

Highlights

Recent Differences Between Appreciation Rates Reflected in the Purchase-Only and All-Transactions Indexes

Background

In recent periods, significant differences have existed between the price appreciation rates reflected in the purchase-only and all-transactions HPIs. The appreciation patterns in the respective indexes have historically been similar to each other, but in the last several quarters a sizeable gap has developed. Between the fourth quarter of 2011 and the fourth quarter of 2012, for example, prices grew roughly 5.5 percent in the purchase-only measure and 0.4 percent in the all-transaction measure. The four-quarter intervals ending in 2012Q3, and 2012Q2, and 2012Q1 also saw smaller, but still significant differences. In the four-quarter period ending in 2011Q4, by contrast, the respective indexes estimated similar price changes; in that interval, the purchase-only series and all-transactions indexes fell 2.3 percent and 2.9 percent respectively.

This Highlights article briefly examines a few hypotheses for the recent gap. Empirical evidence consistent with some of the hypotheses is shown, but the size of the gap is much larger than can be explained with current data.

The difference between the two HPI measures is that the all-transactions measure includes appraisal data from refinances and the purchase-only does not. Both series use the same methodology and rely on home values in mortgage data from Fannie Mae and Freddie Mac (the “Enterprises”), but the dataset used for estimating the purchase-only indexes omits appraisal values from refinance mortgages, whereas the all-transaction measures incorporate such valuations.

In explaining the gap between the two series, the relevant question is: “Why has the growth rate in sales prices outpaced the observed growth in appraisal values?” Ultimately, the source for the divergence must either be related to: (1) systematic differences in appreciation patterns for properties that have been refinanced or (2) systematic differences in how appraisals have accounted for recent price trends. The first factor would explain much of the gap if houses collateralizing recent refinance mortgages had materially lower appreciation rates than houses that sold. The second factor would be important to explaining the gap if appraisal values did not keep pace with growth in sales prices over the latest quarters.

Differences in Price Change Estimates

Figure 1 shows, by state, the difference between the four-quarter price changes reflected in the purchase-only and all-transaction measures over the 2011Q4-2012Q4 interval. Positive values indicate that the purchase-only index showed greater price appreciation.

Only two states evidenced greater price appreciation for the all-transactions index than the purchase-only series. This outcome was notable, as generally one would expect a more balanced

distribution across states. For the four-quarter period ending in 2011Q4 (i.e., a period when the national measures did not show a large difference), for instance, the purchase-only series estimated stronger outcomes in 28 states and the District of Columbia.

Interestingly, over the latest four quarters, some of the largest differences are in states that have seen the largest rebounds in home prices of late. For example, in Arizona, Nevada, Florida, and California—states that saw very significant bust-period price declines but recent strength—the average difference between the 2011Q4-2012Q4 appreciation measures was 12.4 percentage points.

Home Affordable Refinance Program (HARP) Mortgages

One hypothesis for the weaker outcomes for the all-transactions index involves mortgages from the Enterprises' Home Affordable Refinance Program (HARP). Mortgage volume under HARP, which provides mortgage refinances to borrowers with Enterprise-guaranteed loans, expanded significantly in 2012 to include borrowers whose houses were deeper underwater. In particular, prior to the "HARP 2.0" expansion, to obtain a HARP mortgage, a borrower was not permitted to have a loan with a current loan to value (CLTV) ratio of more than 125 percent. In 2012, that constraint was removed and the Enterprises saw a large influx of high-LTV mortgages.

By construction, one might assume that the newly-eligible properties disproportionately would have seen larger price declines and more anemic recent price increases than other houses. By making properties that had higher LTV ratios eligible for HARP loans, the composition of the all-transactions index data sample may have changed. For example, the newly eligible properties might be located in neighborhoods that saw the greatest price declines or the most anemic price increases. FHFA's state-level house price indexes are constructed with pooled datasets comprised of transactions from throughout each of the states. To the extent that transaction volumes spiked in sub-state areas (e.g., neighborhoods, cities and counties) that experienced less robust price increases, those volume increases would have the effect of depressing measured price increases for the all-transactions statewide metrics.¹ That would impact the national estimates.

To test whether home values for houses financed with HARP refinances had different price appreciation than other houses, a dataset identifying HARP mortgages has been merged with the HPI transactions data. Although the HARP mortgage dataset does not explicitly identify newly eligible mortgages, a large portion of HARP mortgages originated in the third quarter had LTV ratios above 125 percent, which were not permitted in 2011. The HARP mortgage file does not include HARP loans from the fourth quarter of 2012 and thus it is not possible to flag HARP loans in that quarter.

