California Regions

## Housing Outlook

Historical Performance

California, the sixth largest economy in the world[1], is considered a leading indicator of the nation's economic health. In our article, we focus on California's economy by identifying prevalent trends across individual regions, including the technology driven San Francisco Bay Area, the diverse Southern California, as well as other large and distinct regions of the state. The analysis ultimately results in the state, regional and CBSA level home price forecasts that can be of interest to investors exposed to or those considering allocation to the U.S. mortgage credit through Credit Risk Transfer Securities ("CRT") issued by Fannie Mae and Freddie Mac, known as CAS and STACR. California alone can constitute up to 30% of the collateral pools in the CRT deals and the vast majority of the nation's jumbo[2] housing market.

Figure 1. Home price appreciation in California has been very robust post-crisis, but has shown signs of stabilization over the past three years.

Home Price Change (YoY%)
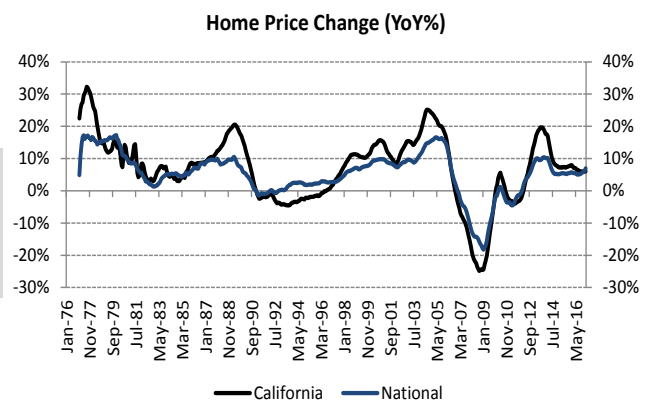
Sources: CoreLogic, FBC

Figure 2. Historical home price performance in California and Nationwide.

	Change 1-Month	Change 12-Month	YTD 2017	2016	Change from Peak*	Change from Trough
California	0.4%	6.1%	0.7%	5.9%	-5.1%	65.3%
National	1.0%	7.0%	1.4%	5.8%	-3.8%	44.5%

*Peak is defined as the highest Home Price Index (HPI) level before 2008 and occured in California in April of 2006. Correspondigly, the most recent trough took place in January of 2012.

Sources: CoreLogic, FBC; As of February 2017

California has experienced strong economic growth, declining distressed inventory, persistent shortage of homes for sale and significant home price appreciation over the past five years. Properties in California appreciated approximately 65.3% since January 2012, which marked the trough of the recent real estate cycle in the state, and exceeded the 44.5% increase in home prices observed nationwide (Figures 1 and 2).

Figure 3. Regional summary statistics of economic and demographic data. Regions provided by the Data Analysis and Publications Branch of the California Department of Social Services.

Region	Home Price Change Last 36mos	Home Price Change Last 24mos	Home Price Change Last 12mos	Household Formation Last 24mos	Employment Growth Last 24mos	Current Affordability[3]	Current Unemplyment Rate
Southern California with Los Angeles	20.2%	13.0%	5.9%	2.3%	2.6%	20.15	5.6%
San Francisco Bay Area	29.5%	16.8%	6.2%	2.3%	2.6%	21.11	4.4%
Central Valley	24.0%	17.2%	8.1%	2.6%	3.0%	40.40	5.6%
Central/Southern Farm	23.1%	14.9%	7.5%	2.6%	3.2%	41.72	8.9%
North and Mountain	16.4%	11.8%	6.6%	2.1%	2.3%	55.50	19.1%

Sources: CoreLogic, Moody's Economy.com, National Association of Home Builders, FBC. As of February 2017.
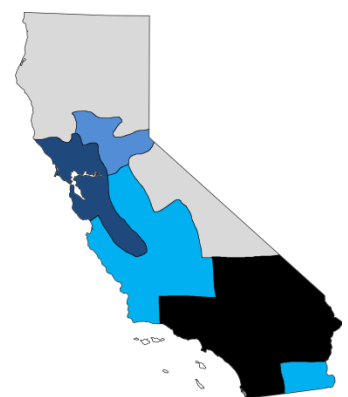
- Southern California with Los Angeles
- San Francisco Bay Area
- Central Valley
- Central/Southern Farm
- North and Mountain

[1] *International Monetary Fund and the U.S. Bureau of Economic Analysis*

[2] *Loan amounts that do not conform to GSE market specific limits*

[3] *Current Affordability - percentage of homes sold in the area that are deemed affordable based on the local median income, 10% down payment and 28% debt to income ratio, provided by National Association of Home Builders.*

State Level Home Prices

Over the next three years, California home prices are expected to increase further, although at a much slower pace. Population growth will remain relatively low at approximately 0.9% per year, according the county level projections offered by California Economic Forecast, lower than the historical norms (the annual growth experienced between 1970 and 2000 stood at 1.8%). At the same time, housing permits are expected to increase by 3.1% as the persistent housing shortage continues in the state. FBC's proprietary, fundamentals' driven, Core-based Statistical Areas ("CBSAs") level Home Price index suggests that California's home valuations will increase 3.6% over the next 12 months, followed by 2.9% and 1.2% increases in year two and three, respectively (Figure 4). Please reference page 4 for a detailed description of the forecasting framework.

