Another improvement to the ASU-RSI is introduced this month with new indices for foreclosure and non-foreclosure houses. The foreclosure sale pairs are formed with two foreclosure sales or with a foreclosure sale paired with an earlier sale of the house that was a non-foreclosure sale. The price of foreclosed houses declined at a 15 percent rate from October 2008 to October 2009 but the preliminary decline for November 2009 was 8 percent and based on very limited data, the decline for December appears to be only two percent. If the preliminary numbers hold up, the foreclosure segment of the housing market may have reached bottom, at least in terms of price declines. In contrast, non-foreclosed houses declined at an annual rate of 19 percent in October with the rate of decline increasing to 23 percent (preliminary) by December (Table 1). The decline in foreclosed house prices peaked at -32 percent in October 2008 and gradually slowed through last September (-18 percent) leading up to a dramatic slowing in the last quarter of 2009. 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.

The prices of foreclosed and non-foreclosed houses appreciated at similar rates with both peaking at a 46 percent annual rate in September 2005. The prices of foreclosed houses began to decline at much faster rates in late 2006 while non-foreclosed houses continued a gradually accelerating rate of decline (Figure 6). While the foreclosure segment of the market is turning around, non-foreclosed house prices have been declining at approximately a 20 percent annual rate since October 2008, which continues through the preliminary December data. While the decline in foreclosure house prices was driven primarily by mortgage related issues, the continuing decline of non-foreclosure prices may have more to do with weak economic conditions, especially in the Phoenix area, and the difficulty buyers face in qualifying for mortgage loans.

The latest data for October 2009 reveals that overall house prices declined by 21 percent in the Phoenix metro area, which is slightly less than the 23 percent decline for September and 25 percent in August (Table 1). The decline in the index which began in March 2007 has continued for 32 months compared to the 17 month decline in the early 1990s. Preliminary estimates for November and December have prices declining at progressively slower rates, 17 and 12 percent respectively. The slowdown in the rate of decline has been two to three percent since mid-2009 so the decline reflected in the December rate indicates that prices are likely to level off by this spring. In contrast to the overall 21 percent annual decline, the October to October decline for lower priced homes was 28 percent compared to 16 percent for more expensive houses. While lower priced houses have been declining at a much faster rate, the preliminary estimate for December for lower priced houses is -14 percent and -11 percent for the more expensive homes. The total decline in prices from the mid-2006 peak is now 47 percent, which breaks down to 58 and 38 percent declines for the lower and higher priced houses, respectively.
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>Sept.–Oct. 2009</td>
<td>-0.3</td>
<td>1.4</td>
<td>-1.3</td>
<td>-1.1</td>
<td>2.1</td>
<td>-10.0</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>
</tr>
<tr>
<td>2006–Oct. 2009</td>
<td>-47.2</td>
<td>59.0</td>
<td>-37.6</td>
<td>-48.5</td>
<td>-53.4</td>
<td>-40.5</td>
</tr>
</tbody>
</table>

Median Price - $131,000 $97,000 $251,000 $89,200 $115,000 $167,000
 Oct. 2009

The overall median price for sales that were included in the October index was $131,000, up from $130,000 in September. Preliminary median prices for November and December are $135,000 and $132,500, respectively. Recent increases in price reflect foreclosed houses that have been purchased by investors and first-time buyers taking advantage of the federal tax credit. The median price in October for foreclosed houses was $115,000 up 19 percent from its low in May with preliminary estimates for November and December of $120,000 and $126,600 respectively. For non-foreclosed houses the median was $167,000 in October with preliminary estimates of $165,700 and $158,000 respectively for November and December. 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 -31 percent in October compared to -34 percent in September with November and December rates of -28 percent and -26 percent respectively. It appears that the most rapid declines (-36 percent) were last summer but this segment of the housing market is improving very slowly. The median price of townhouse / condo units was $89,200 in October, a large drop from $99,500 in September. The preliminary median for November is $89,000 with another large decline to $84,600 anticipated in the December data.

Regions
The pattern of a gradual slowing in the rate of price declines continued in October in all regions. The declines ranged from 16 percent in the Northeast to 28 percent in the Central region (Table 2), the
first time all declines are less than 30 percent on an annual basis. Slight up and down changes in rates from last month also continued across regions. In terms of total declines from the 2006 peak, the Southwest is down the most, 60% but even in the Northeast prices have dropped 35 percent from their peak. Of the five regions, the RSI for the Northeast and Southwest has not hit bottom, which would be indicated by a clear upward trend in the index. Since the annual change in prices is based on the year-to-year change in the index, the RSI must show an upward trend before price appreciation is even possible. For those two regions that will not be until late 2010 at the earliest.

| TABLE 2 |
| CHANGE IN HOUSE PRICES BY REGION |

(Percent)

<table>
<thead>
<tr>
<th>CENTRAL</th>
<th>NORTHEAST</th>
<th>SOUTHEAST</th>
<th>NORTHWEST</th>
<th>SOUTHWEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept.-Oct. 2009</td>
<td>-0.6</td>
<td>-1.6</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>2006 -Oct. 2009</td>
<td>-53.7</td>
<td>-34.9</td>
<td>-44.8</td>
<td>-52.3</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 October 2008 to October 2009 slowed compared to the September data for all cities, continuing a well established trend. In five of the eight cities the annual decline is now less than 20 percent. Prices have declined by over 50 percent in Glendale, Peoria and Mesa since they peaked in 2006 with substantial declines in excess of 30 percent in all other cities including Scottsdale / Paradise Valley. As with the Northeast and Southwest regions, the RSI for Scottsdale / Paradise Valley and Sun City / Sun City West has not reached bottom but continues to decline, even though at a slower rate each month. The earliest that house prices in those two cities could at least stop declining would be late 2010.
### TABLE 3
CHANGE IN HOUSE PRICES BY CITY
(Percent)

