Repeat Sales Index Report
Residential • March 2010

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The latest data for December 2009 reveals that overall house prices declined by 13 percent in the Phoenix metro area, which is less than the 17 percent decline for November and 20 percent in October (Table 1). The decline in the index which began in March 2007 has continued for 34 months compared to the 17 month decline in the early 1990s. Preliminary estimates for January and February 2010 have prices declining at progressively slower rates, 9 and 7 percent respectively. The rate of decline has been slowing for several months and if the present trend continues, prices will level off later this spring. In contrast to the overall 13 percent annual decline, the December to December decline for lower priced homes was 14 percent compared to 12 percent for more expensive houses. While lower priced houses have been declining at a much faster rate, the preliminary estimate for January is -10 percent, the same as for more expensive homes. Data for the last five months through February shows the decline for lower priced houses slowing from almost 30 percent to 5 percent, which is a dramatic slowdown. The total decline in prices from the mid-2006 peak is now 47 percent, which breaks down to 57 and 39 percent declines for the lower and higher priced houses, respectively.

The overall median price for sales that were included in the December index was $132,500, down from $135,000 in November. Preliminary medians for January and February are $125,000 and $127,000, respectively. The declines in the estimates for the latest three months reverse the upward trend that began last April but may reflect only a seasonal slowdown in the housing market. While price declines are unwelcome news to homeowners, those median prices are within the $120,000 to $135,000 range that has persisted since last summer.

TABLE 1
CHANGE IN RESIDENTIAL PRICES
(Percent)

<table>
<thead>
<tr>
<th></th>
<th>OVERALL</th>
<th>LOWER PRICED</th>
<th>HIGHER PRICED</th>
<th>TOWNHOUSE / CONDO</th>
<th>FORECLOSURES</th>
<th>NON- FORECLOSURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov.-Dec. 2009</td>
<td>-0.2</td>
<td>1.2</td>
<td>-1.1</td>
<td>-7.2</td>
<td>2.1</td>
<td>-0.8</td>
</tr>
<tr>
<td>1989–1992</td>
<td>-7.7</td>
<td>-3.9</td>
<td>-12.8</td>
<td>-3.9</td>
<td>na</td>
<td>na</td>
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<tr>
<td>2006–Dec. 2009</td>
<td>-47.3</td>
<td>-57.0</td>
<td>-39.4</td>
<td>-49.8</td>
<td>-52.0</td>
<td>-41.3</td>
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<tr>
<td>Median Price - Dec. 2009</td>
<td>$132,500</td>
<td>$98,000</td>
<td>$260,250</td>
<td>$84,600</td>
<td>$120,000</td>
<td>$160,000</td>
</tr>
</tbody>
</table>

The prices of foreclosed houses declined at a 5 percent rate from December 2008 to December 2009 but the preliminary decline for both January and February was only 2 percent. These numbers
suggest that the foreclosure segment of the housing market is very close to the bottom, at least in terms of the rate of price decline. Foreclosed house prices peaked at an annual 32 percent decline in October 2008 and gradually slowed through last September (-18 percent), leading to the dramatic slowing that has occurred the past several months. A leveling out of the foreclosure RSI would reflect both the substantial decline in prices that has occurred over the past two years and recent increases in median prices that reflect increased demand from first-time buyers and investors.

In contrast, non-foreclosed house prices declined at an annual rate of 16 percent in December with the preliminary rate of decline at 17 percent by January and 18 percent for February. While the foreclosure segment of the market is turning around, non-foreclosure house prices have been declining at approximately a 20 percent annual rate since October 2008. The most recent three months of data finally have declines less than 20 percent but not continuing a slowing trend. The decline in foreclosure house prices was driven initially by mortgage related issues but the continuing decline of non-foreclosure prices has more to do with weak economic conditions, especially in the Phoenix area, and the difficulty buyers’ face in qualifying for mortgage loans.

The median price in December for foreclosed houses was $120,000 up 25 percent from its low in May with preliminary estimates for January and February of $115,200 and $115,000 respectively. For non-foreclosed houses the median price was $160,000 in December with preliminary estimates of $155,000 for both December and January, continuing what has been basically a long-term trend of declining prices. The improvement in the foreclosure segment of the market is offset by continuing weakness in the more important non-foreclosure portion of the market.

The decline in the townhouse/condo RSI slowed to -26 percent in December compared to -28 percent in November but preliminary rates for the next two months are -28 and -30 percent respectively. It appears that the most rapid declines (-36 percent) occurred last summer but the best that can be said about townhouse/condo prices is that the rate of decline appears to be stabilizing at around 30 percent per year. The median price of townhouse / condo units was $84,600 in December with forecasted medians the next two months of $80,000 and $86,400.

