



Integrating Real Estate Market-Based Indicators into Fundamental Home Price Forecasting Systems

Western Economics Association 86th Annual Conference

8:15 am – 10:00 am, Saturday, July 2, 2011

Forecasting Short and Medium-Run Trends in Home Prices

Chair: Jesse Weiher, Federal Housing Finance Agency

by

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Our Results

- We can predict housing market prices fairly well in the long run using economic fundamentals representing demand, supply and the capital markets.
- To predict shorter term price trends and turning points we need to add a variety of market-based technical indicators, along with factors that may be unique to recent market conditions or unique to local markets.
- Variable selection is both an art and a science and one should remain skeptical of purely statistical curve fitting exercises.
- Local submarket and micro-market trends can vary significantly from broader metro trends, but we can forecast at fairly small geographic ***and intra-market (e.g. price range, property type, home age)*** levels using the nearly real-time data now available.

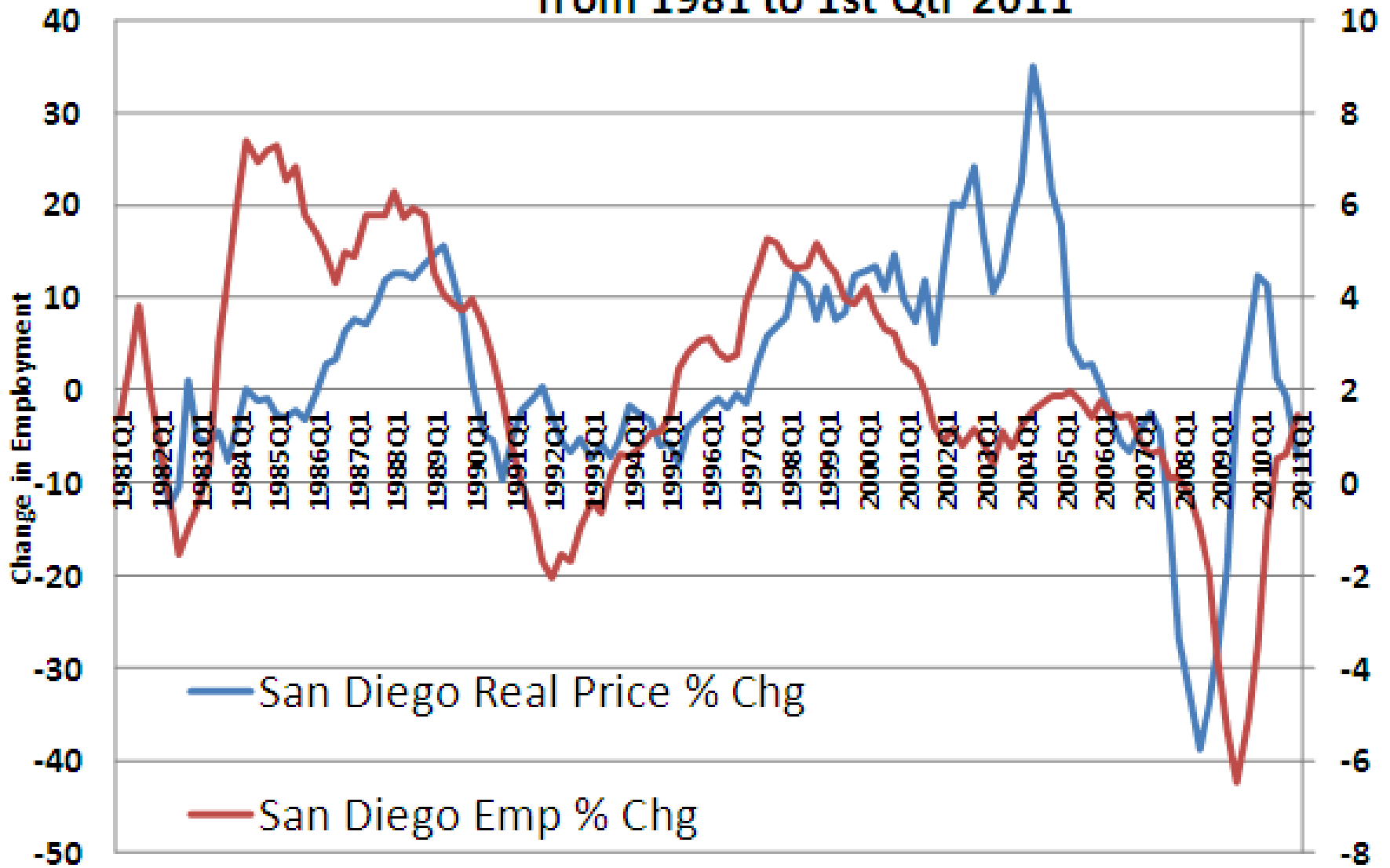
Fundamental Demand Drivers	Hypothesized Relationship On Housing Prices
Household growth rates per year	Positive
Employment in absolute numbers and in relative growth rates	Positive
Past home price trends	Positive
Mortgage Interest Rates and or Affordability Ratios that include Income, LTV and median prices and interest rates	Inverse for mortgage rates, positive for affordability indexes
Rent (multifamily market) to Price (median home) ratios	Positive
Credit Access (LTV trends, % of Mortgages at 90% plus LTV, % of loan applications approved, average credit score)	Positive except for credit score which is negative. Positive for % of LTVs above 90% temporarily and then negative with a substantial lead time.
Seasonal pattern of demand for localized market	Positive and negative based on month of transaction

Examples of Other Unique Factors Affecting Local Demand	Hypothesized Relationship On Housing Prices
Currency Exchange Rates (Stronger foreign currency may affect local prices if a significant portion of the market is international)	Positive with strength of foreign currency, inverse with US Dollar
Oil Prices (Affects transportation-dependent submarkets more so than central mixed-use locations or those with a oil sensitive economy like Houston)	Inverse <i>in general but positive in markets like Houston</i>
Hurricanes, tornadoes, floods, nuclear power accidents, natural disasters	Positive on remaining stock

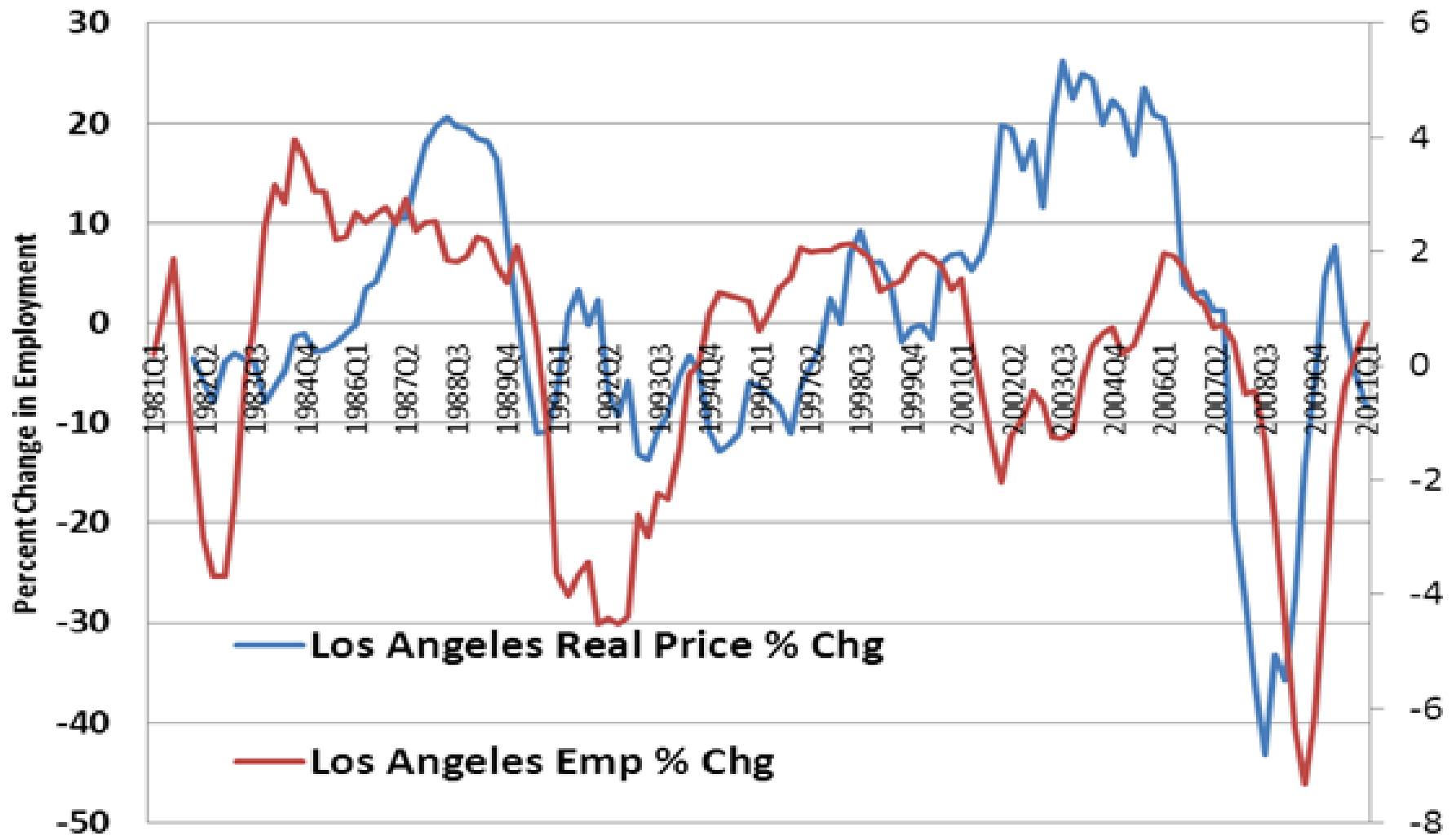
Supply Drivers and Constraints	Hypothesized Relationship On Housing Prices
Housing permits to total stock issued	Inverse as more elastic supply puts less pressure on price
Wharton Residential Land Use Regulatory Index	Positive as the higher the hurdle to develop property the more upward pressure on prices when trends are positive. When price trends are negative, there will be less effect.
Population density (another proxy for high land costs) or land prices to median home prices	Positive
Government Interference Examples	
Home tax credit programs	Positive and temporary
Below-market financing subsidies	Positive and temporary
Changes in tax laws on capital gains	Varies with the direction of the ruling; will affect behavior most just prior to the change.

Market-Based Technical Examples	Hypothesized Relationship On Housing Prices
Sales Transaction Volume, Volume % Trend, By Price Range, By Size, By Age	Positive
Turnover Rate as % of Stock using Regular (non-distress) sales only	Positive
Distressed <i>ed</i> Sales as Percent of Total Sales and % Trend	Inverse
Average New Listing Price Over Past Period Listing Price Trend and the same in terms of Average New Listing Price Per Square Feet	Positive
Expired, <i>Withdrawn</i> , (Off-Market) Listings that did not sell <i>as a percent</i> of the <i>total number of</i> listings <i>or sales</i> , or the Number of Listings Pulled Off Market (by price range and size as well)	Inverse
Sold Price-to-Listing Price Ratio and Percent Change Trend	Positive
Time on the Market to Sell (DOM) and the Percent Change Trend in DOM	Inverse

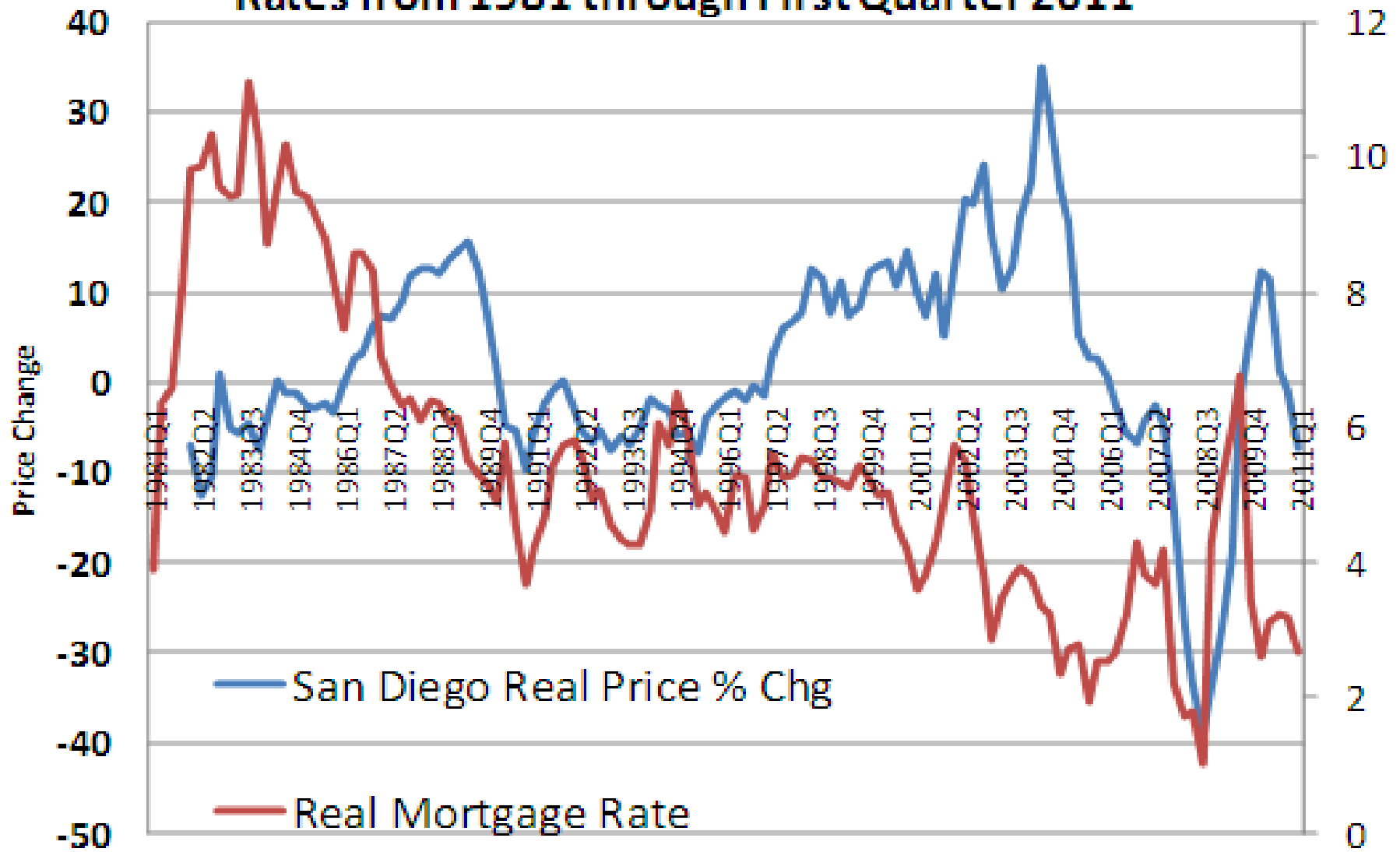
Quarterly Employment Versus San Diego Home Prices from 1981 to 1st Qtr 2011



