

THE RELATIONSHIP BETWEEN U.S. GDP & MEDIAN NEW HOME SALE PRICE

Research Report #2

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Abstract

The initially purpose of the research was to determine if there was a causal relationship between declines in GDP and declines in Median New Homes Sales Prices. A causal relationship was not found, but there appears to be correlation between the two.

In most instances when one went down the other followed soon after. Between 1963 and 2017 there were six occurrences where they fell, four of which they moved together, and two where their shifts seem to not be connected.

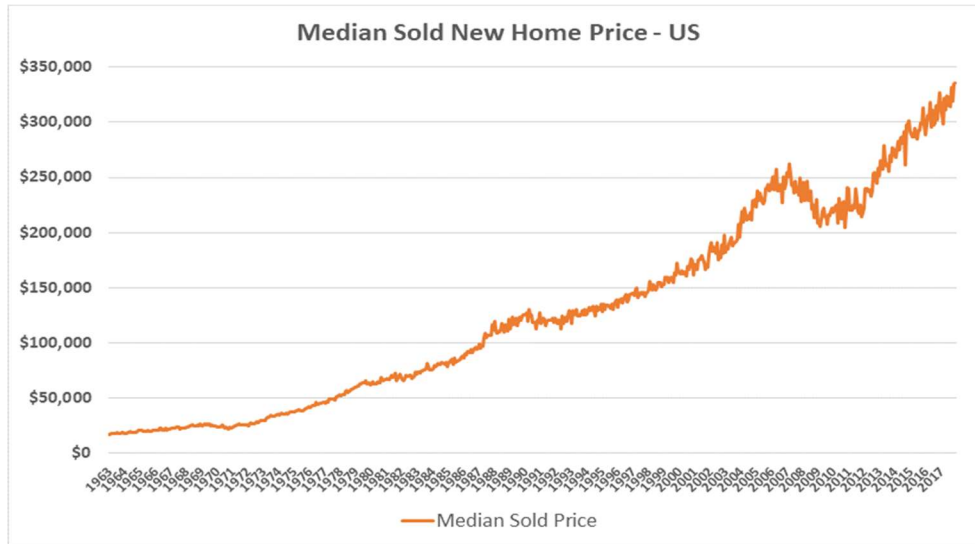
It could also not be said that one could be an indicator of the other. GDP leads New Home Prices in the declines of 1980 and 2001, while New Home Price leads declining GDP in 1988 and 2007.

Negative economic growth (GDP) occurs more frequently than declining new home prices, but it also bounces back quicker than the new homes market. And not every instance is correlated between the two.

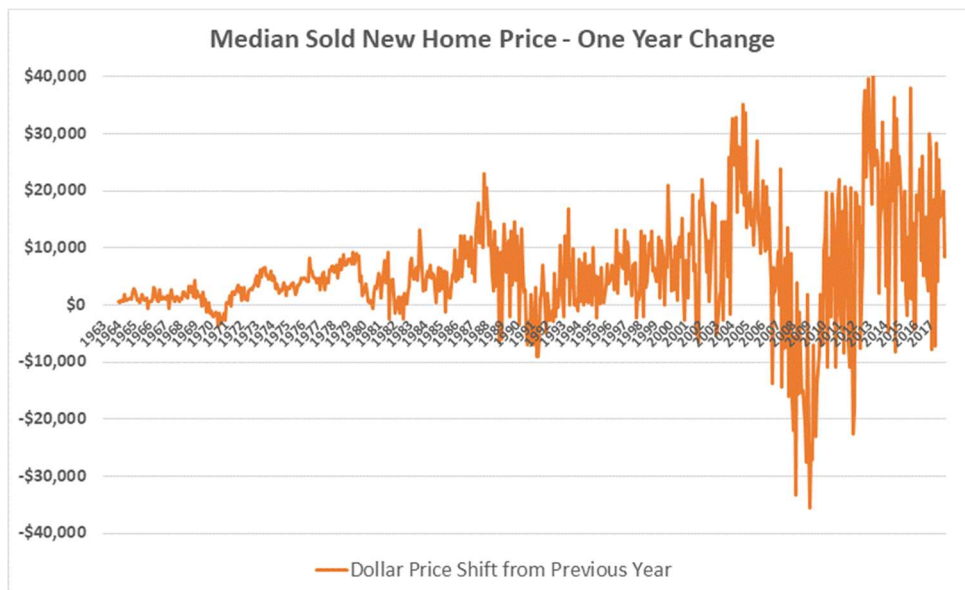
Introduction

Since the start of tracking median home prices in 1963 there has been a general upward trend in pricing across the U.S. Here we can see the increase in Median Sold Price from then to 2017.

