

Repeat Sales Index (RSI)

ASU - W. P. Carey School of Business

Center for Real Estate Theory and Practice

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The use of repeat sales is the most reliable way to estimate price changes in the housing market because the repeat sales approach obviates the need to deal with the many issues associated with the heterogeneous nature of housing. In essence, repeat sales measures the price change of the same housing units over time. In contrast, a statistical model such as regression analysis provides 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 averages would reflect not only changes in prices 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 many of those markets. Any differences that exist between the two indices are partly due to the use of a different house transactions database and possibly by 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 followed. 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 with sales within six months of each other. With the ASU - RSI, transactions with sale prices less than \$5,000 were dropped and pairs with more than 60 percent annual changes in price also were excluded. One notable difference would be in the treatment of For Sale by Owner (FSBO) sales, which are not included in the S&P/Case-Shiller index but are included in the ASU-RSI.

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.

The graphs with this report show the annual rate of change in house prices for the Phoenix metropolitan area on a monthly basis. The ten graphs contained in this report cover two time periods. Five of the graphs present the price changes from January 1990 through June 2007 while the other five graphs cover the recent housing cycle beginning in January 2004. 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, the metro area has been divided into five regions and an index has been calculated for each region. An index has also been calculated for eight individual cities where there are a sufficient number of repeat sales for the index to be reliable. All repeat sales used in the metro index are included in one of the regional indices. A list of the cities included in each region is in Table 1.

Analysis

The latest data through September 2007 reveal a continuation of earlier trends of house price declines compared to September 2006 for the overall Phoenix metro area. On a moving twelve month basis, price changes became negative in March 2007. For the past four months, the decline has been at slightly less than a four percent annual rate. The peak rate of price change occurred in September 2005 at 43 percent. While the rate of increase slowed after September, prices continued to increase until July 2006. From July 2006 through September 2007, the overall decline in house prices has been approximately 4.4 percent. However, there are considerable variations in both the rates of decline and the total decline in house prices across regions and cities.

In the central region, annual price changes have been slightly negative since June and the September data continues that pattern (-1.3 percent). House prices have declined approximately 2.5 percent since peaking in November 2006. House prices in the northeast region have held up well relative to other parts of the metro area. For the past two months prices have actually increased slightly from August and September 2006 levels and since peaking in October 2006, house prices in the northeast have declined only 1.0 percent overall. In contrast, the rates of decline in the southeast, northwest and southwest regions continued to accelerate in September with the annual rates of decline in the southwest reaching double digits for the first time (-10.1 percent). Since annual rates of change first became negative in early 2007, the rates of decline have

increased slightly each month in all three regions reflecting slowly deteriorating market conditions. House prices have declined approximately 7.7 percent, 9.1 percent and 10.7 percent respectively from their 2006 peaks in the southeast, northwest and southwest regions.