Regions

Following a trend that began last June, price declines continued to slow in December from the annual rates in November across all regions with a dramatic slowdown to -15 percent in the Central region. The declines are in the fairly narrow range from 12 percent in the Southeast to 15 percent in the Central region (Table 2). Slight up and down changes in the monthly rates also continued across regions as would be expected. In terms of total declines from the 2006 peak, the Southwest is down the most, 53 percent, but even in the Northeast prices have dropped 37 percent. Of the five regions, the RSI for the Northeast has not hit bottom, which is a necessary first step before price appreciation is even possible, since the annual change in prices is based on the year-to-year change in the index. For the other four regions price changes could turn positive later this summer but for the Northeast that change is not likely until much later in the year.
TABLE 2
CHANGE IN HOUSE PRICES BY REGION
(Percent)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CENTRAL</td>
<td>-14.6</td>
<td>0.8</td>
<td>-3.2</td>
<td>-52.5</td>
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<tr>
<td>NORTHEAST</td>
<td>-13.2</td>
<td>-2.4</td>
<td>-9.7</td>
<td>-36.8</td>
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<tr>
<td>SOUTHEAST</td>
<td>-12.4</td>
<td>-0.3</td>
<td>-7.0</td>
<td>-45.1</td>
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<tr>
<td>NORTHWEST</td>
<td>-13.9</td>
<td>-0.4</td>
<td>-15.3</td>
<td>-52.1</td>
</tr>
<tr>
<td>SOUTHWEST</td>
<td>-15.2</td>
<td>1.4</td>
<td>-21.2</td>
<td>-58.6</td>
</tr>
</tbody>
</table>

Cities

Variations similar to those observed in the regional data are also apparent in the city data (Table 3). The declines in house prices from December 2008 to December 2009 slowed compared to the November data for all cities. The annual rates are now all below 20 percent and Gilbert is in single digits at 8 percent. Only Glendale and Peoria still have total declines over 50 percent compared to the 2006 peaks. As is the case for the Northeast region, the RSI for Scottsdale / Paradise Valley and Sun City / Sun City West continues to decline. While prices in most cities may stop declining later this summer, at this time there is no way to estimate when the decline will end for Scottsdale / Paradise Valley and Sun City / Sun City West.

TABLE 3
CHANGE IN HOUSE PRICES BY CITY
(Percent)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>CHANDLER</td>
<td>-12.1</td>
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<td>GILBERT</td>
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<td>MESA</td>
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<td>PEORIA</td>
<td>-13.7</td>
<td>1.8</td>
<td>-7.3</td>
<td>-51.4</td>
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<tr>
<td>SCOTTSDALE/ PARADISE VALLEY</td>
<td>-13.4</td>
<td>-2.2</td>
<td>-9.7</td>
<td>-36.2</td>
</tr>
<tr>
<td>SUN CITY/ WEST</td>
<td>-12.7</td>
<td>-1.0</td>
<td>-10.5</td>
<td>-38.5</td>
</tr>
<tr>
<td>TEMPE</td>
<td>-17.7</td>
<td>-2.3</td>
<td>-1.9</td>
<td>-38.0</td>
</tr>
</tbody>
</table>
Methodology

The use of repeat sales is the most reliable way to estimate price changes in the housing market because the repeat sales approach eliminates the need to deal with the many issues associated with the heterogeneous nature of housing. Repeat sales can be used to measure the price change of the same housing unit over time. A large number of repeat sales over many years can be analyzed to develop a repeat sales index. In contrast, indices developed using regression analysis provide estimates of price changes over time while simultaneously attempting to control for differences in house characteristics, location, demographics and market conditions, etc. within the model. Regression analysis can and does produce meaningful estimates of price changes but the results are not as reliable as those produced using repeat sales data. An even less rigorous approach would be to simply average sale prices by zip code or some other geographic area where the mix of housing sizes and ages, etc. would be different each month. The percent changes based on medians or averages would reflect not only price changes but also differences in the sizes, ages and other characteristics of the houses sold each month.

The W.P. Carey School of Business – Repeat Sales Index (RSI) tracks very closely to the S&P/Case-Shiller index for Phoenix since the same methodology is employed for calculating both indices. The S&P/Case-Shiller index has been developed for 20 metropolitan areas and is being used as a basis for trading housing futures contracts in 10 of those markets. Any differences that exist between the two indices are probably due to the way the data has been cleaned prior to the calculation process. The S&P/Case-Shiller index is proprietary so the cleaning procedure used in connection with that index could not be completely duplicated. However, following S&P/Case-Shiller, the cleaning process used with the ASU-RSI excludes pairs where the first sale involved new construction and pairs where sales occurred within six months of each other. Sale pairs with extremely high or low annual rates of price change are excluded since at least one of the transactions may involve a data error. The same justification is used to drop sales with extremely high or low prices or prices per square foot prior to matching the sale pairs. A more detailed explanation of the data cleaning and calculation process is contained in the ASU-RSI Methodology Report.

