A few aspects of Hawaii’s recovery from the Great Recession

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WARNING: If the map of the U.S. in your elementary school does not look something like this, dude, it is not a correct depiction: Hawaii is not located in a cutout off the coast of Baja.
Appendix 1: U.S. macroeconomic trends
Real GDP components stabilizing

Percent changes at seasonally-adjusted annual rates

Sources: Bureau of Economic Analysis, US Department of Commerce; calculations by author
U.S. federal budget deficit as a percent of GDP

Source: Congressional Budget Office

In percentage points, roughly:
- 2 Bush full-employment deficit
- 3 the Great Recession
- 3 Obama ARRA (see appendix)
Composition of Federal Reserve assets

Sources: Federal Reserve Board; calculations by author
Yields and inflation expectations settle

Sources: Federal Reserve Bank of St. Louis; inflation expectations calculated by TZE (up to an inflation risk premium and a liquidity risk premium)
Yields and inflation expectations settle

**U.S. Treasury Inflation Protected Securities real yield curve**

**Long-term inflation expectation implied by TIPS yields**

**Sources:** Federal Reserve Bank of St. Louis; inflation expectations calculated by TZE (up to an inflation risk premium and a liquidity risk premium)
Inflation through mid-2009

Source: Bureau of Labor Statistics; Honolulu is a semi-annual index these data include August 14, 2009 release
Honolulu minus U.S. urban inflation differential

### FOMC forecast

<table>
<thead>
<tr>
<th>Variable</th>
<th>Central tendency¹</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2010</td>
<td>2011</td>
<td>Longer run</td>
</tr>
<tr>
<td>Change in real GDP.</td>
<td>-1.5 to -1.0</td>
<td>2.1 to 3.3</td>
<td>3.8 to 4.6</td>
<td>2.5 to 2.7</td>
</tr>
<tr>
<td>April projection.</td>
<td>-2.0 to -1.3</td>
<td>2.0 to 3.0</td>
<td>3.5 to 4.8</td>
<td>2.5 to 2.7</td>
</tr>
<tr>
<td>Unemployment rate.</td>
<td>9.8 to 10.1</td>
<td>9.5 to 9.8</td>
<td>8.4 to 8.8</td>
<td>4.8 to 5.0</td>
</tr>
<tr>
<td>April projection.</td>
<td>9.2 to 9.6</td>
<td>9.0 to 9.5</td>
<td>7.7 to 8.5</td>
<td>4.8 to 5.0</td>
</tr>
<tr>
<td>PCE inflation.</td>
<td>1.0 to 1.4</td>
<td>1.2 to 1.8</td>
<td>1.1 to 2.0</td>
<td>1.7 to 2.0</td>
</tr>
<tr>
<td>April projection.</td>
<td>0.6 to 0.9</td>
<td>1.0 to 1.6</td>
<td>1.0 to 1.9</td>
<td>1.7 to 2.0</td>
</tr>
<tr>
<td>Core PCE inflation³</td>
<td>1.3 to 1.6</td>
<td>1.0 to 1.5</td>
<td>0.9 to 1.7</td>
<td></td>
</tr>
<tr>
<td>April projection.</td>
<td>1.0 to 1.5</td>
<td>0.7 to 1.3</td>
<td>0.8 to 1.6</td>
<td></td>
</tr>
</tbody>
</table>

¹. The central tendency excludes the three highest and three lowest projections for each variable in each year.

². The range for a variable in a given year consists of all participants’ projections, from lowest to highest, for that variable in that year.

³. Longer-run projections for core PCE inflation are not collected.

**Source:** Federal Reserve Open Market Committee minutes of June 23-24, 2009 meeting
U.S. real GDP forecasts (NABE)

U.S. real economic growth forecasts were revised downward sharply in the post-Lehman environment but in first half 2009 have settled on a slow recovery forecast to begin late in 2009 and to accelerate during 2010.

Source: Bureau of Economic Analysis, National Association for Business Economics
Target Fed Funds as a function of inflation gap, output gap:
\[ r^* = [4.5 + (0.5)(p - p^*) + (0.5)(y - y^*)] \]

- \( r \) = Fed Funds rate
- \( p \) = increase in the core CPI [\( p^* = 2 \) (target)]
- \( y \) = real GDP growth rate [\( y^* = \) potential GDP growth]

A higher real GDP growth rate will require a return to higher Fed funds rates.

