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

Ralph B. McLaughlin, CoreLogic*[†]
Arthur Jobe, CoreLogic

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*Corresponding Author

Ralph B. McLaughlin
Deputy Chief Economist
Office of the Chief Economist
CoreLogic, Inc.
8330 Boone Blvd., Ste 650
Vienna, VA 22182

[†] The views expressed in the paper are those of the authors and do not necessarily reflect the position of CoreLogic or its management.

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Abstract

This paper expands upon the seminal work on home flipping by Depken, Hollans, and Swidler (2009) by using a national – instead of regional – data set of residential real estate transactions. We first analyze the characteristics of flipped homes and compare them to non-flipped homes. We then estimate the quarterly evolution of flipping activity between 2002 and 2018. Last, we calculate the temporal variation in economic profits to flipping as well as perform Granger-causality tests between changes in house price and flipping activity. Our findings are four-fold: (1) the Great Recession was inflection point of types of homes flipped, with flipped homes tending to be larger, more expensive, and newer before the recession but trending towards smaller, lower-priced, and older than non-flipped home afterwards; (2) the flipping rate varies over our sample period from near zero in some markets at the beginning of the period to as high as 19.6 percent of all home sales in Fort Lauderdale in 2005Q1; (3) annualized economic profits from property flipping ranged from 4.3 percent at the beginning of our study period to a high of 91.2 percent during 2011Q4, and (4) both house price increases and increases in flipping activity Granger-cause each other.

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House flipping is perhaps one of the least studied economic activities relative to its prevalence amongst popular culture. Numerous television shows, self-help seminars, and even road-side advertisements on house flipping pervade American society. Aside from its prominence in popular culture, there has been some empirical evidence that flipping may be associated with house price bubbles (English, 2005; Shiller, 2006; Wheaton and Nechayev, 2007; Goodman and Thibodeau, 2008; Depken, Hollans, and Swidler, 2009; Bayer, Geissler, Mangum, and Roberts (2011); Lee and Choi, 2011), and as such, is ripe for both broad and deep empirical examination. However, little is known, either academically or otherwise, about how prevalent and profitable the activity is across the U.S. landscape and over time. This paper seeks to answer some of these fundamental questions in an attempt provide a more thorough understanding of what, up until now, has been an empirically elusive economic activity.

We do this by building upon the foundation set by Depken, Hollans, and Swidler (2009) by using a national – instead of regional – data set of residential real estate transactions to study house flipping. We first analyze the characteristics of flipped homes and compare them to non-flipped homes, both nationally and for the largest 100 metropolitan areas. For the same geographic levels, we then estimate the quarterly evolution of flipping activity between 2002 and 2018. Last, we calculate both the spatial and temporal variation in economic profits to flipping as well as conduct Granger-causality tests between house price change and flipping activity.
Our findings are four-fold: (1) the Great Recession was inflection point of types of homes flipped, with flipped homes tending to be larger, more expensive, and newer before the recession but trending towards smaller, lower-priced, and older than non-flipped home afterwards; (2) the flipping rate varies over our sample period from near zero in some markets at the beginning of

the period to as high as 19.6 percent of all home sales in Fort Lauderdale in 2005Q1; (3) annualized economic profits from property flipping ranged from 4.3 percent at the beginning of our study period to a high of 91.2 percent during 2011Q4, and (4) both house price increases and increases in flipping activity Granger-cause each other.

Our paper is structured as follows. Section two briefly reviews the scholarly and industry literature on home flipping and sets out the definition of flipping used in this paper. Section three describes the data set used in the analysis and presents estimates of flipping, presents descriptive statistics on flipped homes compared to non-flipped homes, and trends flipping rates over time and space. Section four estimates both nominal and economic returns to flipping, and section five concludes.

2. The Literature on Home Flipping

There is a small but growing body of both scholarly and industry literature on home flipping in the United States, and it can be split into two types; (1) those conducted by academic researchers that are thorough and detailed, but limited in geographic and temporal scale, and (2) those written by industry professionals that are parsimonious and brief, but extensive in geographic and temporal scale. As such, we bifurcate this brief literature review along these two tracts, and set a stage for producing an analysis that bridges the two.

The flagship study from the academic literature is Depken, Hollans, and Swidler's (2009; herein abbreviated as DHS) analysis of house flipping in Las Vegas, which we expand on in this paper by using a data set that has much broader geographic and temporal range. They measure flipping activity as the share of homes sales in a given quarter that were also sold within the previous two years based on the U.S. Internal Revenue Service (IRS) guidelines that give owner-

occupiers capital gains tax relief after having lived in their property for at least two years. DHS analyze flipping activity as a share of home sales from the mid-1990s up to the housing bubble burst of 2007, compare the characteristics of flipped properties to non-flipped properties, and calculate the nominal and economic profits of flips. They find that flips, on average, are cheaper and smaller than non-flipped properties, that flipping rates vary from 3.4 percent to22 percent during their sample period, that the share of homes sales comprised of flips tends to rise with prices, and that annualized economic profits vary from 0 percent in the late 1990's to near 20 percent in 2006.

Just two years after the DHS study, two independent but similar studies published by Bayer, Geissler, Mangum, and Roberts (2011, referred to hereafter as BGMR) and Lee and Choi (2011; referred to hereafter as LC) conducted a similar analysis of home flipping in the Los Angeles and Chicago metropolitan areas between 1988-2009 and 1995-2007, respectively, and both use a similar two-year definition of flips as DHS. Both studies were more focused on the behavior of repeat flippers (investors) in the market place, rather than just on the level of flipping activities and proceeds like DHS's analysis. Nevertheless, their descriptive statistics on flipping mirror that of DHS: BGMR finds the share of homes purchased by serial flippers in Los Angeles peaked at around 15 percent in 2006, which is four times higher than in the prior decade, with most of the increase due to less experienced flippers; and LC found that home flipping ranged from a high of 21.6 percent of all home sales in 2005 to a low of 5.5 percent in 2010, and that short-term flippers – those that held properties for under two years – had higher but more volatile returns during the study period. They also find evidence that increased flipping activity may indeed increases home prices in future time periods.

While intricate and thorough, these academic studies are limited to analyses of individual metropolitan areas. To date, no known scholarly studies have examined flipping at a national level or conducted inter-metropolitan comparisons of flipping activity and returns. This is perhaps due to the barriers associated with acquiring residential transaction records. Though theoretically freely and publicly available, residential transactions are practically difficult and expensive to acquire. Because these data are compiled by county recorder's offices, acquisition requires extensive outreach to the over 3,000 U.S. counties in the U.S. that record deed transactions. In addition, the format of such data is non-standardized, which makes cross-county comparison difficult and time-consuming. Because of these challenges, private sector firms have emerged to collate, standardize, and resell these records for industry use. Examples of such firms include Attom Data Solutions, Black Knight, Inc., CoreLogic, Inc, and First American Financial Corporation.