Figure 4. *Distribution of Home Price Projections for the composite of all CA CBSAs, weighted by the number of households. Distributions of possible outcomes varies by CBSA.*
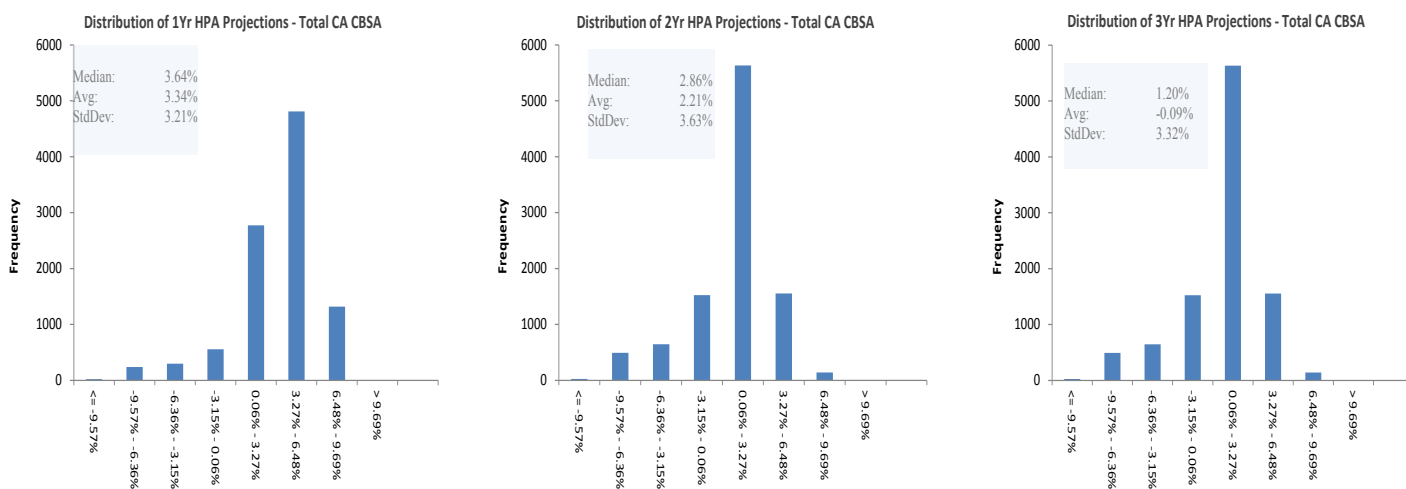
Sources: CoreLogic, Moody's Economy.com, National Association of Home Builders, John Burns, Bureau of Labor Statistics, FBC
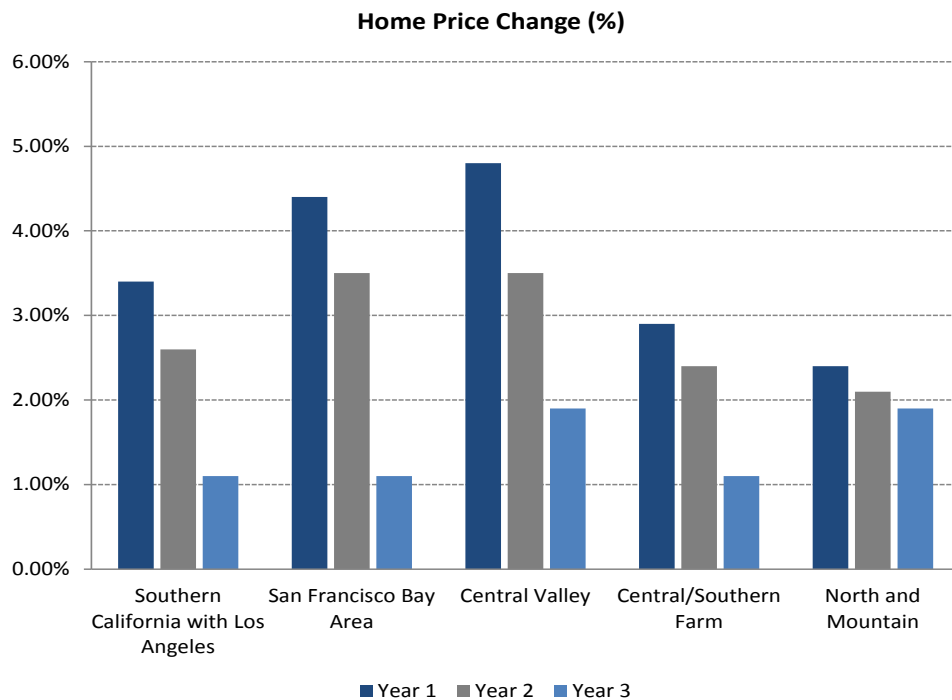
Regional Differences

The stabilization in home price appreciation across the state is a reflection of the decelerating job growth rates, decreasing affordability, and weaker investor demand resulting from the declining inventory of distressed properties and higher home prices. Regional economies and local factors are expected to play a larger role in the future performance of the housing supply. As exhibited by Appendix A, the correlations of YoY changes of CoreLogic's monthly Home Price Index across California CBSAs were the strongest during the earlier stages of the business cycle (2011-2014), when growth was rising at an accelerating rate. Appendix B illustrates the moderation in the strength of the relationships since then, reflective of a normalized housing and highlighting the importance of the differences in regional economies and demographics.