TABLE 1

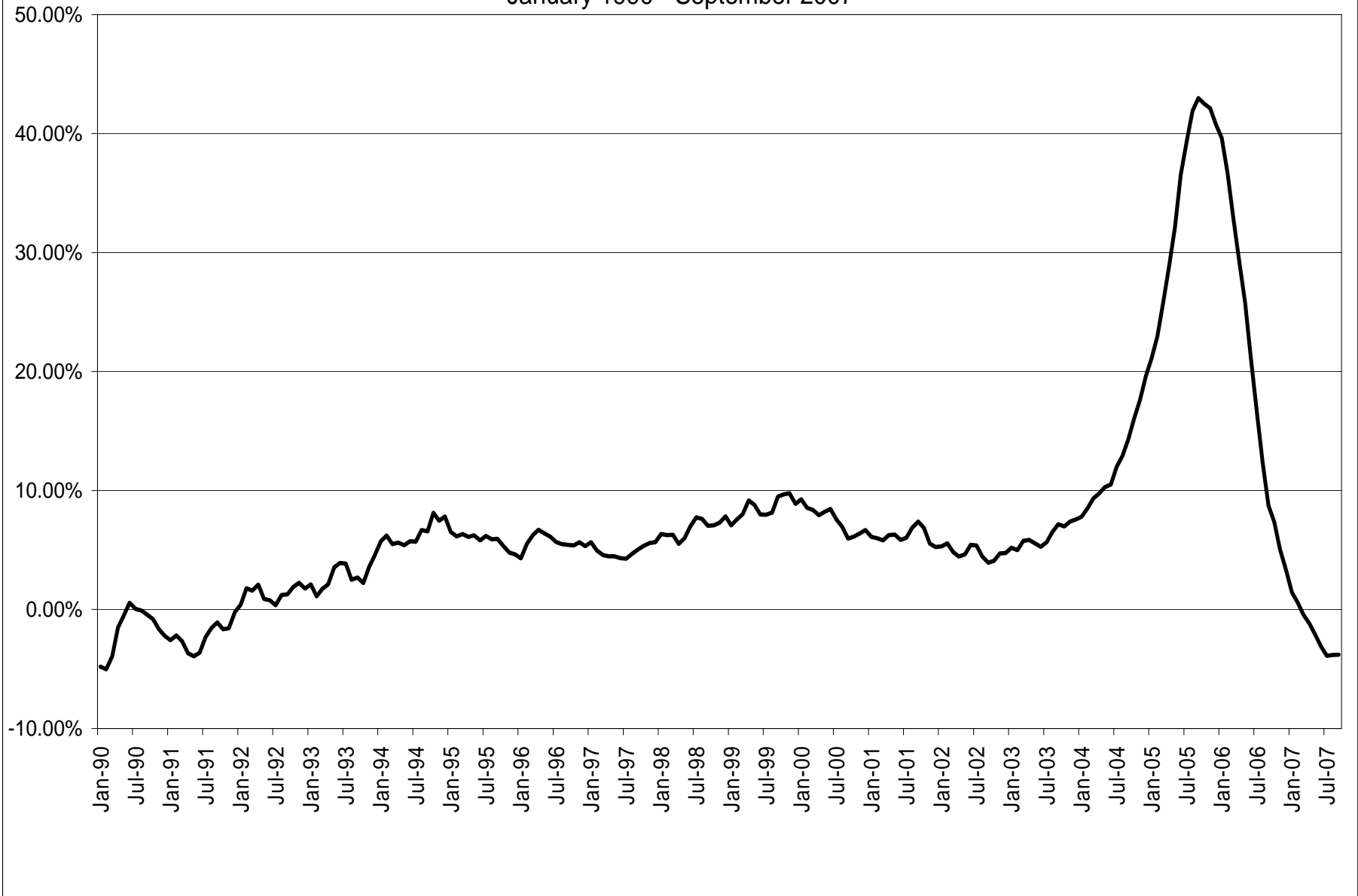
CITIES INCLUDED IN REGIONS

<u>REGION</u>	<u>CITIES</u>
<u>NORTHEAST</u>	CAREFREE CAVE CREEK FOUNTAIN HILLS PARADISE VALLEY SCOTTSDALE
<u>NORTHWEST</u>	EL MIRAGE GLENDALE PEORIA SUN CITY SUN CITY WEST SURPRISE YOUNGTOWN
<u>CENTRAL</u>	PHOENIX
<u>SOUTHEAST</u>	APACHE JUNCTION CHANDLER GILBERT HIGLEY MESA QUEEN CREEK SUN LAKES TEMPE
<u>SOUTHWEST</u>	AVONDALE BUCKEYE GOODYEAR LITCHFIELD PARK

Similar variations exist in the indices for individual cities where rates of change in house prices from September 2006 to September 2007 ranged from 0.9 percent in Scottsdale / Paradise Valley to -9.3 in Sun City / Sun City West. Annual rates of decline were only slightly negative in Tempe (-2.0 percent) and Phoenix (-1.3 percent) while for Chandler, Mesa, Glendale and Peoria the annual declines reflected in the September 2007 data were in the seven to eight percent range. For cities other than Phoenix and Scottsdale / Paradise Valley, the rates of decline are accelerating, which is not good news for owners and sellers, but which makes housing more attractive to prospective purchasers. To keep things in perspective, the declines are still small compared to the 40+ percent rates of appreciation registered in the fall of 2005.

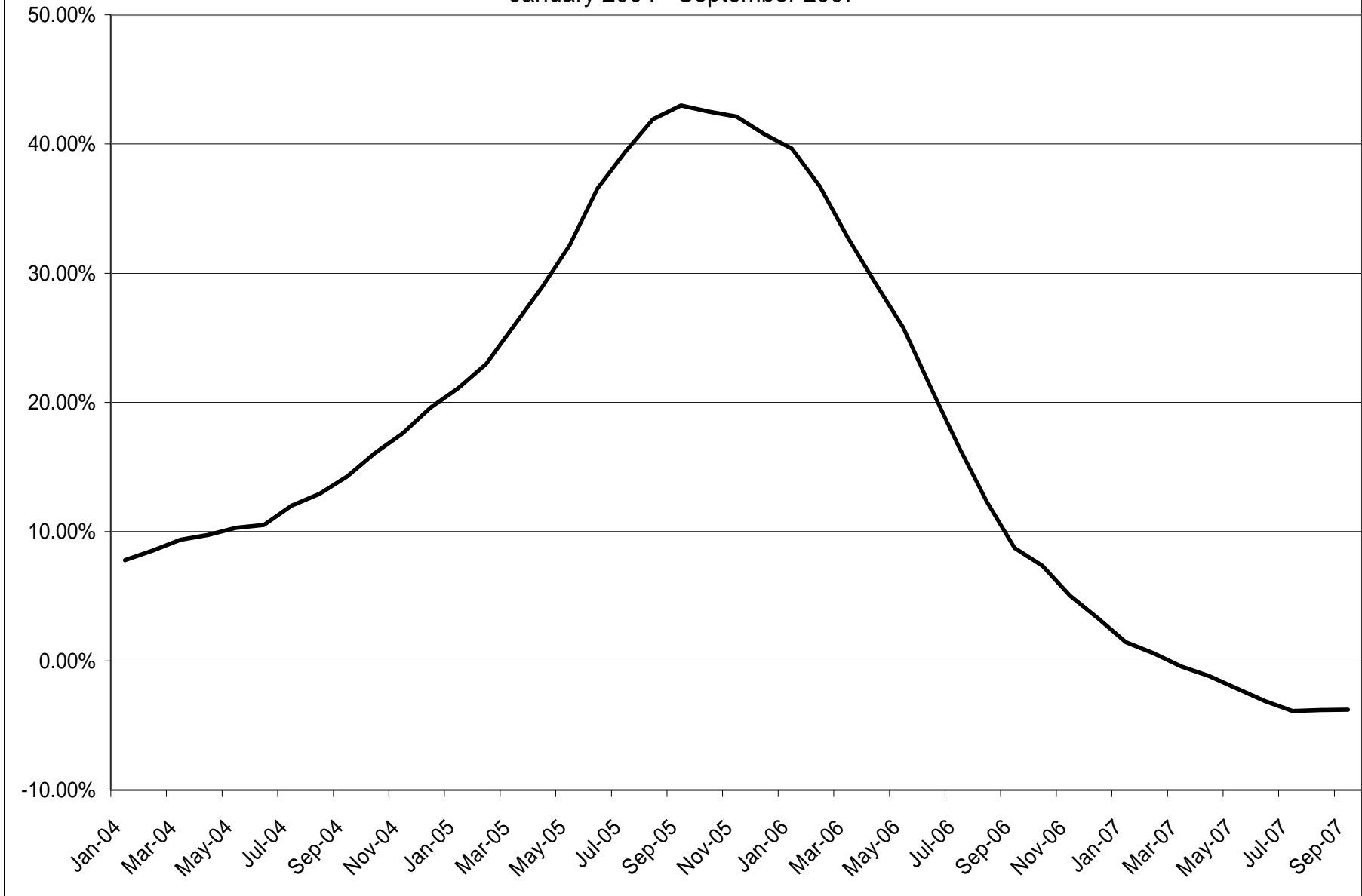
Prices are down in all cities compared to their 2006 peaks but once again the range is substantial. The total decline in Scottsdale / Paradise Valley is slightly over one percent while in Sun City / Sun City West prices have declined over 12 percent. Declines in Phoenix and Tempe are approximately three percent, while for Chandler, Mesa, Peoria and Sun City / Sun City West the declines vary from roughly six to nine percent from 2006 peaks.

