Forecasting Economic Activity for the Nation and for the State

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Manfred W. Keil

Interim Director, Lowe Institute of Political Economy; Chief Economist, Inland Empire Economic Partnership; Robert Day School of Economics and Finance, Claremont McKenna College

Assisting Lowe Institute RAs: Rosy Chen, Alina Hu, Muxi Li
How would you like to graduate into a recession?

- What was it like graduating into the Great Recession for the class of 2008? and 2009?
- Will the class of 2022 or 2023 graduate into a recession?
Red Light - Green Light

What goes down must come up ~
Double-Dip Recession?
National Economy

The Big Picture
Real GDP
2022: Q1: -1.4%; 2021:Q4: 7.0%, Q3: 2.3%, Q2: 6.7%, Q1: 6.3%
GDP Growth Rate Component,
2020 Q1 GDP Growth = -1.4%
best forecast Q2: +1.9% GDPNow, 2.9% Blue Chip
GDP Recovery, U.S. Recessions:
U.S. did worse in
1953 (Korean War)
1973 (OPEC I)
1981 (Volcker Recession)
2007 (Great Recession)
Unemployment Rate, U.S., SA, 1947:M1 - 2022:M4

2022 Apr: 3.6% March: 3.6%, Feb: 3.8%, Jan: 4.0%; 2021 Dec: 3.9%


fred.stlouisfed.org
Employment Level, U.S., SA, 2017:M1 - 2022:M4
Employment Recovery, U.S. Recessions: U.S. did worse in 2001 (dot com) 2007 (Great Recession)
Annual Inflation Rate, CPI
Apr 2022: 8.2%, Mar: 8.6%, Feb: 7.9%, Jan: 7.5%, Dec 2021: 7.1%
What about Oil Prices?
West Texas Intermediate, 1986 - 2022

Shaded areas indicate U.S. recessions.  
Source: U.S. Energy Information Administration  
fred.stlouisfed.org
Annual Inflation Rate: “Sticky Price CPI less Food & Energy”


Apr 2022: 4.7%, Mar: 4.6%, Feb: 4.3%, Jan: 4.0%, Dec 2021: 3.5%
Then vs. Now

- **High Inflation**: 1981, Inflation rate at 14.2%; now, Inflation at 8.2%
- **High Oil Price**
- **FED increasing the interest rate (now by 0.5 pct pts in June and July 2022)**

![Graph showing inflation and Federal Funds Effective Rate from 1950 to 2020. Key points include:
- April 1980: 14.2
- April 2022: 8.22

Shaded areas indicate U.S. recessions. Sources: Board of Governors; BLS.
## Home Prices, 2022 and 2020

<table>
<thead>
<tr>
<th>Region (MSA)</th>
<th>Median Sales Price (April 2022)</th>
<th>% Increase Since January 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>$404,241</td>
<td>35.1%</td>
</tr>
<tr>
<td>Sacramento</td>
<td>$662,223</td>
<td>28.8%</td>
</tr>
<tr>
<td>San Francisco</td>
<td>$987,222</td>
<td>16.9%</td>
</tr>
<tr>
<td>San Jose</td>
<td>$1,421,444</td>
<td>33.9%</td>
</tr>
<tr>
<td>Fresno</td>
<td>$428,725</td>
<td>22.2%</td>
</tr>
<tr>
<td>Los Angeles &amp; Orange</td>
<td>$999,916</td>
<td>15.3%</td>
</tr>
<tr>
<td>Riverside</td>
<td>$579,000</td>
<td>37.5%</td>
</tr>
<tr>
<td>San Diego</td>
<td>$916,268</td>
<td>18.5%</td>
</tr>
</tbody>
</table>
Housing Market in Near Future

Home Prices

Price of home with 30-yr loan and $3,000 monthly payment
- 3% interest rate: $712,000
- 6% interest rate: $501,000

Housing Prices have been rising due to
- Low interest rates
- Limited housing supply during pandemic

Prices should fall (or slow) as interest rates rise
- Recent price increases suggest a persistent housing supply shortage

Source: Zillow Research; St. Louis Federal Reserve Economic Data (FRED)
Record Volume: Too Much Cargo? Port Congestion

SHIPS AT ANCHOR IN SAN PEDRO BAY, SOUTHERN CALIFORNIA
PEOPLE LINING UP FOR BLACK FRIDAY DEALS THIS YEAR LIKE:
The Economist Title Story
Hints at New Data Collection Methods
Small Business Revenue Change, Jan 2020-May 2020