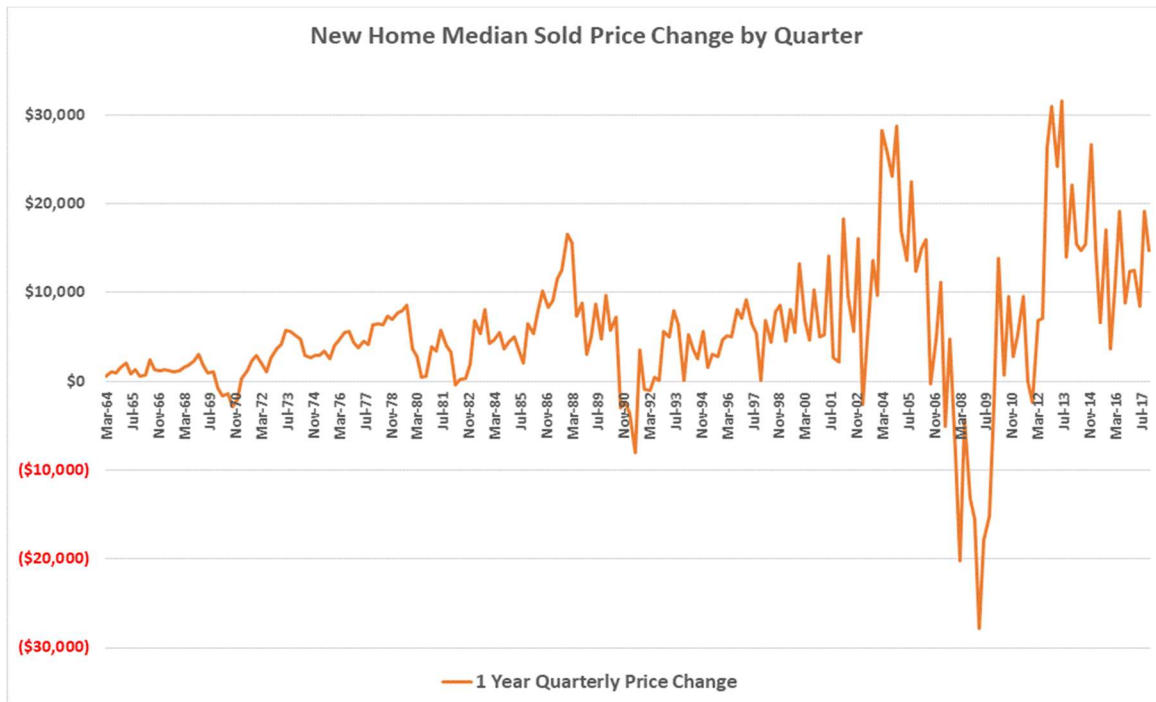
Prices have risen 1850% over that 54 years, or 5.6% per year on average (estimating the amount of increase year to year from the average the sum of the prices for the 12 months of the year as compared to the previous year).



To expose the real estate price declines and yet avoid concerns of seasonal differences we took Median Sold Price in the current month and subtracted from it the Median Price in the month one year before. This gave the positive or negative dollar value depending if we were higher or lower this year than the same month of the previous year. Here is how it displayed graphically.



To further remove outliers and even out the numbers and to more clearly see the trend we took the Median New Home Sale Prices (which is measured monthly) and averaged the three months of each quarter together and then compared it to the previous year. This also allowed us to easily compare it with GDP which is calculated quarterly. Here is how the averaged quarterly data shows.



Since 1963 there have been three periods where the Median New Home Sold Price growth was negative when compared with the same time period in the previous year. They occurred from 1969 to 1971, 1990 to 1991, and 2006 to 2011.

