# NABE Real Estate Roundtable

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# A Wild Flipping Ride: Economic Returns to U.S. House Flipping, 2002-2018

# 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

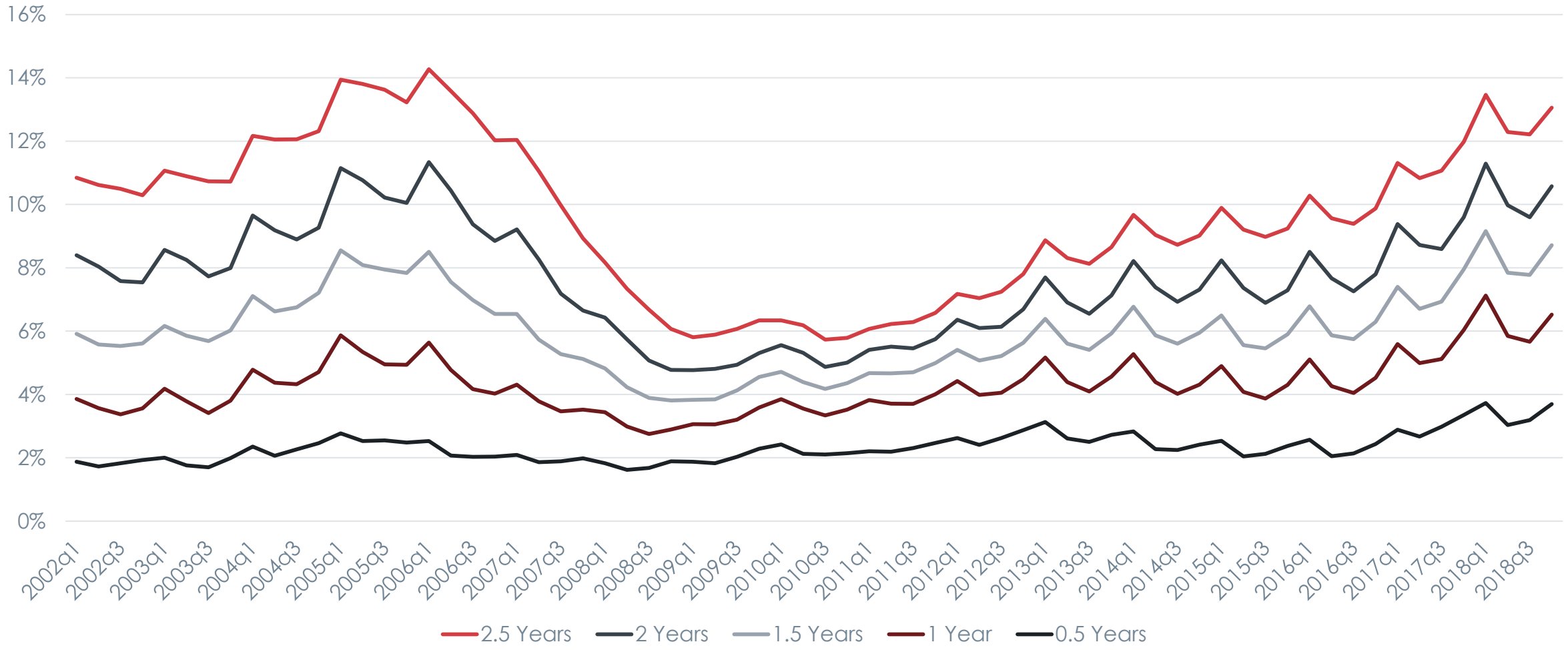
- Variables
  - Bed, bath, SQFT, lot size, stories, garage spaces, age, property type
  - Dummy variable for whether transaction was a buy-side flip
  - Dummy variable for whether transaction was a sell-side flip

- 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

| Metros With Highest Flipping Rates | Flipping Rate | Metros With Lowest Flipping Rates | Flipping Rate |
|---|---|---|---|
| Fort Lauderdale, FL | 12.1% | Houston, TX | 4.3% |
| Philadelphia, PA | 10.7% | Raleigh, NC | 4.7% |
| Tampa, FL | 10.6% | Austin, TX | 4.8% |
| Los Angeles, CA | 10.4% | Kansas City, MO | 4.9% |
| Honolulu, HI | 10.3% | Pittsburgh, PA | 5.4% |