To date, just three studies have used national-level data sets to examine home flipping in the U.S. and across select housing markets, and all come from private firms that resell or publish property transaction data. Unlike DHS, each of these studies define flipping rates as the share of home sales in a given period that also sold within the past 12-months. They justify using using 12-months because it is the threshold at which the IRS applies either short-term (less than 12-month) or long-term capital gains (12 months or more). McLaughlin (2017, Trulia), He (2018, CoreLogic), and Blomquist (2018, Attom) studies are mostly agreeable in their estimates of national and metro-level flipping rates. McLaughlin (2017) excludes distressed properties in his measure of flipping since his goal was to estimate the relationship between prices and flipping in a relatively normal, non-distressed housing market. He finds that flipping rates vary from over eight percent in 2006 to a low of under four percent during the housing bust. He's (2016)

estimates and definitions are similar and he finds flipping rates vary from a little over eight percent in late 2005 to just over four percent in early 2008. Blomquist's(2018) estimates are slightly larger than McLaughlin and He's, with an estimated high share of around nine percent in 2006 to a low of about five percent in 2014, perhaps due to his exclusion of non-arm's length transactions in his measure of flipping rates.

In our analysis, we use the academic definition of a home flip as being a sold property in a given quarter that has sold at least once within the previous 24 months. We choose this for two reasons. First, we arbitrarily assume that most true house flippers are not intending to be owner-occupiers so any flips occurring over a two-year period do not reflect a professional time-frame for returns on a flip. Second, we assume that a 12-month period for flipping is too restrictive, especially for flippers who take on large projects the require major renovations, such as foundation repair or replacement, room addition, construction of an additional room or unit, and/or other major repairs such as those to electrical or plumbing systems. In addition to the two-year definition of flip, we also apply a few other restrictions to measuring a flip. First, we include non-arm's length transactions in a flip if it was on the "buy side" of flip but not on the "sell side," i.e., a flipper buys a distressed property but sells it as an arm's length transaction. Second, we include non-arm's length transactions in the pool of total transactions since they also represent the pool of property transactions that could be acquired by flippers to carry out a flip. And third, we exclude any property we identify as new construction through recognized names of homebuilders, as well as property-level year built, and year sold information. Though it is possible that some flippers speculate on new construction, especially over a longer-time period, under construction or newly constructed properties tend to see their deeds exchanged much more frequently than existing homes, likely as the property changes hands from developers, to home

builders, to holding companies, and ultimately to end buyers. As a result, including new construction as flips greatly risks over estimating the share of "true" flips conducted by investors, even if some legitimate flips are lost in the measure.

3. Data Set and Descriptive Statistics on Home Flipping

In this paper, we leverage CoreLogic's national level data set on housing transactions between 2000 and 2018. While the data set includes home sales transactions for the entire U.S., we filter transactions to those only in the one hundred largest metropolitan areas or metropolitan divisions, when available. For measures of flipping volume and share of transactions, we also restrict our data set to metro areas that have at least 250 transactions and 10 flips per quarter. We do this because of temporal variations in the availability of transaction data at the county level. In the full data set over the sample period, some counties report substantial increases in the number of transactions over time. To avoid misinterpreting national changes in flips that might be due to lapses or increases in reported transaction data, we apply these metro-level population and transaction filters. This will help ensure that changes in the share of properties flipped, as well as their characteristics, are due to actual changes in market behavior, rather than the mix of counties reporting data in any given time-period. After applying these filters, our data set consists of 57,545,608 transactions between 2002Q1 and 2018Q3, with 4,844,380 of these transactions being properties that sold at twice within a two-year period (this includes a capture period that extends to January 1, 2000 so that two-year flips could be calculated for transactions in 2002Q1).

Figure 1 shows that the share of flips nationally ranges from a high of 11.3 percent in 2006Q1 to a low of 4.3 percent in 2009Q2. The total of volume of flipped properties peaked in 2005Q2 at 151,329 and hit a low of 30,225 in 2009Q1. Table 1 shows that at the metro level,

Fort Lauderdale, Tampa, and Los Angeles had the largest share of home sales comprised of flips between 2002Q1 and 2018Q3, with flips of 12, 10.5, and 10.4 percent, respectively. Among the metros with the lowest flipping rate are San Antonio, Wichita, and El Paso with rates of 4.1, 4.5, and 4.5 percent, respectively.

Across metros, there is substantial temporal variation over our sample of 6,700 metro-quarters. Table 2Honolulu and Fort Lauderdale dominate the list of top 10 metro-quarters, taking the first eight spots with flips ranging from 17.1 to 19.6 percent; Ogden and Salt Lake City, UT round out the top 10 metro-quarter list, with a flip rate of 17 and 16.9 percent, respectively. Each of these top 10 metro-quarters were between 2004Q2 and 2008Q2. The top 10 list of markets with the lowest share of flipping activity is made up exclusively by New Orleans, with a flipping rate of zero to 1.9 percent between 2002Q1 and 2004Q3.

We also find that the characteristics of flipped properties vary over time and space. Table 3 shows that across all quarters at the national level between 2002Q1 and 2018Q3, flipped properties are less expensive[1], smaller, and older than non-flipped properties. On average, flipped properties are 8.7 percent less expensive ($187,403 vs. $205,261), 11.9 percent square feet (1,771 square feet vs. 2,011 square feet), and 59.4 percent older (25.8 years old vs. 16.2 years old). However, these differences vary substantially over time. For example, Figure 3 flips ranged from selling for a 17.3 % discount compared to non-flips in 2009Q4, to a 3.4 percent premium in 2004Q1;Figure 3 also shows the average size of flips compared to non-flips ranged from 16.4 percent smaller in 2005Q4 to just 5 percent smaller in 2009Q1; and Figure 4 shows the

[1] We calculate the price differential using the sell-side of a flip.

average age differential of flips ranged from 15 percent older in 2018Q3 to 78.9 percent older in 2005Q4.

While these price and characteristic differentials give us a parsimonious understanding of the types and sales prices of properties flipped, they tell us nothing about the returns to flipping experienced by home flippers. As such, we turn to estimating these returns in the following section.