Southern California with Los Angeles is projected to observe slightly higher home prices over the next three years driven by the growing population, household formation and job growth, specifically in San Diego, Orange and Santa Barbara counties, whose economies are essentially at full employment. The vast majority of the job creation is expected to occur in professional services, leisure and hospitality, as well as healthcare (California Economic Forecast. "County-Level Economic Forecast 2015-2040").

Figure 5. Regional level Home Price projections. San Francisco Bay Area and Central Valley are forecasted to observe the strongest housing stock performance.

San Francisco Bay Area is also poised for a low, single digit appreciation in home values as a result of the booming labor market, but capped by decreasing affordability. The National Association of Home Builders' Housing Opportunity Index ("HOI") that illustrates the percentage of homes sold in the area that are reasonably priced (based on the local median income, 10% down payment and 28% debt to income ratio) lists San Francisco-San Mateo-Redwood City, CA as the state's least affordable housing market. Only 7.8% of recently sold homes were affordable to families earning the area's median income. CBSAs neighboring San Francisco-San Mateo-Redwood City and San Jose-Sunnyvale-Santa Clara will continue to experience the spread of wealth created by the technology sector and an influx of residents and foreign investors looking for housing that will continue to provide price support in most areas of the region.

Home Price Change (%)

Legend: ■ Year 1 ■ Year 2 ■ Year 3

Sources: CoreLogic, Moody's Economy.com, National Association of Home Builders, John Burns, Bureau of Labor Statistics, FBC

Central Valley, home to Sacramento-Arden-Arcade-Roseville, and Yuba City CBSAs, the hub of the government employment has observed higher than the average job growth over the past three years and a commensurate home price appreciation. According to the California Economic Forecast, the area will continue to benefit from the population growth (approximately 1.0% over the next three years) and job creation in the near future. The resulting gains will remain subdued, however given the vast majority of new employment will be concentrated in the lower-paying sectors (government, construction, administrative support).

Central/Southern Farm is forecast to experience positive population growth amid abundant housing and affordability, as well as moderate employment gains. It's important to note however, that despite the recent improvements, the unemployment rates in certain areas are still well above the state averages (for instance, El Centro CBSA unemployment stands at 18.6%, according to the estimates reported by the California Economic Forecast). Additionally, Bakersfield-Delano may experience flat valuations over the short-term as employment growth in the area over the past two years was virtually nonexistent. Similarly, Stockton may also see slight softening in home valuations amid stagnant incomes in lower-paying industries (agriculture, transportation and warehousing) that dominate the area and decreasing affordability.

North and Mountain region remains very affordable relative to the rest of the state, but is also expected to lag in population growth (or even experience loss) and economic expansion over the long-term. Regional forecast of the stable price growth is based on the economic fundamentals existing in Chico and Redding CBSAs that expect to see significant growth in the relatively well-paying professional services and information sectors (as projected by the California Economic Forecast). It's important to keep in mind, that these two CBSAs may not appropriately reflect the local circumstances of the largely rural communities with constrained labor markets prevalent in the region. County and local level home price forecasts are available upon request

Home Price Projections : Methodology

FBC's CBSA level Home Price forecasting framework considers multiple factors that affect the housing values in the short run and over the intermediate term: (1) Recent Home Price Momentum (2) Housing Inventory Levels (3) Household Growth Outlook (4) Current/Short-Term Employment Outlook (5) Long-Term Employment Outlook (6) Affordability. The framework is based on a multi-step approach including the assessment of individual factor's predictive power, analysis of its historical performance and future expectations, as well as a simulation-based assignment of its weighting on the index values. Each of the factors receives a letter grade based on its historical performance relative to long-term observed CAGR. A composite score of all factor grades is computed using randomly generated weightings of each factor. The composite score is then applied to a sliding scale of home price change and converted to an annualized number. For instance, a "C" grade is considered "flat" or no change from prior year for home prices, while "F" represents the worst 12-month home price change in that CBSA over the past 20 years. Additionally, a grade of "B" is reflective of a normal housing exhibiting the long term average growth rate or CAGR.