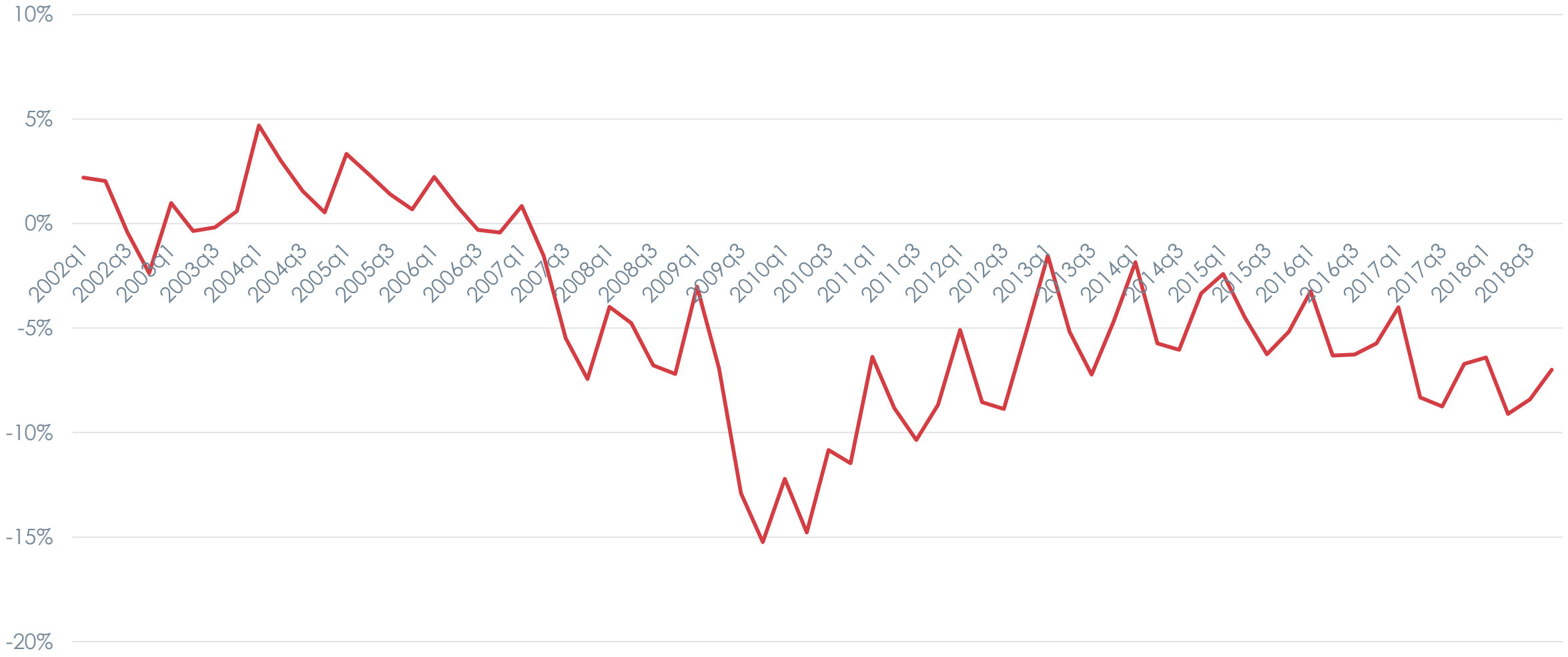
# Metro-Quarters Flipping Rates, 2002Q1 – 2018Q4

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

| Metro-Quarters With Highest Flipping Rates | Quarter | Flipping Rate | Metro-Quarters With Lowest Flipping Rates | Quarter | Flipping Rate |
|---|---|---|---|---|---|
| Honolulu, HI | 2006Q2 | 20.7% | Modesto, CA | 2008Q2 | 0.9% |
| Fort Lauderdale, FL | 2005Q1 | 19.7% | Birmingham, AL | 2010Q2 | 1.1% |
| Honolulu, HI | 2005Q2 | 19.0% | Birmingham, AL | 2010Q3 | 1.1% |
| Fort Lauderdale, FL | 2004Q4 | 18.8% | Modesto, CA | 2009Q1 | 1.1% |
| Fort Lauderdale, FL | 2005Q2 | 18.0% | Birmingham, AL | 2009Q2 | 1.2% |