4. Returns to Home Flipping in the United States

We follow the methods of estimating the returns to home flipping as demonstrated by DHS. In doing so, we estimate the nominal median percent returns to flipping, which is the percent difference between the buy price of a flip and the sell price of the flip, the buy discount and sell premium of homes flipped, which is the difference between the buy price of a flip and the sell price of the flip taking into account the opportunity costs of flipping by estimating what the property would have sold for if it was not part of a flip, the median economic percent returns to flipping, and the annualized percent economic returns to flipping that takes into account the time frame in which a property was bought and sold. We present our estimates for both our national sample as well as for the 100 largest metros in each quarter between 2002Q1 and 2018Q3.

Like the national flipping rate, we find substantial variation in the nominal percent returns from flipping over our study period. Figure 4 shows that returns range from a high of 35 percent in 2005Q3 to a low of -27 percent in 2009Q1. In general, returns to flipping were lowest during the Great Recession and peaked during the housing market bubble. Since the housing market began to stabilize in 2012 to the end of our study period in 2018, nominal percent profits grew from 0 percent to 29.8 percent.

To estimate to the economic returns to flipping, we employ a series of hedonic models based on the classic works of Rosen (1974) and Goodman (1978) and adapted to home flipping by DHS. The basic form of the model can be demonstrated as:

$$P_{i,q} = \alpha_q + \beta_q X_{i,q} + \gamma_q FB_{i,q} + \delta_q FS_{i,q} + \varepsilon_{i,q} \qquad (1)$$

where $P_{i,q}$ is the nominal sales price of property i in quarter q; X_i is a vector of house i's structural and property characteristics, including number of beds, baths, living square feet, lot size, garage space, age, property type, and zip code; $FB_{i,q}$ is an indicator variable equal to 1 of the i^{th} sale is the buy side flip in quarter q, otherwise set to 0; and $FS_{i,q}$ is an indicator variable equal to 1 of the i^{th} sale is the sell side flip in quarter q, otherwise set to 0. Like DHS, we assume the error term is normally distributed with a mean of 0 and variance of σ_ε^2. We also follow DHS in predicting nominal sales prices because doing so maintains a more straightforward interpretation of the estimates as compared to interpreting log estimates of elasticities.

The vector β is a set of coefficients of the nominal impact of a property's structural and locational characteristics on its selling price. Since we are focused on estimating the premiums and discounts that flippers experience on a property, *FB* and *FS* are of acute interest in this study. As such, the coefficients on γ and δ are of key variables since they represent the independent impact on house price due to it being either on the buy side or flip side of a transaction, respectively. We estimate equation (1) for each quarter between 2002Q1 and 2018Q3 for the nation and for each metro separately.

Nationally, our model shows decent fit across each quarter, with Figure 5 showing R^2 values ranging from a low of 66.8 percent in 2002Q2 to a high of 82.8 percent in 2017Q2. Coefficients on the square foot are statistically significant at the 95 percent confidence interval in every quarter of our national pooled panel, with estimates ranging from $53 per square foot

during the depths of the Great Recession in 2009Q2 to $151 in the 2017Q2. Coefficients on bathrooms are statistically significant in 66 of 67 quarters with values of an extra bathroom ranging from adding about $8,000 in value to a home in 2018Q1 to nearly $100,000 in 2016Q3. Coefficients on bedrooms are statistically significant in 63 of 67 quarters with values of an extra bedroom detracting just under $43,900 from a home's value in 2017Q1 to adding nearly $24,000 in 2016Q3. The negative coefficient on bedrooms in a hedonic model is not unusual and is also found in DHS's analysis. These results imply that homebuyers prefer more non-bedroom living space in a home than bedroom space. Coefficients on car space are statistically significant in 62 of 67 quarters with values of an extra garage parking spot adding $95 to a home's value in 2002Q1 to adding nearly $6,620 in 2017Q1. Lot size is significant in just 13 of 67 quarters, likely due to collinearity with square footage and garage size. Age is statistically significant in 62 of 67 quarters, with an additional year's age detracting $1,389 from a home's value in 2017Q1 to adding $138 in 2004Q1.

Since the purpose of our study is to estimate the returns to flipping the U.S. over time and space, we now turn more specifically to doing so by describing the results of the indicator variable coefficients on the buy and sell side of a flip for our national regressions. Figure 4 shows the buy and sell flip coefficient estimated for each quarter between 2002Q1 and 2018Q3. The indicator variable for the buy side of a flip provides an estimate of the average difference a flipping investor pays from the market value of X_{it}. More simply said, it is an estimate of the discount that a flipping investor pays when they buy a property for a flip compared to an otherwise identical property. As Figure 6 shows, the difference is always negative across our national sample and is statistically significant in each quarter's regression. The buy-side discount

ranges from a low of $10,517 in 2002Q2 to a high of $74,639 in 2018Q3. With 49 of 67 quarters falling between a $20,000 and $60,000 discount.

DHS hypothesize that the buy-side discount may present for a couple of reasons. First, flipping investors may have based their business model on an ability to identify property owners who might be willing to sell their property at a discount because they have already earned healthy capital gains. For example, an investor with a keen eye may be able to offer a cash purchase on a property to a long-time homeowner who has paid off their mortgage in exchange for a quick and guaranteed close. Secondly, some flipping investors may be able to identify properties with significant deferred maintenance that could be bought for a discount below what a similar property without deferred maintenance would sell for, perform the necessary maintenance for less than the discounted amount, and then resell the property at a profit equal to the difference between the discount and cost of the work. However, since we are currently unable to observe the costs of any work done on a flip in our data set, our estimated returns are always going the reflect the upper profit bounds of a flip.

The indicator variable for the sell side of a flip provides an estimate of the average difference in price an investor receives when selling a flipped home compared to an identical home that was not part of a flip. As Figure 4 shows, the difference is always positive across our national sample and is statistically significant in each quarter's regression. Unlike buy-side discounts, the sell-side premiums on flipped properties remained relative across out sample period, ranging from $4,904 in 2002Q4 to about $22,357 in 2008Q1, with 46 of 67 quarterly estimates falling between a $10,000 and $20,000 premium.

Taken together, these estimates of both the buy-side discounts and sell-side premiums suggest an aggregate change in the strategy of flippers over out study period. From 2002Q1

through 2006Q4, margins on both the buy side and sell side of a flip were relatively thin, suggesting that flippers were more likely speculating on market appreciation to earn profits than adding value to homes with deferred maintenance. However, since the onset of the Great Recession in 2007, flippers have increasingly been able to purchase properties at a discount, while premiums on their sales have remained relatively flat. This trend suggests that flippers' strategies changed from became less speculative on home price appreciation to more focused on identifying properties that were either distressed (foreclosure, short sale, REO, etc.) and/or that were with substantial deferred maintenance. In other words, flippers were more likely to have practiced price speculation before the housing market crash but afterwards they were more likely to add physical value (in the case of remedying deferred maintenance) or legal value (taking a property out of a claim-of-lien process) to a property. While we cannot observe the intentions of individual flippers, the aggregate trend suggests the industry move from more to less risky activity.

