2019

Housing Market Follows Elongated Supply Cycle

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ABSTRACT
The housing market has followed its own elongated supply cycle for more than two decades. Housing market supply-side indicators show that the massive overbuild of new homes during the housing boom set in motion an extended period of underbuild that is still ongoing nearly ten years after the recession ended. This paper proposes a new metric to gauge the health of the housing market from the perspective of supply, with an eye toward predicting future construction activity. The metric adds yearly overbuilds and subtracts underbuilds during the past two decades, indicating whether the housing market is in balance. The analysis shows that the housing overbuild during the boom period reached nearly two and a half million units, but the subsequent underbuild has more than eliminated the housing surplus, leaving the market in short supply today.

Keywords: home construction, household formation, housing boom, housing market

1 INTRODUCTION – MOTIVES FOR BUILDING NEW HOMES

The housing market can be viewed as two separate markets: (1) The current stock of housing, which is occupied by current homeowners and renters, comprises the existing home market. When the stock of homes is in balance with the need for homes, it should be the case that most households would be able to find housing (either to own or rent) from the existing housing stock. (2) Additions to the housing stock represents the market for new homes. New homes would be needed, for example, in an economy with an expanding population. This paper examines number (2), or the supply of new homes.

There are several reasons that the stock of homes would not match the need for homes, giving rise to increased or decreased demand and building of new homes. The main factor driving homebuilding is demographic, such as changes in the number of people forming new households. In addition, there may be small changes in the number of households that wish to have second homes. The housing stock may also be affected by other factors, such as demolitions, reconfigurations, damage or conversions (Schuetz and Murray, 2018). The resulting construction of new homes would be expected to drive the housing stock toward the level of the need for housing.

However, there is another important motive for building new homes that is not based solely on need. Homes not only offer the owner a place to live, but also serve as key investment assets (Weintraub, 2019). For instance, the stunning rise in home prices during the housing boom (1995-2005) accentuated this motive for owning a home. When prices were rising rapidly, people saw homes as a lucrative investment. As a result, the demand for homes far surpassed the current housing stock at the time. To satisfy the excess demand, homebuilders ramped up new home construction.

The outsize price gains set in motion a surge in home construction that, in turn, created a massive housing glut, which has restrained housing construction for the past decade. Too many homes and rising vacancies inevitably caused home prices to fall starting in 2005, and the investment motive for owning homes dried up. However, by that time, there already were far too many houses in existence relative to the need for housing.