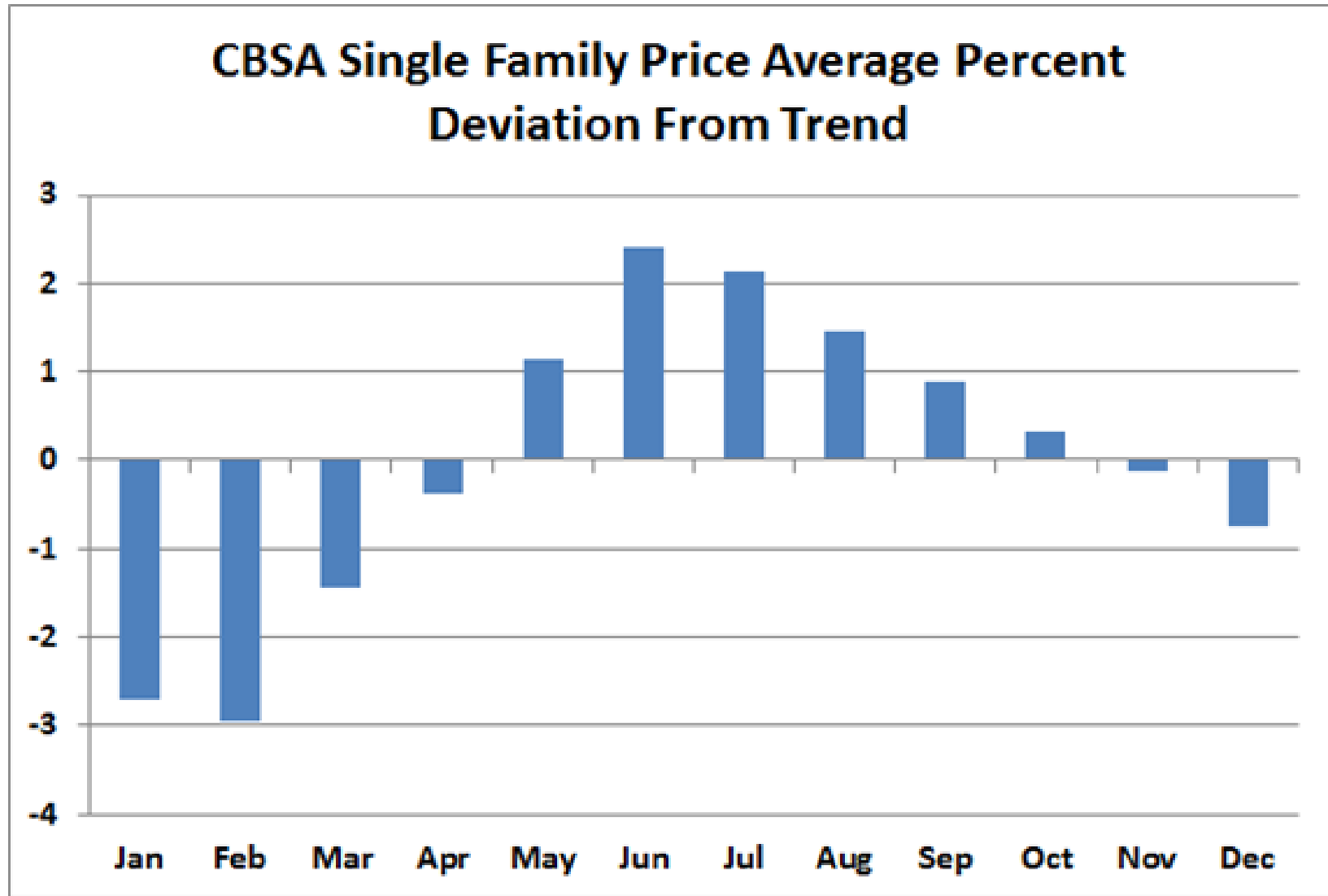
Quarterly Employment Change Versus Changes in Home Prices for Los Angeles



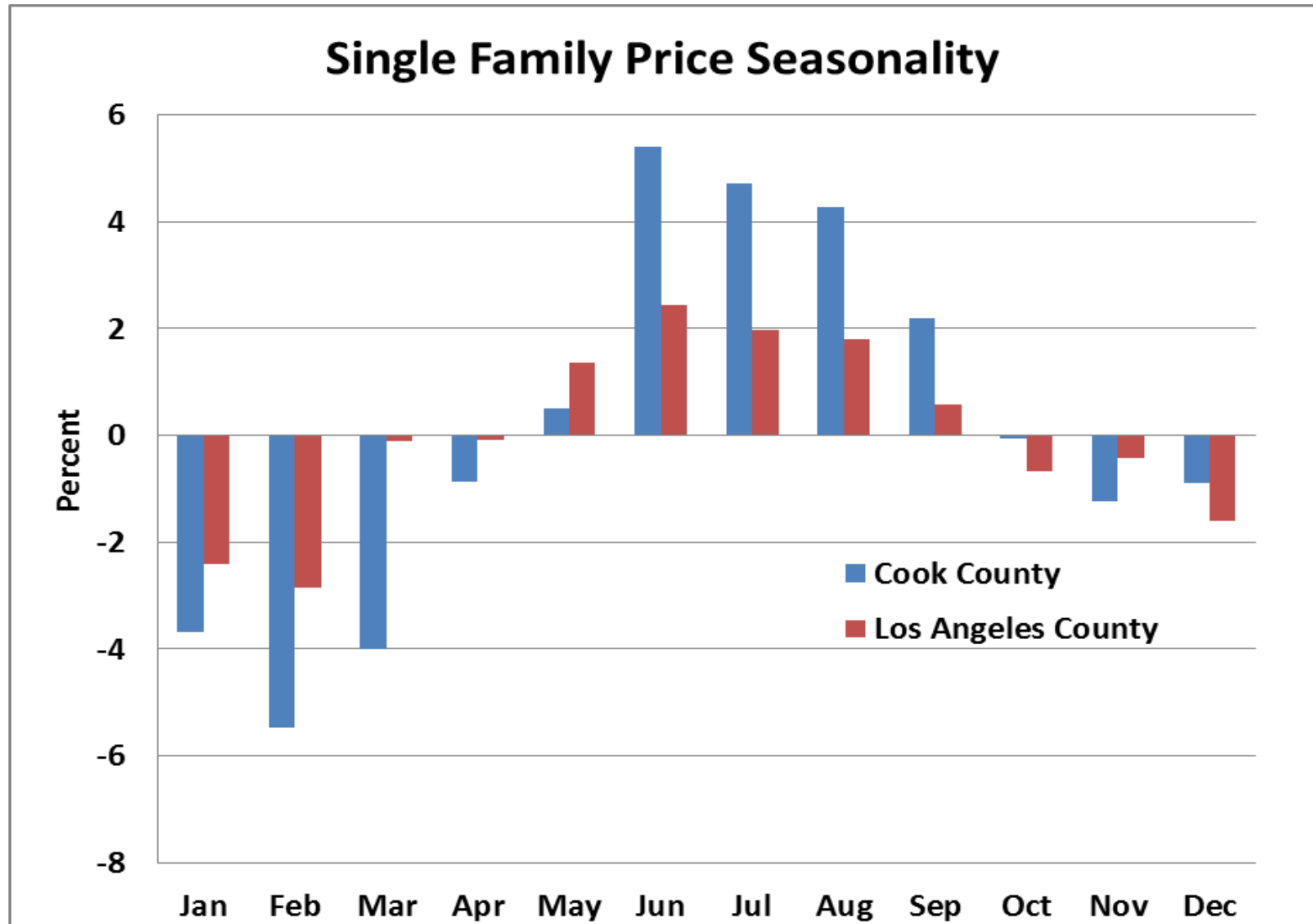
San Diego Real Home Prices Versus Real Mortgage Rates from 1981 through First Quarter 2011



Seasonality in Prices



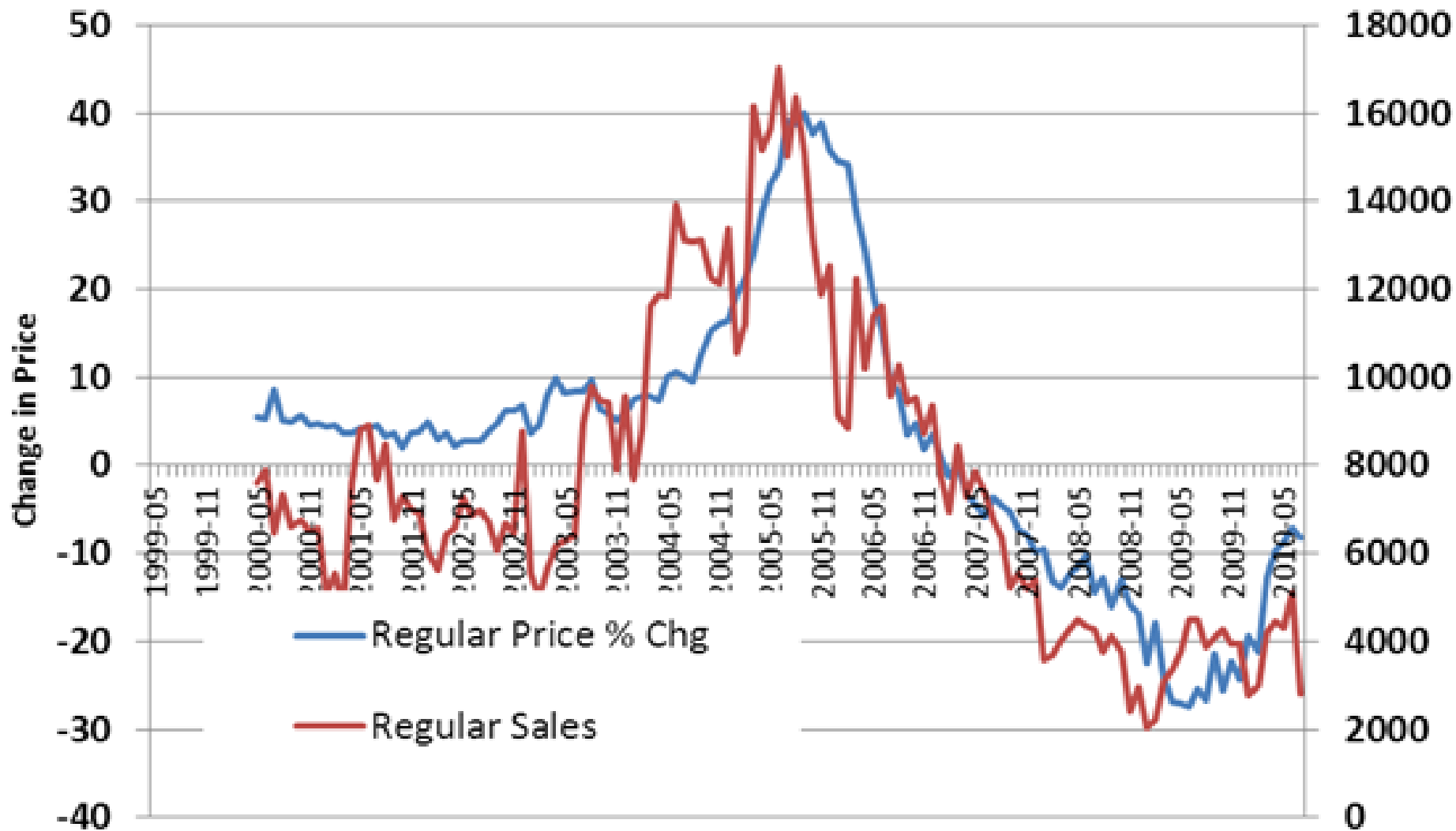
Seasonality in LA and Chicago



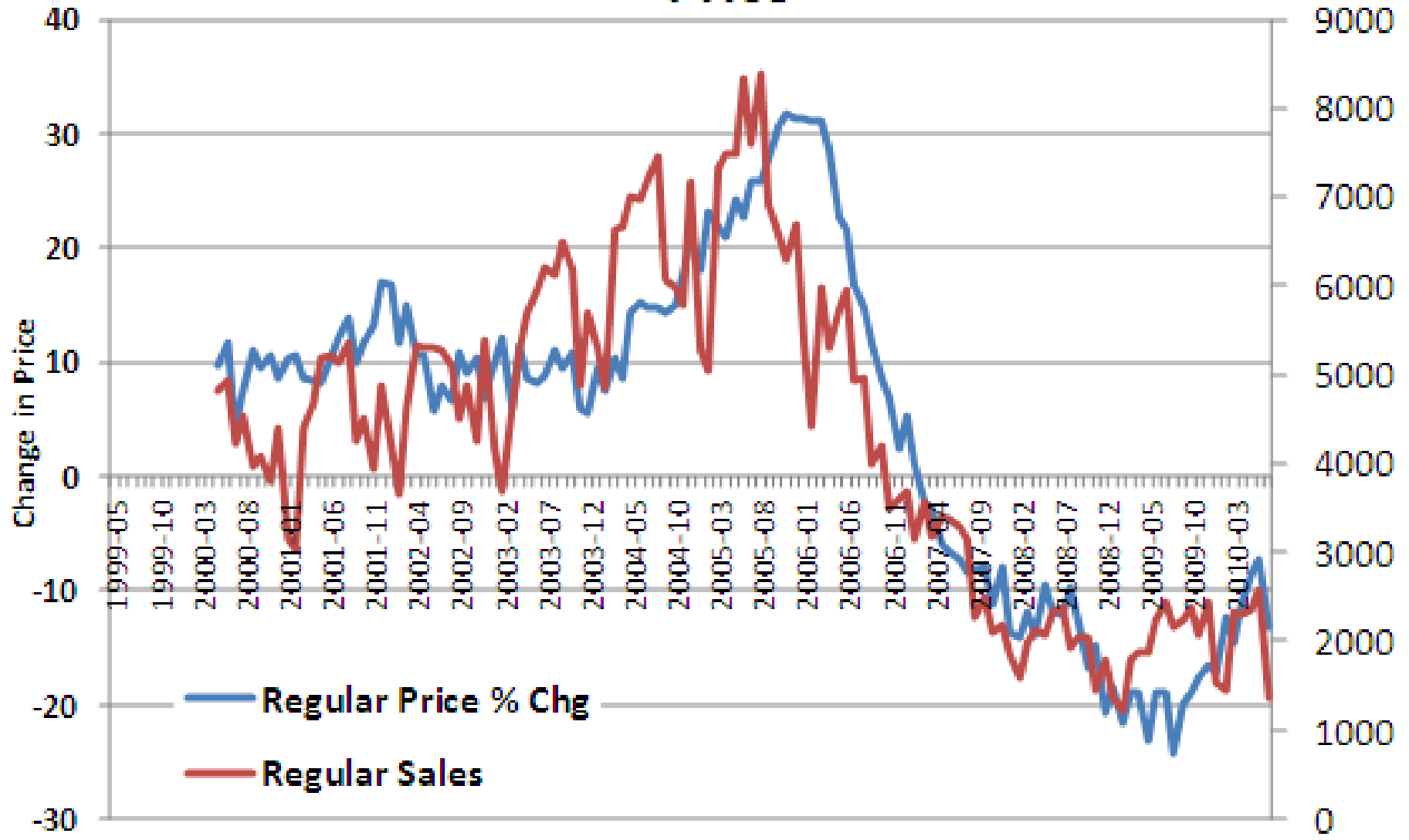
San Diego Sales Volume Vs. Change in Median Price