Metro Phoenix Repeat Sales Index (RSI)
Percent Change from Same Month Previous Year
January 1990 - September 2007



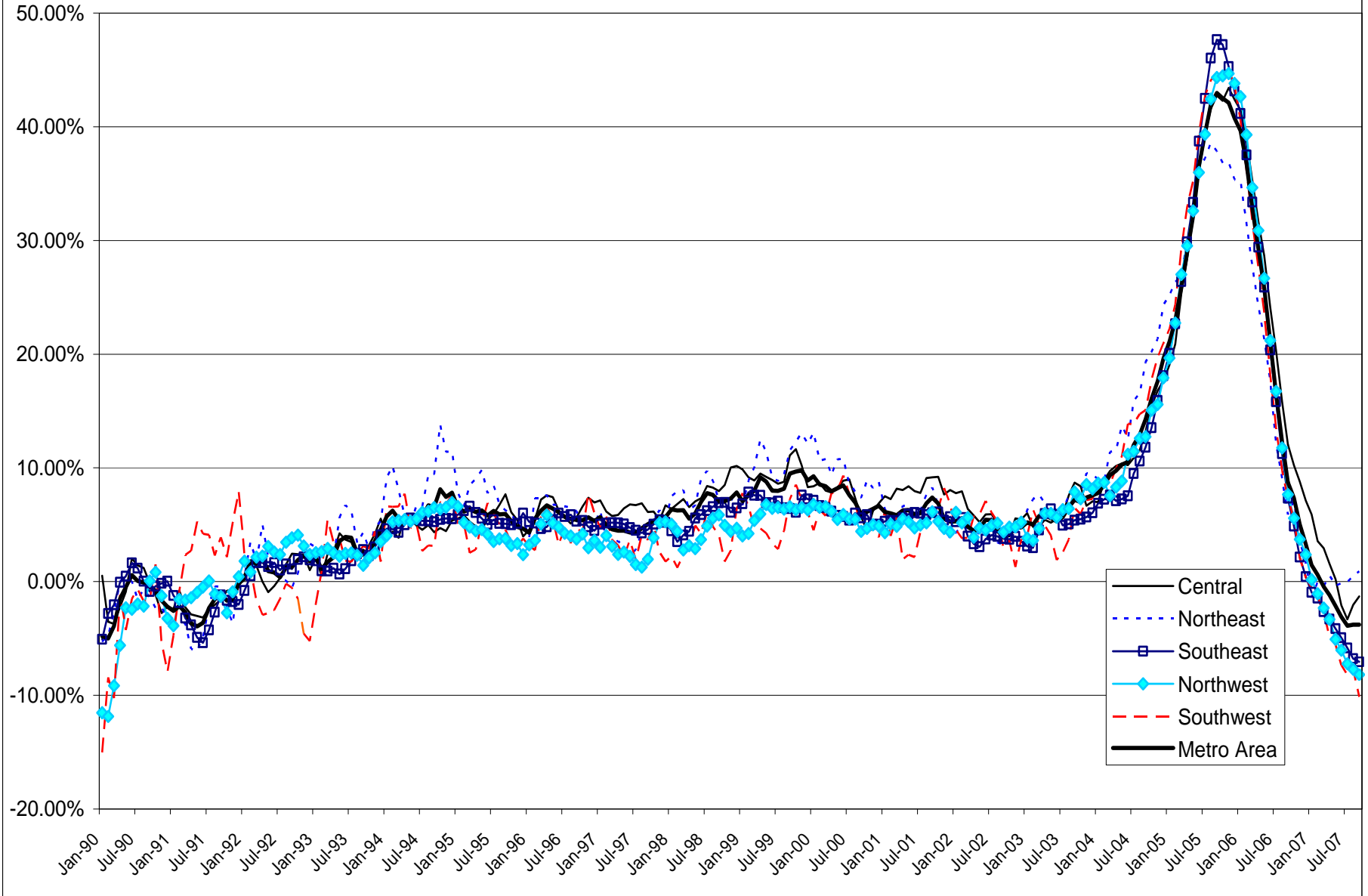
Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