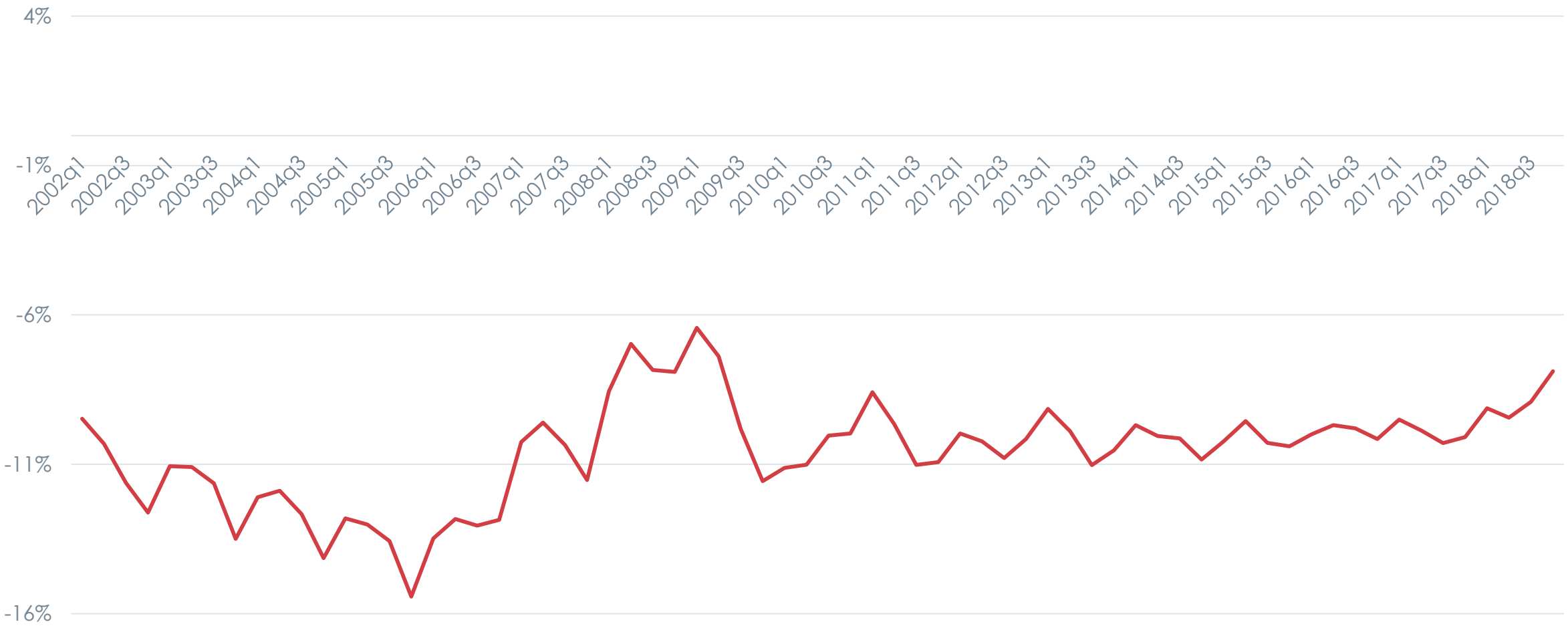
# Flipping Rates and Characteristics

## Flipping Characteristics: Flips vs Non-Flips % Price Difference



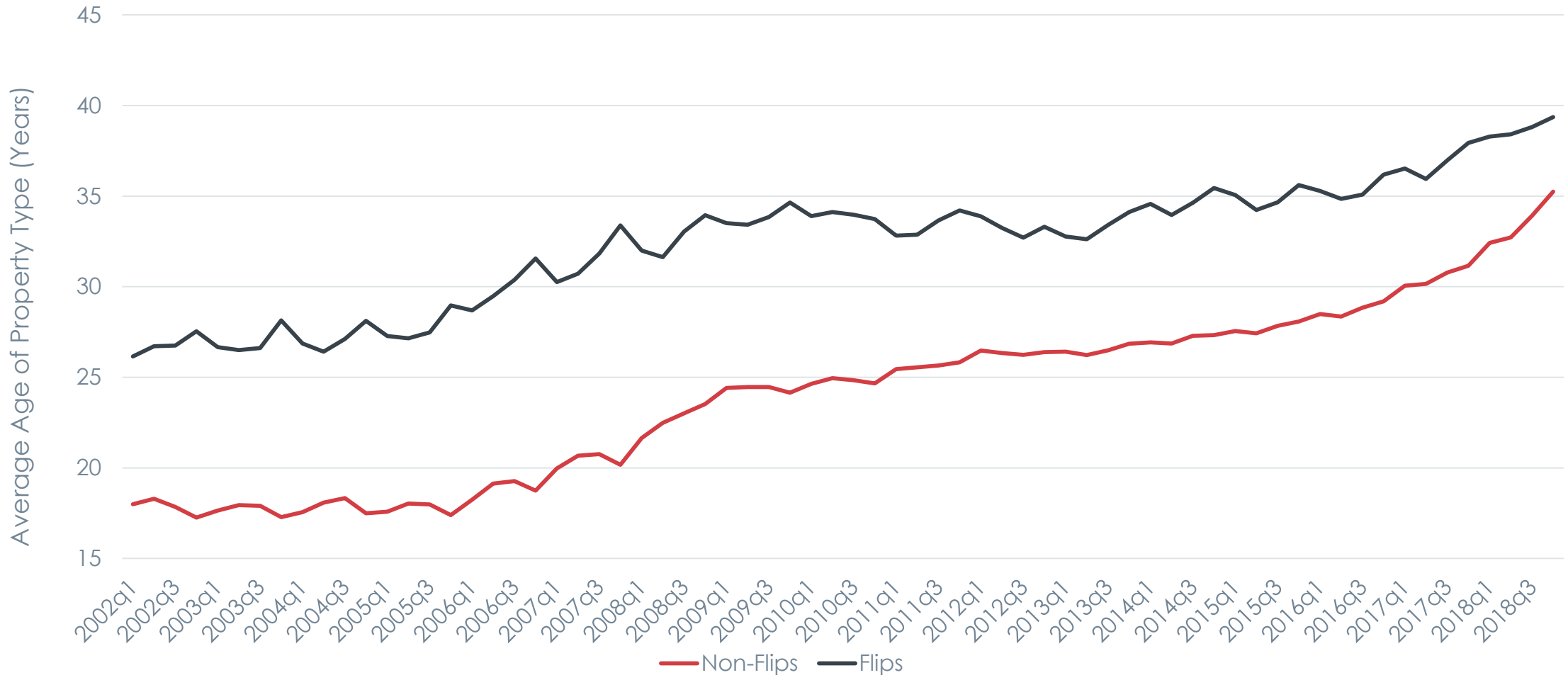
# Flipping Rates and Characteristics

## Flipping Characteristics: Flips vs Non-Flips % Square Feet Difference



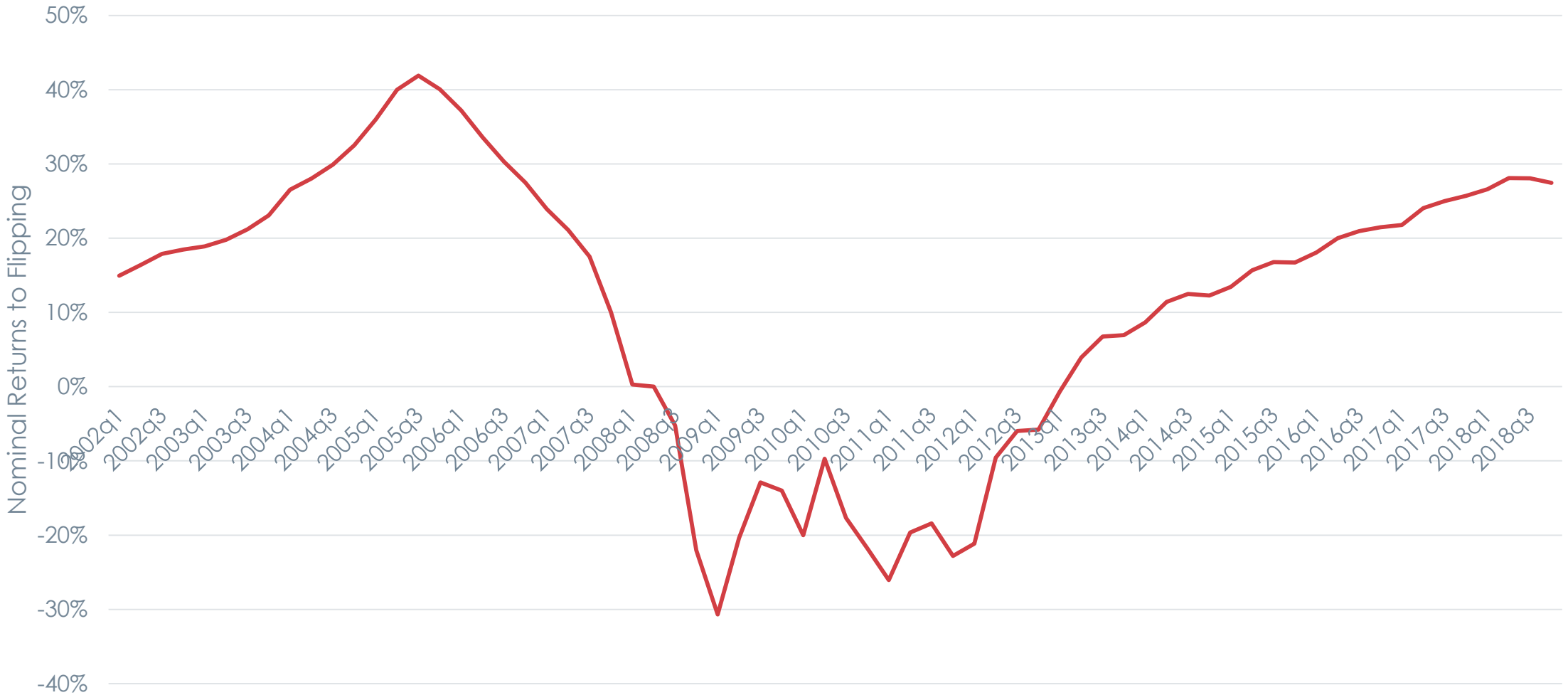