Claremont: -71%
Upland: -12%
Pomona: +9%
Chino: -7%
California Economy

The State
Unemployment Rate, U.S. and Selected States, SA, September 2021
Unemployment Rate, U.S. and Selected States, SA, 2019:M9 to 2021:M9
Unemployment Rate, U.S. and Selected States, SA, 2019:M9 to 2021:M9
State Unemployment Rates,
U.S., SA, April 2022
<table>
<thead>
<tr>
<th>Category</th>
<th>Feb-20</th>
<th>May-20</th>
<th>Dec-20</th>
<th>Apr-21</th>
<th>Mar-22</th>
<th>Apr-22</th>
<th>MTM</th>
<th>YTY%</th>
<th>%20-Feb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nonfarm</td>
<td>17,691,900</td>
<td>15,107,300</td>
<td>16,090,700</td>
<td>16,526,800</td>
<td>17,410,600</td>
<td>17,452,000</td>
<td>41,400</td>
<td>5.6</td>
<td>98.6</td>
</tr>
<tr>
<td>Mining and Logging</td>
<td>22,500</td>
<td>19,100</td>
<td>19,000</td>
<td>19,400</td>
<td>19,400</td>
<td>19,300</td>
<td>-100</td>
<td>-0.5</td>
<td>85.8</td>
</tr>
<tr>
<td>Construction</td>
<td>910,200</td>
<td>828,800</td>
<td>873,500</td>
<td>885,700</td>
<td>915,900</td>
<td>902,700</td>
<td>-13,200</td>
<td>1.9</td>
<td>99.2</td>
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<tr>
<td>Manufacturing</td>
<td>1,329,700</td>
<td>1,227,100</td>
<td>1,259,500</td>
<td>1,271,200</td>
<td>1,299,100</td>
<td>1,301,700</td>
<td>2,600</td>
<td>2.4</td>
<td>97.9</td>
</tr>
<tr>
<td>Trade, Transportation &amp; Utilities</td>
<td>3,064,800</td>
<td>2,657,900</td>
<td>2,964,700</td>
<td>3,013,200</td>
<td>3,134,700</td>
<td>3,144,700</td>
<td>10,000</td>
<td>4.4</td>
<td>102.6</td>
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<tr>
<td>Wholesale Trade</td>
<td>686,100</td>
<td>615,800</td>
<td>639,800</td>
<td>644,800</td>
<td>653,800</td>
<td>655,100</td>
<td>1,300</td>
<td>1.6</td>
<td>95.5</td>
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<tr>
<td>Retail Trade</td>
<td>1,646,900</td>
<td>1,342,800</td>
<td>1,553,500</td>
<td>1,596,300</td>
<td>1,644,400</td>
<td>1,648,900</td>
<td>4,500</td>
<td>3.3</td>
<td>100.1</td>
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<tr>
<td>Transportation, Warehousing &amp; Utilities</td>
<td>731,800</td>
<td>699,300</td>
<td>771,400</td>
<td>772,100</td>
<td>836,500</td>
<td>840,700</td>
<td>4,200</td>
<td>8.9</td>
<td>114.9</td>
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<tr>
<td>Logistics</td>
<td>3,750,900</td>
<td>3,273,700</td>
<td>3,604,500</td>
<td>3,658,000</td>
<td>3,788,500</td>
<td>3,799,800</td>
<td>11,300</td>
<td>3.9</td>
<td>101.3</td>
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<tr>
<td>Information</td>
<td>591,500</td>
<td>508,600</td>
<td>536,400</td>
<td>551,900</td>
<td>590,600</td>
<td>592,800</td>
<td>2,200</td>
<td>7.4</td>
<td>100.2</td>
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<tr>
<td>Financial Activities</td>
<td>851,600</td>
<td>800,300</td>
<td>818,000</td>
<td>823,500</td>
<td>833,900</td>
<td>837,300</td>
<td>3,400</td>
<td>1.7</td>
<td>98.3</td>
</tr>
<tr>
<td>Professional &amp; Business Services</td>
<td>2,773,600</td>
<td>2,497,000</td>
<td>2,622,300</td>
<td>2,685,200</td>
<td>2,805,500</td>
<td>2,816,900</td>
<td>11,400</td>
<td>4.9</td>
<td>101.6</td>
</tr>
<tr>
<td>Educational &amp; Health Services</td>
<td>2,874,100</td>
<td>2,615,200</td>
<td>2,756,300</td>
<td>2,795,800</td>
<td>2,893,100</td>
<td>2,893,600</td>
<td>500</td>
<td>3.5</td>
<td>100.7</td>
</tr>
<tr>
<td>Leisure &amp; Hospitality</td>
<td>2,060,600</td>
<td>1,112,800</td>
<td>1,358,300</td>
<td>1,550,300</td>
<td>1,861,900</td>
<td>1,882,000</td>
<td>20,100</td>
<td>21.4</td>
<td>91.3</td>
</tr>
<tr>
<td>Other Services</td>
<td>593,400</td>
<td>408,500</td>
<td>456,300</td>
<td>492,500</td>
<td>545,900</td>
<td>545,800</td>
<td>-100</td>
<td>10.8</td>
<td>92.0</td>
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<tr>
<td>Government</td>
<td>2,619,900</td>
<td>2,432,000</td>
<td>2,426,400</td>
<td>2,438,100</td>
<td>2,510,600</td>
<td>2,515,200</td>
<td>4,600</td>
<td>3.2</td>
<td>96.0</td>
</tr>
</tbody>
</table>
California Employment Recovery