We also use these coefficients to calculate the economic returns to flipping for every home sale that was the sell-side of a flip in our data set. As noted above, we cannot observe the costs associated with any property improvements, nor can we observe the commission paid. As such, our estimates of economic profits represent the upper bound of returns to flipping. Aside from omitting these costs, we estimate the economic returns by considering the opportunity costs of holding property, which is the change in price otherwise identical non-flipped homes would have experienced during the same time period. For example, consider two identical single-family homes that are adjacent to one another. One house is bought and sold by a flipper over a one-year period with a nominal profit of $100,000, while the adjacent home was not flipped but

appreciated by $75,000 during the same time period. In this example, the opportunity costs of the flipper are $75,000 and the economic profit earned is $25,000.

Using coefficients from the hedonic regression model and observed characteristics of each flipped property in our data set, we can set the buy and sell side indicator variables to 0 to predict what a flipped home would have sold for had it not been a part of a flip. Subtracting this value from the price the investor paid for the property yields the buy side discount and subtracting the actual sell side sales price from the predicted sales price yields the sell side premium. Adding the discount and premium together and dividing by the sales price of the buy side of the flip will yield an estimate of the percent economic returns on a given flip. Figure 7 shows the median percent economic returns to home flipping in the United States from 2002Q1 – 2018Q3, which varies from a low of 4.8 percent in 2003Q3 to 41.1 percent in 2011 Q4. In general, economic profits were lowest during the run up to the Great Recession and highest during the foreclosure crisis. Since the bottom of the housing market in 2012, economic profits on flipping have stabilized to around 20 and 40 percent.

While these estimates profit a rough cut of the economic profits to home flipping in the U.S., they do not consider the length of time a flip has taken. This is important point when attempting to estimate a stable panel of returns, since the time it takes to flip homes make vary over time. To remedy this problem, we follow DHS and annualize the returns to each flip by applying equation (2) below,

$$r_a = (1 + r_t)^{(\frac{1}{t})} - 1 \qquad (2)$$

where the annualized economic profit a property, r_a, is the function of the economic profit of that property *r* and the time period, *t,* over which the property was flipped.

Figure 7 also shows the median annualized economic returns to flipping on the economic returns to flipping. At the beginning of our study period, economic returns closely follow annualized economic returns, suggesting little market distortion in the industry. However, as the foreclosure crisis emerged and the number of distressed homes on the market increased, so did the annualized returns. Figure 8 shows this was likely due to a decrease in the median number of elapsed days between the purchase and sale of flipped property during this time period, falling by over 100 days from 387 in 2007Q2 to 285 days by 2010Q4. Figure 9 also shows that the share of flips that involved investors purchasing non-arm's length properties during this time period increased from just under three percent flips in 2005Q3 to close to 10 percent of flips in 2010Q4, suggesting that flippers were able to buy properties at a substantial discount because of distress and then sell them at a profit more quickly than a traditional fix and flip property. After the foreclosure crisis began to ease in 2012, the share of flipped properties involving a distressed sale decreased back to between three and four percent.

Last, we follow in DHS's footsteps by testing for Granger Causality (Granger, 1969) between both house prices and flipping activity. While Granger Causality tests are not true test of causality, they do tell us about the predictive power of a variable X on future values of variable Y while also controlling for current values of Y. This test is also of importance for variables – such as house prices and flipping rates – that exhibit strong serial correlation over time.

Like DHS, we use four-quarter lags of our variables of interest in our Granger Causality tests. However, we depart from DHS by performing not one but two Granger Causality tests: one on house price changes and flipping rates (as performed by DHS), and another on house price changes on changes on flipping rates. We add the latter as we believe it is a better reflection of the role that house prices play in influencing flipping activity and vice versa. We hypothesize that, for

example, increases in the rate house price appreciation would entice more flippers to enter the market, and that as more flippers enter the market, future house price growth is likely to increase. Flippers increasingly entering a market could increase prices for two reasons. First, they represent additional demand on the buy-side of a flip, and as such, could push up prices as it represents increased competition in the marketplace with other investors and owner-occupiers looking to purchase properties. Second, if flippers are entering the market at higher rates, and some of the are adding value to the housing stock by remedying deferred maintenance or renovating, then prices will naturally be higher because of the additional value added to such properties.

As it turns out, both sets of Granger Causality tests show that not only can house price changes be used to forecast both the levels and change of flipping activity, but that higher levels and changes of flipping activity can also be used to forecast changes in house prices. In other words, these results suggest that house price appreciation leads to increases in flipping activity, which then recursively leads to additional increases in home prices, that again leads to further increases in home prices. Results from the Granger Causality tests are available from the author upon request.

5. Summary and Future Research on Flipping Activity

We have attempted in the paper to conduct the first known academic study on national-level home flipping in the U.S., basing much of our work on the groundbreaking study on home flipping carried out by Depken, Hollans, and Swidler (2007). Our work shows that the share of flips nationally ranges from a high of 11 percent in 2005Q1 to a low of 5 percent in 2010Q3. Like DHS' analysis of home flipping in Las Vegas, we also flipped properties nation-wide tend to be smaller, less expensive, and older, with flipped properties, on average, 5.9 percent less expensive, 12.6 percent smaller, and 59.2 percent older compared to non-flipped properties. We also find that

nominal returns on home flipping range from a loss of 27 percent in 2009Q1 to a gain of 35 percent in 2005Q3. Using an hedonic house price model to calculate economic returns to flipping that account for opportunity costs, we find that the economic returns to flipping ranged from 4.8 percent in 2003Q3 to 41.1 percent in 2011Q4. Adjusted for the holding time of flip, we find the annualized economic returns to flipping peaked drastically during the foreclosure crisis compared to non-annualized returns, likely because of faster turnaround times on flips (presumably because of foreclosure purchase and quick resale). Regardless of how we measure returns to flipping, they tended to be lowest just before and during the onset of the Great Recession and peaked just after the housing market bottomed out in 2012 and 2013. Last, we find a recursive national-level relationship between changes in house prices and flipping activity. House price changes Granger-Cause changes in flipping activity over a four-quarter lag period, and that changes in flipping activity Granger-Cause changes in home prices.

While the methodology and findings in our paper are high-level and rather parsimonious, there remains much opportunity for the academic work on flipping to expand into areas that might be of much broader interest to economists and housing policy makers. These opportunities lie in three different camps.