Home Price Change / Affordability		Historical			Projected			
CBSA/DIV Names	Region	Last 24m	Last 12m	YTD 2017	Year 1 HPA	Year 2 HPA	Year 3 HPA	Affordability (HOI)
Los Angeles-Long Beach-Glendale, CA	Southern California with Los Angeles	13.6%	6.4%	0.8%	3.1%	2.2%	0.5%	12.5
Santa Ana-Anaheim-Irvine, CA	Southern California with Los Angeles	10.8%	4.5%	1.5%	4.1%	3.7%	2.0%	13.5
Riverside-San Bernardino-Ontario, CA	Southern California with Los Angeles	13.0%	5.7%	0.5%	3.3%	2.6%	1.3%	39.1
Oxnard-Thousand Oaks-Ventura, CA	Southern California with Los Angeles	10.6%	5.5%	0.4%	3.2%	2.8%	1.6%	29.3
San Diego-Carlsbad-San Marcos, CA	Southern California with Los Angeles	13.7%	6.0%	1.1%	3.8%	2.8%	1.2%	19.6
Santa Barbara-Santa Maria-Goleta, CA	Southern California with Los Angeles	11.7%	4.4%	0.3%	4.1%	3.5%	2.9%	37.8
Oakland-Fremont-Hayward, CA	San Francisco Bay Area	19.1%	7.2%	1.4%	4.8%	3.7%	1.9%	28.3
San Francisco-San Mateo-Redwood City, CA	San Francisco Bay Area	13.0%	3.2%	1.5%	4.5%	3.5%	0.5%	7.8
San Jose-Sunnyvale-Santa Clara, CA	San Francisco Bay Area	17.7%	6.9%	2.7%	4.7%	3.6%	0.8%	19.7
Santa Rosa-Petaluma, CA	San Francisco Bay Area	15.4%	6.8%	0.1%	3.4%	3.2%	1.1%	20.8
Vallejo-Fairfield, CA	San Francisco Bay Area	19.4%	9.6%	0.7%	2.5%	0.3%	-1.1%	43.3
Santa Cruz-Watsonville, CA	San Francisco Bay Area	11.2%	4.3%	1.2%	2.6%	4.9%	2.5%	18
Napa, CA	San Francisco Bay Area	15.9%	7.2%	2.1%	2.3%	2.4%	0.7%	16.2
Sacramento--Arden-Arcade--Roseville, CA	Central Valley	17.1%	7.9%	1.0%	4.9%	3.5%	1.9%	40.2
Yuba City, CA	Central Valley	20.9%	10.7%	1.8%	3.5%	3.4%	2.0%	48.2
El Centro, CA	Central/Southern Farm	18.5%	4.8%	2.7%	3.1%	3.4%	1.9%	49.8
Hanford-Corcoran, CA	Central/Southern Farm	16.6%	6.6%	1.3%	2.0%	1.7%	3.0%	44.8
Fresno, CA	Central/Southern Farm	12.1%	7.0%	0.2%	3.6%	2.3%	1.3%	43.5
Madera, CA	Central/Southern Farm	15.9%	5.5%	1.7%	4.6%	7.0%	4.9%	48
Bakersfield-Delano, CA	Central/Southern Farm	7.8%	3.2%	-0.4%	1.1%	0.3%	0.9%	60.5
Stockton, CA	Central/Southern Farm	19.2%	9.7%	1.3%	2.9%	0.1%	-2.5%	37.1
Modesto, CA	Central/Southern Farm	17.8%	9.2%	1.0%	3.4%	4.6%	2.9%	44.3
Visalia-Porterville, CA	Central/Southern Farm	15.4%	8.0%	1.1%	3.2%	2.7%	0.5%	39.1
Salinas, CA	Central/Southern Farm	21.6%	14.8%	3.7%	4.4%	4.0%	1.8%	15.2
San Luis Obispo-Paso Robles, CA	Central/Southern Farm	14.9%	5.5%	0.8%	2.8%	4.7%	2.7%	21.1
Merced, CA	Central/Southern Farm	16.7%	7.5%	0.6%	2.7%	4.3%	3.0%	37.3
Chico, CA	North and Mountain	13.1%	7.8%	1.6%	2.8%	2.5%	2.3%	57
Redding, CA	North and Mountain	10.1%	5.0%	-0.3%	1.9%	1.6%	1.3%	53.6

Sources: *CoreLogic, National Association of Home Builders, FBC; As of February 2017*

Appendix A: Correlations of YoY% Home Price Changes Across CA CBSAs
Home Price correlations was extremely high during the housing rebound Post Crisis.