Source: Bureau of Economic Analysis, National Association for Business Economics, Federal Reserve Board; Taylor Rule calculation by TZ Economics
Rebounding global oil prices clip the wings of economic recovery for Hawaii, just as oil price declines at the end of 2008 eased recession.

Source: Energy Information Administration, U.S. Department of Energy
Historically closely tied real income growth rates

**Source:** Quarterly data BEA, U.S. Department of Commerce; regressions of real log changes, Hawaii on US
Quarterly real Hawaii income growth, volatility

Annualized growth (right scale)

Conditional volatility (left scale)

NBER recessions shaded

Source: Bureau of Economic Analysis, Bureau of Labor statistics; deflation using interpolated Honolulu CPI-U, quarterly annualized growth and GARCH volatility estimates by TZE
Appendix 2: correlated default implies systemic risk

- Securitization of mortgage default risk enabled better risk-pooling, more efficient global capital allocation, expanded access to credit by households.
- Mortgage-backed securities (MBS) were repackaged into collateralized debt obligations (CDO) with prioritization of risk exposure further limiting default risk for senior tranche-holders.
- Geographic diversity combined with pooling and tranching of risk exposures created safe securities from underlying mortgages with idiosyncratic risk, as long as default was uncorrelated.
- Default risk began to increase as prices stopped rising, while a synchronous national turning point meant that rising default risk was also increasingly correlated default risk—systemic risk.
- Correlated default erodes the valuations of CDO (and related CDS, CDO$^2$, etc.) much faster than if risk was uncorrelated.
Mortgage delinquency rates continue to run lower in Hawaii than elsewhere, rising somewhat with the “burn in” of losses to mainland second-home buyers in Hawaii resort condo markets. Disparate pattern of default risk nationwide should not be mistaken for *uncorrelated* increase in default risk.

<table>
<thead>
<tr>
<th>State</th>
<th>Percent 30+ days past due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Nevada</td>
<td>11.75</td>
</tr>
<tr>
<td>2 Mississippi</td>
<td>11.70</td>
</tr>
<tr>
<td>3 Florida</td>
<td>10.67</td>
</tr>
<tr>
<td>4 Michigan</td>
<td>10.43</td>
</tr>
<tr>
<td>5 Georgia</td>
<td>10.07</td>
</tr>
<tr>
<td>6 Indiana</td>
<td>9.89</td>
</tr>
<tr>
<td>7 Arizona</td>
<td>9.66</td>
</tr>
<tr>
<td>8 California</td>
<td>9.22</td>
</tr>
<tr>
<td>9 Tennessee</td>
<td>9.14</td>
</tr>
<tr>
<td>10 Alabama</td>
<td>8.86</td>
</tr>
<tr>
<td>11 Louisiana</td>
<td>8.84</td>
</tr>
<tr>
<td>12 Ohio</td>
<td>8.64</td>
</tr>
<tr>
<td>13 Rhode Island</td>
<td>8.25</td>
</tr>
<tr>
<td>14 Maryland</td>
<td>8.25</td>
</tr>
<tr>
<td>15 West Virginia</td>
<td>8.07</td>
</tr>
</tbody>
</table>

Hawaii 5.64% (90+ days 2.31%)

*Source: Mortgage Bankers Association (first quarter 2009)*
Serious mortgage delinquency

Selected Counties: (percent of loans)

- Dade, FL: 15.45
- Merced, CA: 12.90
- Clark, NV: 10.93
- Maui, HI: 4.69
- Hawaii, HI: 4.50
- Kauai, HI: 4.01
- Honolulu, HI: 2.07

Resilient Oahu home prices reflect strong underlying economic fundamentals, not imminent collapse, but correlated rise in delinquency is a systemic problem

Source: Federal Reserve Bank of New York
Prototypical CDO tranching structure

Underlying obligors

Issuer

$2 billion (AAA)

$43 million (A)

$54 million (BBB)

$64 million (NR)

Tranching and subordination of risk into designated high-risk/high-yield buckets does not fully insulate senior tranches from valuation loss ordinarily concentrated in junior tranches if correlated default amplifies overall risk exposure