<table>
<thead>
<tr>
<th></th>
<th>CHANDLER</th>
<th>GILBERT</th>
<th>GLENDALE</th>
<th>MESA</th>
<th>PEORIA</th>
<th>SCOTTSDALE/</th>
<th>SUN CITY/</th>
<th>TEMPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. - Oct. 2009</td>
<td>0.3</td>
<td>-0.6</td>
<td>1.5</td>
<td>1.1</td>
<td>-0.8</td>
<td>-1.9</td>
<td>-1.5</td>
<td>-1.7</td>
</tr>
<tr>
<td>1989 – 1992</td>
<td>-7.6</td>
<td>na</td>
<td>-19.6</td>
<td>-10.9</td>
<td>-7.3</td>
<td>-9.7</td>
<td>-10.5</td>
<td>-1.9</td>
</tr>
<tr>
<td>2006 – Oct. 2009</td>
<td>-40.8</td>
<td>-44.3</td>
<td>-53.5</td>
<td>-49.9</td>
<td>-52.1</td>
<td>-34.0</td>
<td>-37.4</td>
<td>-36.7</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 in the previous 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, data is included in calculations for the current month and the next two months before it is reported. This means that the rate of return calculated from each sale pair is included in calculations for a total of three months before it is published, which accounts for the difference between the date on the report and the ending date on the graphs.

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 and for smaller geographic areas (regions and selected cities). Price changes for the attached portion of the housing market (townhouse / condominiums) are also presented in a repeat sales index using the same methodology and an index is also estimated for higher and lower priced single-family detached houses. 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. 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 single-family 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 based on the index 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 (October and November) in Figures 1 -5. Figures 4 and 5 include the new townhouse / condominium RSI and the single-family RSI presented earlier in Figures 1 and 2. Figures 6-13 contain eight graphs that cover two 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 change for Gilbert in Figures 8 and 9 starts in January 2000.

### TABLE 4
CITIES INCLUDED IN REGIONS

<table>
<thead>
<tr>
<th>REGION</th>
<th>CITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTHEAST</td>
<td>CAREFREE</td>
</tr>
<tr>
<td></td>
<td>CAVE CREEK</td>
</tr>
<tr>
<td></td>
<td>FOUNTAIN HILLS</td>
</tr>
<tr>
<td></td>
<td>PARADISE VALLEY</td>
</tr>
<tr>
<td></td>
<td>SCOTTSDALE</td>
</tr>
<tr>
<td>NORTHWEST</td>
<td>EL MIRAGE</td>
</tr>
<tr>
<td></td>
<td>GLENDALE</td>
</tr>
<tr>
<td></td>
<td>PEORIA</td>
</tr>
<tr>
<td></td>
<td>SUN CITY /</td>
</tr>
<tr>
<td></td>
<td>SUN CITY WEST</td>
</tr>
<tr>
<td></td>
<td>SURPRISE</td>
</tr>
<tr>
<td></td>
<td>YOUNGTOWN</td>
</tr>
<tr>
<td>CENTRAL</td>
<td>PHOENIX</td>
</tr>
</tbody>
</table>
SOUTHEAST
APACHE JUNCTION
CHANDLER
GILBERT
HIGLEY
MESA
QUEEN CREEK
SUN LAKES
TEMPE

SOUTHWEST
AVONDALE
BUCKEYE
GOODYEAR
LITCHFIELD PARK
Figure 1
Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - December 2009

Trend
Metro Area
Upper Range¹
Lower Range²

November and December are Preliminary

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

1: October Median Price $251,000
2: October Median Price $97,000
Figure 2
Phoenix Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 2004 - December 2009

Metro Area
Upper Range¹
Lower Range²

November and December are Preliminary

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
1: October Median Price $251,000
2: October Median Price $97,000
Figure 3
Phoenix Median Single-Family House Prices
January 1989 - December 2009

Trend
Metro Area
Upper Range¹
Lower Range²

November and December are Preliminary

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

1: October Median Price $251,000
2: October Median Price $97,000
Figure 4
Phoenix Single-Family and Townhouse/Condominium 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 5
Phoenix Single-Family & Townhouse/Condominium Repeat Sales Index (RSI)
Percentage Change Same Month, Previous Year
January 2004 - December 2009

November and December 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 - December 2009

Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data
1: October Foreclosures Median Price $115,000
2: October Non-Foreclosures Median Price $167,000
Figure 7
Phoenix Foreclosures, Non-Foreclosures and Townhouse/Condominium Median Prices
January 1989 - December 2009

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

1: October TH/Condo Median Price $89,200
Figure 8
Regional Single-Family Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - October 2009

Central
Northeast
Southeast
Northwest
Southwest
Metro Area

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 - October 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 - October 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 - October 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 Single-Family West Repeat Sales Index (RSI)
Percent Change Same Month, Previous Year
January 1990 - October 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 - October 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 - October 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 - October 2009

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