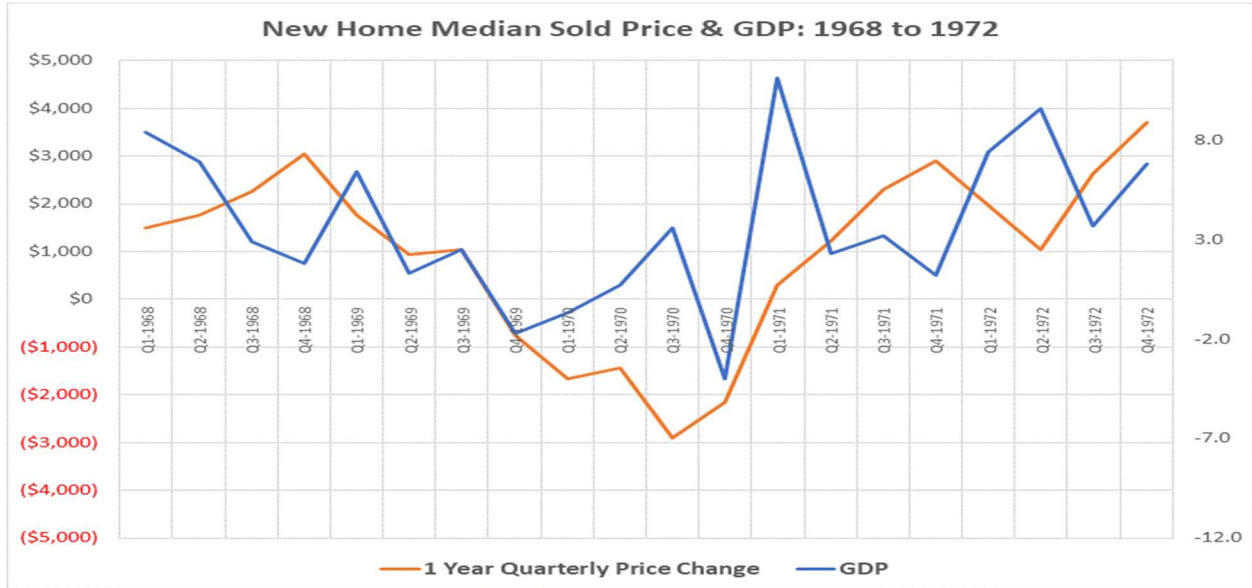
There are also two periods where the Median Sold Prices experienced short declines: 1982 and 2003.

Between 2013 to 2017 there was a period of pricing volatility where several months went negative but the price trend annually increased.

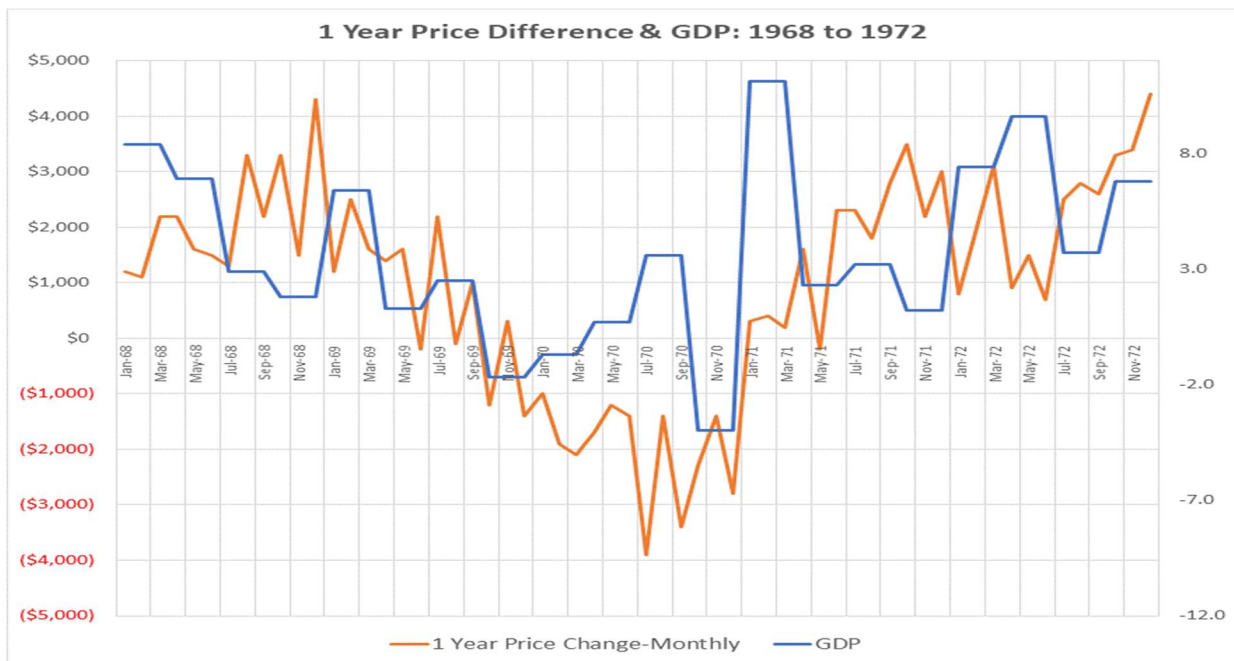
Lastly, between 1973 and 1975 economic output, GDP, dropped but New Home Sold Prices remained unaffected.