¹ Independent of the effect on the geographic composition of the sample, one might assume that newly eligible HARP properties might have disproportionately had poor upkeep relative to other properties. While that might be true, this effect may not be fully reflected in appraisals. Most appraisals for newly eligible HARP loans are derived from Automated Valuation Models, which generally have difficulty incorporating valuation effects of poor property condition.

For each of five states—California, Florida, Washington, Georgia, and Arizona²—Table 1 shows the average model residual associated with recent transactions involving HARP mortgages. In the repeat-transactions statistical model that underlies the HPI, the average model residual represents the difference between the observed price change for a home (over a given interval) and the predicted price change. The predicted price change is an overall estimate calibrated using the entire data sample. Thus, the average model residual for HARP loans represents the extent to which the HARP-refinanced properties exhibited materially different appreciation patterns. Negative numbers indicate that the actual change was below the predicted value (i.e., the HARP property saw less appreciation or a greater price decline than the norm). The numbers reflect percentage point differences, such that -10.0 percent means that the observed price increase for a HARP property was about ten percentage points below what would have been expected.

It should be noted that the percentage point residuals do not reflect the gap in appreciation over the latest year. Rather, they reflect the difference between the predicted and actual price change over the time period between two observed values for a given home. That interval in most cases was longer than a year. For a property whose price appreciation was measured between 2010Q3 and 2012Q3, for example, -10.0 percent residual would mean that, *over that two year period*, the property's price change was ten percent lower than the norm. Because price changes for many houses—over many different intervals—are used to calibrate the indexing model, the residuals do not directly quantify the effect that HARP mortgages on the latest four-quarter price change estimates.

Because of the vast influx in HARP mortgages in the third quarter of 2012, the HARP modeling error for the third quarter reflects the extent to which houses with newly eligible HARP mortgages saw relatively anemic price growth. As indicated earlier, because the HARP lookup file did not yet include data from the fourth quarter of 2012, the table does not report results for the fourth quarter.

Table 1 reveals that, as expected, houses with HARP mortgages tended to have lower appreciation rates than other properties. Because the 2012Q3 outcomes were generally significantly below outcomes for prior periods, the table also suggests that—consistent with expectations—the HARP houses refinanced in 2012 evidenced poorer outcomes than outcomes for houses with earlier HARP mortgages. For example, in California, the average model residual for the third quarter was -17.2, meaning that, all else equal, houses with HARP mortgages evidenced about 17 percent less appreciation between the quarter of the refinanced loan's origination and 2012Q3. By contrast, in the preceding three periods, observed appreciation for HARP loans tended to lag appreciation for other houses by -8.0 to -13.6 percent.

While the empirical outcomes exhibited in Table 1 are interesting and consistent with expectations, HARP mortgages represent only a modest fraction of total refinance activity and total mortgage volume. For example, between the first and third quarters of 2012, HARP mortgages comprised just 10 to 20 percent of the all-transactions data sample for Arizona. In California over the same time frame, HARP mortgages accounted for between four and nine percent of the data sample.³ Thus, despite the fact that such properties evidenced depressed

² Outcomes for these states are generally representative of outcomes for other states.

³ HARP shares for Florida, Georgia and Washington were slightly higher, ranging from about 8 percent to 22 percent of the estimation samples.

growth in home prices, when home values from HARP mortgages are removed from the all-transactions index data sample, the index estimates ultimately do not change much.⁴ The large gap between observed appreciation in the purchase-only and all-transactions indexes remains and thus an explanation is still needed.

Appraisals from “Quick Turnaround” Refinances

Although HARP volume has been robust in recent periods, the overall volume of non-HARP activity has been greater. Between late 2011 and late 2012, market interest rates dropped significantly, causing a significant boom in overall refinance volumes. The interest rate decline was sufficiently large, in fact, that in some cases it led to multiple mortgage originations (sometimes successive refinances) for the same borrower within the year.

In earlier time periods, houses with quick-turnaround refinances sometimes evidenced zero observed value increases or very modest estimated appreciation. In other words, the appraised values for mortgages that were originated within short time periods were sometimes identical or more similar than might be expected given market trends. If that phenomena was significant and quick-turnaround refinances were common in recent quarters, then part of the relative weakness in the all-transactions index might be explained

A look at the Enterprises’ transactional data supplies no empirical support for this hypothesis. Although more common than in earlier periods, quick-turnaround refinances still represented a small fraction of the total estimation sample for the all-transactions index. Moreover, the most important ingredient to the hypothesis—that quick-turnaround refinances showed relatively limited price growth—is not borne out in the data. In recent quarters, houses with multiple mortgage originations within a short time span evidenced price growth similar to that of other houses.