Post-Crisis 2011-2014

	National	CA	Bakersfield	Fresno	Los Angeles	Oakland	Oxnard	Riverside	Sacramento	San Diego	San Francisco	San Jose	Anaheim	Santa Maria	Santa Rosa	Stockton	Vallejo	Modesto	Napa	Salinas	San Luis Obispo	Santa Cruz	San Rafael	Chico	El Centro	Hanford	Madera	Merced	Redding	Visalia	Yuba City
National	1.00	0.97	0.98	1.00	0.95	0.97	0.95	0.95	0.97	0.96	0.99	0.98	0.94	0.94	0.97	0.95	0.96	0.95	0.93	0.97	0.98	0.96	0.98	0.95	0.83	0.96	0.96	0.96	0.99	0.99	0.92
CA	0.97	1.00	0.95	0.98	0.99	1.00	0.99	0.99	1.00	1.00	0.98	0.97	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.97	0.97	0.94	0.85	0.93	0.96	0.98	0.97	0.96	0.97
Bakersfield, CA	0.98	0.95	1.00	0.99	0.92	0.95	0.91	0.92	0.96	0.94	0.97	0.97	0.92	0.90	0.94	0.91	0.91	0.91	0.92	0.95	0.96	0.91	0.94	0.94	0.76	0.93	0.94	0.93	0.98	0.98	0.88
Fresno, CA	1.00	0.98	0.99	1.00	0.96	0.97	0.95	0.95	0.97	0.97	0.99	0.98	0.95	0.95	0.97	0.95	0.96	0.95	0.94	0.98	0.98	0.95	0.97	0.96	0.82	0.95	0.97	0.97	0.99	0.99	0.92
Los Angeles-Long Beach-Glendale, CA	0.95	0.99	0.92	0.96	1.00	0.99	1.00	0.99	0.99	0.99	0.96	0.95	0.99	0.98	0.97	0.99	0.99	0.99	0.98	0.96	0.97	0.97	0.97	0.93	0.88	0.92	0.94	0.98	0.95	0.94	0.98
Oakland-Hayward-Berkeley, CA	0.97	1.00	0.95	0.97	0.99	1.00	0.99	0.98	0.99	0.99	0.98	0.98	0.99	0.98	0.98	0.97	0.98	0.97	0.98	0.97	0.98	0.97	0.97	0.95	0.85	0.93	0.96	0.97	0.97	0.96	0.96
Oxnard-Thousand Oaks-Ventura, CA	0.95	0.99	0.91	0.95	1.00	0.99	1.00	0.99	0.98	0.99	0.96	0.94	0.99	0.99	0.97	0.98	0.99	0.99	0.97	0.96	0.97	0.97	0.97	0.92	0.89	0.92	0.94	0.97	0.94	0.94	0.98
Riverside-San Bernardino-Ontario, CA	0.95	0.99	0.92	0.95	0.99	0.98	0.99	1.00	0.98	0.99	0.95	0.93	0.98	0.98	0.96	1.00	0.99	0.99	0.96	0.97	0.96	0.97	0.95	0.91	0.87	0.90	0.93	0.99	0.94	0.94	0.99
Sacramento--Roseville--Arden-Arcade, CA	0.97	1.00	0.96	0.97	0.99	0.99	0.98	0.98	1.00	0.99	0.97	0.97	0.99	0.96	0.96	0.97	0.97	0.97	0.97	0.97	0.97	0.96	0.96	0.94	0.81	0.92	0.94	0.96	0.97	0.96	0.95
San Diego-Carlsbad, CA	0.96	1.00	0.94	0.97	0.99	0.99	0.99	0.99	0.99	1.00	0.97	0.96	0.99	0.97	0.97	0.99	0.98	0.98	0.97	0.97	0.97	0.97	0.96	0.93	0.84	0.91	0.94	0.98	0.96	0.96	0.97
San Francisco-Redwood City-South San Francisco, CA	0.99	0.98	0.97	0.99	0.96	0.98	0.96	0.95	0.97	0.97	1.00	0.98	0.95	0.96	0.98	0.95	0.97	0.96	0.94	0.97	0.99	0.96	0.98	0.97	0.87	0.96	0.96	0.97	0.98	0.97	0.94
San Jose-Sunnyvale-Santa Clara, CA	0.98	0.97	0.97	0.98	0.95	0.98	0.94	0.93	0.97	0.96	0.98	1.00	0.95	0.93	0.96	0.92	0.93	0.92	0.95	0.96	0.96	0.93	0.97	0.94	0.77	0.93	0.96	0.92	0.98	0.96	0.89
Anaheim-Santa Ana-Irvine, CA	0.94	0.99	0.92	0.95	0.99	0.99	0.99	0.98	0.99	0.99	0.95	0.95	1.00	0.97	0.95	0.98	0.97	0.97	0.98	0.96	0.95	0.95	0.95	0.92	0.83	0.89	0.93	0.96	0.94	0.93	0.96
Santa Maria-Santa Barbara, CA	0.94	0.98	0.90	0.95	0.98	0.98	0.99	0.98	0.96	0.97	0.96	0.93	0.97	1.00	0.96	0.98	0.99	0.99	0.95	0.95	0.96	0.98	0.96	0.92	0.91	0.92	0.94	0.97	0.92	0.93	0.98