Comparison of NEW HOME MEDIAN SOLD PRICE data with GDP data

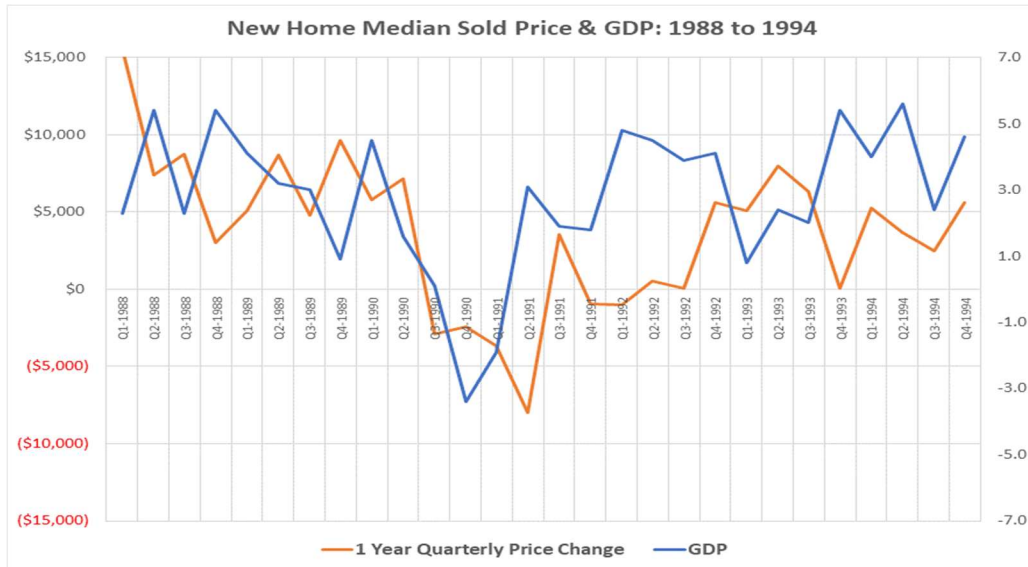
Median New Home Sales Prices declined on a year over year basis beginning from 1969 to 1971.



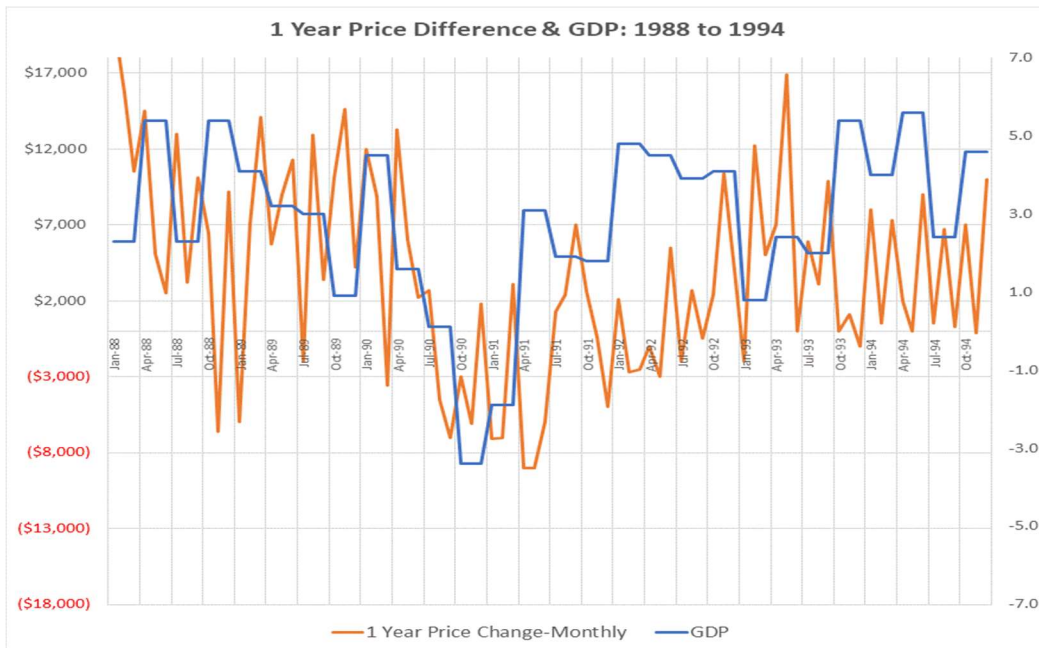
The first drop below \$0 occurred in the Median Price and was closely followed by GDP. While GDP bounced back the real estate prices did not go positive until Q1-1971 when it finally pulled up.



In 1990 both the GDP and Median Sold Price declined at the same time, then GDP pulled into the positive while it took almost two years before New Homes became positive.