Sub-prime mortgage-related risk pricing

Based on baskets of 20 CDS-referencing asset-backed securities containing sub-prime mortgages and home equity loans of different ratings; after initiation, fee (spread) that buyer pays is (100 – ABX price), plus, the upfront fee that previous sellers pay rises if ABX falls


Note: Time (horizontal) scales are slightly different, as in originals
Appendix 3: macroeconomic policy topics

- Christina Romer (Obama CEA) on ARRA stimulus
  - Twice the size of the New Deal (1934); 3% vs. 1½% of GDP
  - ¾ of stimulus spend out in 18 months (CBO)
  - Tax cuts (+AMT), support to states, infrastructure, energy, education
  - Romer\(^2\) research: tax cut multiplier \(\approx 1.0\); spending multiplier \(\approx 1.6^*\)
  - “Estimates almost surely more likely to [be] biased downward”
  - Inherited deficit \(\Rightarrow\) need for credible long-run fiscal solutions

- Doug Holtz-Eakin (ex-CBO): “missing an exit strategy”
  - Fiscal stimulus is something you “turn on” and “turn off”
  - “Temporary” interventions will simply not unwind on their own
  - Eventually “very high degree of difficulty 180° pirouette…made ‘in public’”
  - People believe Washington and Wall Street failed, want bums out
  - Legacy of the “Rick Santelli ‘revolution’”: good solutions not popular


Source: NABE Spring 2009 Policy Conference, Federal Reserve Board
Turn to fiscal policy has budget deficit consequences

- William Gale (Brookings) on fiscal policy and the economic crisis
  - Convert “vicious circle” to “virtuous” circle; raise confidence and prevent deflation
  - Fiscal policy required since monetary and financial interventions not enough
  - Policy options inevitably create inequities and moral hazard

- Tax cuts and spending ($787 billion) in stimulus package
  - $185 billion in 2009
  - $399 billion in 2010
  - $134 billion in 2011

- “Bangs for bucks” have long lags; tax cuts more likely saved than spent

- 2009 budget CBO baseline: deficit $1.3 trillion, 8.3% of GDP

- Several unique features in this budget (TARP; GSEs; Fed actions)
  - TARP treated on present-value basis: subsidy $184b; public debt rises $461b
  - MBS purchases little effect on budget, but $248 billion added to debt
  - FNMA/FHLMC counted as present value of takeover: $218b add to deficit (2009) (but don’t forget GSEs’ $1.6 trillion debt and $4 billion MBS issued are not included)
  - Fed shows up as future realization of net earnings (to Treasury)

- 2/3 of deficit attributable to policy change; 1/3 to forecasting errors

Among many origins of financial crisis:
- Regulatory arbitrage—book assets off balance sheet, via conduits
- Maturity mismatches—riding the yield curve on overnight repos
- Violation of Taylor Rule mixed with Asian demand for Treasuries
- “Affordable housing” pressure on GSEs, rating agencies
- Bank stock ownership limitations that impede corporate governance

Six reform ideas (Calomiris)
- Smarter “micro prudential” regulation of banks
- Eliminate distortions in housing finance that encourage leveraging
- Improve stockholder discipline of banks
- Counterparty “netting” and OTC transparency
- Prepackaged “bridge bank” plans for large, complex financials
- “Macro prudential” regulation of bank capital and liquidity standards

Someone to think about the big picture

- Macro prudential regulation
  - Time-varying parameters (capital, liquidity, provisioning policies)
  - Increase requirements to tamp down asset price “bubbliciousness”
  - Form new regulator: Federal Reserve has its hands full
  - Problem identifying bubbles: false positives
  - Orderly resolution of systemically-embedded financial institutions

Big debate in Hawaii: how to diversify the economy

...as if we had a choice

Small open economies take global prices as given, maximize their social welfare by specializing in production in their comparative advantage, trading that with the rest of the world

Hawaii should maximize risk-adjusted returns
Hawaii gross product by NAICS industry, 2006

Sources: Bureau of Economic Analysis, US Department of Commerce; Bank of Hawaii
Hawaii gross product by industry: growth and volatility

“Inner Core” includes low-risk, low-yield cluster of industries including government at all levels, including federal defense, and things like retail and wholesale trades, even construction*

Sources: Bureau of Economic Analysis, US Department of Commerce; *calculations by TZE but only over the 1997-2007 interval, which explains why construction was less volatile than might be expected