Market Acceleration

With little empirical support for the explanations pointing to HARP and quick-turnaround refinances, the most natural remaining hypothesis is that the acceleration in sales price growth that occurred during the year simply was not fully captured in appraisal values. Appraisal values are necessarily backward looking, as they focus on historical sales data for properties “comparable” to a given home. While appraisers may observe market trends, capturing the most recent information on market happenings is extremely difficult. When markets accelerate or decelerate rapidly—as they apparently did last year—appraisers are unavoidably constrained in their ability to reflect those rapid movements in their appraised values.

It should be noted that some of the market “acceleration” evident in recent quarters in FHFA’s purchase-only index likely reflects a decline in the share of distressed-sales in the transaction sample. FHFA’s “distress-free” indexes for 12 cities generally reflect less robust price growth than their full-sample counterparts.

⁴ For example, removing data from HARP mortgages raised the estimated price increase for 2011Q3-2012Q3 by just one percentage point. The four-quarter price growth for the modified all-transactions series was 1.0 percent, still far below the 9.8 percent growth in the purchase-only index.

The total measured price appreciation for the purchase-only series thus incorporates two effects: (1) marketwide price growth and (2) a change in the composition of the data sample toward fewer distressed sales. Whether or not the effects of distress sales should be included in index estimation is debatable, but their inclusion could be important in the context of understanding the gap between the all-transactions and purchase-only indexes. In particular, if valuations from appraisers are less susceptible to the compositional effect, then that could explain some of the more modest growth in the all-transactions metric. To the extent that some appraisers do not use distressed sales in their comparables analysis, for example, the effect of not doing so would be to dilute the effects of the compositional change over time. Over the latest year, that would have led to lower estimate of price growth for the all-transactions index.

That the gap between the all-transactions and purchase-only indexes appears particularly large in some states that have seen notable reductions in distressed sale volumes is certainly suggestive. Metropolitan area data used in the estimation of FHFA's local "distress-free" indexes⁵ suggest substantial declines in the share of distressed sales in Arizona, Georgia, and California—states where the gap between the respective indexes is particularly large. In Arizona, where the gap between the purchase-only and all-transactions four-quarter appreciation was a significant +13.9 percentage points, the available data (for the Phoenix-Mesa-Glendale Metropolitan Statistical Area) point to a 25 percentage point decline in the share of distressed sales in the purchase-only data. Roughly 7.5 percentage points of the recent increase in the purchase-only series was accounted for by the distress-sales compositional effect.⁶ If the all-transactions series does not reflect this effect, then this would explain a substantial share of the all-transaction-purchase-only gap that has developed for the state as whole.

Conclusion

Although the purchase-only and all-transactions indexes frequently have shown material differences in measured appreciated rates, over the longer term, the two measures have consistently moved in similar directions. In all likelihood, the short-term gap that has developed between the metrics will diminish over time. FHFA will, in any case, continue to monitor the respective measurements.

⁵ FHFA's "distress-free" indexes are not calculated for states, but rather for Metropolitan Statistical Areas.

⁶ The Phoenix-Mesa-Glendale, Arizona "distress-free" purchase-only series evidenced 20.4 percent price growth between 2011Q4-2012Q4, 7.5 percentage points below the growth for the standard purchase-only series.

**Figure 1: Difference in Measured Appreciation
Purchase-Only vs. All-Transactions Index**
Purchase-Only Change Minus All-Transactions Change (2011Q4-2012Q4)