First, there is opportunity to explore and explain the geographic and temporal variation in home flipping among the nation's largest housing markets. For example, what metro-level factors explain the variation in flipping rates over space and time? What factors best explain the inter-metropolitan variation in flipping returns, also over space and time? Such work would be of acute interest to economic geographers and regional economists alike.

Second, and as mentioned in previous sections, our estimates represent the upper bound of home flipping returns since we cannot yet observe the actual transaction and renovation costs on

any given flip. The actual returns to flipping could vary substantially from our estimates when considering these costs, not only because these costs likely to vary across housing markets due to regional variation in labor, materials, and permitting costs, but also over time as the strategies of flippers ebbs and flows with economic conditions. Sources of such information could include Internal Revenue Service data on flippers' tax returns, building permits, real estate listings, and tax assessor data. Such work would likely be of interest to urban and real estate economists.

Last, there is ripe opportunity for analysis of how flipping activity might influence different subset of the housing market. Since flips, on average, tend to be less expensive, smaller, and older than non-flipped properties, there is potential that flippers may affect the housing markets of middle- and low-income homebuyers. While common discourse has focused anecdotally on flipper crowding out first time homebuyers, the theoretical effect is likely more ambiguous. This is because flippers may also improve dilapidated or distressed segments of the housing stock that may otherwise be unsuitable for most first-time homebuyers, and thus counterintuitively provide more supply for such buyers than the counterfactual. Such a question could be answered empirically through analysis of the share of inventory in a given submarket that flippers are active in, the price differential between the buy and sell side of the flip, and characteristics of buyers and respective financing on the sell side of a flip.

References

Bayer, P., Geissler, C., Mangum, K., & Roberts, J. W. (2011). *Speculators and middlemen: The strategy and performance of Investors in the Housing Market* (No. w16784). National Bureau of Economic Research.

Blomquist, D. (2017, December 8). 7 Habits of Highly Effective Home Flippers [Blog post]. Retrieved from https://www.attomdata.com/news/real-estate-investing/7-habits-highly-effective-home-flippers/

Depken, C. A., Hollans, H., & Swidler, S. (2009). An empirical analysis of residential property flipping. *The Journal of Real Estate Finance and Economics*, *39*(3), 248.

English, W. H. (2005). The impact of property flipping on single family detached home prices. Master of Science in Real Estate Thesis, University of Texas at Arlington, December.

Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society*, 424-438.

Goodman, A. C. (1978). Hedonic prices, price indices and housing markets. *Journal of urban economics*, *5*(4), 471-484.

Goodman, A. C., & Thibodeau, T. G. (2008). Where are the speculative bubbles in US housing markets?. *Journal of Housing Economics*, *17*(2), 117-137.

He, B. (2018, May 16). House Flipping Reaches a Post-Crash High Across the Nation [Blog post]. Retrieved from https://www.corelogic.com/blog/2018/05/house-flipping-reaches-a-post-crash-high-across-the-nation.aspx

Lee, J. M., & Choi, J. W. (2011). The role of house flippers in a boom and bust real estate market. *The Journal of Economic Asymmetries*, *8*(2), 91-109.

McLaughlin, R. (2015, January 29). Are We Past the Flipping Point? [Blog post]. Retrieved from https://www.trulia.com/research/flipping-point-jan2015/

Rosen, S. (1974). Hedonic prices and implicit markets: product differentiation in pure competition. *Journal of political economy*, *82*(1), 34-55.

Wheaton, W., & Nechayev, G. (2008). The 1998-2005 Housing "Bubble" and the current "Correction": What's Different This Time? *Journal of real Estate research*, *30*(1), 1-26.

Shiller, R. J. (2006). Long-term perspectives on the current boom in home prices. *The Economists' Voice*, *3*(4).

Tables

Table 1

Average Property Characteristics of Flipped and Non-Flipped Properties, 2002Q1 – 2018Q3

Property Type	Average Price	Average Square Feet	Average Age (Years)
Non-Flip	$211,656	1,980	16.5
Flip	$199,110	1,731	26.2
% Difference	-5.9%	-12.6%	59.2%

Note: Only properties with non-missing values of all variables used in the hedonic model were including in table calculations. Percent differences calculated as diff = (flip_value – non-flip_value)/non-flip_value.

Table 2

Metros with the Highest and Lowest Aggregate Flipping Rates, 2002Q1 – 2018Q3

Metros with Highest Rates	Flip Rate	Flip Count	Metros with Lowest Rates	Flip Rate	Flip Count
Fort Lauderdale, FL	12.0%	101,131	San Antonio, TX	4.1%	21,888
Tampa, FL	10.5%	142,791	Wichita, KS	4.5%	5,257
Los Angeles, CA	10.4%	171,669	El Paso, TX	4.5%	7,067
Honolulu, HI	10.4%	25,443	Raleigh, NC	4.5%	21,363
Philadelphia, PA	10.3%	53,023	Houston, TX	4.9%	82,727
West Palm Beach, FL	10.0%	69,432	Albuquerque, NM	5.1%	11,268
Phoenix, AZ	9.8%	210,723	Austin, TX	5.2%	33,045
Detroit, MI	9.7%	64,901	Pittsburgh, PA	5.4%	29,885
Memphis, TN-MS-AR	9.4%	37,874	Provo, UT	5.5%	8,436
Deltona, FL	9.3%	32,158	Greensboro, NC	5.6%	11,021

Note: Figures computed from a 1% trimmed sample of sales price.

Table 3

Metros-Quarters with the Highest and Lowest Flipping Rates, 2002Q1 – 2018Q3

Metros with Highest Rates	Quarter	Flip Rate	Metros with Lowest Rates	Quarter	Flip Rate
Honolulu, HI	2008Q2	19.6%	Stockton, CA	2008Q3	1.4%
Fort Lauderdale, FL	2005Q1	19.6%	Stockton, CA	2008Q4	1.4%
Honolulu, HI	2006Q2	19.5%	Birmingham, AL	2010Q3	1.5%
Honolulu, HI	2005Q2	19.0%	Stockton, CA	2008Q1	1.5%
Fort Lauderdale	2004Q4	18.3%	Stockton, CA	2008Q2	1.6%
Fort Lauderdale	2005Q2	17.9%	Stockton, CA	2009Q1	1.6%
Fort Lauderdale	2004Q2	17.6%	Provo, UT	2011Q1	1.7%
Honolulu, HI	2005Q1	17.0%	Wichita, KS	2005Q3	1.7%
Fort Lauderdale, FL	2004Q1	16.9%	Birmingham, AL	2010Q2	1.7%
Fort Lauderdale, FL	2004Q3	16.9%	Provo, UT	2010Q3	1.7%

Note: Figures computed from a 1% trimmed sample.