# Flipping Rates and Characteristics

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



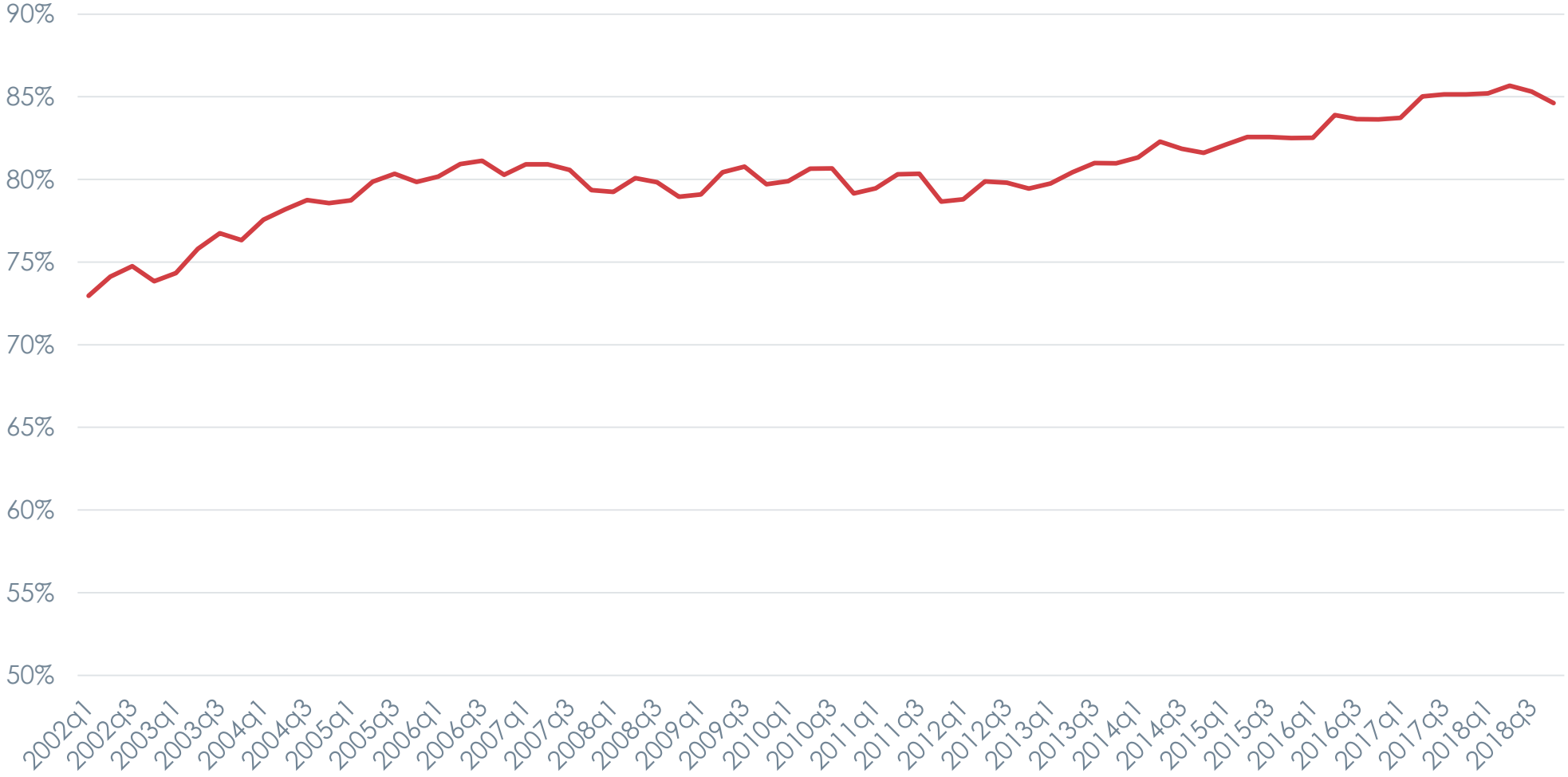
# Flipping Returns

## Flipping Returns: Nominal % Returns



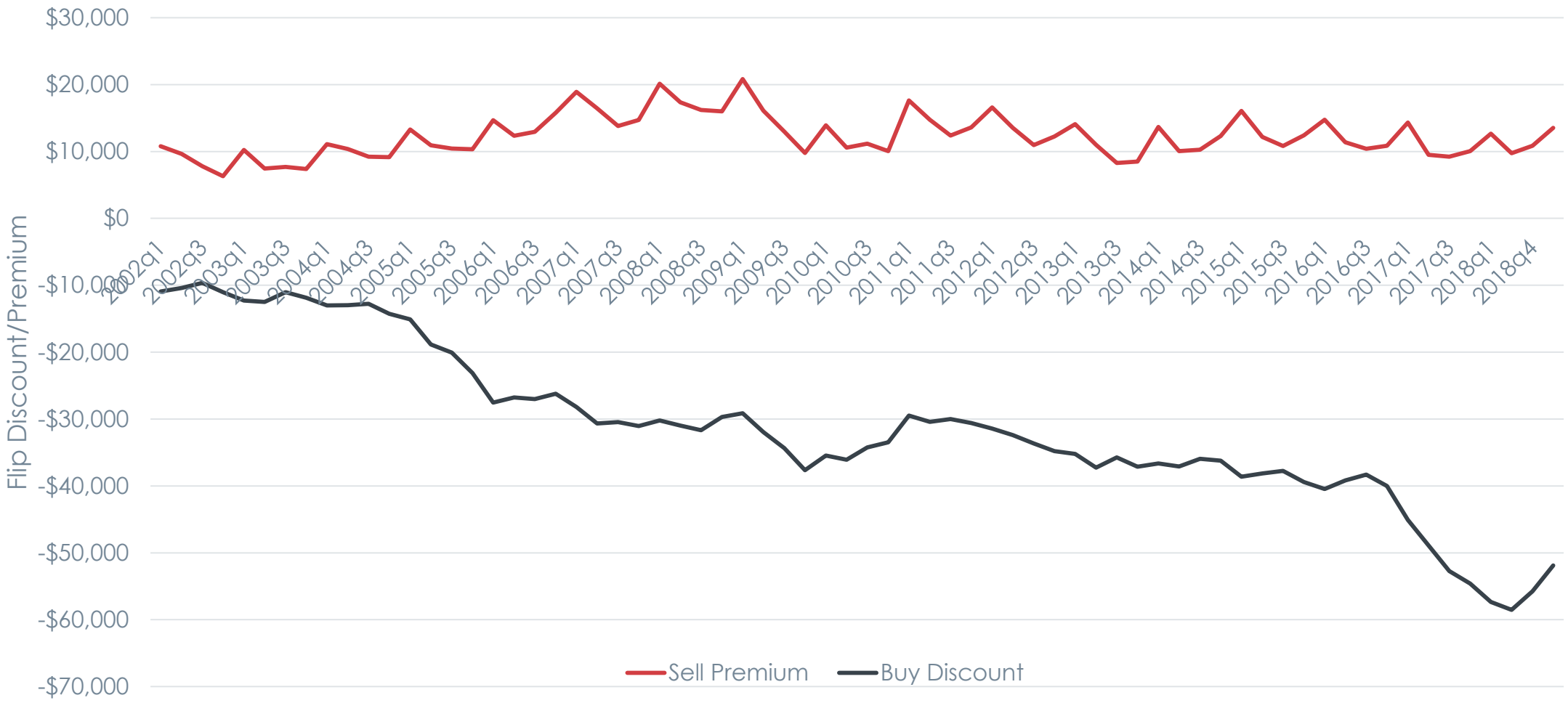
# Flipping Model Fit

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