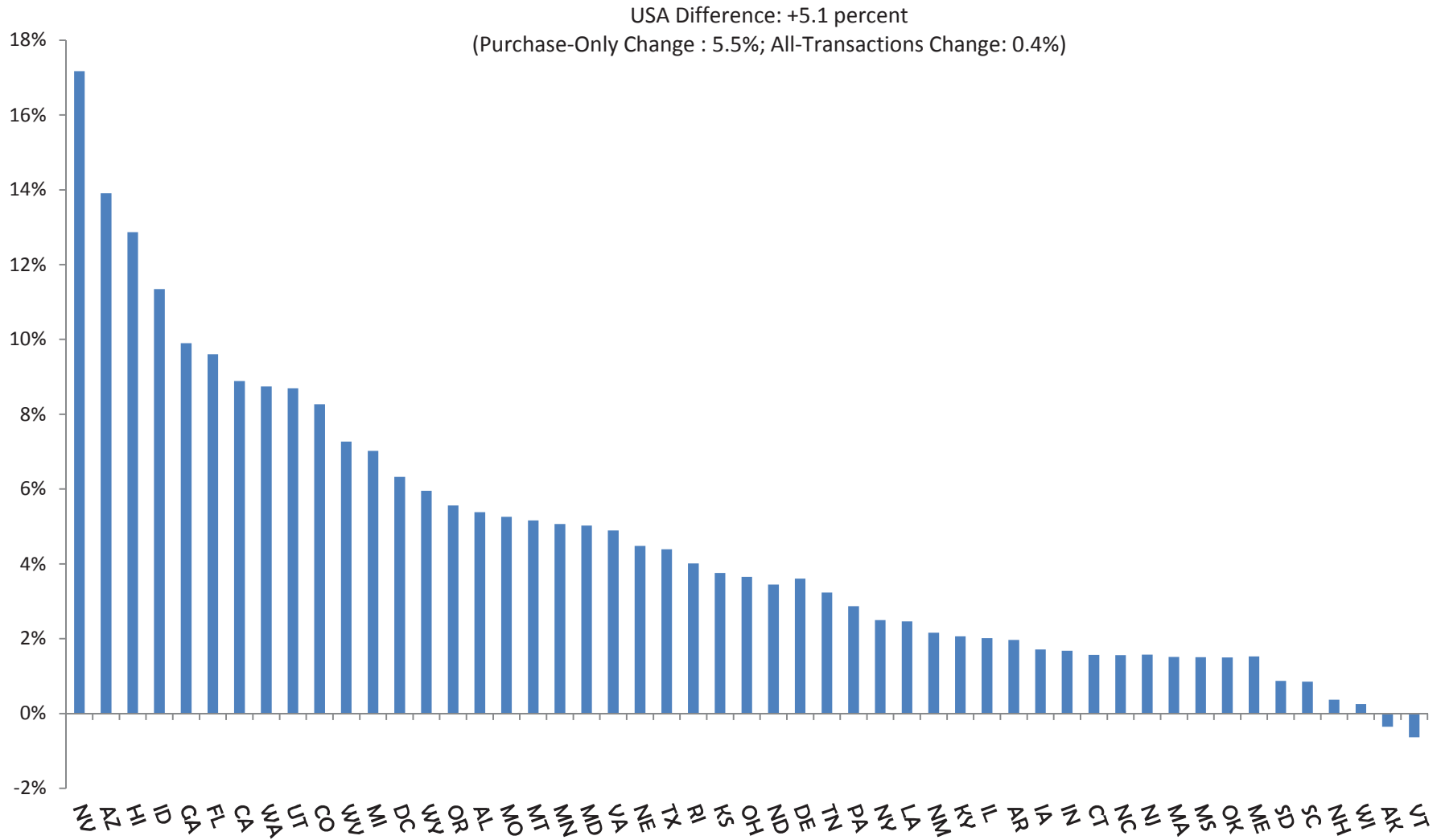


Table 1: Average Residual for Recent Transaction Pairs involving HARP Mortgages*

Negative Number Indicates Actual Appreciation was less than Predicted (i.e., Homes with HARP Loans Experienced Less Robust Price Growth Than Others in the Same State)

Date of Latest Property Valuation (Appraisal from HARP Refinance)	California	Florida	Washington	Georgia	Arizona
2012Q4	<i>Identification of HARP Loans Not Possible Given Current Data</i>				
2012Q3	-17.2%	-6.6%	-8.2%	-9.8%	-9.5%
2012Q2	-13.6%	-3.4%	-6.3%	-6.8%	-5.5%
2012Q1	-13.4%	-3.1%	-4.4%	-6.2%	-4.7%
2011Q4	-12.5%	-2.3%	-3.5%	-5.3%	-2.6%
2011Q3	-10.8%	-0.6%	-2.4%	-5.5%	-1.0%
2011Q2	-8.0%	1.5%	-0.8%	-2.1%	3.9%
2011Q1	-8.0%	2.9%	-0.5%	-2.9%	2.6%

* - Value pairs where the latest property valuation came from a HARP refinance.