Figure 1: U.S. Flipping Rate, 2002Q1 – 2018Q3

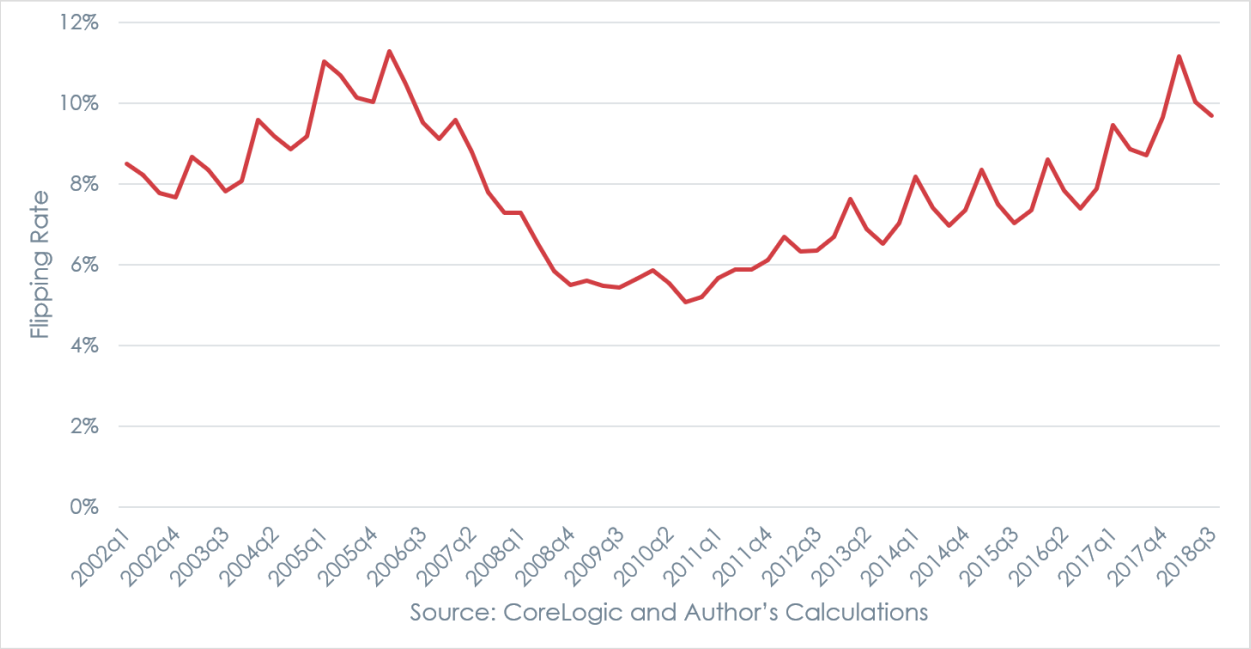

Figure 2: Average Price and Size Differences, Flips vs. Non-Flips, 2002Q1 – 2018Q3