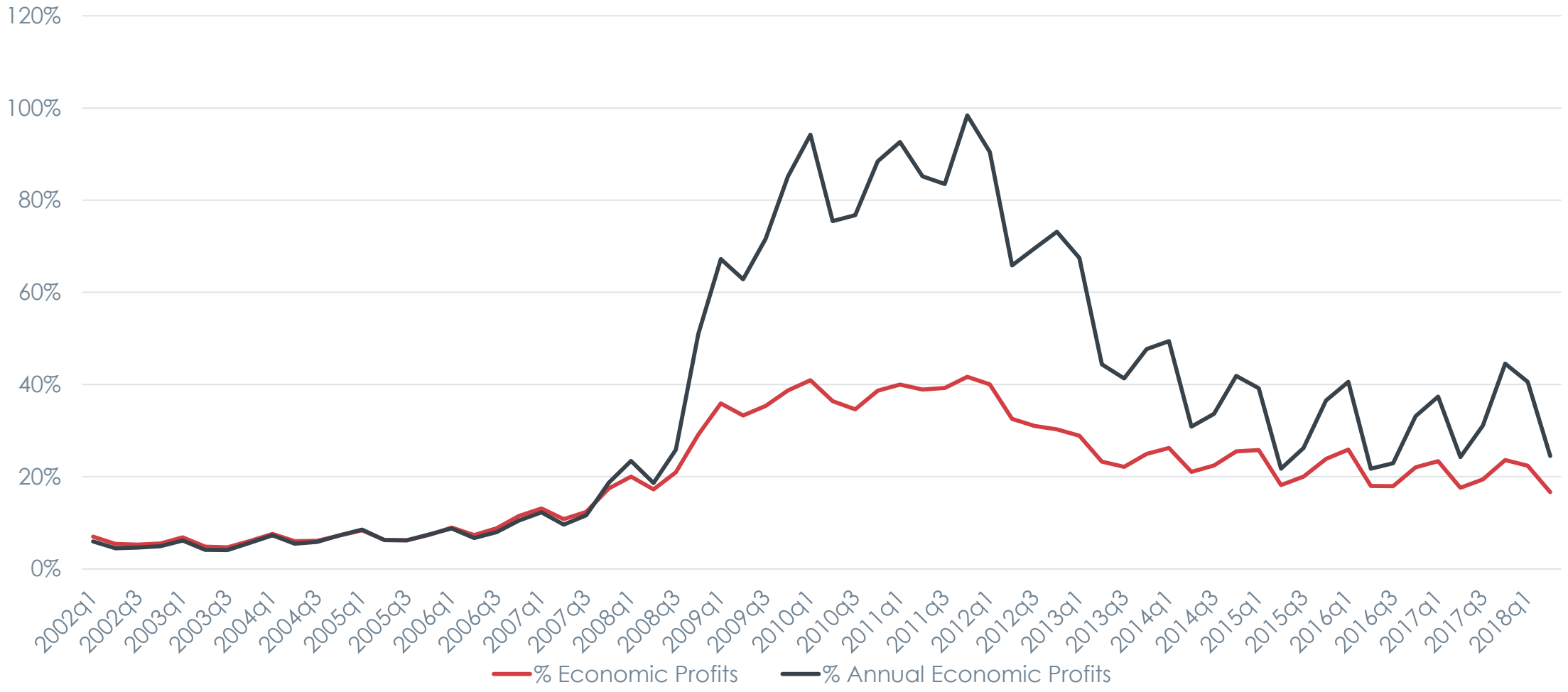
# Flipping Returns

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



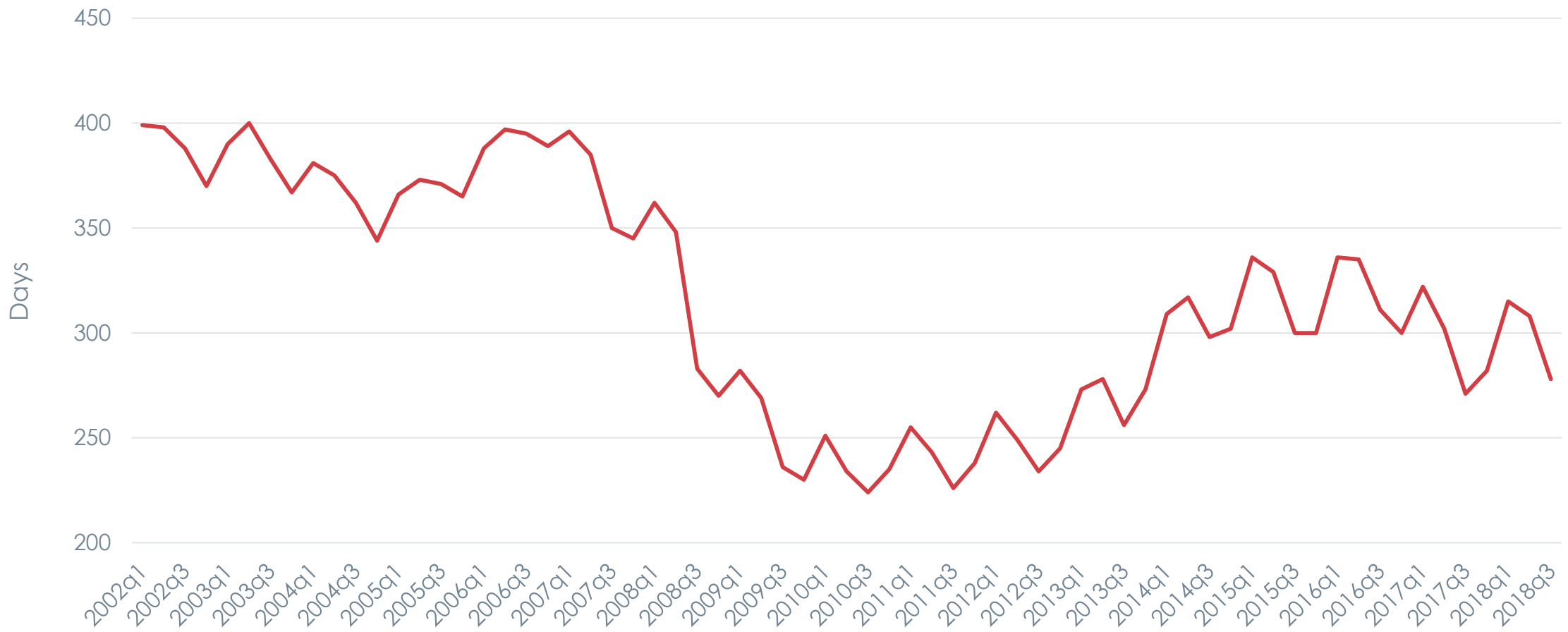
# Flipping Returns

## Flipping Returns: % Economic Returns vs. % Annualized Economic Returns



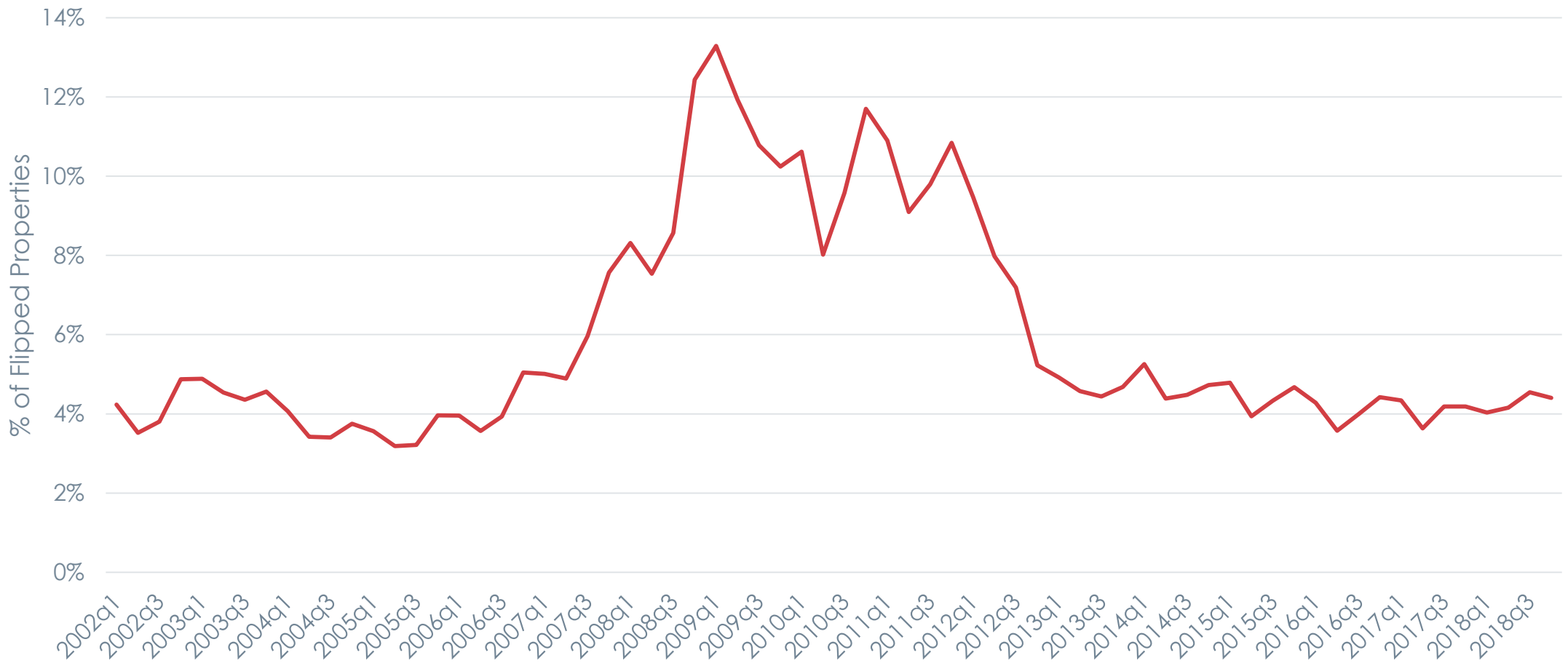