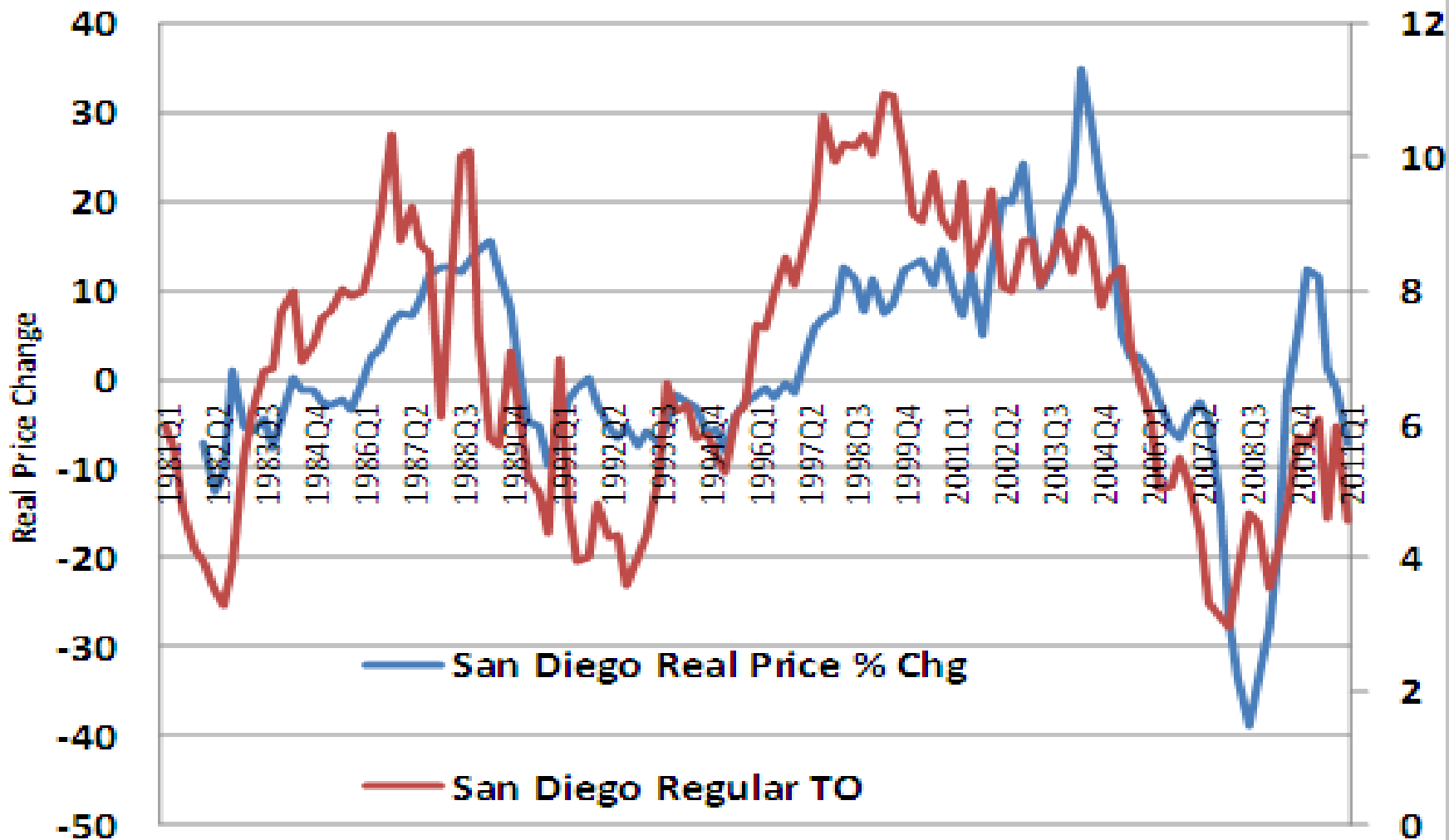
Phoenix Sales Volume Vs. Change in Median Price



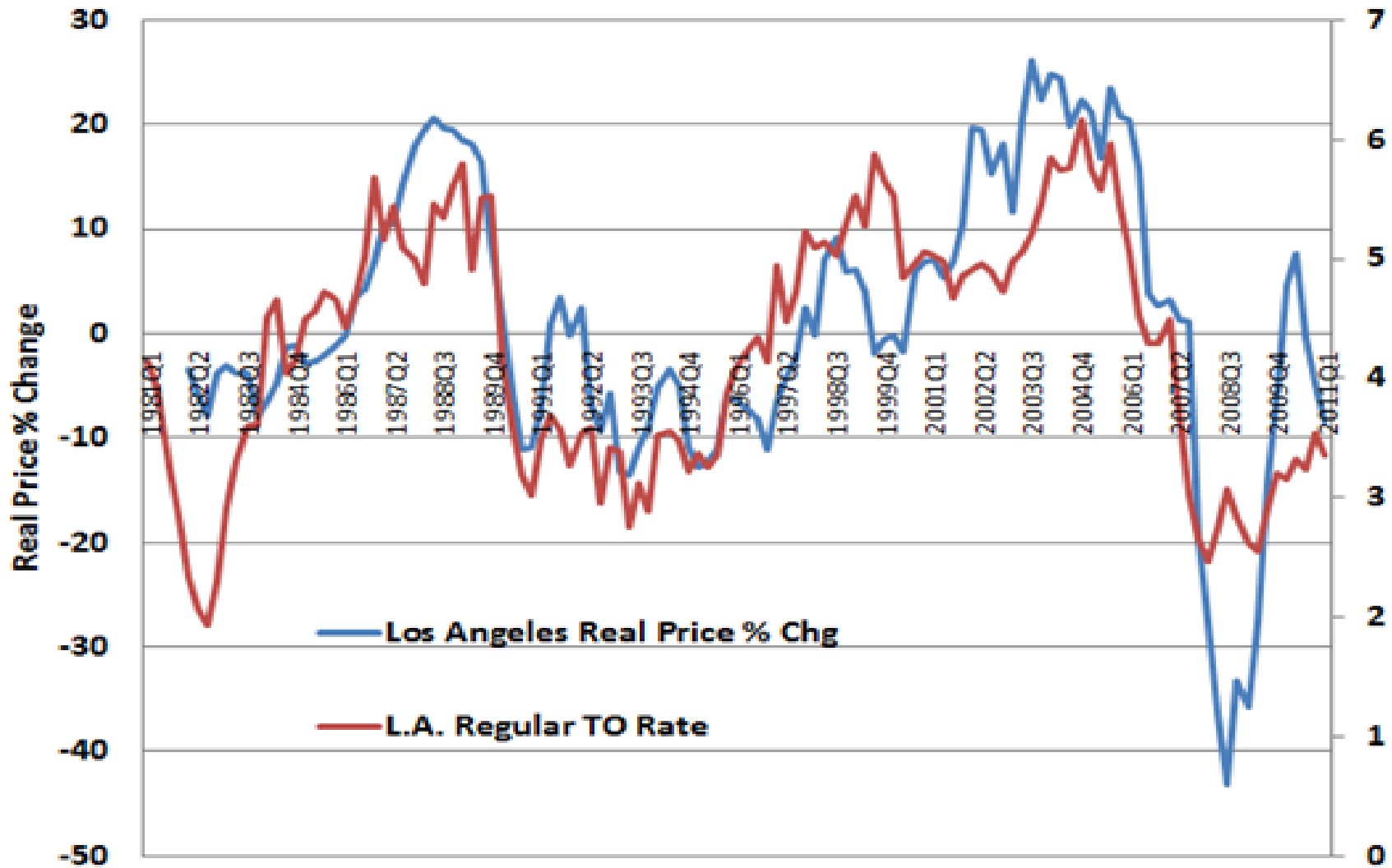
Tampa Sales Volume Vs. Change in Median Price



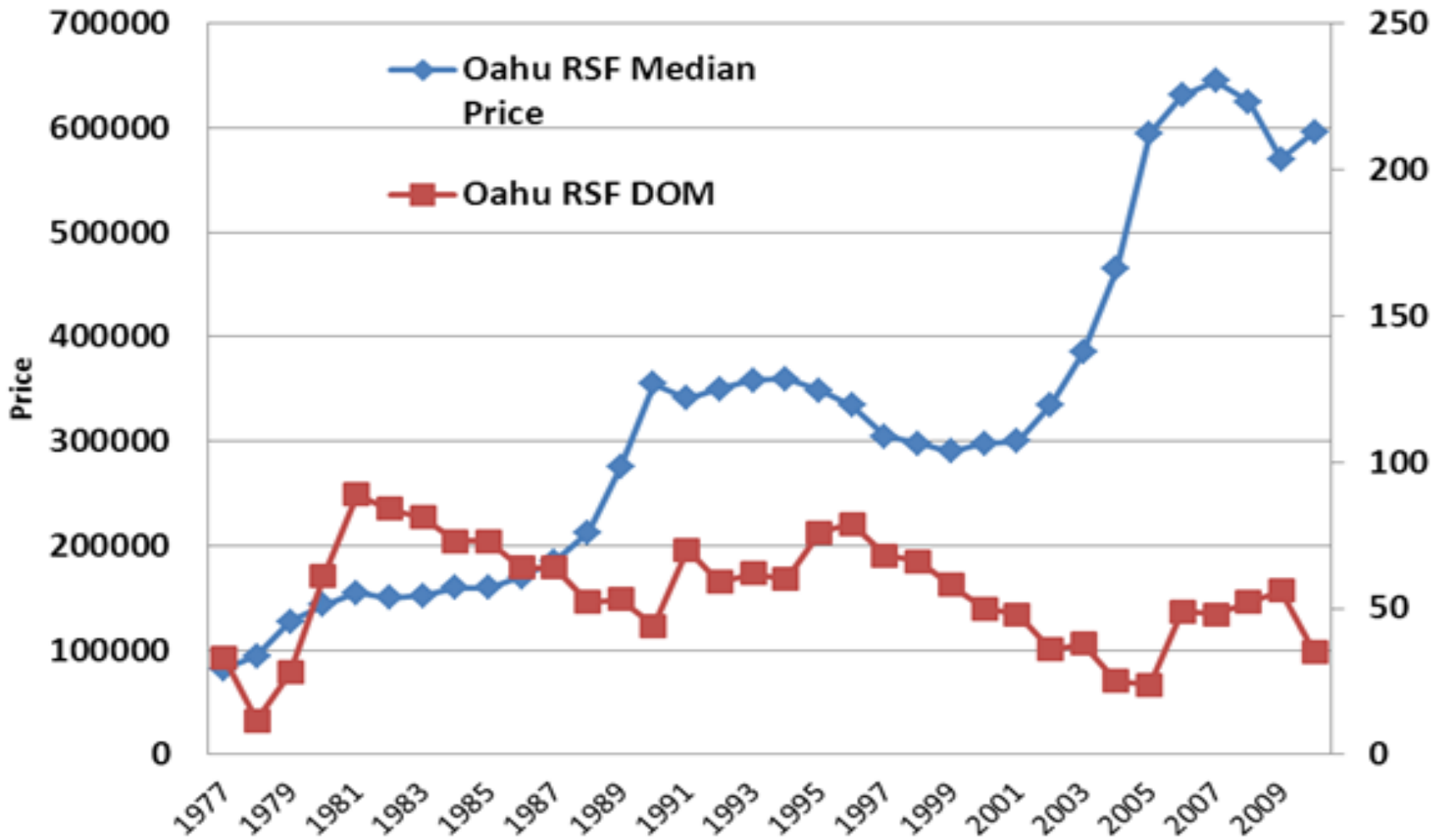
San Diego Real Price Change Versus Turnover Rate from 1981 through First Qtr 2011



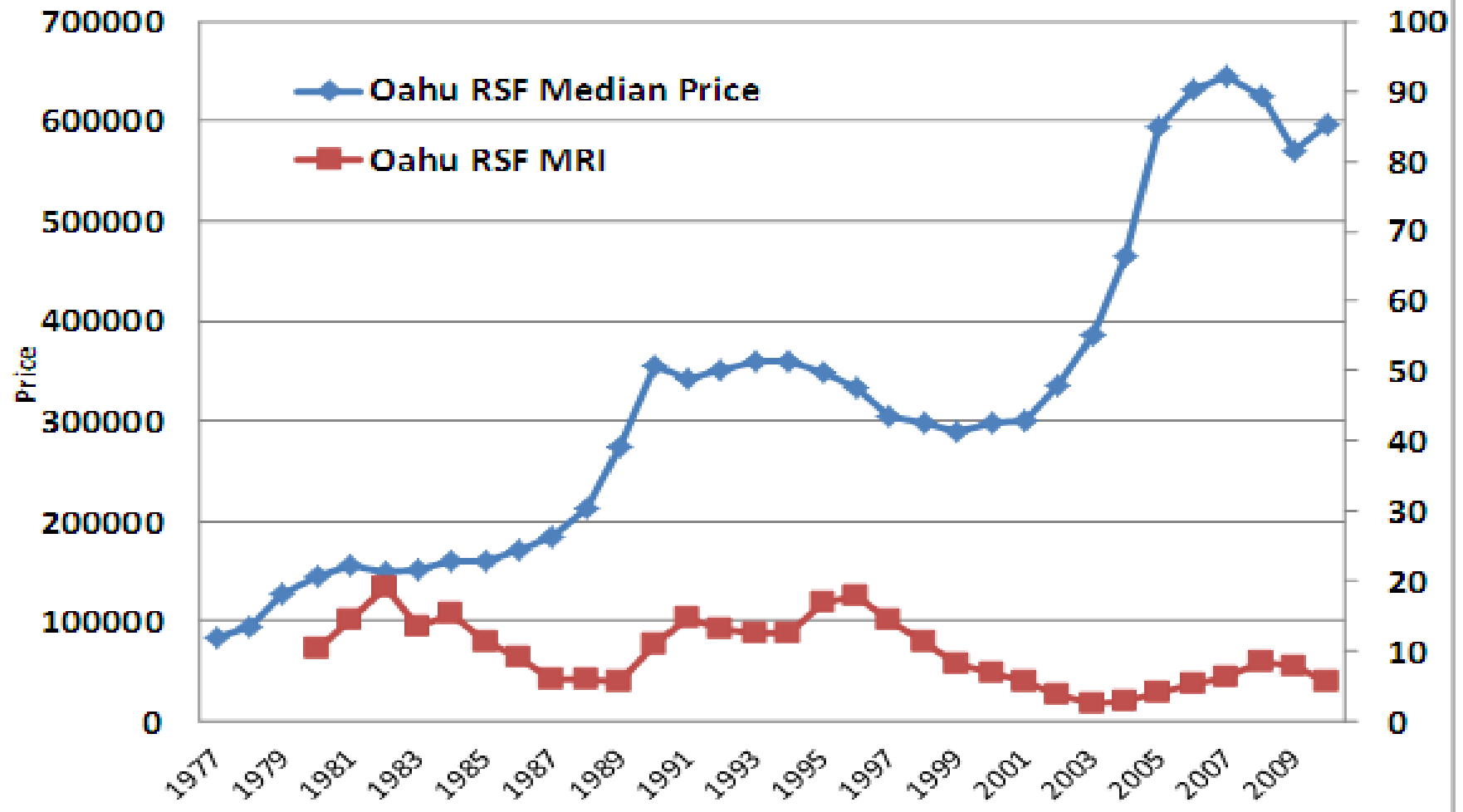
Los Angeles Real Price Percent Change Versus Turnover Rate