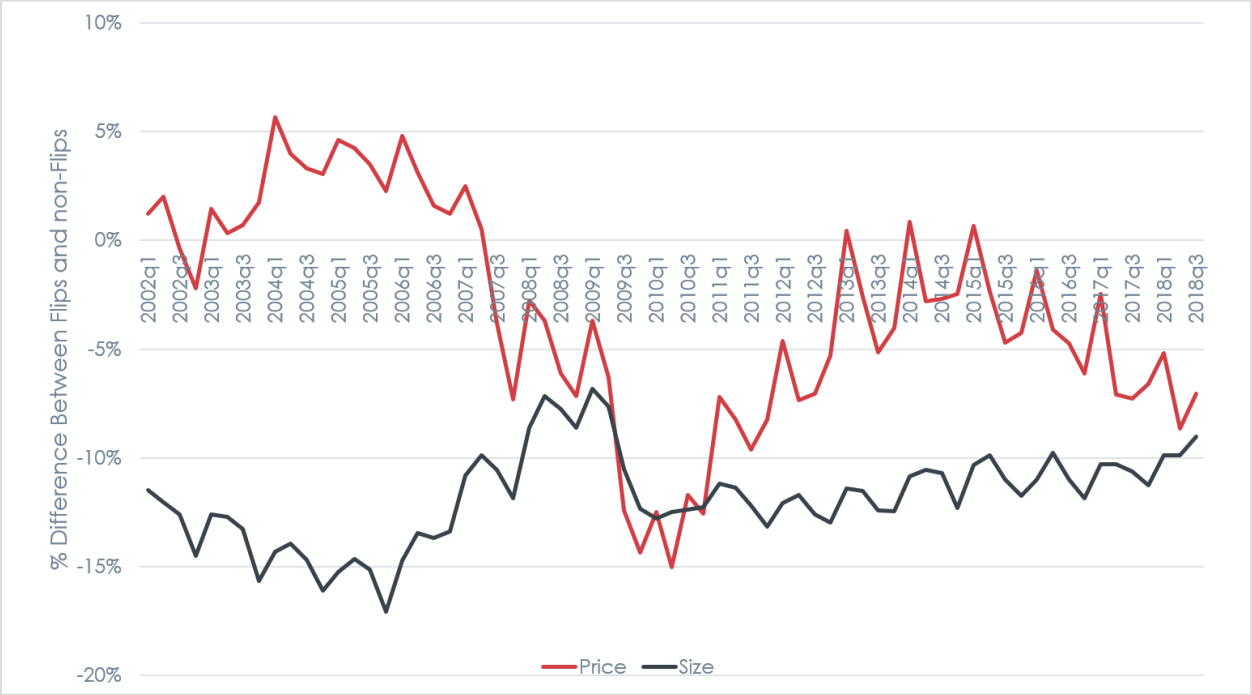

Figure 3: Average Age of Flips. Vs. Non-Flips, 2002Q1 – 2018Q3

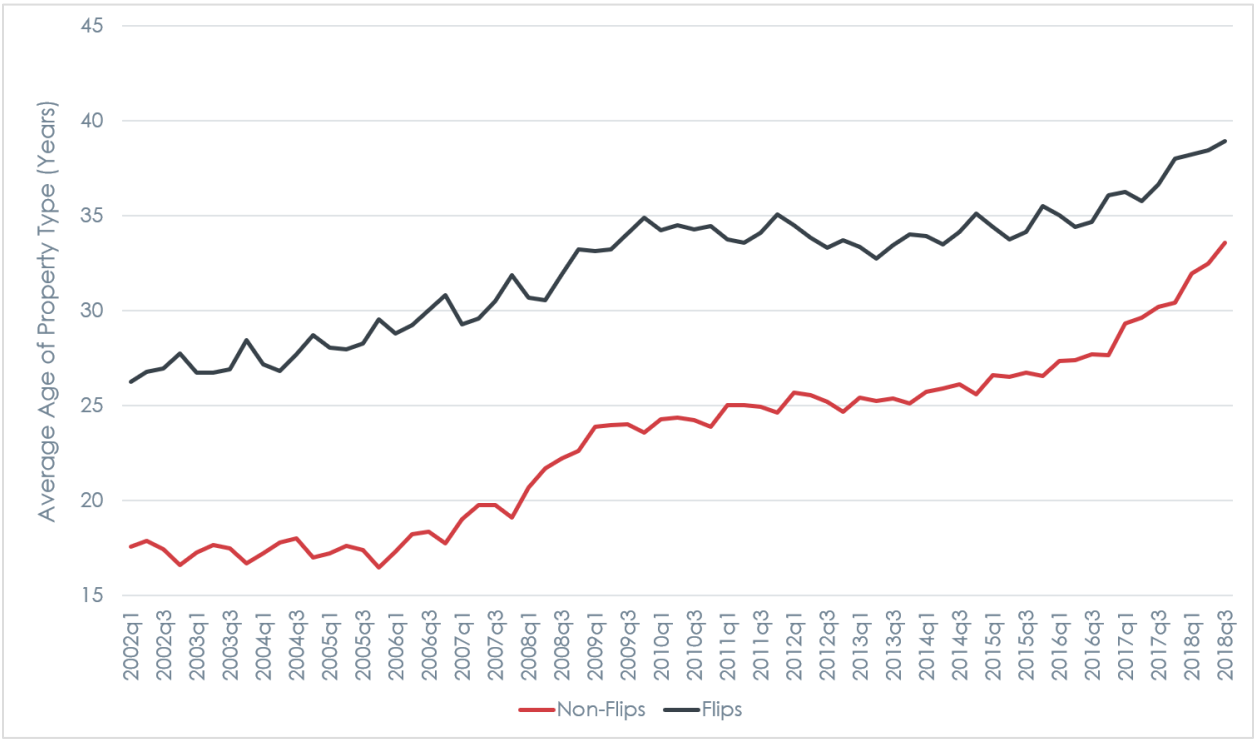

Figure 4: Percent Nominal Flipping Profit, 2002Q1 – 2018Q3

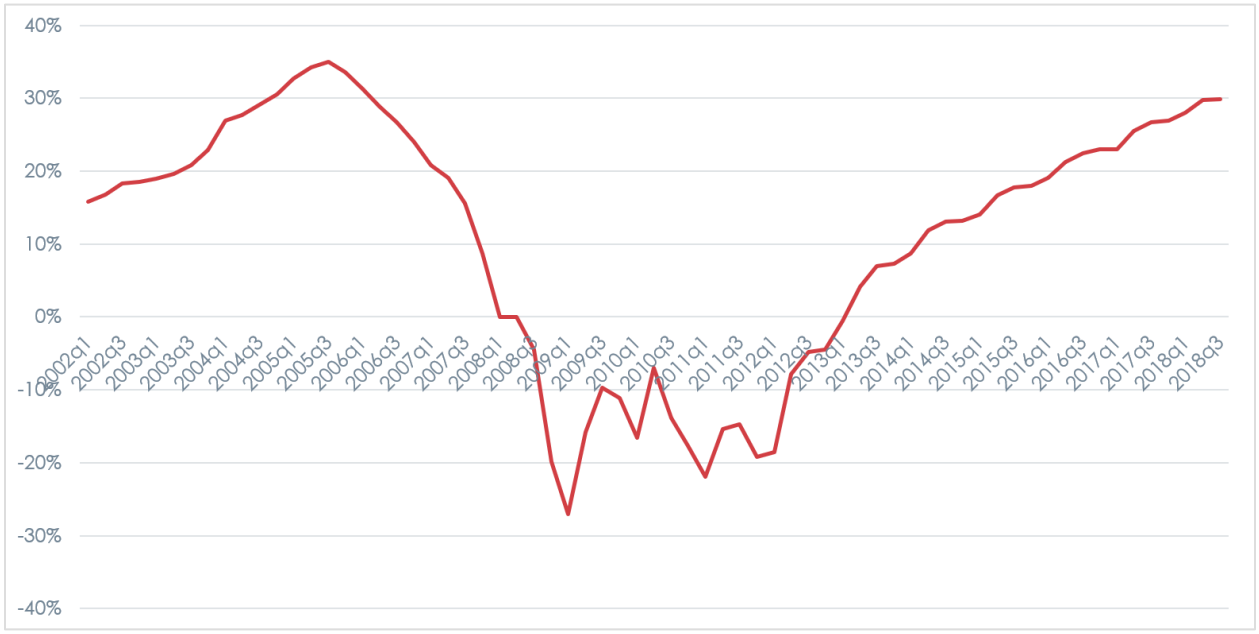

Figure 5: R^2 Values for National Hedonic Models, 2002Q1 – 2018Q3

