Distressed Sales and Housing Cycles

With respect to the argument that distressed sales can distort home price measurements: as detailed in the Notice and noted by another submitter, there are advantages and disadvantages associated with the inclusion of such sales in the data sample. Such transactions can provide valuable information about price trends in cases where non-distressed sales volumes are modest, for instance. Also, even if removing distressed sales was deemed to be desirable after balancing the various considerations, given current available data sources, it is difficult to clearly identify such sales and remove them from the data sample.[14]

The submission that raises concerns about the expanded-data index showing relatively limited price growth during market recoveries provides no evidence that the (anticipated) slow growth would misrepresent actual appreciation in the market. Tracking of home prices is the key statutory requirement and, accordingly, the relevant issue for FHFA is not whether certain market factors may influence lending and home prices during market cycles; rather, the key issue for FHFA is the reliability and accuracy of price measurement. The plain language of the statute does not ask FHFA to evaluate market conditions (as the submitter would have done using a "more sophisticated measure") or to somehow account for likely market factors when selecting the appropriate index. It also does not ask FHFA to select an index that maximizes measured price appreciation during certain parts of the housing cycle.

Given the basic goal of tracking the average home value over time, the "higher-of" rule suggested by submitters is not well aligned with the statutory language. By construction,

[14] FHFA currently publishes distress-free measures for 12 metropolitan areas, but such measures make use of a special, third-party-sourced dataset to identify distressed transactions.

the higher-of rule will clearly inflate estimates of home price appreciation (and minimize measured price declines) and thus would tend to lead to artificial growth in conforming loan limits.

One of the two submitters that advances the "higher-of" rule does so to mitigate the effect of distressed sales on index estimates. Even assuming that the inclusion of distressed sales is problematic—an issue addressed above—it is not clear why the maximum of the two price change estimates would be superior over the long term to use of the midpoint (or some other function of the two). Also, although there may be some differences, the two indexes generally will be affected similarly by changes in the volumes of distressed sales.

E. Conclusion

While not unanimous, the submissions received in response to the Notice were, on balance, quite positive. All submitters seemed to agree that an FHFA-produced measure was appropriate. The only matter of some (limited) debate seemed to be whether small adjustments were necessary. In some cases, the contemplated adjustments would have a limited influence on index estimates. In other cases, FHFA believes that the adjustments are not supported by the statutory language.

FHFA will begin using the seasonally adjusted, expanded-data HPI for the U.S. for the purpose of adjusting the baseline conforming loan limit.[15] Consistent with the usual timing of loan-limit releases, the first use of the index will be in late November of this year when FHFA announces the 2016 Enterprise loan limits. As in prior years, FHFA will publish actual loan limits as well as detailed information about the relevant calculations. Given that the

[15] As discussed in the prior Notice, because index values will be compared for the same quarter over time, only the most trivial difference will exist between the selected seasonally adjusted index and an unadjusted index.

expanded-data index is now the reference index, the relevant discussion will include an evaluation of changes in the expanded-data index.

As detailed at length in the Notice, certain loan-limit provisions in the Enterprise Charters require that, after a period of home price declines, the baseline loan limit cannot rise again until home prices exceed their pre-decline levels.[16] In accordance with this requirement and as discussed in the prior Notice, when determining the 2016 baseline conforming loan limit this November, the third quarter 2015 price level will be compared to the price level in the third-quarter of 2007—the base period for the recent price decline. As the expanded-data HPI has now been selected as the reference index, market participants can expect that the net price change (positive or negative) will be computed over that interval using the expanded-data HPI.

Dated: October 15, 2015.

Melvin L. Watt,
Director, Federal Housing Finance Agency.

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[16] See Section 302(b)(2) (12 U.S.C. 17179b)(2)) of the Fannie Mae Charter and Section 305(a)(2) (12 U.S.C. 1454(a)(2)) of the Freddie Charter. These sections were amended by HERA sections 1124(a) and (b), 122 Stat. 2691-2692.