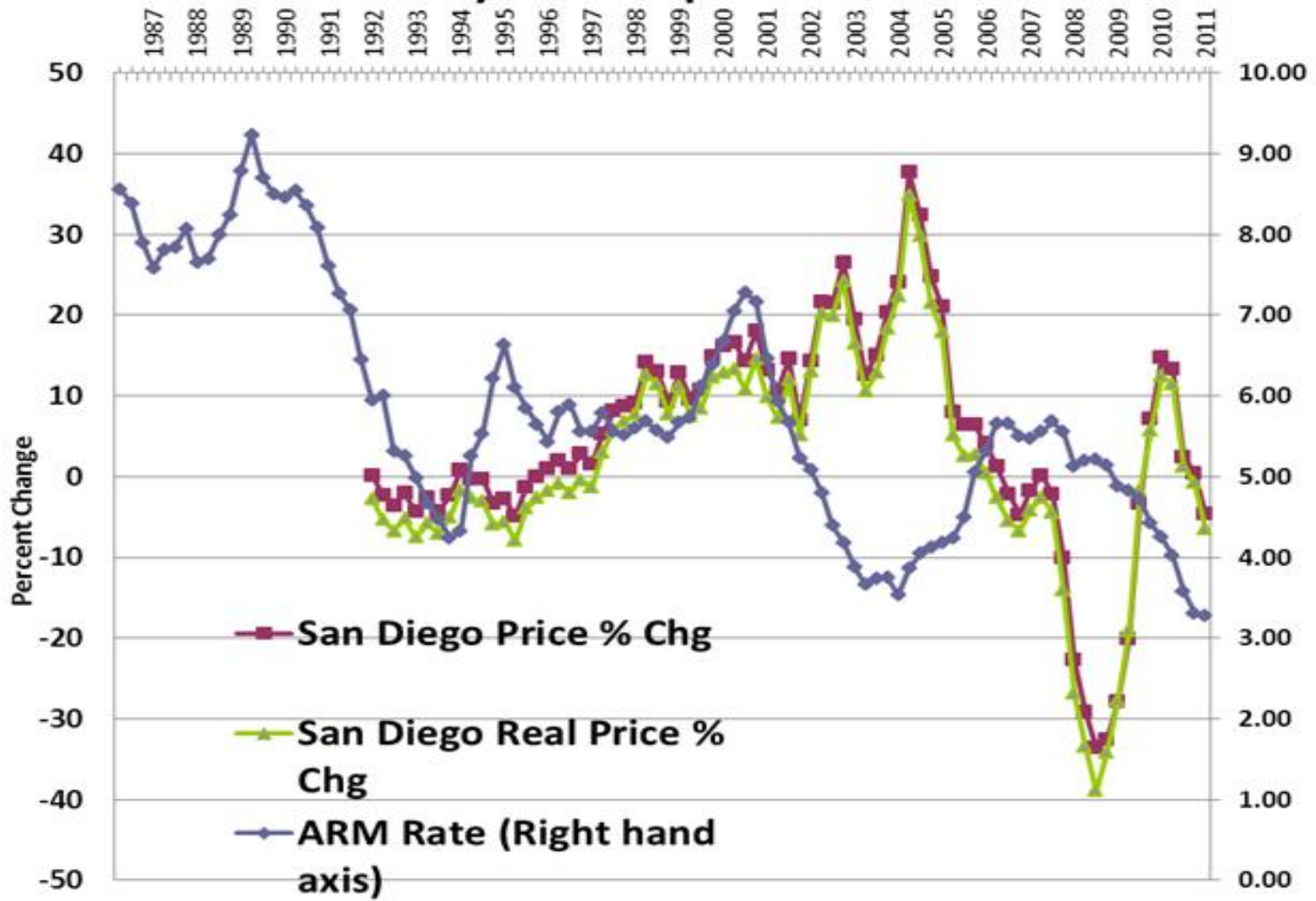
Honolulu CBSA Median Single Family Price and Sold Market Time



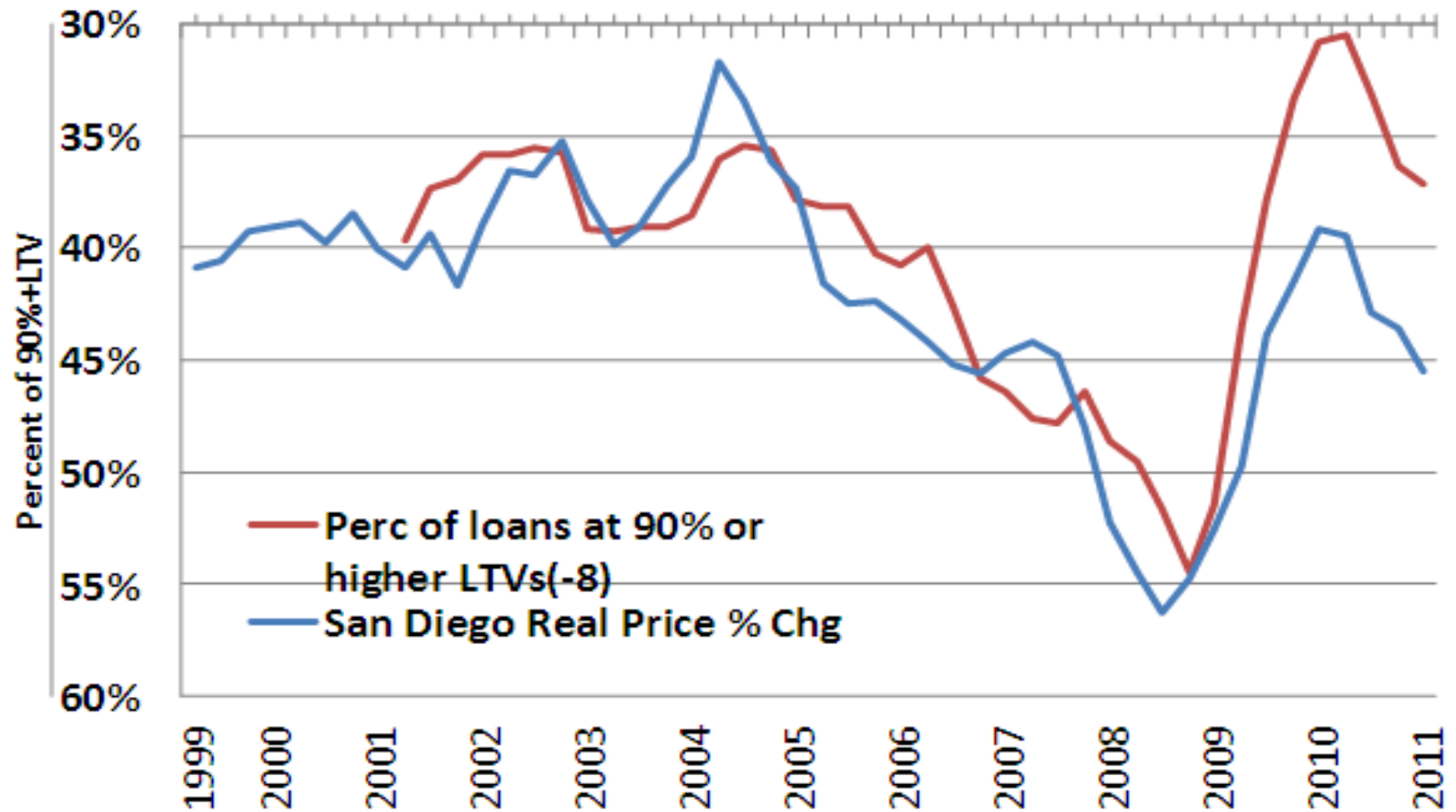
Honolulu CBSA Median Single Family Price and Months of Inventory Remaining



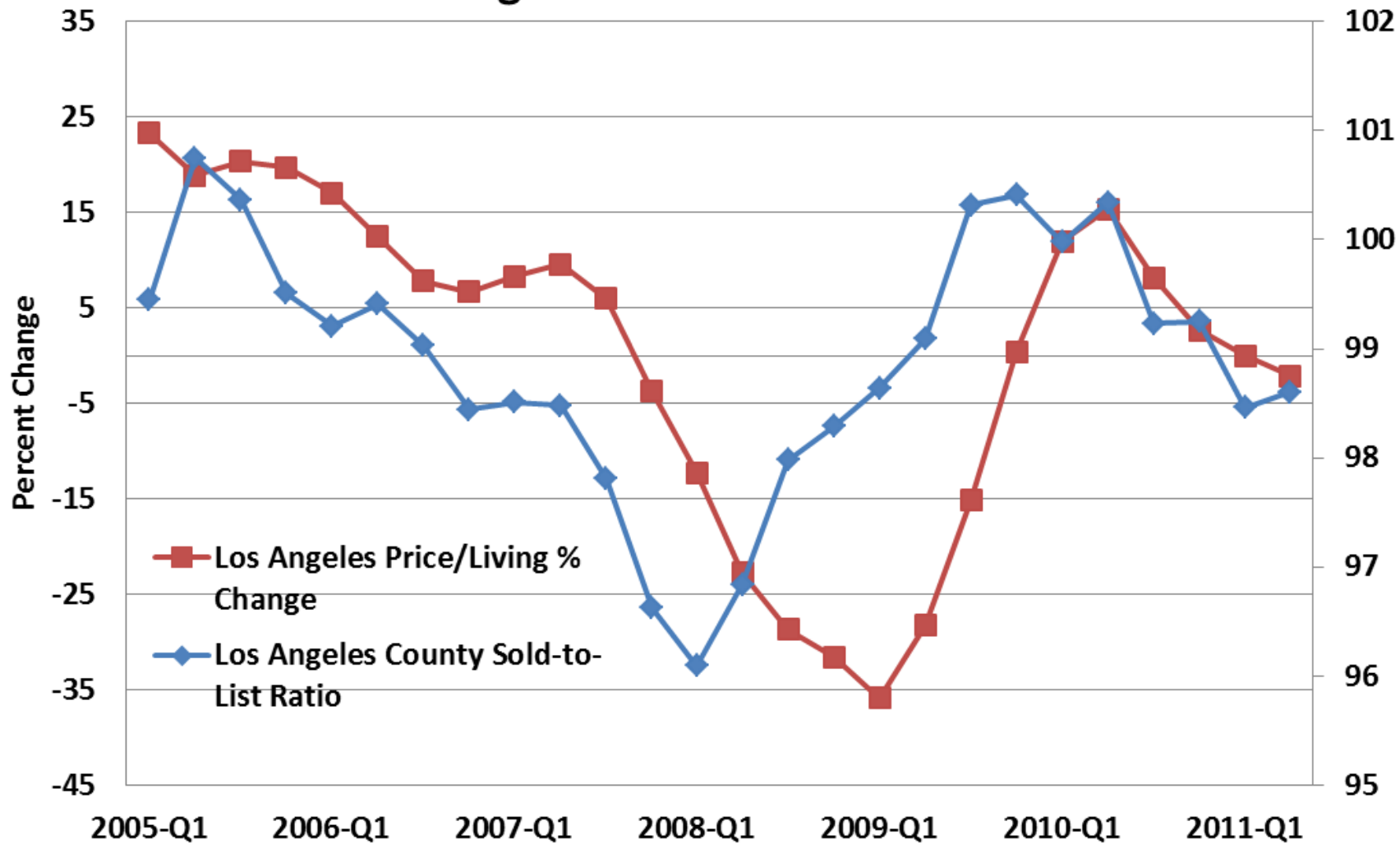
ARM rates seem to inversely lead price changes by several quarters



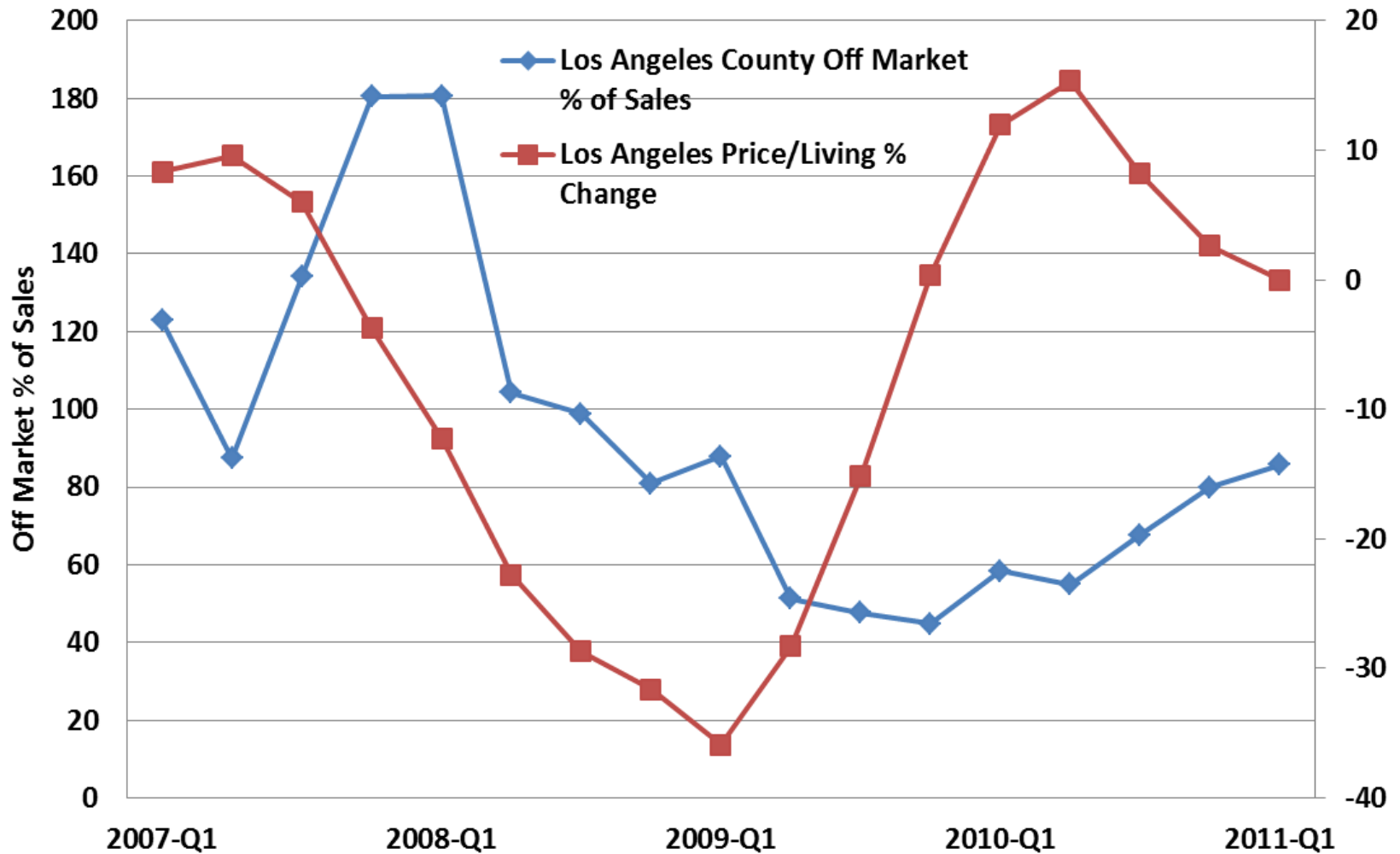
San Diego Home Price Changes Versus the Percent of Originated Mortgages at 90% or Higher LTV (with 8 quarter lead) from 1999 through 2010