Metro Phoenix Repeat Sales Index (RSI)
Percent Change from Same Month Previous Year
January 2004 - September 2007



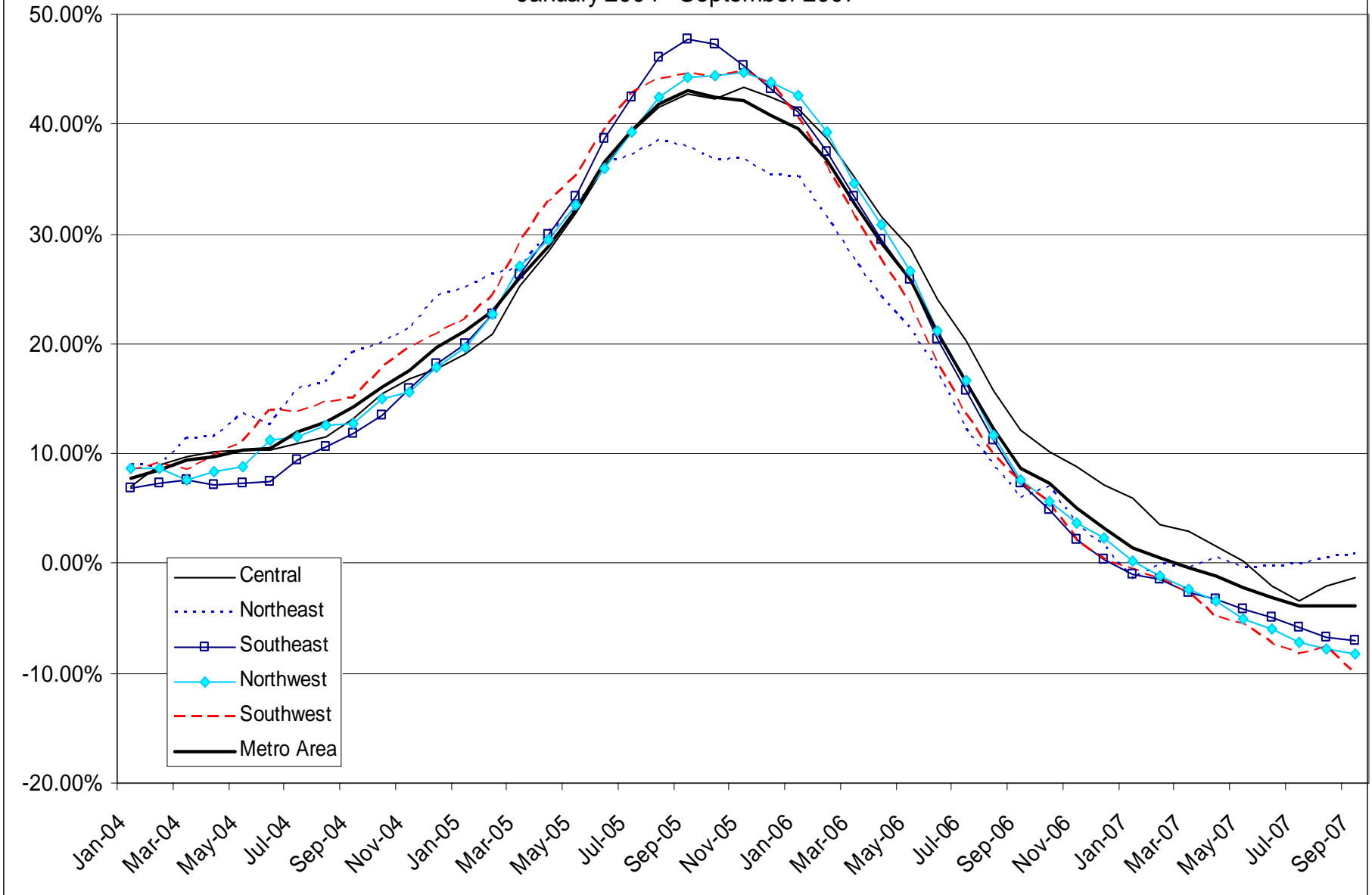
Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

Regional Repeat Sales Index (RSI)
 Percent Change from Same Month Previous Year
 January 1990 - September 2007