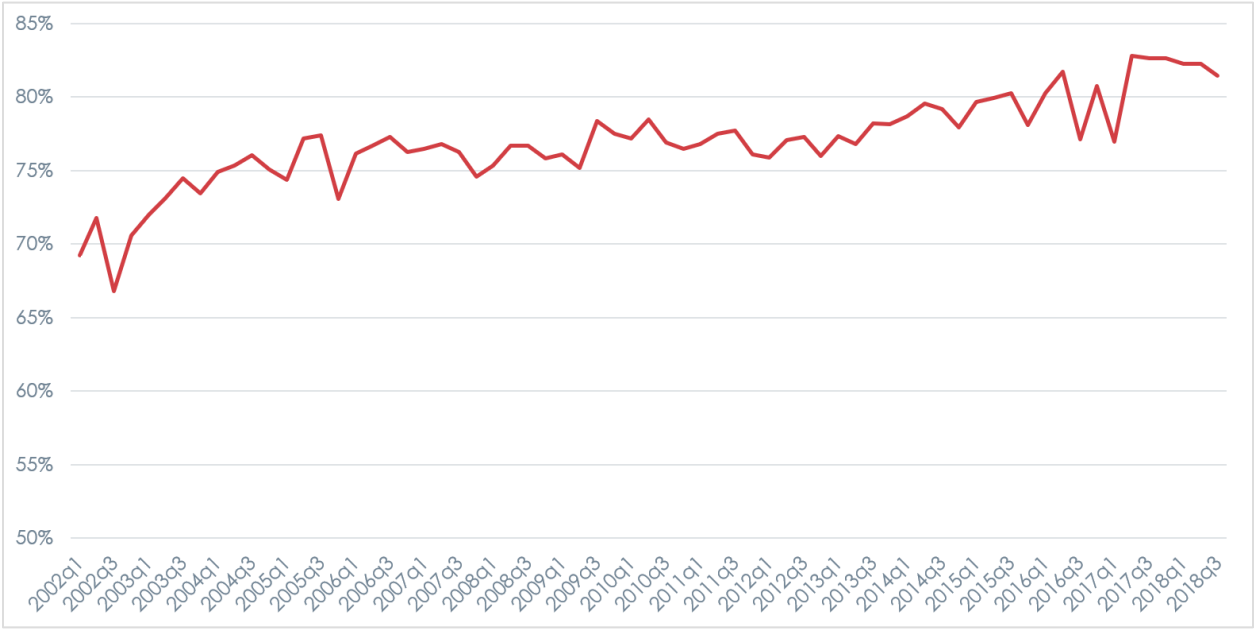

Figure 6: Buy Side Discounts and Sell Side Premiums of Flips, 2002Q1 – 2018Q3

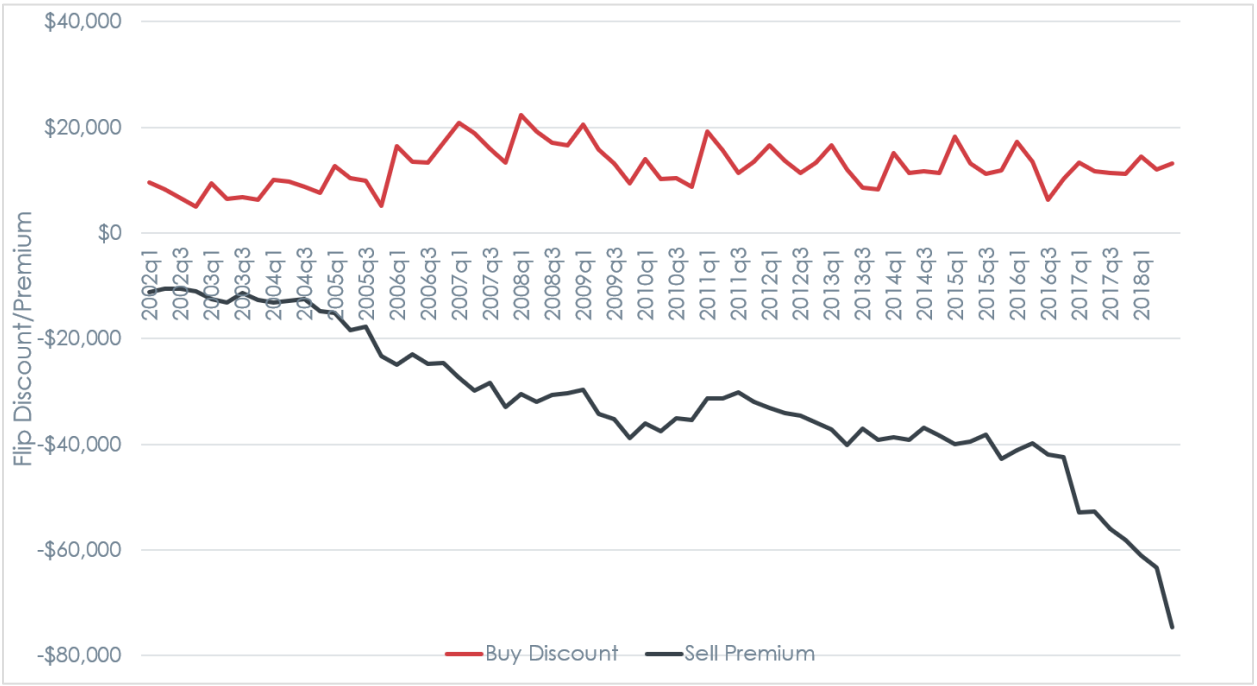

Figure 7: Economic and Annualized Economic Returns to Flipping, 2002Q1 – 2018Q3

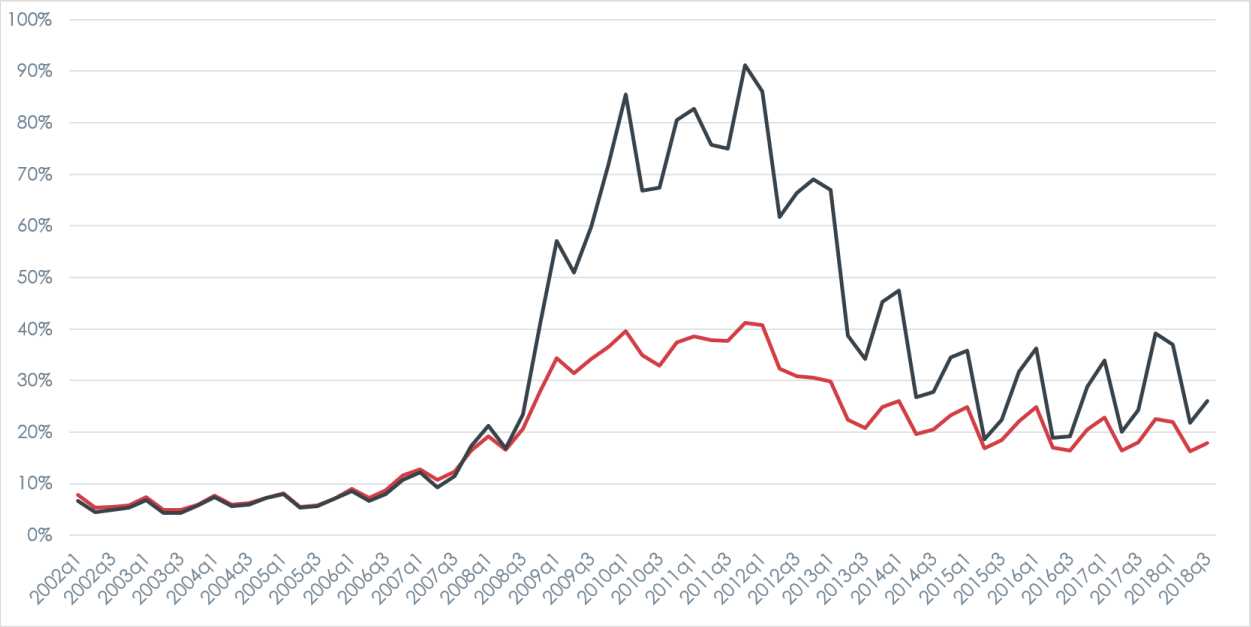

Figure 8: Median Days Duration of Flipped Properties, 2002Q1 – 2018Q3