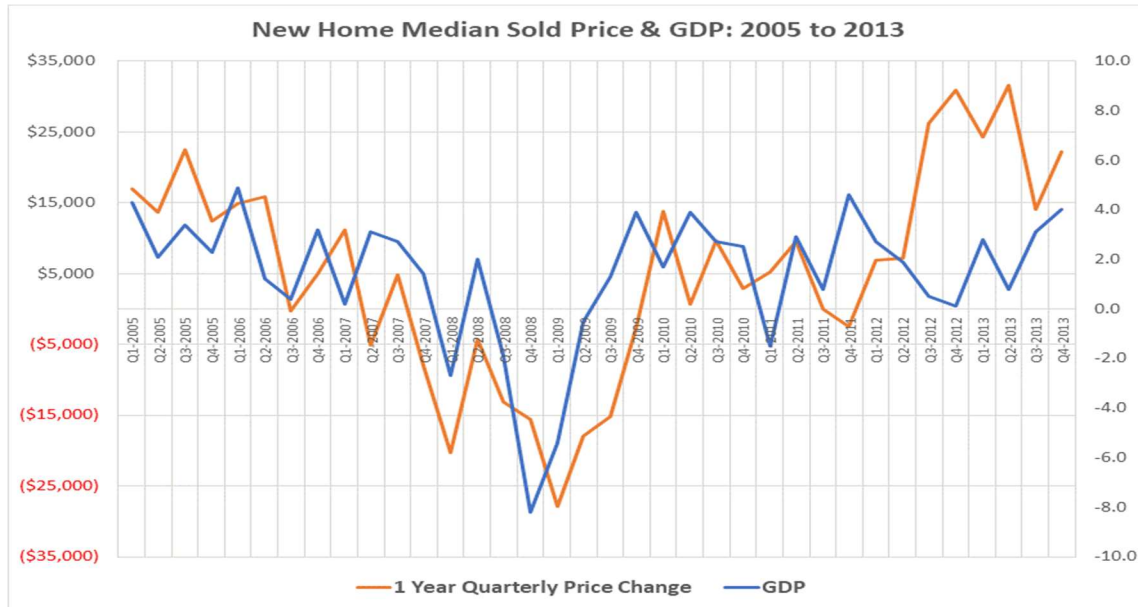
While the quarterly average New Home Sold Price stays above \$0 until Q3-1990 (above graph) individual months (graph below) began going negative in 1988, two years before. While GDP bounced back by 1991 real estate prices took until 1993.



This one seems to have been led by real estate and followed by the economy.

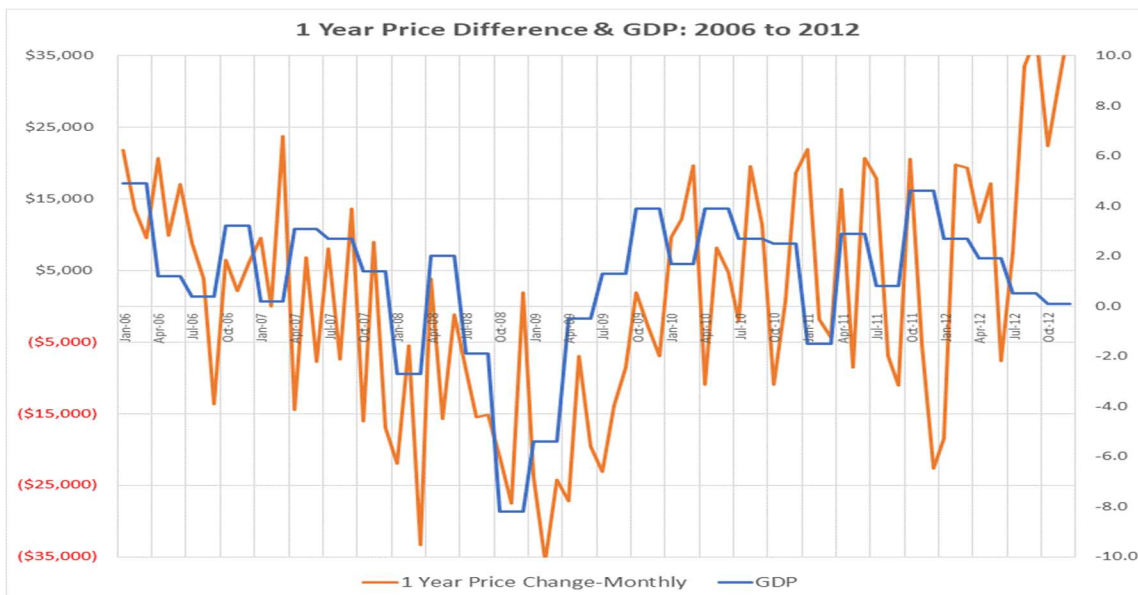
In 2007 when the market fell out of the housing industry and slid into the negative the Median New Home Sold Price declined before GDP declined; and it stayed there much longer.