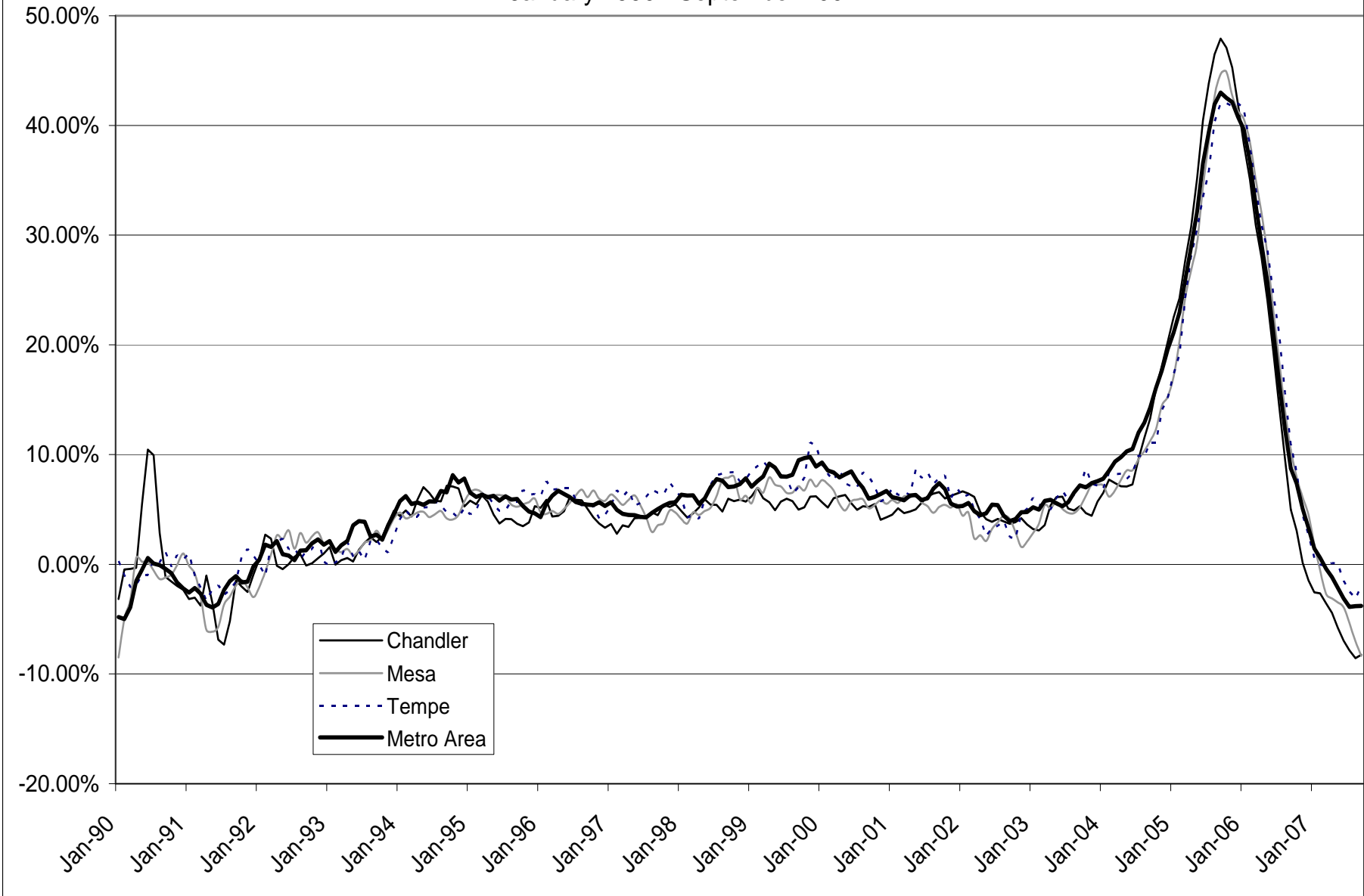
Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
 Data Provided by Ion Data

Regional Repeat Sales Index (RSI) Percent Change from Same Month Previous Year January 2004 - September 2007