Santa Rosa, CA	0.97	0.98	0.94	0.97	0.97	0.98	0.97	0.96	0.96	0.97	0.98	0.96	0.95	0.96	1.00	0.96	0.97	0.96	0.95	0.96	0.98	0.96	0.97	0.93	0.86	0.94	0.96	0.97	0.96	0.96	0.95
Stockton-Lodi, CA	0.95	0.98	0.91	0.95	0.99	0.97	0.98	1.00	0.97	0.99	0.95	0.92	0.98	0.98	0.96	1.00	0.99	0.99	0.95	0.96	0.96	0.97	0.95	0.91	0.88	0.90	0.92	0.99	0.94	0.94	0.99
Vallejo-Fairfield, CA	0.96	0.98	0.91	0.96	0.99	0.98	0.99	0.99	0.97	0.98	0.97	0.93	0.97	0.99	0.97	0.99	1.00	0.99	0.95	0.96	0.97	0.97	0.96	0.92	0.91	0.93	0.94	0.99	0.94	0.95	0.99
Modesto, CA	0.95	0.98	0.91	0.95	0.99	0.97	0.99	0.99	0.97	0.98	0.96	0.92	0.97	0.99	0.96	0.99	0.99	1.00	0.95	0.96	0.97	0.98	0.95	0.93	0.91	0.91	0.93	0.99	0.93	0.95	0.99
Napa, CA	0.93	0.98	0.92	0.94	0.98	0.98	0.97	0.96	0.97	0.97	0.94	0.95	0.98	0.95	0.95	0.95	0.95	0.95	1.00	0.94	0.95	0.92	0.94	0.93	0.82	0.90	0.92	0.93	0.93	0.92	0.93
Salinas, CA	0.97	0.98	0.95	0.98	0.96	0.97	0.96	0.97	0.97	0.97	0.97	0.96	0.96	0.95	0.96	0.96	0.96	0.96	0.94	1.00	0.96	0.95	0.97	0.93	0.82	0.92	0.96	0.97	0.97	0.96	0.94
San Luis Obispo-Paso Robles-Arroyo Grande, CA	0.98	0.98	0.96	0.98	0.97	0.98	0.97	0.96	0.97	0.97	0.99	0.96	0.95	0.96	0.98	0.96	0.97	0.97	0.95	0.96	1.00	0.96	0.97	0.95	0.87	0.96	0.95	0.97	0.96	0.97	0.95
Santa Cruz-Watsonville, CA	0.96	0.97	0.91	0.95	0.97	0.97	0.97	0.97	0.96	0.97	0.96	0.93	0.95	0.98	0.96	0.97	0.97	0.98	0.92	0.95	0.96	1.00	0.95	0.92	0.87	0.91	0.93	0.96	0.94	0.94	0.97
San Rafael, CA	0.98	0.97	0.94	0.97	0.97	0.97	0.97	0.95	0.96	0.96	0.98	0.97	0.95	0.96	0.97	0.95	0.96	0.95	0.94	0.97	0.97	0.95	1.00	0.92	0.84	0.97	0.97	0.96	0.96	0.96	0.94
Chico, CA	0.95	0.94	0.94	0.96	0.93	0.95	0.92	0.91	0.94	0.93	0.97	0.94	0.92	0.92	0.93	0.91	0.92	0.93	0.93	0.93	0.95	0.92	0.92	1.00	0.86	0.92	0.91	0.92	0.96	0.94	0.89
El Centro, CA	0.83	0.85	0.76	0.82	0.88	0.85	0.89	0.87	0.81	0.84	0.87	0.77	0.83	0.91	0.86	0.88	0.91	0.91	0.82	0.82	0.87	0.87	0.84	0.86	1.00	0.86	0.82	0.88	0.79	0.82	0.91
Hanford-Corcoran, CA	0.96	0.93	0.93	0.95	0.92	0.93	0.92	0.90	0.92	0.91	0.96	0.93	0.89	0.92	0.94	0.90	0.93	0.91	0.90	0.92	0.96	0.91	0.97	0.92	0.86	1.00	0.92	0.92	0.93	0.94	0.89
Madera, CA	0.96	0.96	0.94	0.97	0.94	0.96	0.94	0.93	0.94	0.94	0.96	0.96	0.93	0.94	0.96	0.92	0.94	0.93	0.92	0.96	0.95	0.93	0.97	0.91	0.82	0.92	1.00	0.95	0.95	0.95	0.91
Merced, CA	0.96	0.98	0.93	0.97	0.98	0.97	0.97	0.99	0.96	0.98	0.97	0.92	0.96	0.97	0.97	0.99	0.99	0.99	0.93	0.97	0.97	0.96	0.96	0.92	0.88	0.92	0.95	1.00	0.94	0.96	0.98
Redding, CA	0.99	0.97	0.98	0.99	0.95	0.97	0.94	0.94	0.97	0.96	0.98	0.98	0.94	0.92	0.96	0.94	0.94	0.93	0.93	0.97	0.96	0.94	0.96	0.96	0.79	0.93	0.95	0.94	1.00	0.97	0.91
Visalia-Porterville, CA	0.99	0.96	0.98	0.99	0.94	0.96	0.94	0.94	0.96	0.96	0.97	0.96	0.93	0.93	0.96	0.94	0.95	0.95	0.92	0.96	0.97	0.94	0.96	0.94	0.82	0.94	0.95	0.96	0.97	1.00	0.92
Yuba City, CA	0.92	0.97	0.88	0.92	0.98	0.96	0.98	0.99	0.95	0.97	0.94	0.89	0.96	0.98	0.95	0.99	0.99	0.99	0.93	0.94	0.95	0.97	0.94	0.89	0.91	0.89	0.91	0.98	0.91	0.92	1.00