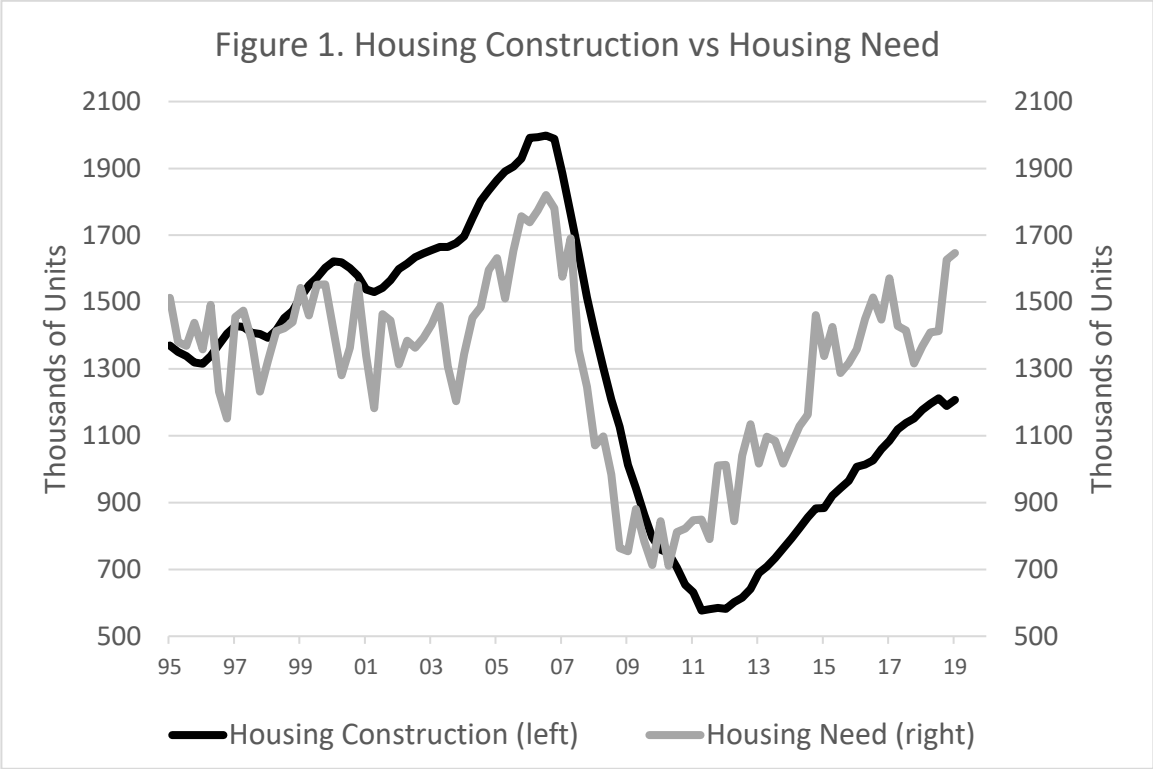
2 HOUSING NEED, CONSTRUCTION ACTIVITY, AND THE NEW HOUSING METRIC

This paper looks at the supply of homes since 1995 to gauge the health of the housing market and the state of the housing cycle. Specifically, this study compares the needs of households (as dictated by the pace of household formation) with new home construction over time. Conerly (2018) moves in this direction by comparing construction with population growth to say that the US continues to underbuild new homes. However, he stops short of using year-by-year comparisons to form a view of the relative supply (stock) and demand (need) for houses over time. This paper accumulates the excesses and shortages to determine the adjustment that would be needed to restore balance between the housing stock and housing need.

Housing Need (Demand). As Figure 1 shows, new housing need hovered at a pace of about 1.4 million units per year through 2003 (Census [1], 2019). Household formation was the main driver of how many additional housing units would be needed to satisfy new demand. In addition, home depletions (demolitions and damaged homes), changes in demand for second homes, reconfigurations, and conversions are assumed to have added about 250 thousand units per year to the overall housing need.

Household formation increased briefly around the end of the housing boom (2005-07), but that trend reversed quickly. The recession and subsequent weak economy caused household formation to crater from 2008 to 2011. Many people in their 20s and 30s either could not find work at all or found jobs with pay that was not commensurate with their education, so fewer could

afford to buy or rent homes than in the past. Instead, they continued to live with their parents (Fry, 2016). As a result, overall housing need dropped to about 850 thousand per year (see Figure 1). Since 2014, household formation has rebounded and new housing needs have reached normal levels of around 1.4 million per year.



Note: Data are reported quarterly at annual rates. Housing construction is measured by the number of new home completions.
Sources: Census Bureau [1], Housing Inventory, Census Bureau [2], Residential Construction.

Construction Activity (Supply). Housing construction soared during the housing boom, from 1995 to 2005. The pace of home construction peaked at 2 million per year at the height of the boom (Census [2], 2019), well beyond new housing needs. This overbuild can be seen in Figure 1 as the gap between housing construction and housing need.

This elevated pace of building did not last, however. New home construction plummeted by about 75 percent to less than 600 thousand per year by the end of 2010 (Census [2], 2019) during the housing bust. That drop was much steeper than the actual decline in household formation. The net result was a serious underbuild of new homes by 2011. This underbuild continues today despite a rebound in new home construction in recent years.

Figure 2 shows relative changes in new home need and housing construction, highlighting the overbuilds and underbuilds over the past two decades. These data match the average values for selected periods in Figures 1. The dates in Figure 2 roughly conform to the major shifts in housing need and construction.

Figure 2. Household Construction vs Housing Need

	1995-99	**2000-07**	**2008-11**	**2012-18**
Household Formation	1159	1229	608	1027
Other Factors	250	250	250	250
Total Housing Need	1409	1479	858	1277
Construction	1423	1725	869	921
Yearly Avg Overbuild	14	246	11	-356
Period Overbuild (Total)	70	1968	44	-2492
Cumulative Overbuild (Total)	70	2038	2082	-410

Notes: Data are annual averages unless noted. Period Overbuild (Total) represents the sum of the overbuilds during each period, and Cumulative Overbuild gives the sum at the end of each period. Negative values denote underbuilds.
Sources: Census [1], Housing Inventory, Census [2], Residential Construction.

New Housing Metric. This paper introduces a new excess housing supply metric. The metric can be used to assess the current state of the housing market by comparing the additions of new homes over time to the rise in housing needs. For example, the metric quantifies the excess supply that occurred during the boom period by adding the excess additions each year, and produces an estimate of the cumulative overbuild of houses during the boom relative to actual need. The size of that overbuild dictated how long and deep the subsequent underbuild would have to be during the housing bust for the housing market to recover fully.

The formula for this new metric S_t, signifying excess supply at time t, is

$$S_t = \sum (\text{Construction}(t) - \text{Need}(t))$$

where the sum is taken from an initial point prior to the housing boom to time t. For this study, the initial point is 1995, when the housing boom began.

The excess housing supply metric essentially takes the differences between housing construction and new home need each year and cumulates them over time. This metric quantifies the overbuild of houses during the housing boom and tracks the progress toward balance during the pullback in home construction from 2008 to 2011 and the rebound in construction since then.

3 RESULTS – FROM EXCESS SUPPLY TO SHORTAGE

As shown in the period overbuild line in Figure 2, housing need and construction were roughly in balance through 1999. However, during the period from 2000 to 2007, there were far too many homes completed relative to need. The last line in Figure 2 presents the new housing supply metric, S_i, representing the cumulative overbuild. This metric shows a massive glut of more than 2 million homes during that time.