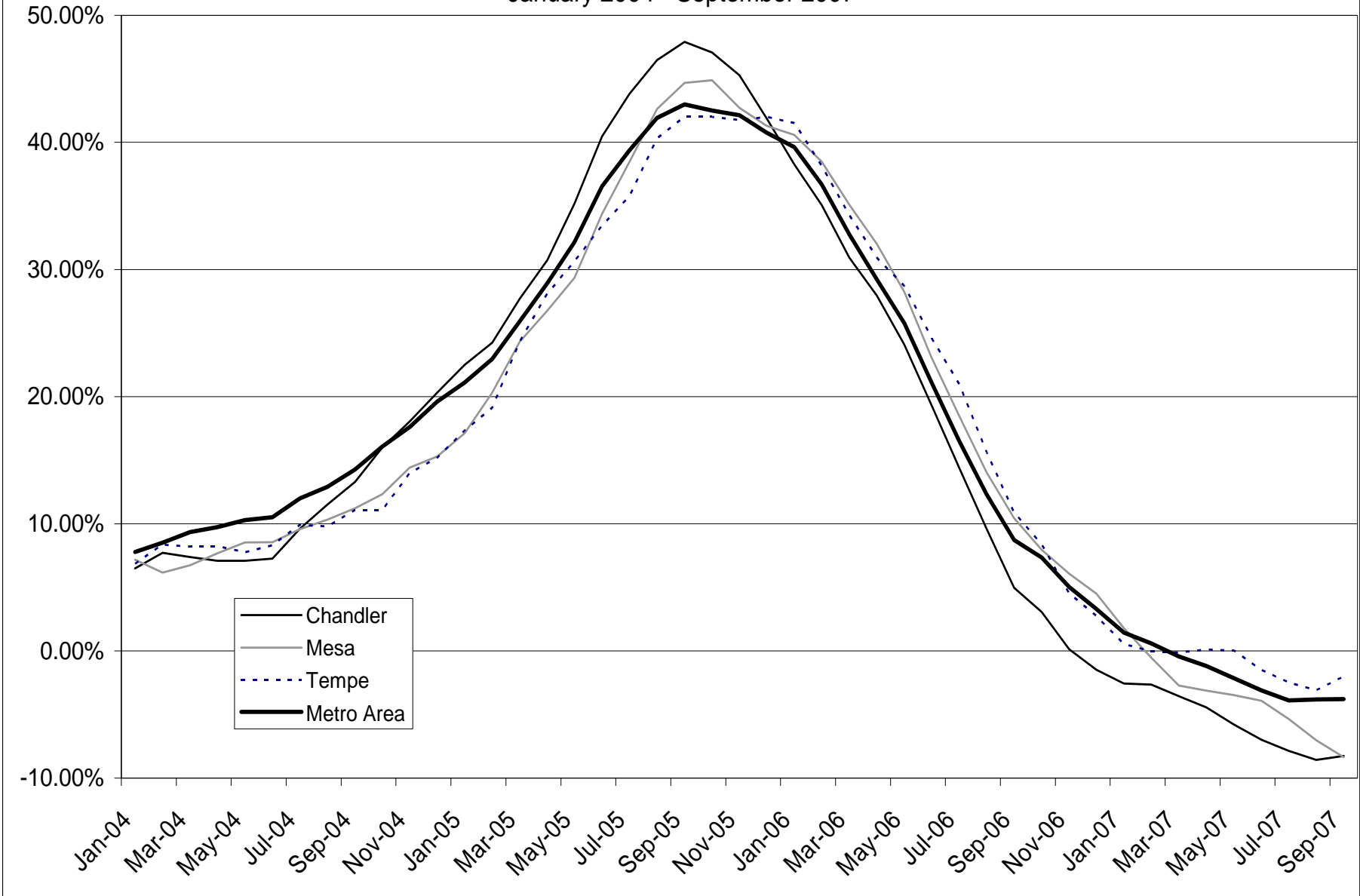
Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
Data Provided by Ion Data

Chandler, Mesa, & Tempe Repeat Sales Index (RSI)
Percent Change from Same Month Previous Year
January 1990 - September 2007



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

Chandler, Mesa & Tempe Repeat Sales Index (RSI)
 Percent Change from Same Month Previous Year
 January 2004 - September 2007