Notes: Correlation Matrix is calculated based on YoY changes of CoreLogic monthly HPI.

Appendix B: Correlations of YoY% Home Price Changes Across CA CBSAs
Differences in correlations in Home Price performance reflect a normal housing environment since 2014.

Recent Performance 2015-2017

	National	CA	Bakersfield	Fresno	Los Angeles	Oakland	Oxnard	Riverside	Sacramento	San Diego	San Francisco	San Jose	Anaheim	Santa Maria	Santa Rosa	Stockton	Vallejo	Modesto	Napa	Salinas	San Luis Obispo	Santa Cruz	San Rafael	Chico	El Centro	Hanford	Madera	Merced	Redding	Visalia	Yuba City
National	1.00	-0.20	0.01	0.51	-0.35	-0.20	0.04	0.05	0.24	0.17	-0.22	-0.20	-0.18	-0.15	-0.44	0.19	0.15	-0.13	-0.01	0.51	-0.20	-0.35	-0.58	0.17	-0.28	0.40	-0.34	-0.40	0.10	0.59	0.40
CA	-0.20	1.00	0.48	-0.52	0.51	0.95	-0.49	0.24	-0.51	0.18	0.91	0.88	0.71	0.47	0.71	-0.40	-0.73	-0.72	-0.75	-0.69	0.16	0.70	0.71	-0.83	0.37	-0.35	0.19	-0.18	0.05	-0.20	-0.60
Bakersfield, CA	0.01	0.48	1.00	-0.11	0.59	0.61	-0.22	-0.08	-0.61	-0.30	0.52	0.53	0.16	0.48	0.35	-0.14	-0.47	-0.02	-0.12	-0.27	-0.34	0.48	0.27	-0.45	-0.05	-0.12	0.31	-0.09	-0.24	-0.17	-0.39
Fresno, CA	0.51	-0.52	-0.11	1.00	-0.46	-0.38	0.38	0.04	0.35	-0.03	-0.44	-0.35	-0.56	-0.28	-0.34	0.44	0.33	0.27	0.09	0.54	-0.16	-0.36	-0.62	0.41	-0.12	0.35	-0.51	-0.34	-0.49	0.12	0.41
Los Angeles-Long Beach-Glendale, CA	-0.35	0.51	0.59	-0.46	1.00	0.51	0.16	-0.07	-0.51	-0.27	0.39	0.41	0.35	0.15	0.36	-0.10	-0.54	-0.09	-0.26	-0.37	-0.35	0.48	0.57	-0.26	0.11	-0.38	0.34	0.33	-0.13	-0.19	-0.36
Oakland-Hayward-Berkeley, CA	-0.20	0.95	0.61	-0.38	0.51	1.00	-0.41	0.22	-0.53	0.09	0.89	0.91	0.64	0.47	0.69	-0.32	-0.69	-0.59	-0.67	-0.68	0.13	0.72	0.69	-0.79	0.36	-0.28	0.19	-0.23	-0.17	-0.35	-0.61
Oxnard-Thousand Oaks-Ventura, CA	0.04	-0.49	-0.22	0.38	0.16	-0.41	1.00	0.30	0.52	0.02	-0.68	-0.53	-0.12	-0.70	-0.57	0.72	0.40	0.42	0.20	0.27	-0.07	-0.41	-0.27	0.70	0.30	0.24	-0.33	0.45	-0.43	-0.02	0.58
Riverside-San Bernardino-Ontario, CA	0.05	0.24	-0.08	0.04	-0.07	0.22	0.30	1.00	0.56	0.72	-0.05	-0.02	0.48	-0.22	-0.22	0.42	0.18	-0.30	-0.35	-0.37	0.58	-0.15	-0.10	0.06	0.80	0.34	-0.40	0.05	-0.22	0.01	0.39
Sacramento--Roseville--Arden-Arcade, CA	0.24	-0.51	-0.61	0.35	-0.51	-0.53	0.52	0.56	1.00	0.68	-0.75	-0.73	0.02	-0.68	-0.75	0.65	0.61	0.15	0.28	0.20	0.55	-0.83	-0.61	0.69	0.44	0.60	-0.42	0.17	-0.05	0.28	0.82
San Diego-Carlsbad, CA	0.17	0.18	-0.30	-0.03	-0.27	0.09	0.02	0.72	0.68	1.00	-0.12	-0.21	0.56	-0.20	-0.34	0.32	0.14	-0.33	-0.17	-0.24	0.71	-0.44	-0.22	0.13	0.67	0.30	-0.14	0.03	0.10	0.29	0.53
San Francisco-Redwood City-South San Francisco, CA	-0.22	0.91	0.52	-0.44	0.39	0.89	-0.68	-0.05	-0.75	-0.12	1.00	0.96	0.44	0.65	0.87	-0.62	-0.76	-0.65	-0.67	-0.60	-0.04	0.82	0.68	-0.93	0.04	-0.46	0.27	-0.33	0.08	-0.26	-0.81
San Jose-Sunnyvale-Santa Clara, CA	-0.20	0.88	0.53	-0.35	0.41	0.91	-0.53	-0.02	-0.73	-0.21	0.96	1.00	0.40	0.52	0.85	-0.53	-0.72	-0.62	-0.69	-0.57	-0.05	0.86	0.72	-0.89	0.08	-0.38	0.12	-0.33	-0.06	-0.37	-0.83
Anaheim-Santa Ana-Irvine, CA	-0.18	0.71	0.16	-0.56	0.35	0.64	-0.12	0.48	0.02	0.56	0.44	0.40	1.00	0.04	0.18	-0.01	-0.47	-0.55	-0.43	-0.66	0.57	0.18	0.49	-0.40	0.69	-0.08	0.30	0.27	0.10	-0.12	-0.08
Santa Maria-Santa Barbara, CA	-0.15	0.47	0.48	-0.28	0.15	0.47	-0.70	-0.22	-0.68	-0.20	0.65	0.52	0.04	1.00	0.59	-0.55	-0.29	-0.18	-0.28	-0.15	-0.31	0.67	0.40	-0.62	-0.23	-0.43	0.33	-0.36	0.04	-0.10	-0.55