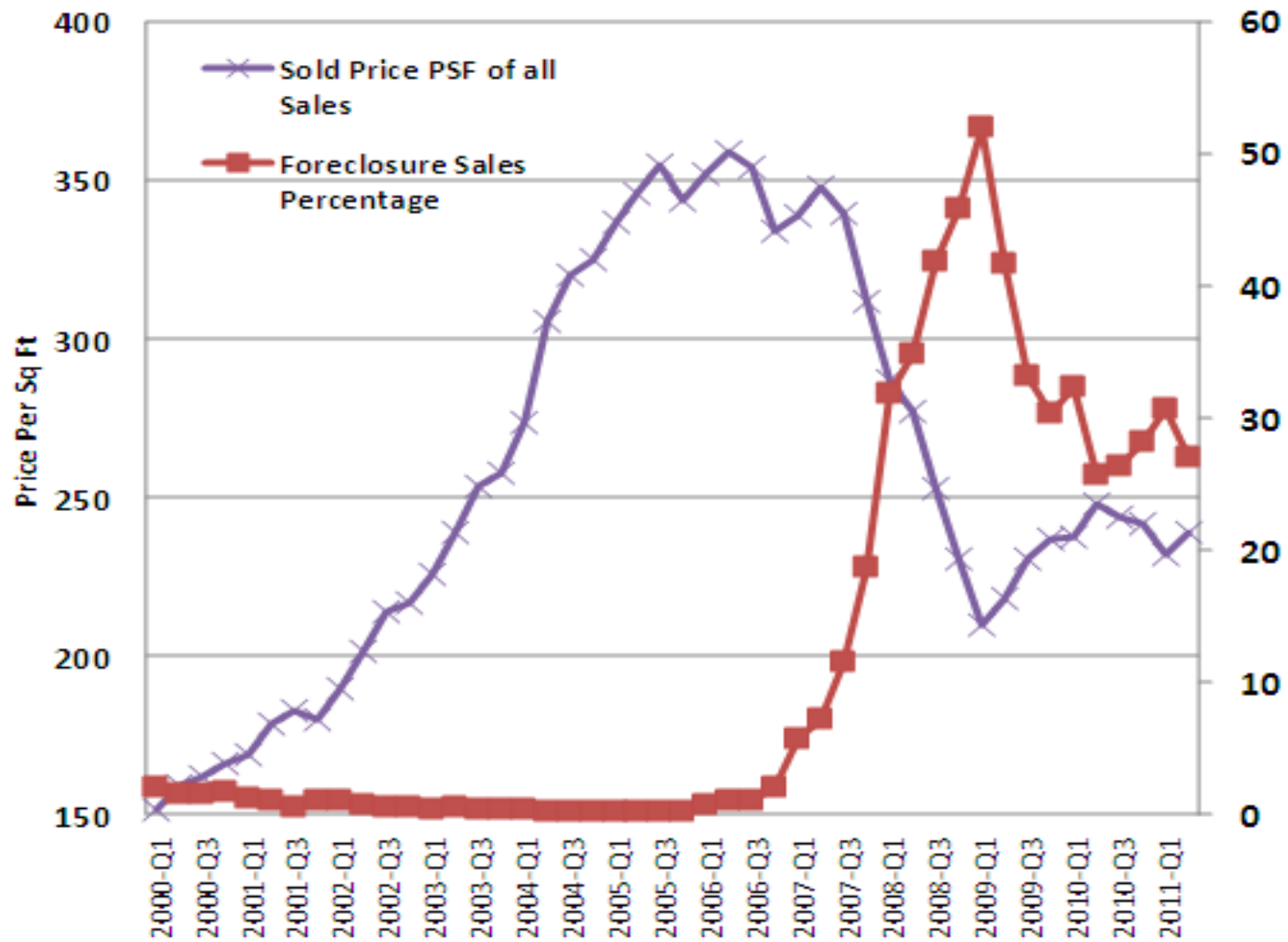
Los Angeles Single Family Price/Living % Change and Average Sold-To-List Price Ratio



Los Angeles County Single Family Price/Living % Change and Off Market Listings % of Total Sales

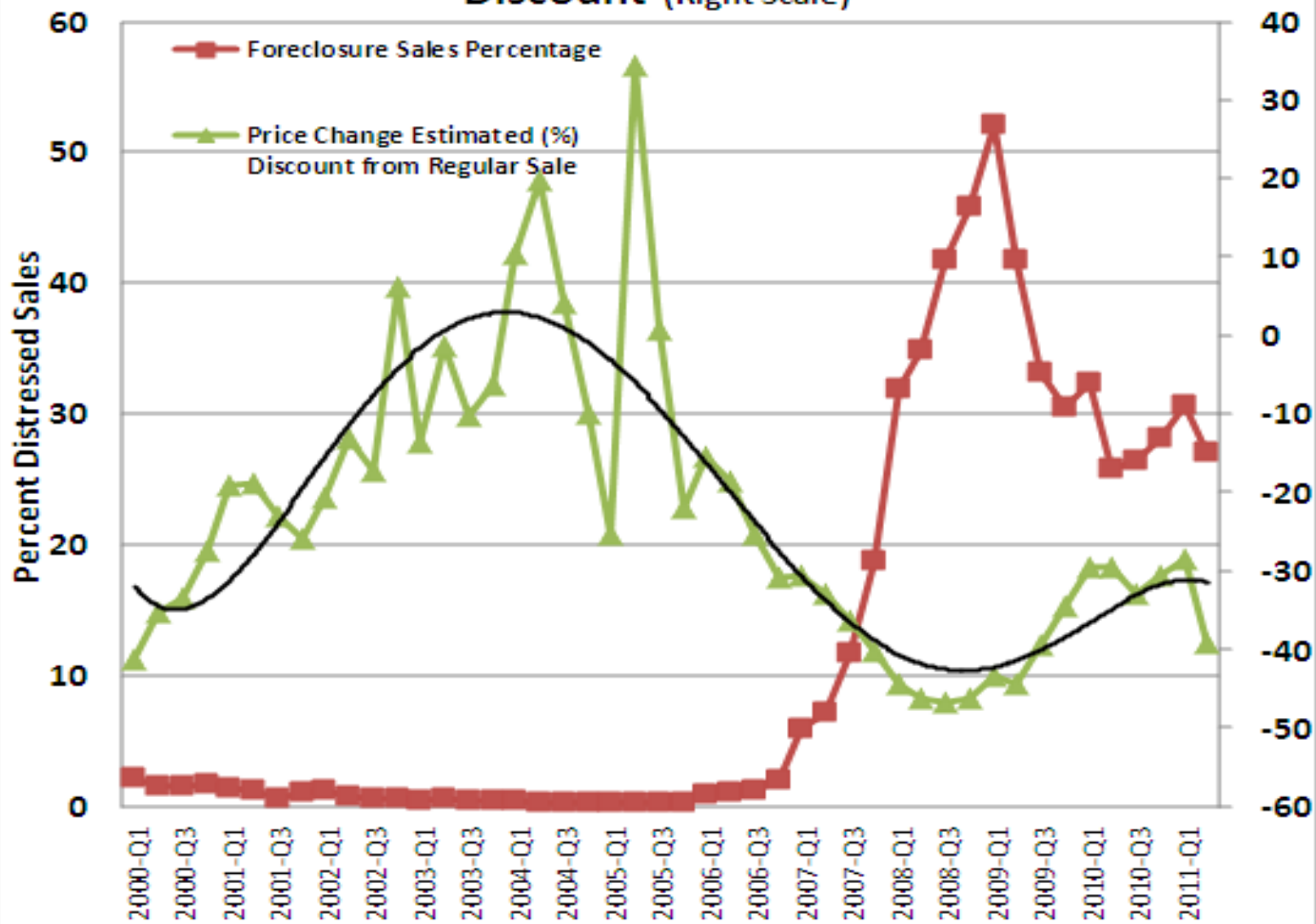


Foreclosure Sales as % of Total Sales Versus San Diego Home Prices PSF

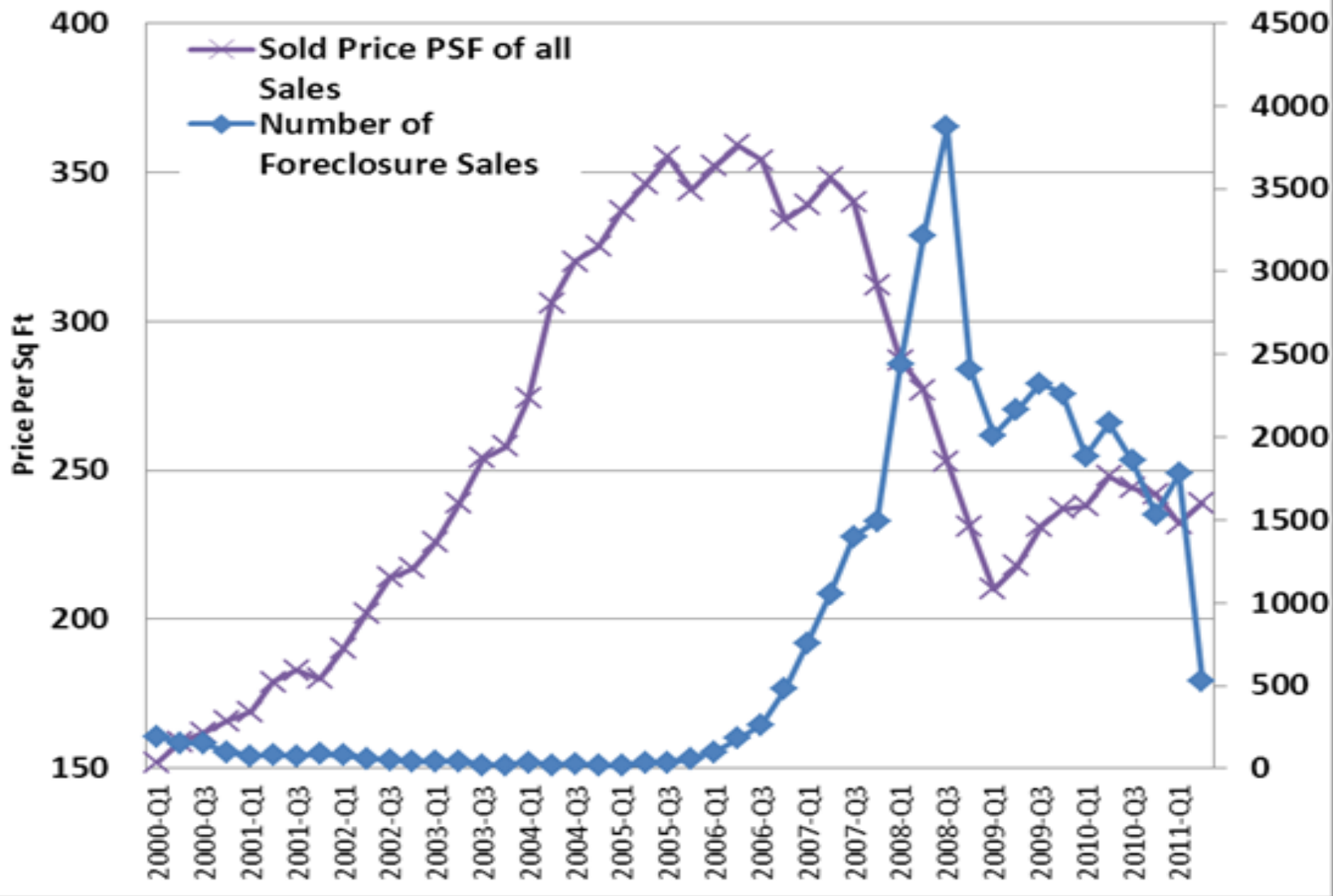


Distress Sales Versus San Diego Home Price

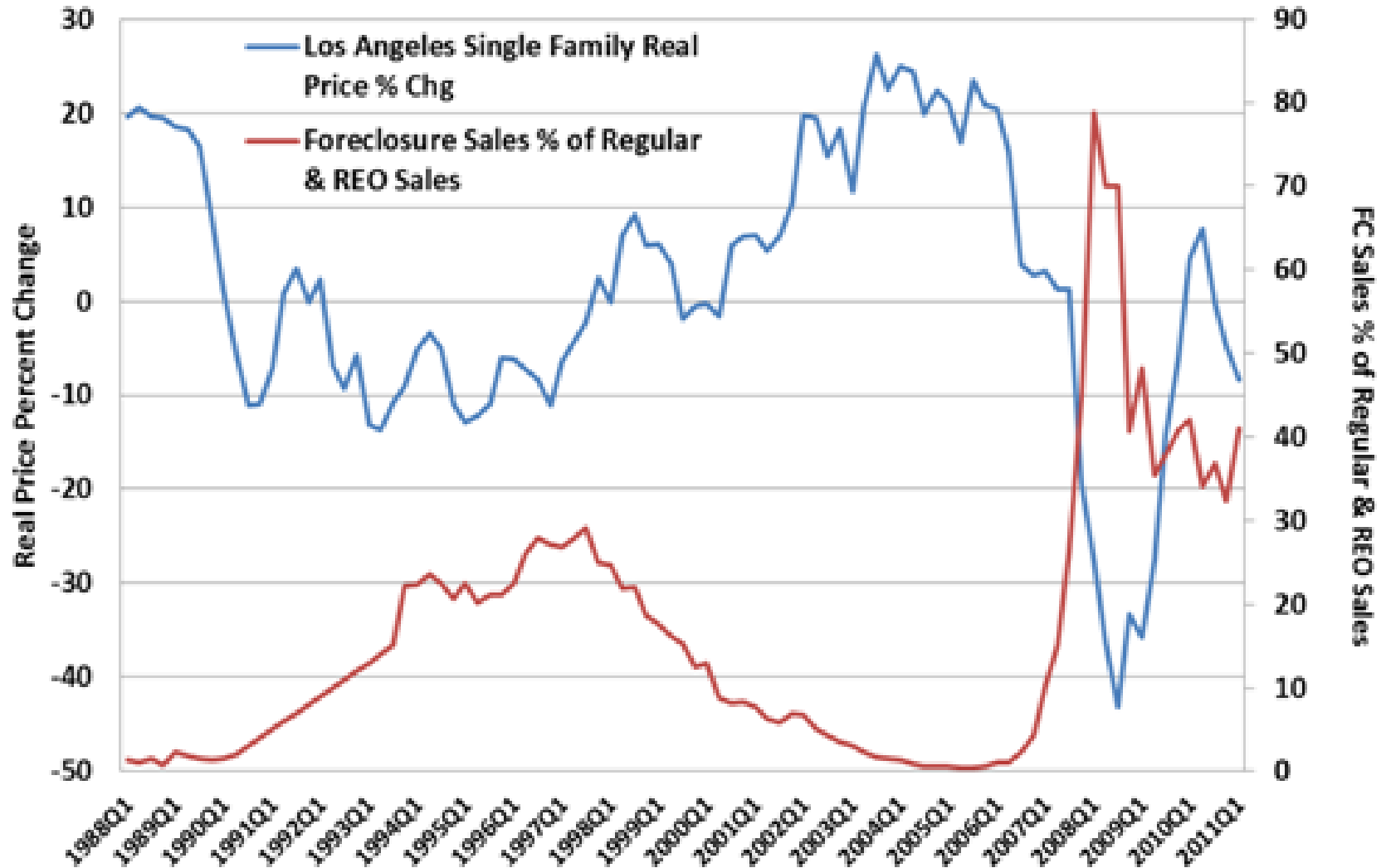
Discount (Right Scale)



