NABE Real Estate Roundtable

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CoreLogic
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Project Objective

• Estimate Flipping Rates Across Space and Time

• Estimate Gross Flipping Returns Across Space and Time

• Test for Granger Causality Between Flipping Rate and House Price Change
Previous Work
Flipping: Very Thinly Researched
Only 3 Academic Studies, None at the National Level

• Seminal work of Depken, Hollans, and Swidler (2009)
  − Estimate quarterly flipping rates in Las Vegas between 1996 - 2007
  − Estimate quarterly flipping returns in Las Vegas between 1996 - 2007
  − Estimate Granger Causality between flips and house prices in Las Vegas between 1996 – 2007

• Interesting findings:
  − Flipping rates vary from 3.4% in 1996Q4 to a peak of 22% in 2004Q3.
  − Gross flipping returns vary from near 0% in the late 90's and early 00s, to nearly 20% just before the crash.
  − House price increases Granger Cause the flipping rate, and vice versa.

• Granger Causality findings replicated in other studies:
  − Bayer, Geissler, Mangum, and Roberts (2011) find increased involvement of less-experienced flippers drives prices in Los Angeles.
  − Lee and Choi (2011) show similar results for Chicago.
Methods and Data
Brief Description of Methods
Flipping Rates, Flipping Returns, Granger Causality

• Flipping Rates and Characteristics:
  − Flipping rates on various definitions of flips
  − Flipping rates by metro
  − Compare characteristics of non-flips vs. flips

• Flipping Returns:
  − Nominal percent return on flips
  − Comparing average buy-side discounts vs. sell-side premiums
  − Percent economic returns
  − Percent annualized economic returns

• Granger Causality Tests
  − Test for Granger Causality of four period changes of house prices on changes in flipping rates
  − Test for Granger Causality of four period changes of flipping rate on changes in house prices
Brief Description of Methods
Flipping Rates, Flipping Returns, Granger Causality

• Employ an OLS Hedonic Model
  – Run nationally, and for each of the largest 100 markets, in each quarter
  – Initial data set of ~120 million transactions between 2000Q1 and 2018Q4.
  – Filtered to 53,643,905 transactions in largest 100 metros
  – 4,116,074 are properties that were resold within two years

• Variables
  – Bed, bath, SQFT, lot size, stories, garage spaces, age, property type
  – Dummy variable for whether transaction was a buy-side flip
  – Dummy variable for whether transaction was a sell-side flip

• Interpretation of Coefficients
  – Marginal effects of property characteristics on sale price
  – Buy-side discounts and sell-side premiums of a flip
Preliminary Findings
Flipping Rates, 2002Q1 – 2018Q4

Flipping Rates by Definition, United States
## Metros with Highest Average Flipping Rates, 2002 - 2018
Tend to be Highest in Sand Metros, Lowest in Midwest/South/Atlantic Metros

<table>
<thead>
<tr>
<th>Metros With Highest Flipping Rates</th>
<th>Flipping Rate</th>
<th>Metros With Lowest Flipping Rates</th>
<th>Flipping Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort Lauderdale, FL</td>
<td>12.1%</td>
<td>Houston, TX</td>
<td>4.3%</td>
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<tr>
<td>Philadelphia, PA</td>
<td>10.7%</td>
<td>Raleigh, NC</td>
<td>4.7%</td>
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<tr>
<td>Tampa, FL</td>
<td>10.6%</td>
<td>Austin, TX</td>
<td>4.8%</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>10.4%</td>
<td>Kansas City, MO</td>
<td>4.9%</td>
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<tr>
<td>Honolulu, HI</td>
<td>10.3%</td>
<td>Pittsburgh, PA</td>
<td>5.4%</td>
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</tbody>
</table>
### Metro-Quarters Flipping Rates, 2002Q1 – 2018Q4

Tend to be Highest in Fort Lauderdale, Honolulu, and Utah

<table>
<thead>
<tr>
<th>Metro-Quarters With Highest Flipping Rates</th>
<th>Quarter</th>
<th>Flipping Rate</th>
<th>Metro-Quarters With Lowest Flipping Rates</th>
<th>Quarter</th>
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<tbody>
<tr>
<td>Honolulu, HI</td>
<td>2006Q2</td>
<td>20.7%</td>
<td>Modesto, CA</td>
<td>2008Q2</td>
<td>0.9%</td>
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<tr>
<td>Fort Lauderdale, FL</td>
<td>2005Q1</td>
<td>19.7%</td>
<td>Birmingham, AL</td>
<td>2010Q2</td>
<td>1.1%</td>
</tr>
<tr>
<td>Honolulu, HI</td>
<td>2005Q2</td>
<td>19.0%</td>
<td>Birmingham, AL</td>
<td>2010Q3</td>
<td>1.1%</td>
</tr>
<tr>
<td>Fort Lauderdale, FL</td>
<td>2004Q4</td>
<td>18.8%</td>
<td>Modesto, CA</td>
<td>2009Q1</td>
<td>1.1%</td>
</tr>
<tr>
<td>Fort Lauderdale, FL</td>
<td>2005Q2</td>
<td>18.0%</td>
<td>Birmingham, AL</td>
<td>2009Q2</td>
<td>1.2%</td>
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</table>
Flipping Rates and Characteristics

Flipping Characteristics: Flips vs Non-Flips % Price Difference

-20% -15% -10% -5% 0% 5% 10%
Flipping Rates and Characteristics

Flipping Characteristics: Flips vs Non-Flips % Square Feet Difference
Flipping Rates and Characteristics

Flipping Characteristics: Average Age of Flips and Non-Flipped Properties

Graph showing the average age of property type over time for non-flips and flips.
Flipping Returns

Flipping Returns: Nominal % Returns
Flipping Model Fit

$R^2$ of National Model Generally Between 75% and 85%
Flipping Returns

Flipping Returns: Buy-Side Discount vs. Sell Side Premium

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Flipping Returns

Flipping Returns: % Economic Returns vs. % Annualized Economic Returns
Flipping Rates and Characteristics

Flipping Characteristics: Days Between Flips Fell Sharply During Recession
Flipping Rates and Characteristics

Flipping Characteristics: Spike in Distressed Property Purchases During GR
Flipping Rates and Characteristics

Flipping Characteristics: Investor Share of Flip Sales at Series High
Granger Causality
Does Home Price Changes Granger Cause Flipping Rates, and Vice Versa?

- Following methodology of Depken, Hollans, and Swidler, we conduct Granger Causality tests.
  - Perform a vector autoregressive model in STATA with dependent variable regressed on four quarter lag values of dependent variable and “independent” variable.
  - Conduct a joint F-test for significant for lagged independent variables.
  - P-values less than .05 indicate Granger Causality.

<table>
<thead>
<tr>
<th>Equation</th>
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Granger Causality

Does Home Price Changes Granger Cause Flipping Rates *Changes*, and Vice Versa?

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Future Work
Future Research Questions

• What explains intermarket variation in flipping rates?

• Do flippers increase prices for entry level buyers?

• Can we determine which properties were speculative flips (no improvements) and which were value-add?