It did not rise until the end of 2009.



Real estate led the way with negative year over year growth in September 2006, and it lead the market down in 2007 and 2008 and it wasn't until 2012 before it finally recovered.

During this turn GDP came in after real estate and led the way out.

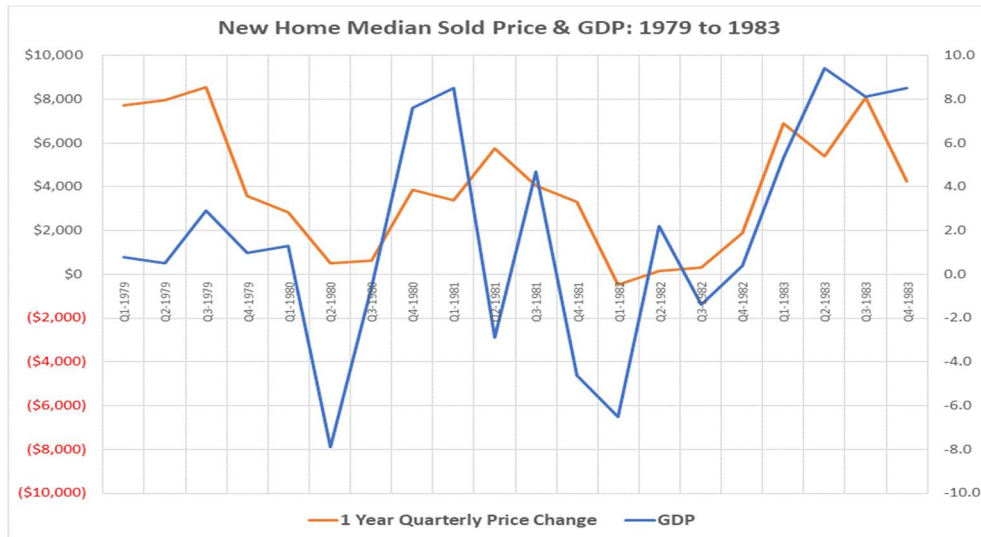


A couple of years later when the New Home Price dipped negative again at the end of 2011. This was a short bounce and it was preceded by the GDP going negative two quarters prior.

Smaller dips

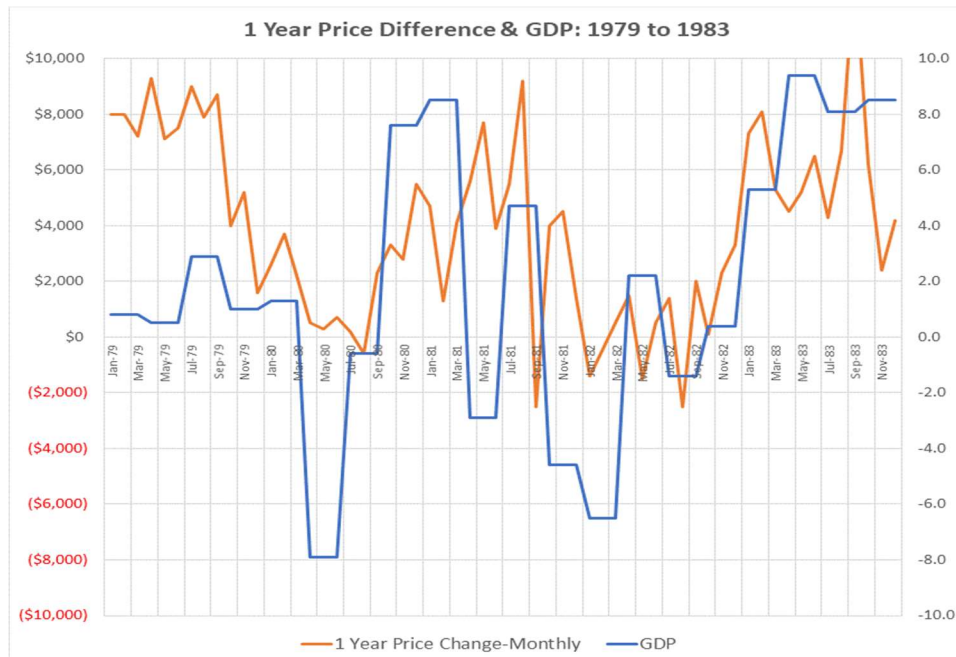
The other two instances where there was a quick housing price decline are in 1982 and in 2003.

The U.S. GDP bounces above and below 0% between 1980 and 1982 but the Median New Home Sold Price only dips below \$0 in Q1-1982.