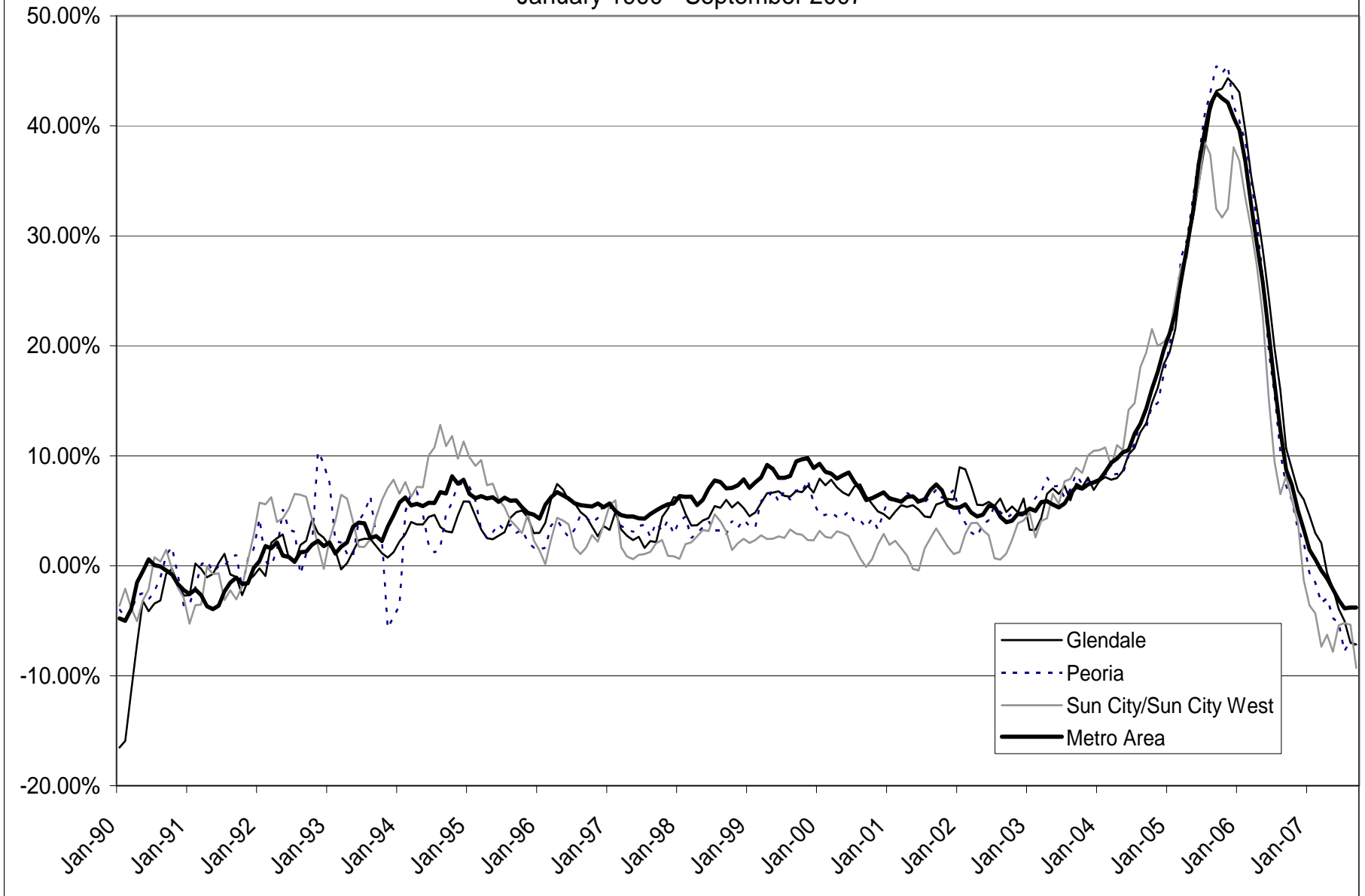


Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
 Data Provided by Ion Data

Glendale, Peoria, & Sun City/Sun City West Repeat Sales Index (RSI)