- Transportation & Warehousing surged (as online goods replace in-person services)
- Leisure & Hospitality stays below the pre-pandemic level
- Reshuffling” within the labor force

They do want to work
- They just don’t want to work for you
- e.g. Transportation & Warehousing Employment surged as we substituted in-person services for goods (especially online goods)
- Leisure & Hospitality earnings per job are up 29% since Jan 2020
  - “Reshuffling” within the sector
  - “Great Resignation” or “Great Renegotiation”?

Source: CA Employment Development Department; Emsi / Burning Glass; Federal Reserve Bank of San Francisco (Bart Hobijn)
California: Change in Employment, High, Middle, and Low Wage, 2020:M1-2022:M4

-3.8% Middle Wage ($29K-$73K)
-9% High Wage (>$73K)
-22% Low Wage (<$29K)

Week ending Apr 15, 2022

data source: Earnin, Intuit, Kronos, Paychex
Cumulative Deaths per 100,000 Population by U.S. State, May 2022
California Counties and the Inland Empire
Unemployment Rates by County

March. 2022

April. 2022

Source: EDD
Jobs Recovery Varies Across Regions, Large Metros (April ‘22)

Source: EDD, KE
Unemployment Rates, U.S. (SA), California (SA), Southern California (NSA), 2020:M2, Peak Level, 2021:M9, in Percent

<table>
<thead>
<tr>
<th>Area</th>
<th>2020:M2</th>
<th>Peak Level</th>
<th>2021:M9</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>3.5</td>
<td>13.3</td>
<td>4.8</td>
</tr>
<tr>
<td>California</td>
<td>4.3</td>
<td>16.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Inland Empire</td>
<td>3.9</td>
<td>15.2</td>
<td>6.6</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>4.7</td>
<td>18.8</td>
<td>9.7</td>
</tr>
<tr>
<td>Orange County</td>
<td>2.8</td>
<td>14.9</td>
<td>6.0</td>
</tr>
<tr>
<td>San Diego</td>
<td>3.2</td>
<td>15.9</td>
<td>6.6</td>
</tr>
<tr>
<td>Ventura County</td>
<td>3.7</td>
<td>14.5</td>
<td>6.2</td>
</tr>
<tr>
<td>Imperial County</td>
<td>18.1</td>
<td>28.6</td>
<td>19.4</td>
</tr>
</tbody>
</table>
Change in California MSA Unemployment Rate, 2020,
Labor Share Leisure and Hospitality, 2019
Employment Change, in %, since pre-Great Recession Level
California % of Population with at least One Dose of Vaccine

data source: Centers for Disease Control and Prevention (CDC)
Final Statement regarding the Double-Dip Recession
However... (Keil lectures in Econ 125, Econometrics; this is called a “probit” - scary)

$$\text{Pr}(1 \text{ Year Before} = 1 | \text{spread}_t) = \Phi(-2.71 - 3.65 \times \text{spread}_t - 6.06 \times \text{spread}_{t-3}) + 5.90 \left( \frac{1}{3} \sum_{i=0}^{2} \text{u}_{t-i} - \frac{1}{12} \sum_{i=0}^{12} \text{u}_{t-i} \right)_t$$

$$(0.65) \quad (1.03) \quad (1.60) \quad (2.99)$$

$$-10.18 \Delta_3 (\text{hrsManu} \times \text{shManu})_{t-9} - 0.0034 \Delta_{12} \text{housstart}_t + 0.0041 (\text{housstock}_t - 10,000) \times \text{DHS10}$$

$$(4.86) \quad (0.0012) \quad (0.0009)$$

$$-0.184 \Delta_4 (\text{CSI})_t$$

$$(0.063)$$

McFadden $R^2 = 0.886, t = 1960:M1 - 2018:M12$ excluding recessions and recovery
Spread: (10-Y Gov Bond - 30-D Tbill)
Conclusion:

● very low probability of recession in 2023, even less for 2022 (phew!)
● GDP growth 2022 Q2 around +2%
● Fed re-establishes credibility by getting inflation under control (less than 4% by end of the year)
● caveat: Ukraine, China, Coronavirus