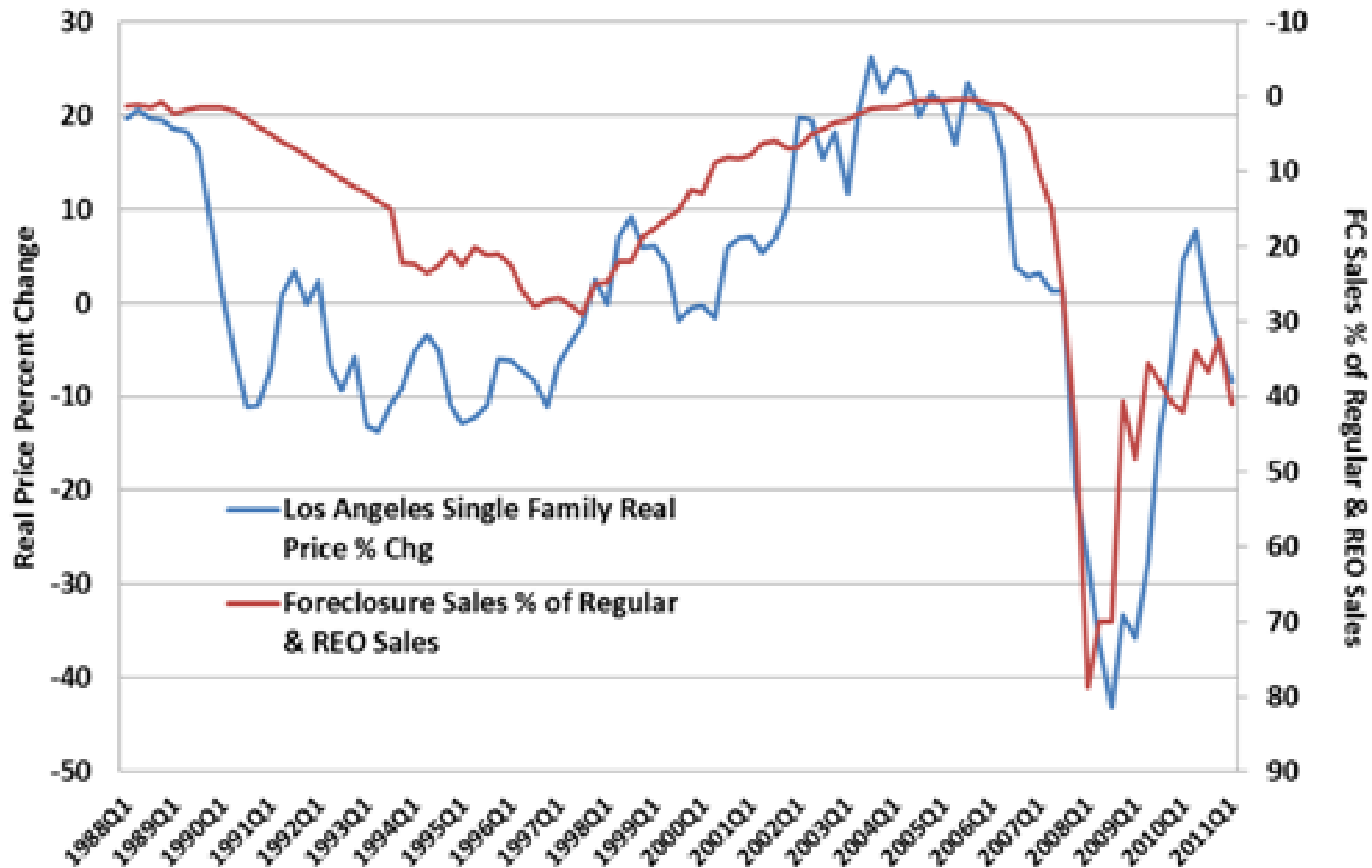
Distress Sales Volume Versus San Diego Home Prices PSF



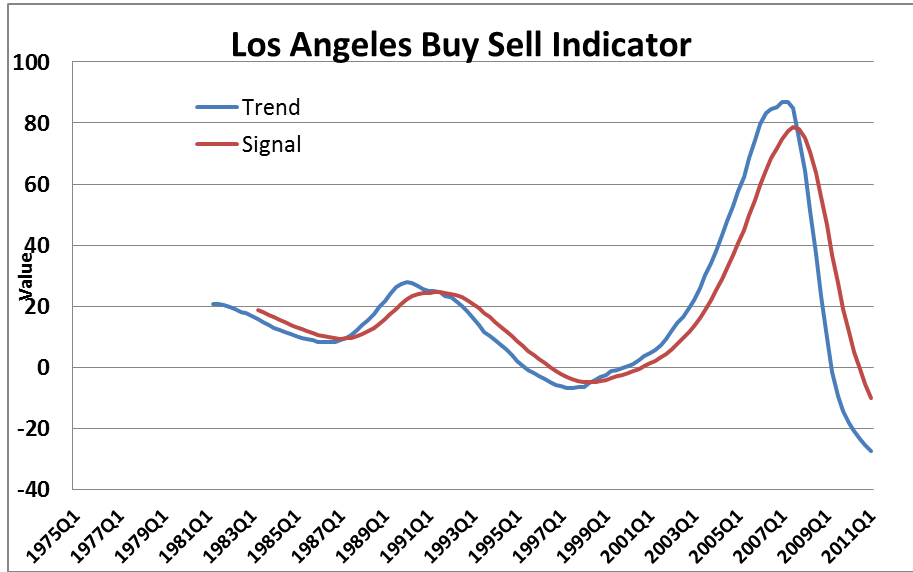
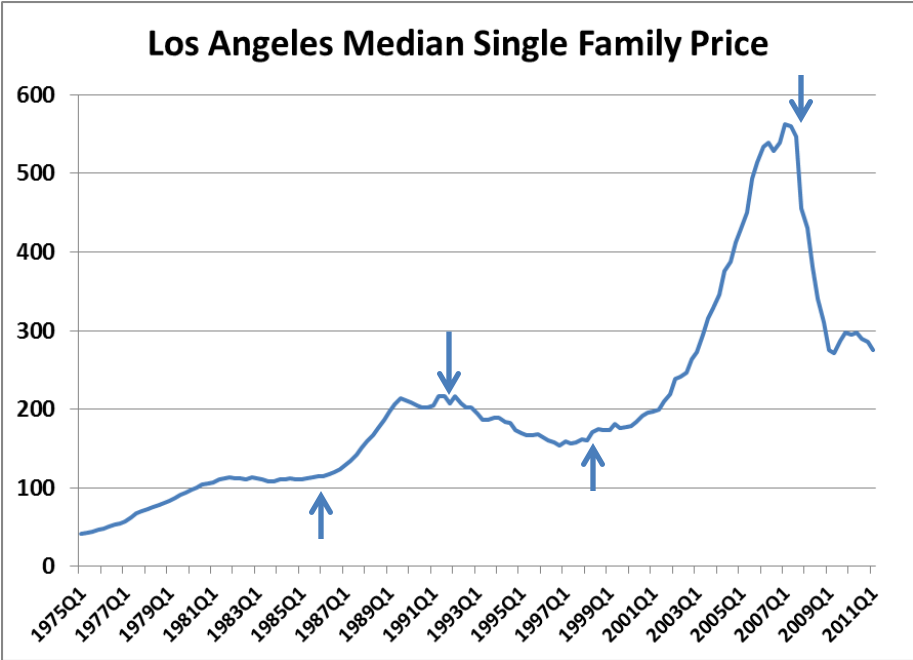
Los Angeles Real Median Single Family Price % Change and Foreclosure Sales % of Regular & REO Sales



Los Angeles Real Median Single Family Price % Change and Foreclosure Sales % of Regular & REO Sales (plotted inversely)