Percent Change from Same Month Previous Year

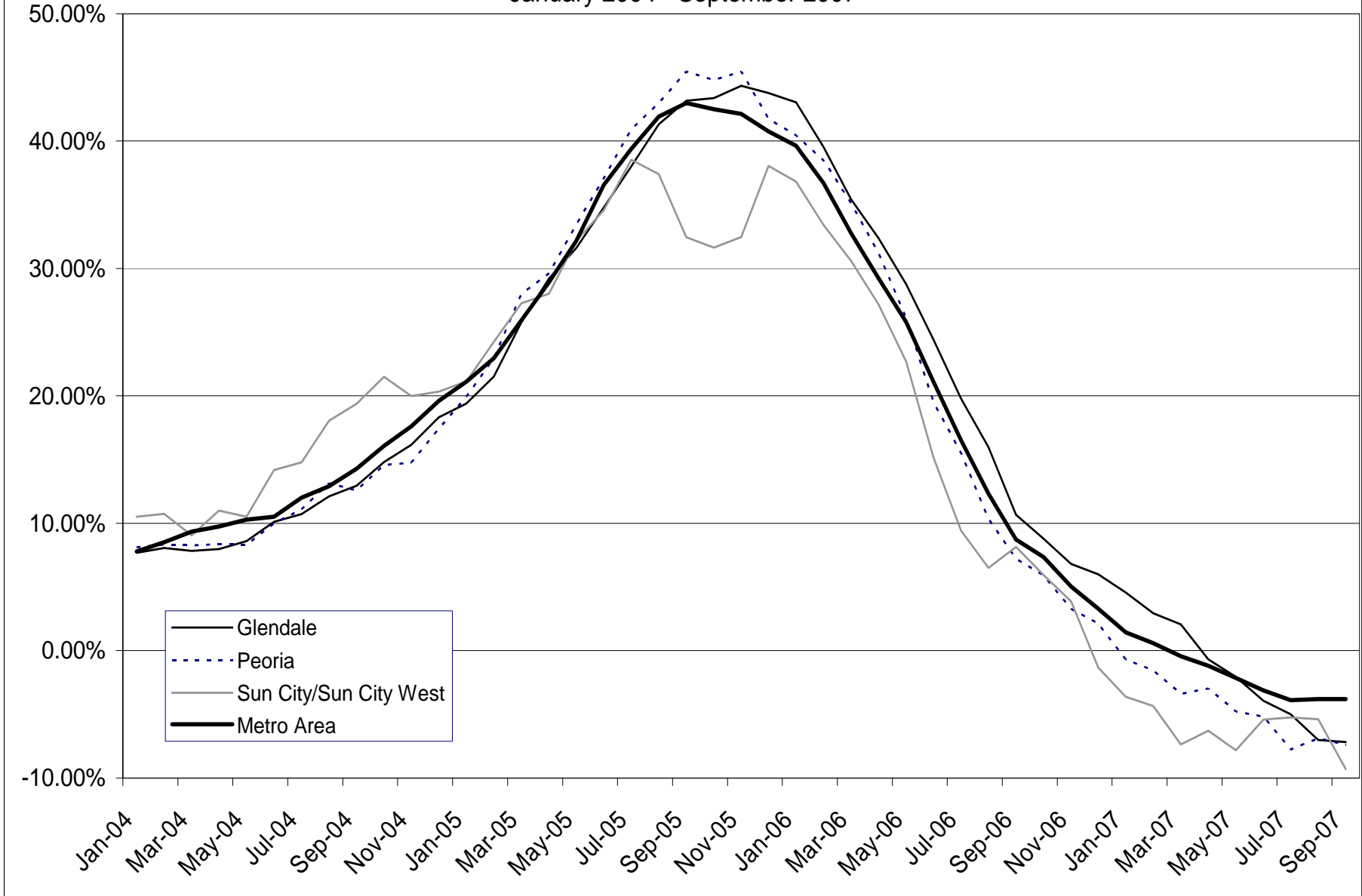
January 1990 - September 2007



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

Data Provided by Ion Data

Glendale, Peoria, & Sun City/Sun City West Repeat Sales Index (RSI)
 Percent Change from Same Month Previous Year
 January 2004 - September 2007

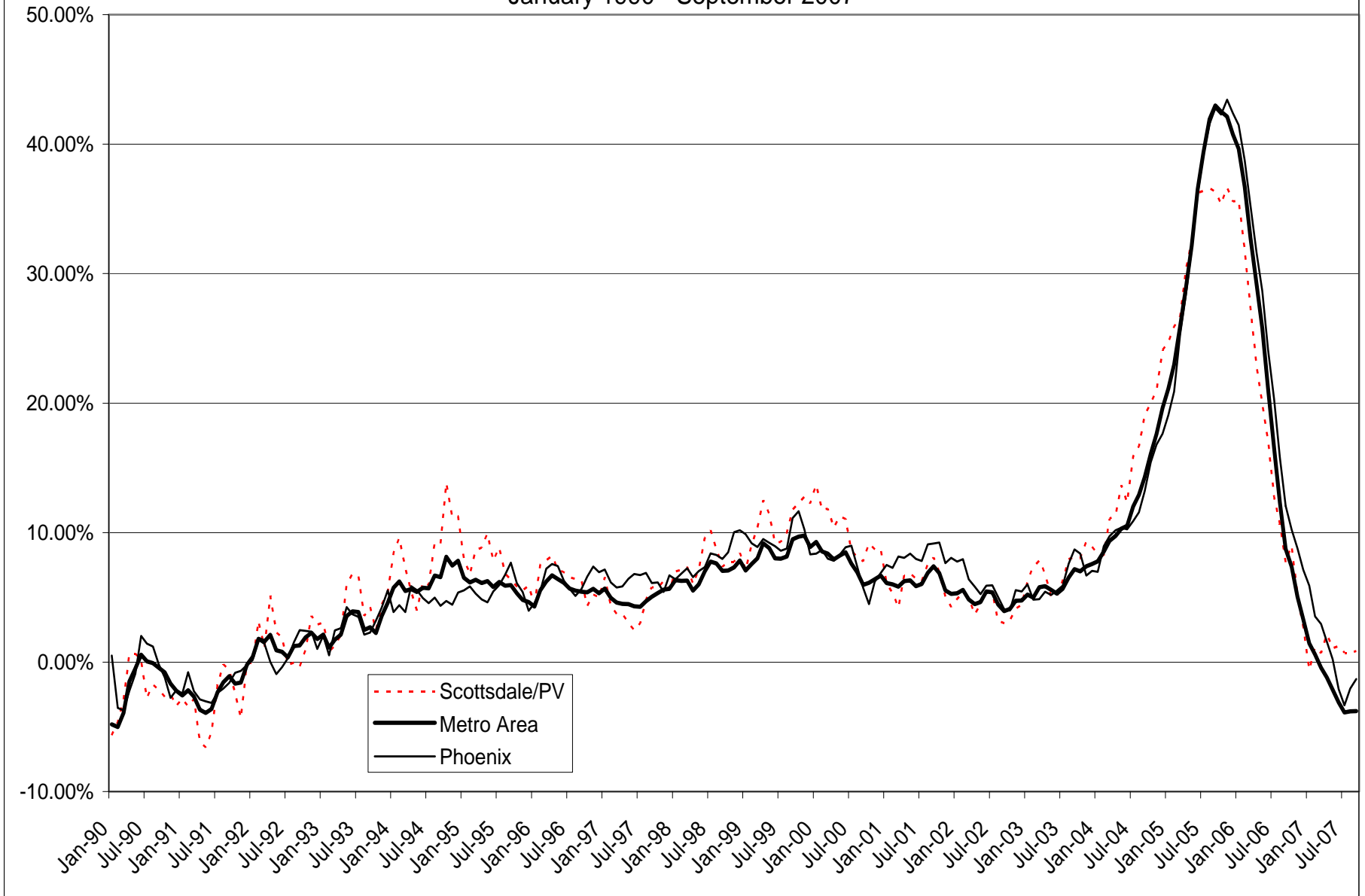


Source: ASU W.P. Carey School of Business; Center for Real Estate Theory and Practice
 Data Provided by Ion Data

Scottsdale/Paradise Valley, & Phoenix Repeat Sales Index (RSI)

Percent Change from Same Month Previous Year

January 1990 - September 2007



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

Data Provided by Ion Data

Scottsdale/Paradise Valley, & Phoenix Repeat Sales Index (RSI)

Percent Change from Same Month Previous Year

January 2004 - September 2007



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

Data Provided by Ion Data