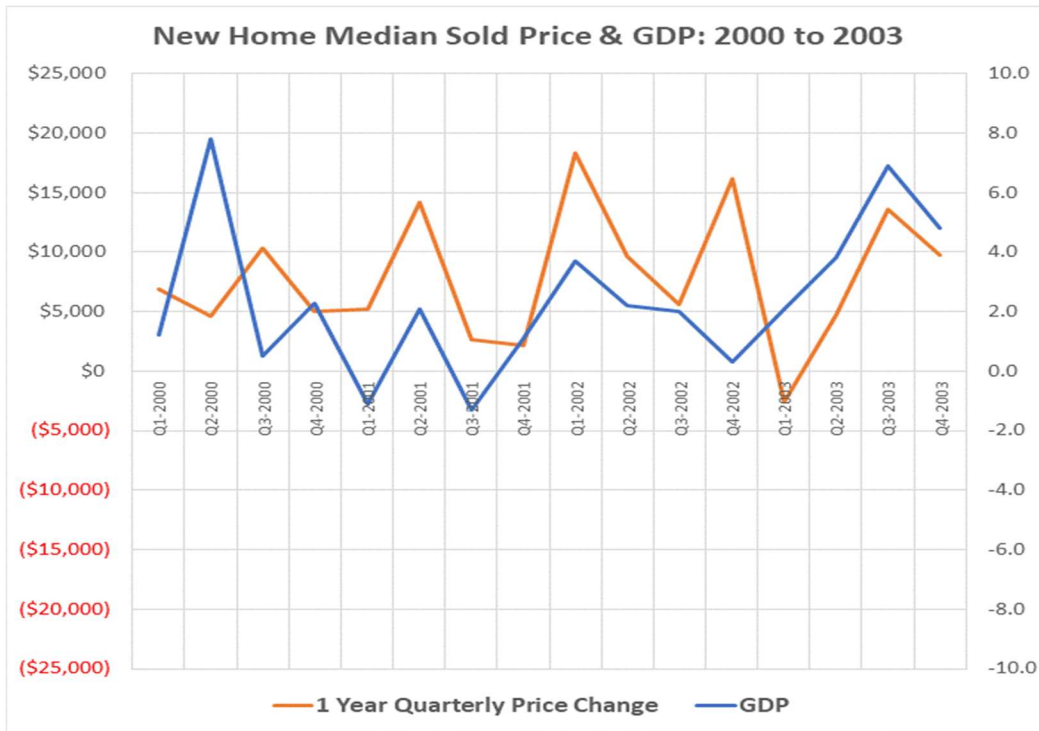


GDP was followed down by real estate in 1981-82, more than a year after the GDP with the exception of one month dipping below \$0 in August 1980. Both increased in 1982.

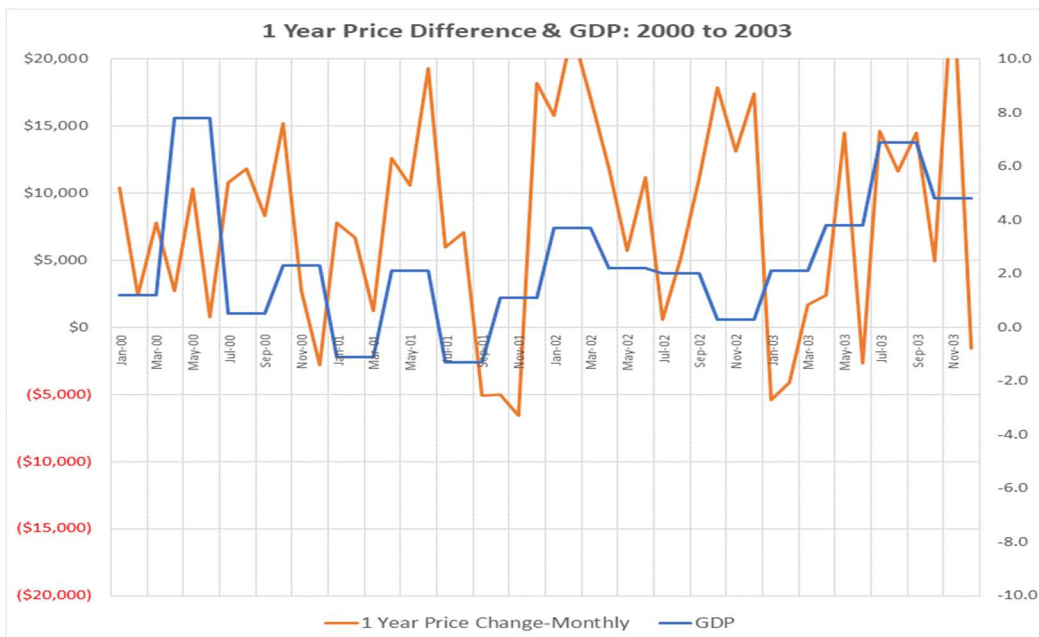
This turn was led by the economy and followed by real estate.