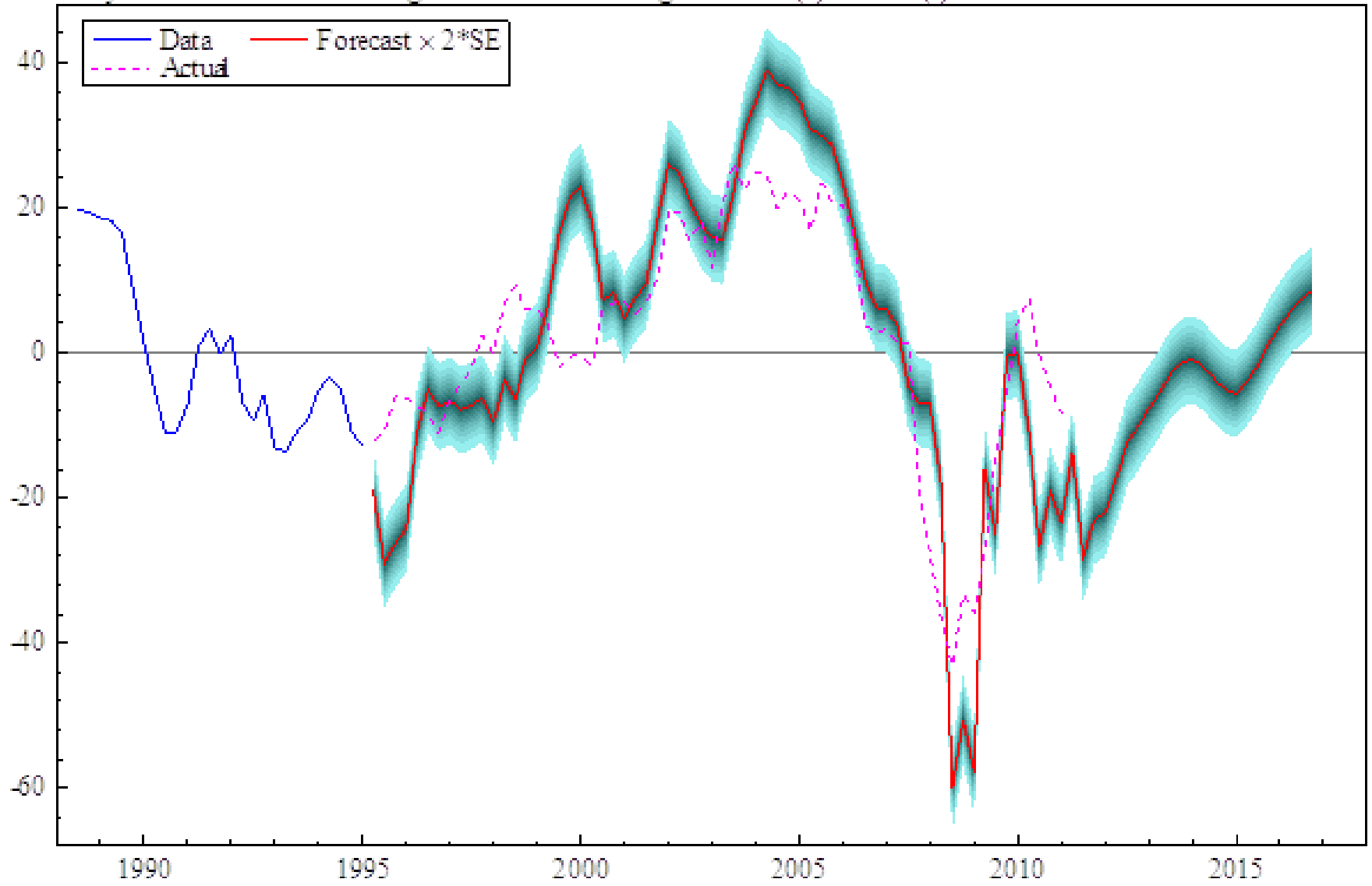


Los Angeles Median Single Family Price and Buy/Sell Indicator

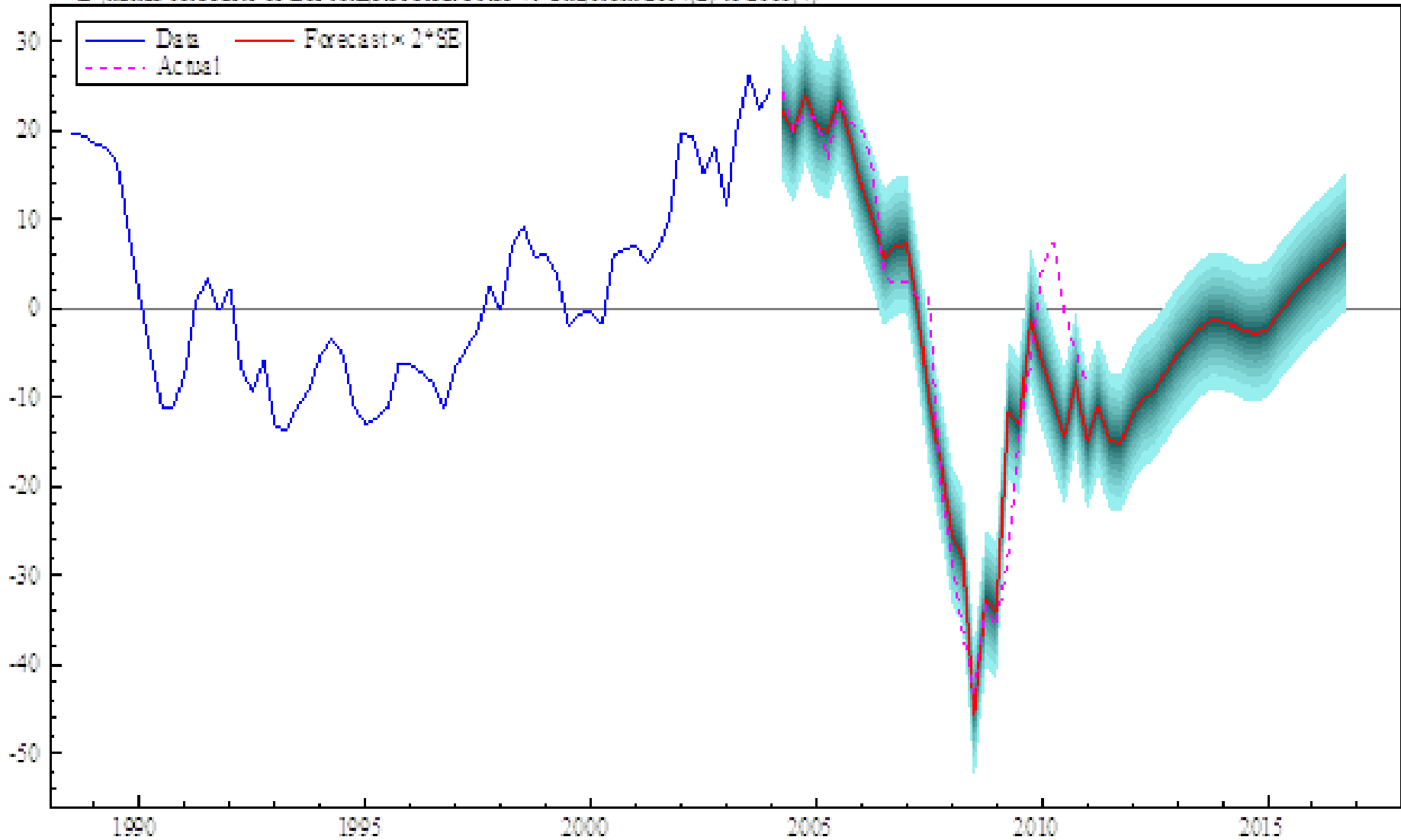


Forecasts

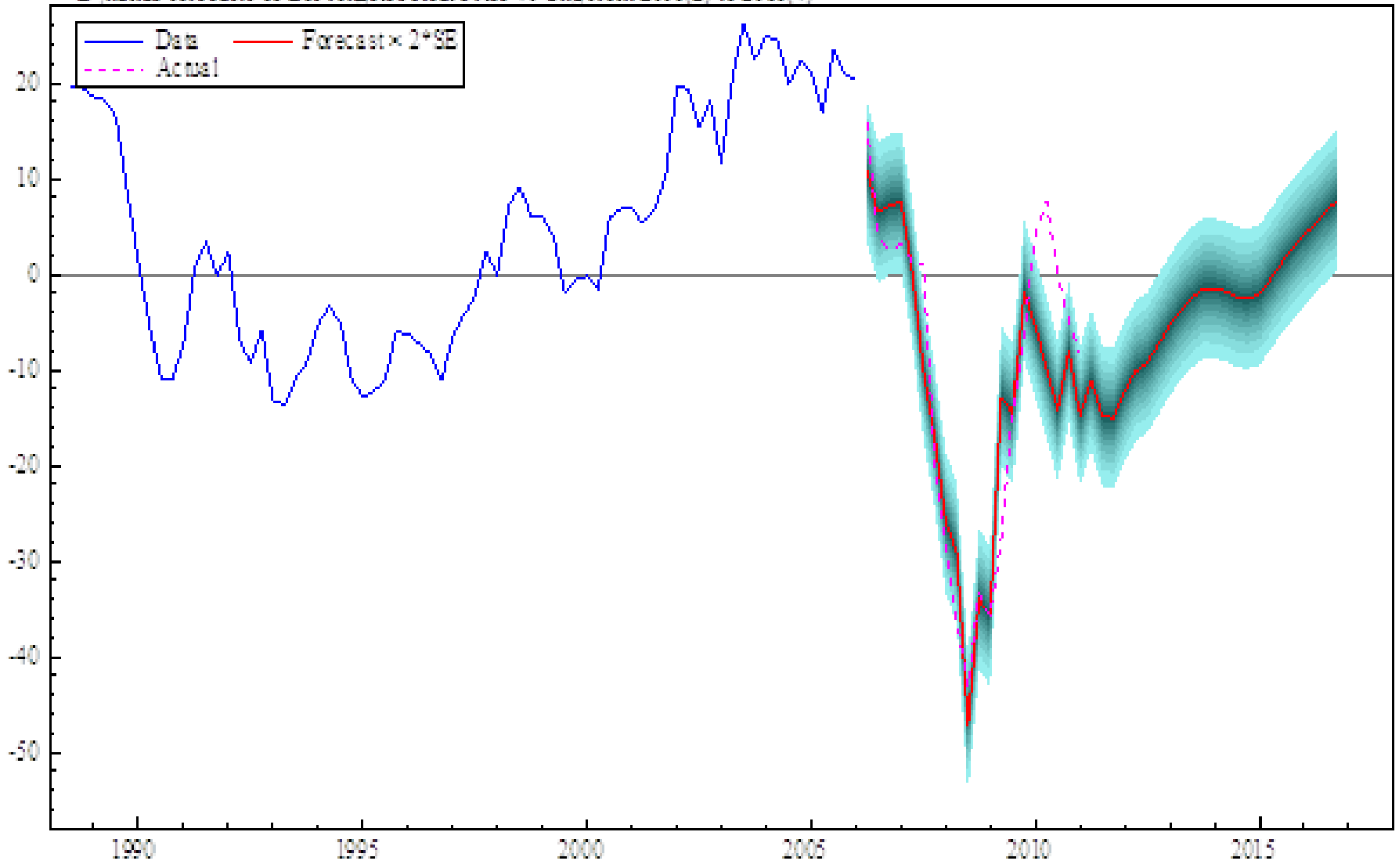
Dynamic forecasts of Los Angeles Real Price % Chg from 1995(2) to 2016(4)



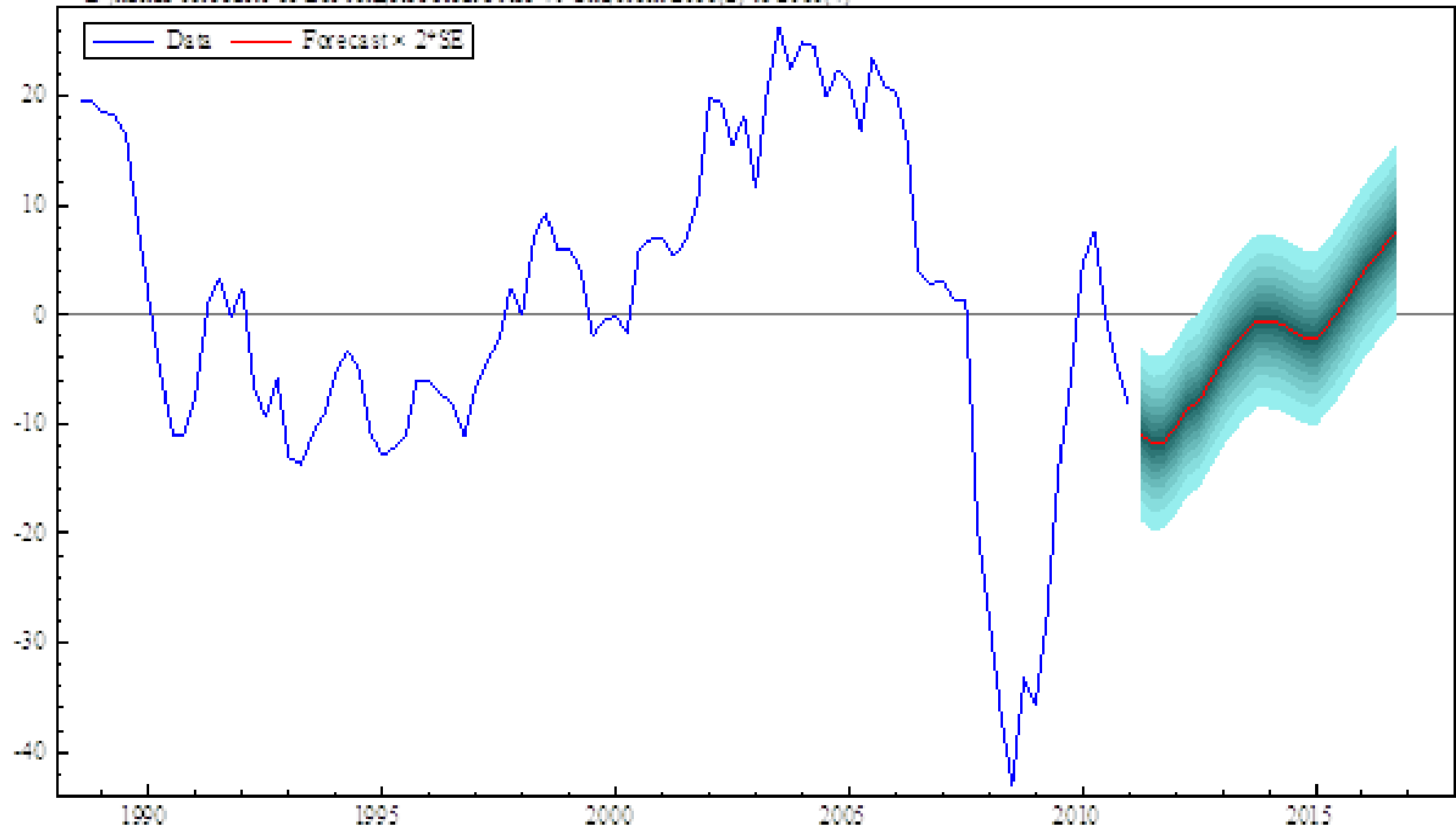
Dynamic forecasts of Los Angeles Real Price % Chg from 2004(2) to 2016(4)



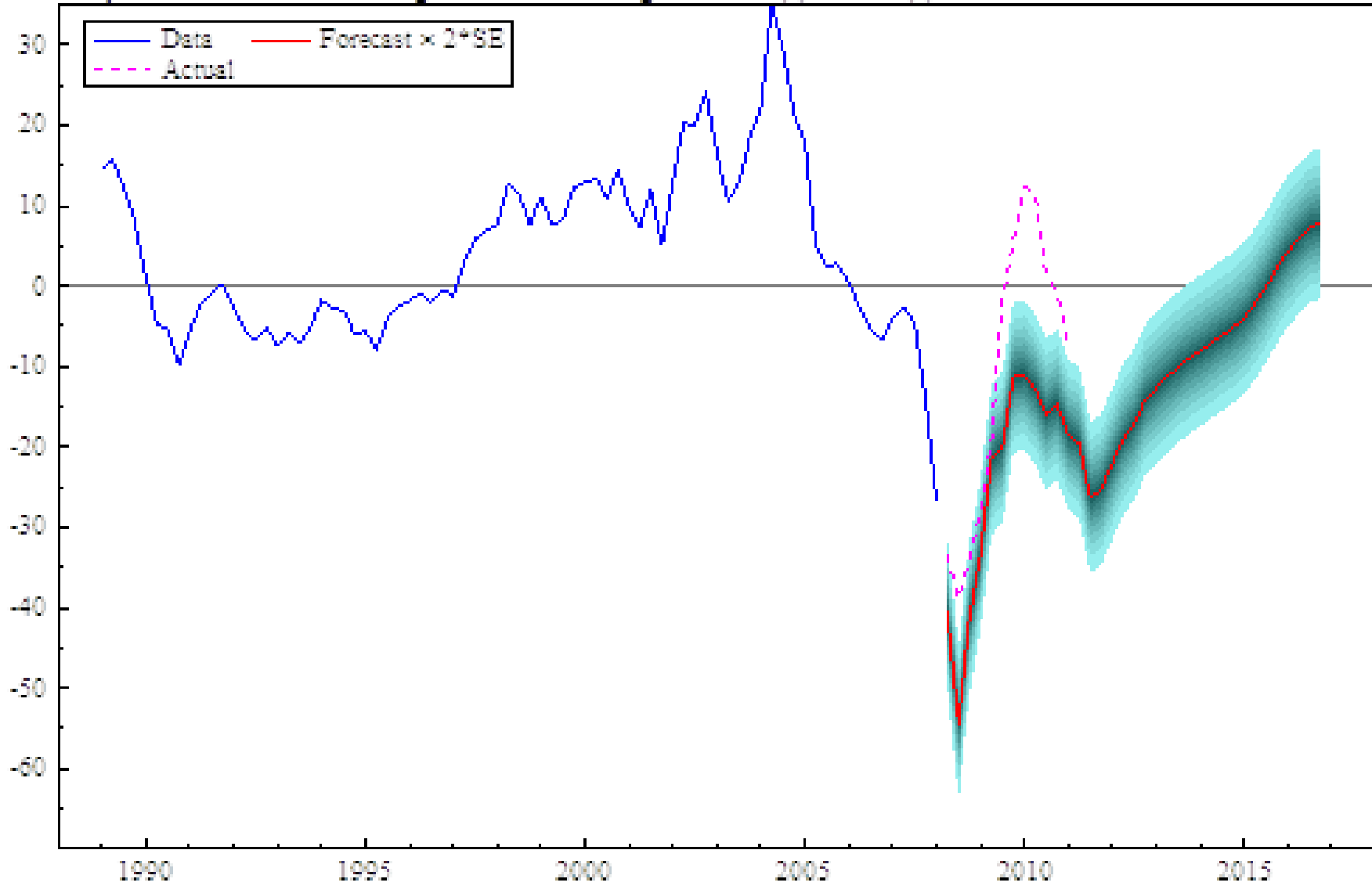
Dynamic forecasts of Los Angeles Real Price % Chg from 2006(2) to 2016(4)



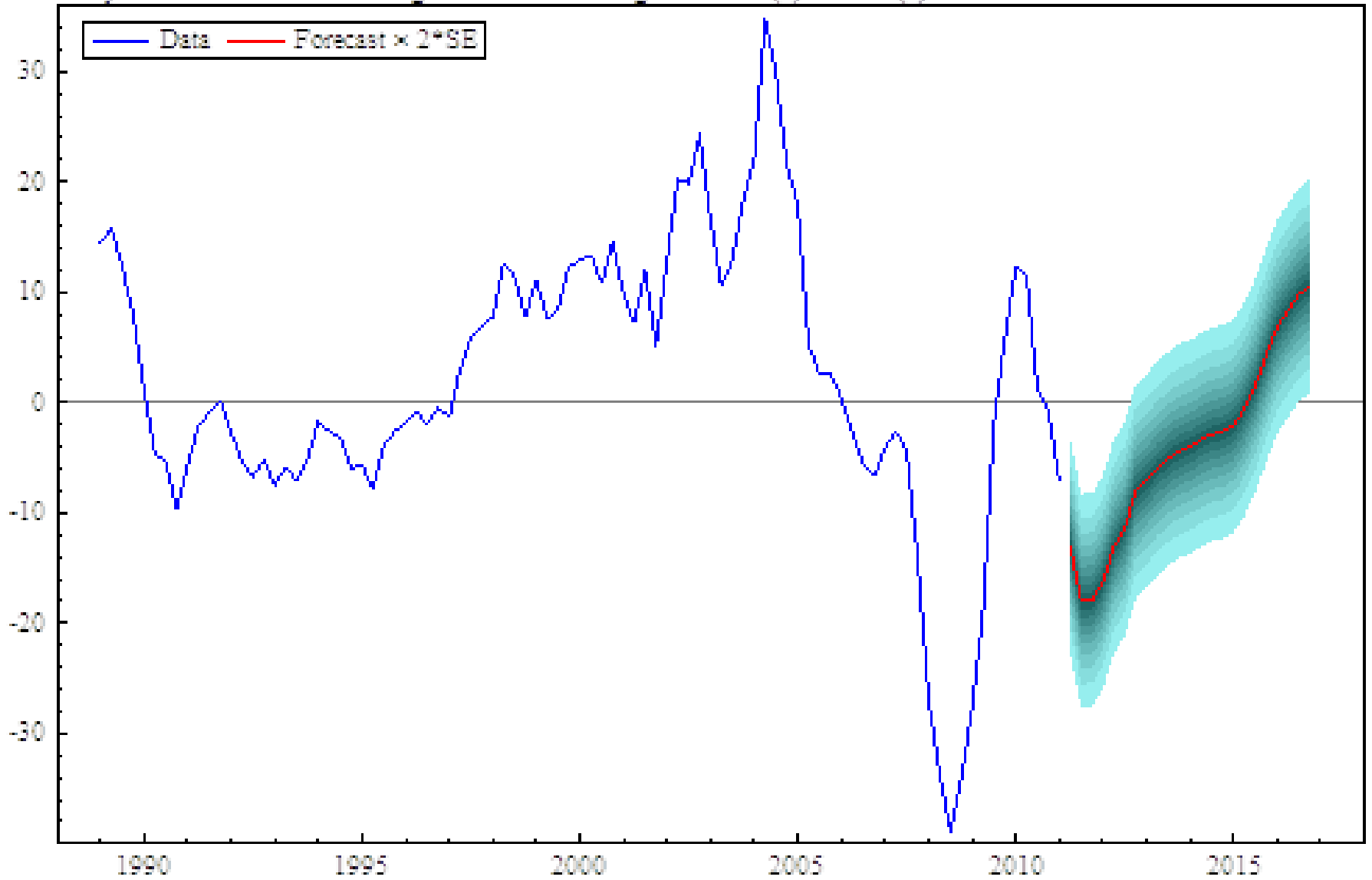
Dynamic forecasts of Los Angeles Real Price % Chg from 2011(2) to 2016(4)