The metric also shows that the housing market correction more than eliminated the glut during the period from 2012 to the present and actually generated a new shortage of homes. Since housing construction continues to undershoot housing needs, construction activity is likely to continue to increase along with home prices in coming years.

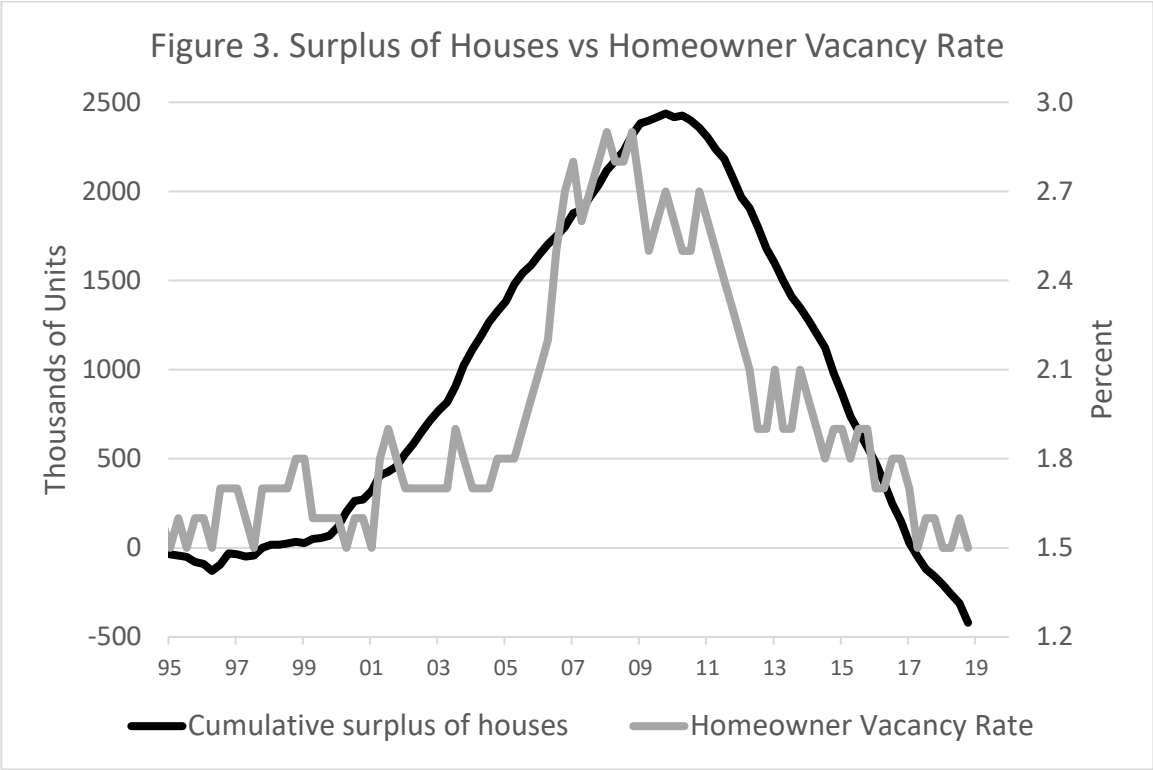
Figure 3 shows a year-by-year estimate of the size of the cumulative housing glut, as measured by S_i. According to this metric, the surplus reached nearly 2.5 million homes at the worst point of the housing crash in 2009. The excess supply continued to rise despite the drop off in construction because housing need fell by even more. The huge glut of homes led many analysts at the time to believe that home prices and the housing market would never improve (for example, Hough, 2012).

The size of the glut and the pullback in household formation dictated how much and for how long construction activity had to decline in order for the housing market to be restored to a healthy balance. For example, an underbuild of 500 thousand units per year would take five years to correct the 2.5 million cumulative overbuild. These conditions essentially set in motion the correction that has lasted for the entirety of the current expansion.

According to Figure 3, the new metric returned to neutral by 2017, which is consistent with the roughly 350 thousand unit annual average underbuild in the six years from the beginning of 2012. But the underbuild did not stop there. Even today, builders remain cautious about "working on spec" and bankers are stingy with loans to builders (Coy, 2019).

The running rate of construction continues to be well below the new housing need. As a result, each year the stock of houses has drifted lower relative to need. By the end of 2018, the new supply metric showed a 410 thousand unit shortage of houses, which seems to mirror the path of housing vacancies over time. The latest readings showing the shortage of homes corresponding to historically low vacancies (Census [3], 2019).

Based on the excess supply metric, home construction must increase further just to stop the new shortage of houses from becoming larger, let alone reestablishing balance in the housing market. In that case, home construction would have to rise well beyond need for the next several years. Otherwise, the shortage of homes will become even more acute.



Note: Data are reported quarterly at annual rates. **Sources:** Census Bureau [1], Inventory, Census Bureau [2], Residential Construction, and Census Bureau [3], Vacancy Rates.

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