Santa Rosa, CA	-0.44	0.71	0.35	-0.34	0.36	0.69	-0.57	-0.22	-0.75	-0.34	0.87	0.85	0.18	0.59	1.00	-0.58	-0.67	-0.53	-0.60	-0.46	-0.15	0.85	0.75	-0.82	-0.08	-0.51	0.13	-0.28	-0.03	-0.43	-0.92
Stockton-Lodi, CA	0.19	-0.40	-0.14	0.44	-0.10	-0.32	0.72	0.42	0.65	0.32	-0.62	-0.53	-0.01	-0.55	-0.58	1.00	0.43	0.35	0.15	0.32	0.17	-0.58	-0.30	0.63	0.45	0.35	-0.39	0.29	-0.59	-0.09	0.62
Vallejo-Fairfield, CA	0.15	-0.73	-0.47	0.33	-0.54	-0.69	0.40	0.18	0.61	0.14	-0.76	-0.72	-0.47	-0.29	-0.67	0.43	1.00	0.57	0.51	0.52	0.05	-0.54	-0.58	0.69	-0.03	0.37	-0.36	0.03	-0.10	0.15	0.65
Modesto, CA	-0.13	-0.72	-0.02	0.27	-0.09	-0.59	0.42	-0.30	0.15	-0.33	-0.65	-0.62	-0.55	-0.18	-0.53	0.35	0.57	1.00	0.70	0.48	-0.26	-0.38	-0.37	0.61	-0.21	0.00	0.19	0.32	-0.28	-0.07	0.43
Napa, CA	-0.01	-0.75	-0.12	0.09	-0.26	-0.67	0.20	-0.35	0.28	-0.17	-0.67	-0.69	-0.43	-0.28	-0.60	0.15	0.51	0.70	1.00	0.39	-0.06	-0.59	-0.52	0.60	-0.37	0.29	0.25	0.25	0.18	0.07	0.41
Salinas, CA	0.51	-0.69	-0.27	0.54	-0.37	-0.68	0.27	-0.37	0.20	-0.24	-0.60	-0.57	-0.66	-0.15	-0.46	0.32	0.52	0.48	0.39	1.00	-0.47	-0.38	-0.45	0.50	-0.46	0.17	-0.37	-0.18	-0.08	0.26	0.40
San Luis Obispo-Paso Robles-Arroyo Grande, CA	-0.20	0.16	-0.34	-0.16	-0.35	0.13	-0.07	0.58	0.55	0.71	-0.04	-0.05	0.57	-0.31	-0.15	0.17	0.05	-0.26	-0.06	-0.47	1.00	-0.32	-0.01	-0.02	0.69	0.30	-0.04	0.17	0.06	-0.12	0.26
Santa Cruz-Watsonville, CA	-0.35	0.70	0.48	-0.36	0.48	0.72	-0.41	-0.15	-0.83	-0.44	0.82	0.86	0.18	0.67	0.85	-0.58	-0.54	-0.38	-0.59	-0.38	-0.32	1.00	0.77	-0.76	-0.05	-0.51	0.11	-0.25	-0.08	-0.42	-0.82
San Rafael, CA	-0.58	0.71	0.27	-0.62	0.57	0.69	-0.27	-0.10	-0.61	-0.22	0.68	0.72	0.49	0.40	0.75	-0.30	-0.58	-0.37	-0.52	-0.45	-0.01	0.77	1.00	-0.64	0.25	-0.51	0.19	0.08	-0.11	-0.57	-0.75
Chico, CA	0.17	-0.83	-0.45	0.41	-0.26	-0.79	0.70	0.06	0.69	0.13	-0.93	-0.89	-0.40	-0.62	-0.82	0.63	0.69	0.61	0.60	0.50	-0.02	-0.76	-0.64	1.00	-0.04	0.43	-0.22	0.39	-0.16	0.19	0.78
El Centro, CA	-0.28	0.37	-0.05	-0.12	0.11	0.36	0.30	0.80	0.44	0.67	0.04	0.08	0.69	-0.23	-0.08	0.45	-0.03	-0.21	-0.37	-0.46	0.69	-0.05	0.25	-0.04	1.00	0.13	-0.18	0.25	-0.31	-0.23	0.25
Hanford-Corcoran, CA	0.40	-0.35	-0.12	0.35	-0.38	-0.28	0.24	0.34	0.60	0.30	-0.46	-0.38	-0.08	-0.43	-0.51	0.35	0.37	0.00	0.29	0.17	0.30	-0.51	-0.51	0.43	0.13	1.00	-0.46	0.00	-0.06	0.17	0.41
Madera, CA	-0.34	0.19	0.31	-0.51	0.34	0.19	-0.33	-0.40	-0.42	-0.14	0.27	0.12	0.30	0.33	0.13	-0.39	-0.36	0.19	0.25	0.25	-0.04	0.11	0.19	-0.22	-0.18	-0.46	1.00	0.36	0.27	-0.01	-0.18
Merced, CA	-0.40	-0.18	-0.09	-0.34	0.33	-0.23	0.45	0.05	0.17	0.03	-0.33	-0.33	0.27	-0.36	-0.28	0.29	0.03	0.32	0.25	-0.18	0.17	-0.25	0.08	0.39	0.25	0.00	0.36	1.00	0.02	-0.06	0.27
Redding, CA	0.10	0.05	-0.24	-0.49	-0.13	-0.17	-0.43	-0.22	-0.05	0.10	0.08	-0.06	0.10	0.04	-0.03	-0.59	-0.10	-0.28	0.18	-0.08	0.06	-0.08	-0.11	-0.16	-0.31	-0.06	0.27	0.02	1.00	0.54	-0.03
Visalia-Porterville, CA	0.59	-0.20	-0.17	0.12	-0.19	-0.35	-0.02	0.01	0.28	0.29	-0.26	-0.37	-0.12	-0.10	-0.43	-0.09	0.15	-0.07	0.07	0.26	-0.12	-0.42	-0.57	0.19	-0.23	0.17	-0.01	-0.06	0.54	1.00	0.48
Yuba City, CA	0.40	-0.60	-0.39	0.41	-0.36	-0.61	0.58	0.39	0.82	0.53	-0.81	-0.83	-0.08	-0.55	-0.92	0.62	0.65	0.43	0.41	0.40	0.26	-0.82	-0.75	0.78	0.25	0.41	-0.18	0.27	-0.03	0.48	1.00

Notes: Correlation Matrix is calculated based on YoY changes of CoreLogic monthly HPI.

Sources: CoreLogic, FBC

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