# Flipping Rates and Characteristics

## Flipping Characteristics: Days Between Flips Fell Sharply During Recession



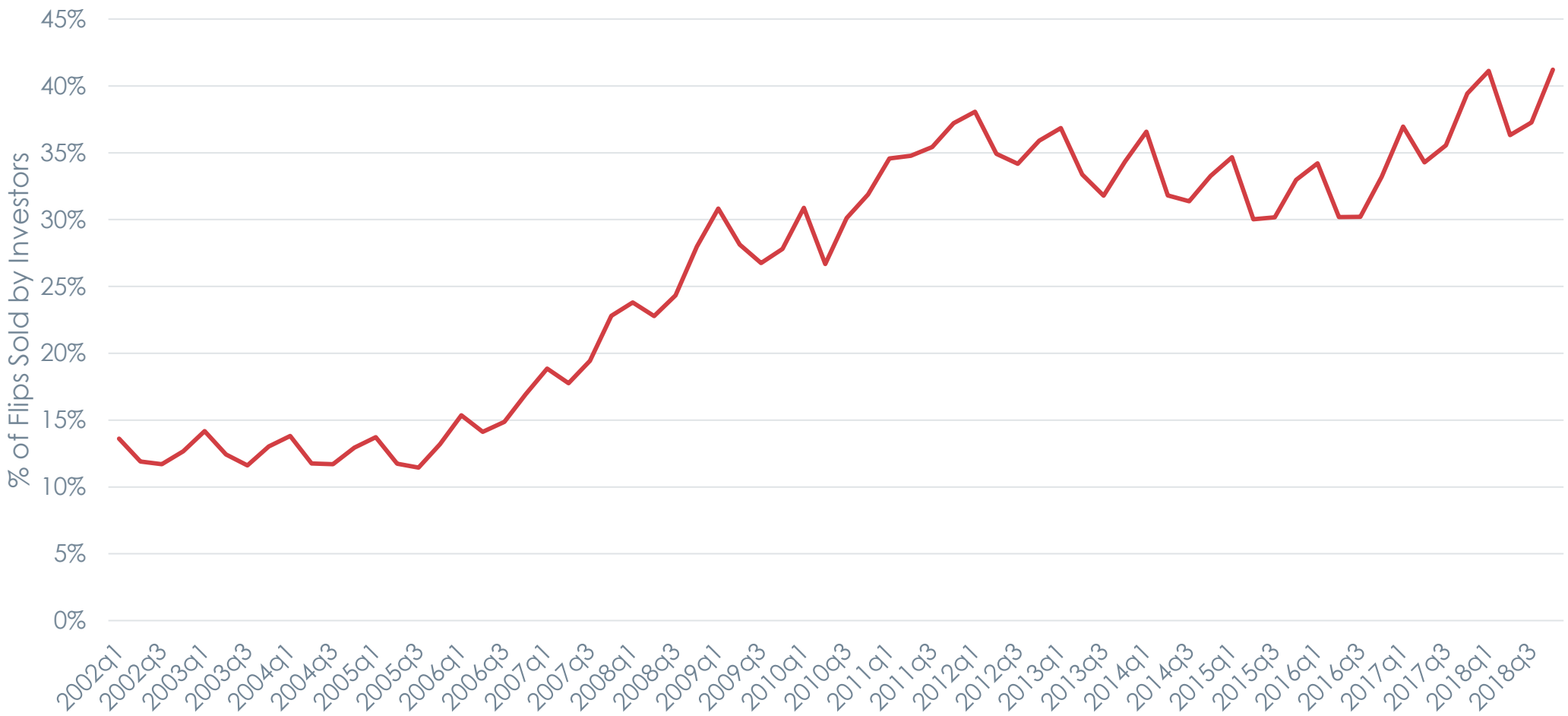
# Flipping Rates and Characteristics

## 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.

Granger causality Wald tests

| Equation | Excluded | chi2 | df | Prob > chi2 |
|---|---|---|---|---|
| flip2year | hpi | 47.255 | 4 | 0.000 |
| flip2year | ALL | 47.255 | 4 | 0.000 |
| hpi | flip2year | 20.688 | 4 | 0.000 |
| hpi | ALL | 20.688 | 4 | 0.000 |

# Granger Causality

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

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Granger causality Wald tests

| Equation | Excluded | chi2 | df | Prob > chi2 |
|---|---|---|---|---|
| flip_change | hpi_change | 17.133 | 4 | 0.002 |
| flip_change | ALL | 17.133 | 4 | 0.002 |
| hpi_change | flip_change | 20.064 | 4 | 0.000 |
| hpi_change | ALL | 20.064 | 4 | 0.000 |

# 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?