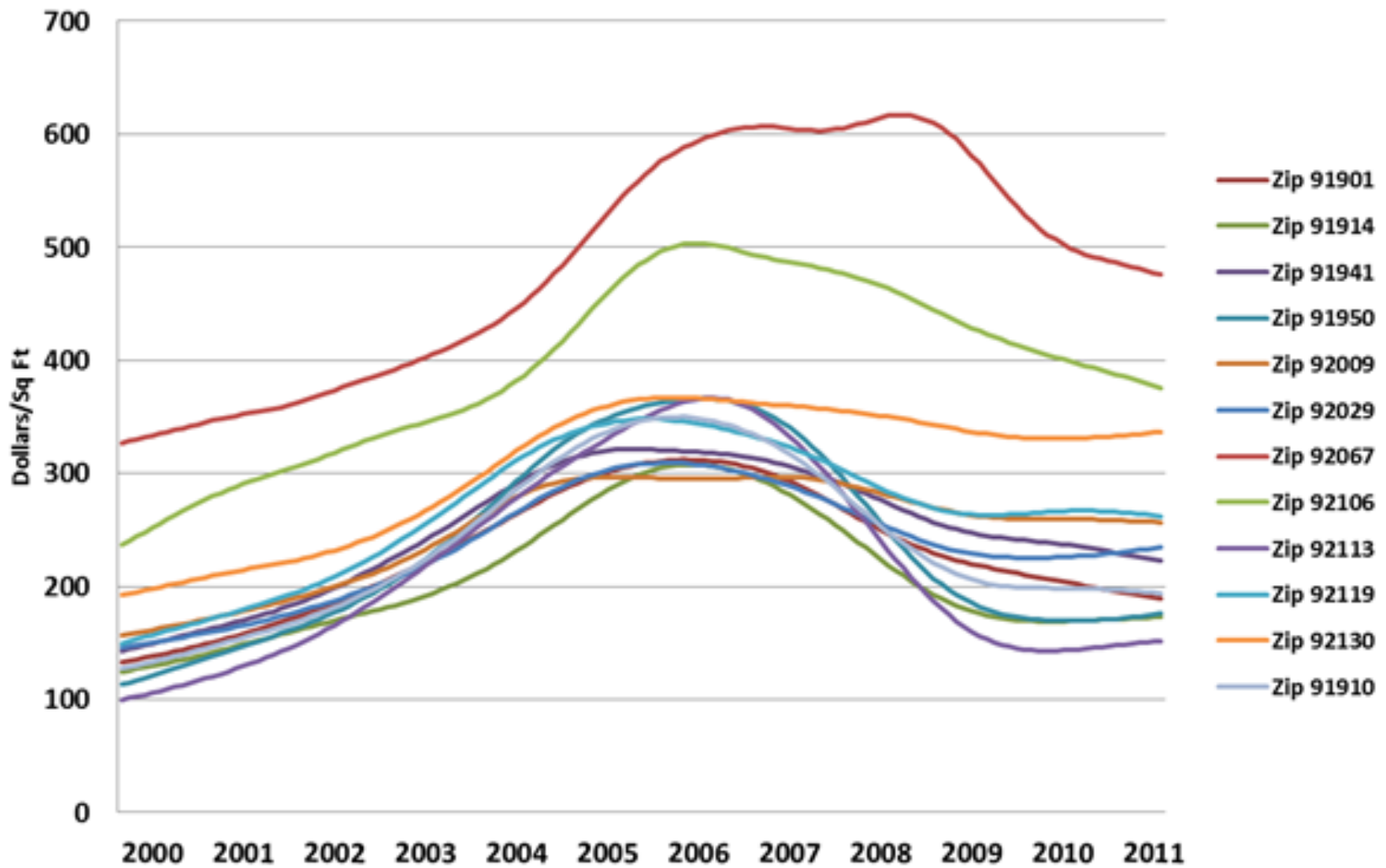
Dynamic forecasts of San Diego Real Price % Chg from 2008(2) to 2016(4)



Dynamic forecasts of San Diego Real Price % Chg from 2011(2) to 2016(4)



San Diego Zip Code Single Family Regular & REO Sold Price Per Living Area

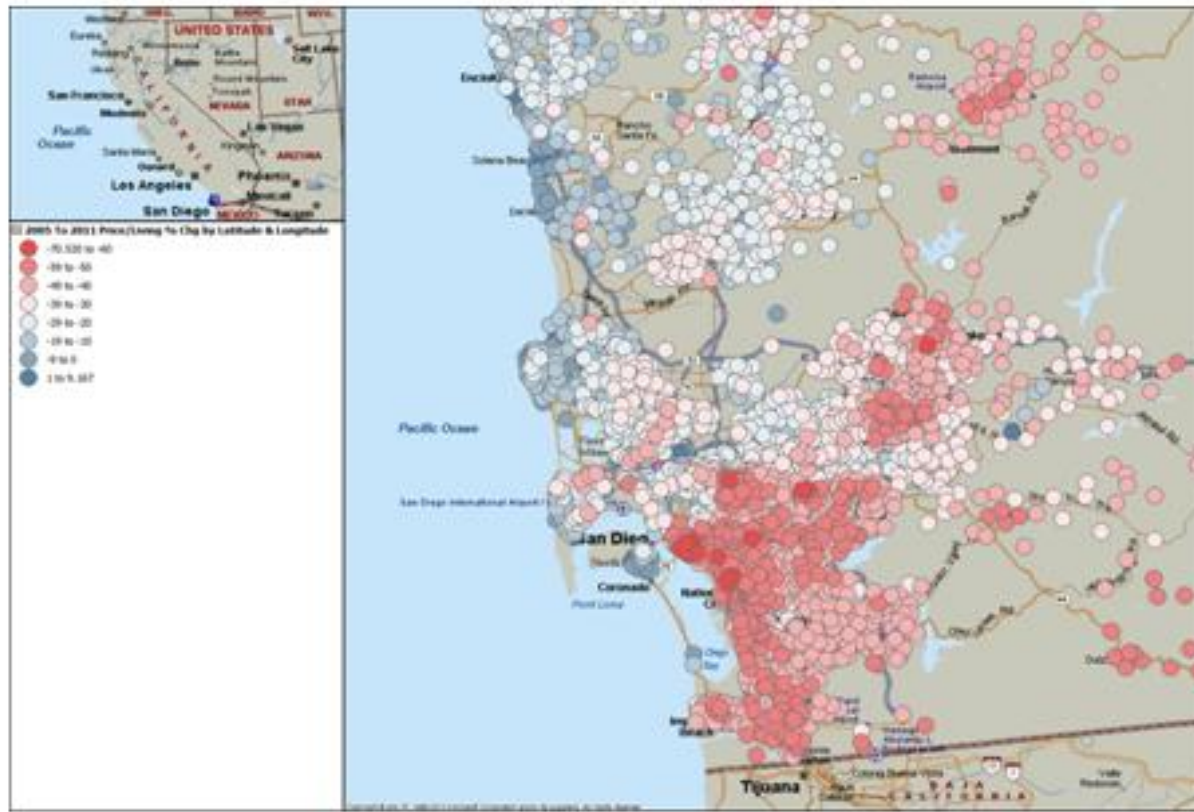


Red dots show greater price declines than blue dots in San Diego 2005-2011

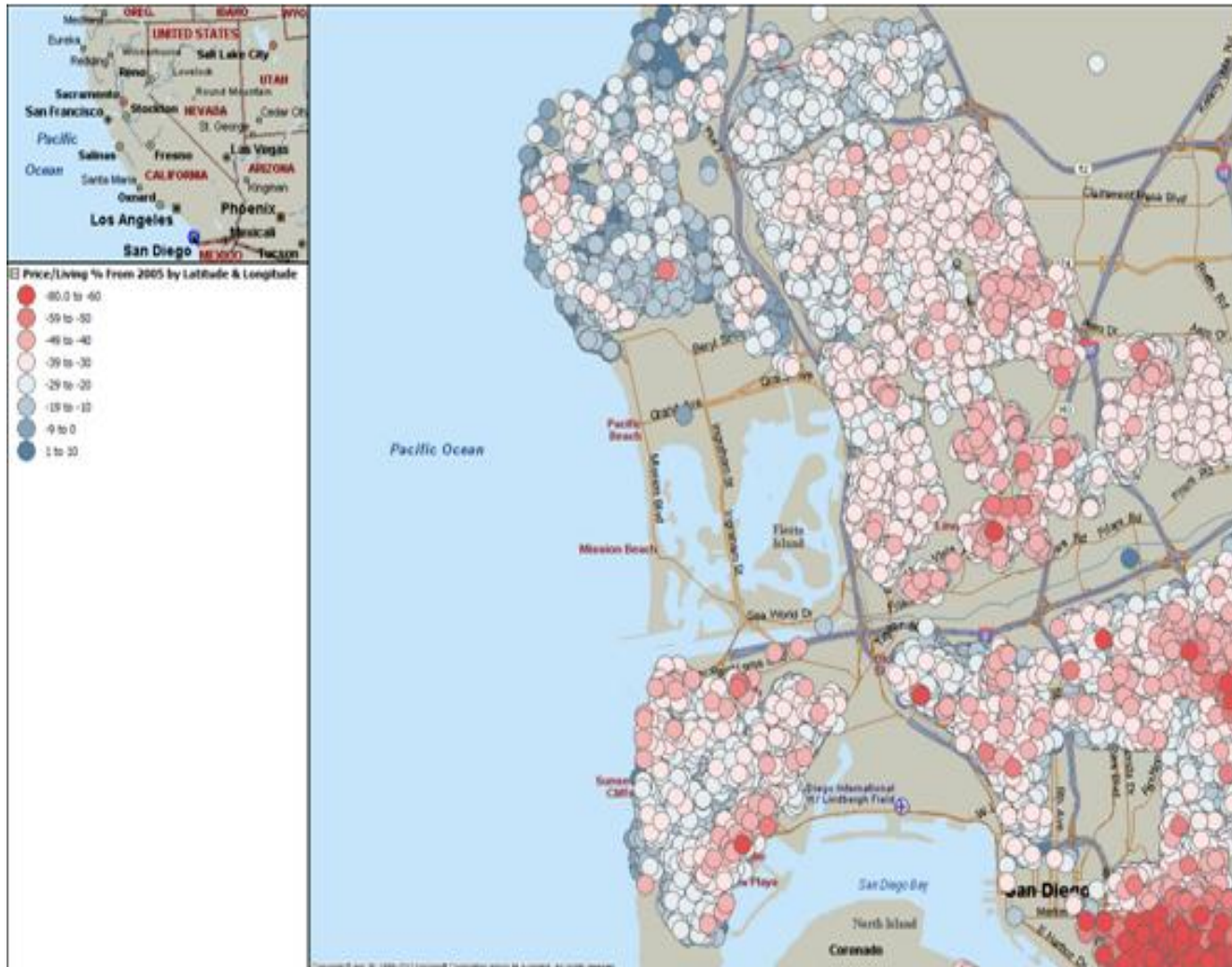
San Diego 2005-2011

Mapped at Zip code plus 2 level

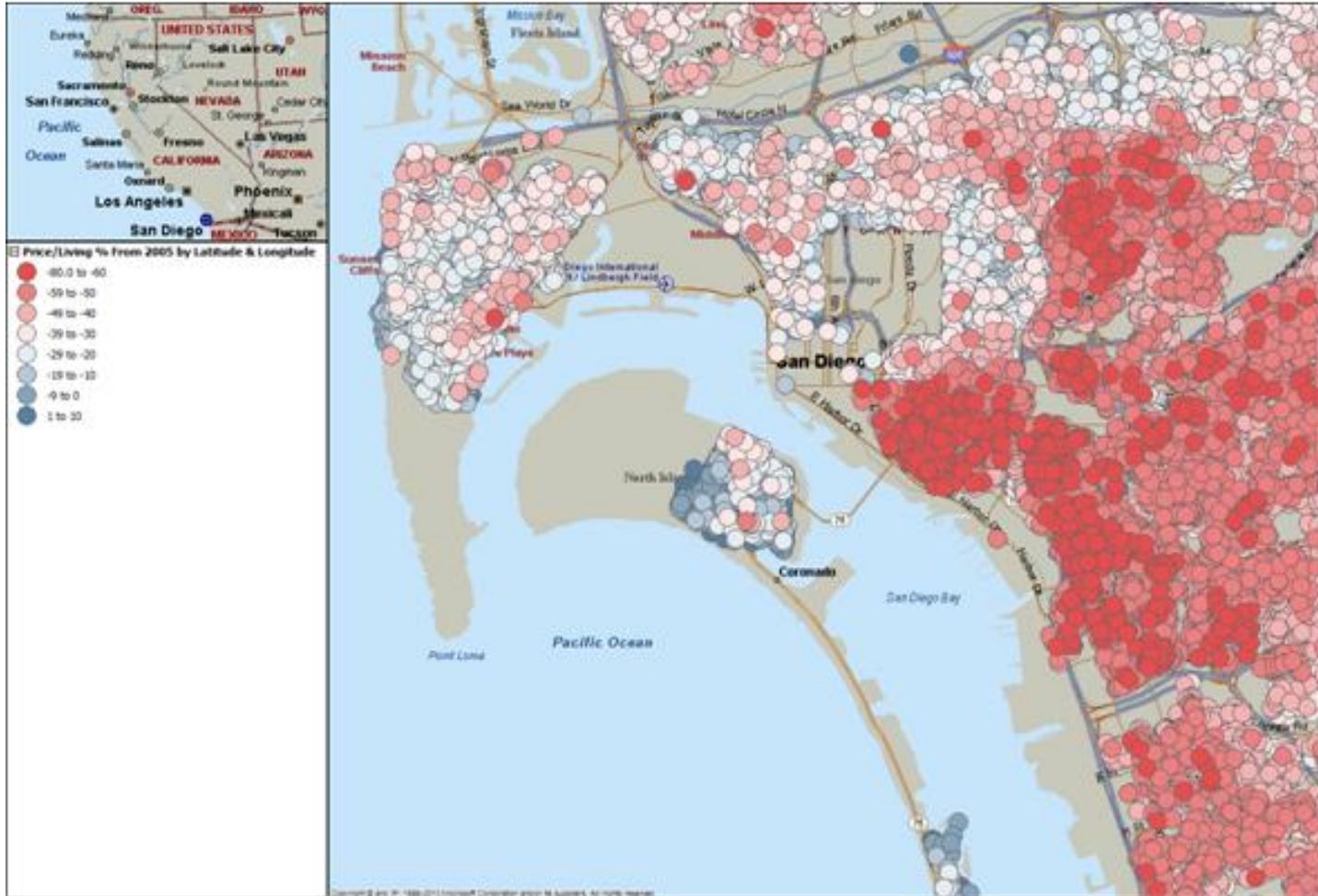
Source: Collateral Analytics



San Diego 2005-2011 Home Prices Mapped at Zip Plus 4



San Diego 2005-2011 Mapped at Zip Plus 4 level – second view



Conclusions

- ✓ We can now predict home prices reasonably well in the short ***and intermediate term*** for micro-markets around the United States.
- ✓ By adding market-based technical indicators of the housing market we can capture behavioral aspects and predict turning points much better than when using fundamentals alone.
- ✓ Metro market averages can be misleading, just as Case-Shiller indices are a poor representation of the typical owner in any given metro.
- ✓ Note that just because we can forecast home prices does not mean that we can capitalize on speculation in housing. Transactions costs are too high to buy and sell direct assets unless we expect short-term price swings that exceed 20% which are very rare. Someday indices may work to allow short selling and hedging.