The house price data used in the S&P/Case-Shiller index starts in January 1989. Beginning with January 1990, the percent change from the same month in the previous year is reported. The ASU – RSI also begins with January 1989 data so the same percent change calculation also begins in January 1990 and is reported for each month since then. There is seasonality in house price data so month to month changes may not accurately reflect changes in market conditions and would cover a very short time period. Calculating a percent change from the same month last year controls for whatever seasonality may be present in the data. Annual rates of change typically are thought of applying to a calendar year but in this report the annual rates that are reported would be measuring change over the preceding twelve months. To smooth the index the rate of return calculated from each sale pair is included in calculations for a total of three months before it is published. Results using data for the two newest months are labeled as preliminary.
The S&P/Case-Shiller index is published only for the entire Phoenix metro area. One major advantage to the ASU-RSI is that in addition to the overall index, indices have been calculated for higher and lower priced houses, smaller geographic areas (regions and selected cities) and for the housing market segmented in various ways. Price changes for the attached portion of the housing market (townhouse / condominiums) are presented as a repeat sales index using the same methodology and indices are also estimated for higher and lower priced single-family detached houses and for foreclosure and non-foreclosure sales. The monthly data are divided into two groups based on the median price of all single-family houses sold. Sales are then paired within each of the two data sets and a repeat sales index is calculated for each. The foreclosure sale pairs are formed using two foreclosure sales or with a foreclosure sale paired with an earlier non-foreclosure sale of the house. The metro area has also been divided into five regions and an index has been calculated for each. All repeat sales used in the metro index are included in one of the five regional indices. Indices have also been calculated for eight individual cities where there are a sufficient number of repeat sales a reliable index to be estimated. A list of the cities included in each region is in Table 4.

The graphs contained in this report show the annual rate of change in house prices for the Phoenix metropolitan area on a monthly basis as well as median house prices. Figures 1 and 2 compare the change in the overall, lower and higher priced indices to the overall trend in the index, where the trend was estimated using data from January 1989 through December 2003. Figure 3 makes the same type of comparison using the median price of single-family sales that were used to form sale pairs for the current month, not the median price of all sales that occurred during the month. Since each index is a moving three month average, preliminary estimates of the index and future median prices for the entire market are included for the next two months (December and January) in Figures 1-6. Figures 4 and 5 include the townhouse / condominium RSI compared to the single-family RSI presented earlier in Figures 1 and 2. The foreclosure and non-foreclosure RSIs are in Figure 6 while Figure 7 has median prices for foreclosure and non-foreclosure houses and townhouse / condo units. Figures 8-15 contain graphs for the regions and cities for two different time periods. Four of the graphs present the price changes from January 1990 through September 2009 while the other four graphs cover the current housing cycle beginning in January 2004. Due to data limitations, a reliable index for Gilbert could not be calculated until January 1999 so the annual changes for Gilbert in Figures 10 and 11 start in January 2000.
<table>
<thead>
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<th>REGION</th>
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<td>GOODYEAR</td>
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<td>LITCHFIELD PARK</td>
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Figure 1
Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - February 2010

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

December Median Prices: 1, Upper $260,250 2, Lower $98,000
Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - February 2010

Metro Area
Upper Range¹
Lower Range²

January and February are Preliminary

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

December Median Prices: 1, Upper $260,250  2, Lower $98,000
Figure 3
Phoenix Median Single-Family House Prices
January 1989 - February 2010

- Trend
- Metro Area
- Upper Range¹
- Lower Range²

January and February are Preliminary

December Median Prices: 1, Upper $260,250  2, Lower $98,000

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 4
Phoenix Single-Family and Townhouse/Condominium Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - February 2010

January and February are Preliminary

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 5
Phoenix Single-Family & Townhouse/Condominium Repeat Sales Index (RSI)
Percentage Change Same Month, Previous Year
January 2004 - February 2010

January and February are Preliminary

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 6
Phoenix Single-Family
Foreclosure Repeat Sales Index (RSI)
Percentage Change Same Month, Previous Year
January 2001 - February 2010

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

December Median Prices: 1, Foreclosures $120,000 2, Non-Foreclosures $160,000
Figure 7
Phoenix Foreclosures, Non-Foreclosures and Townhouse/Condominium Median Prices
January 1989 - February 2010

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

December Median prices: 1, TH/Condo $84,600  2, Foreclosures $120,000  3, Non-Foreclosures $160,000
Figure 8
Regional Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 9
Regional Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 10
Chandler, Gilbert, Mesa, & Tempe Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 11
Chandler, Gilbert, Mesa & Tempe Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 12
Glendale, Peoria, & Sun City/Sun City West Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 13
Glendale, Peoria, & Sun City/Sun City West Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 14
Scottsdale/Paradise Valley & Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
Figure 15
Scottsdale/Paradise Valley & Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data