Between 2000 and 2003 there was a decline in GDP (2001), two quarters going below 0, and getting very close again in Q4-2002 right before the Median New Housing Sold Price went negative in Q1-2003.



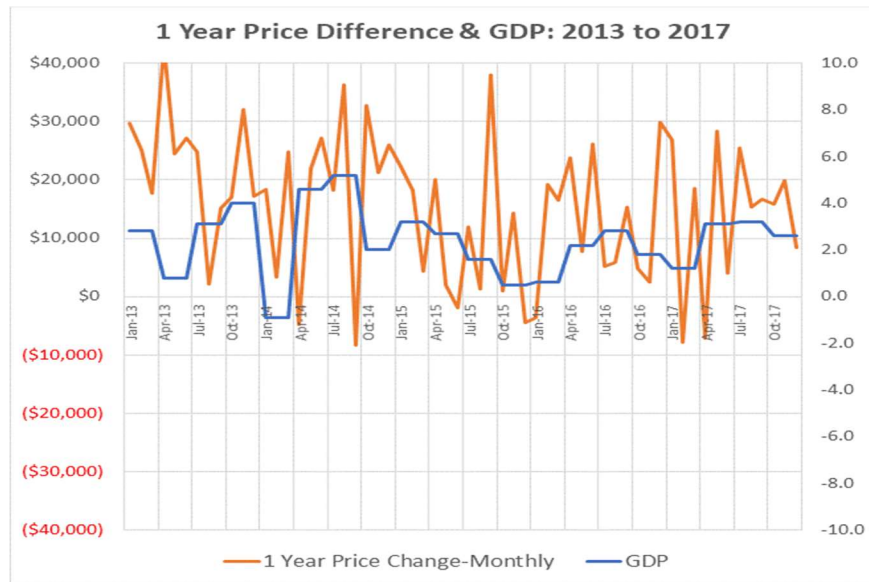
The quarterly average (graph above) remains positive until Q1-2003, while the monthly numbers (graph below) started dipping negative in 2000. GDP followed in Q1-2001 which real estate followed in the end of 2001, and was down again in 2003 after a positive rebound.



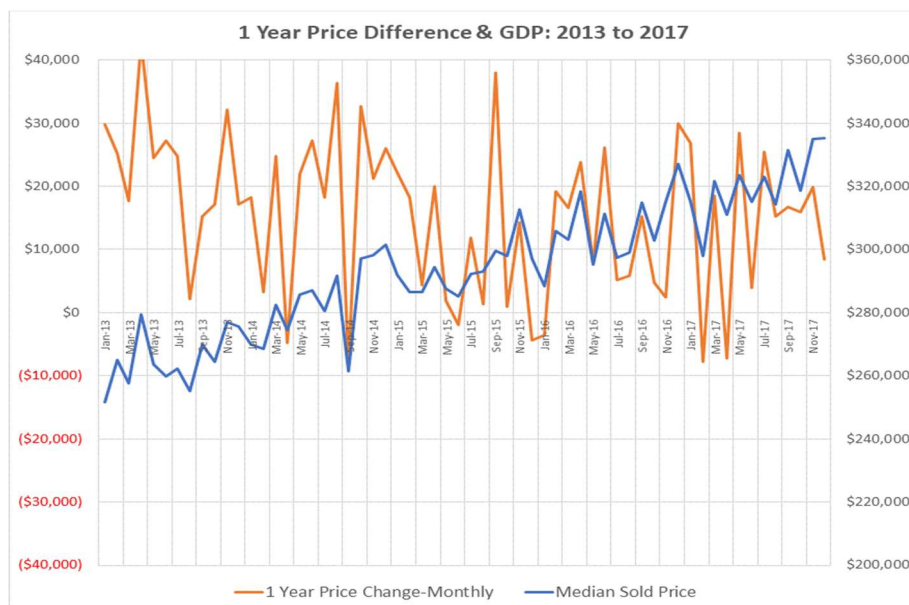
Erratic times – 2013 to 2017

After 2012, even as the Median New Home Sold Price increased, there were 7 months where the Median Sold Price in during a given month was lower than the same month of the previous year. As the New Home market experienced annual price increase between 3.7% and 6.8% these 7 months were negative.

GDP was negative only during the first quarter of 2014 and that preceded all of the months with negative sold price.

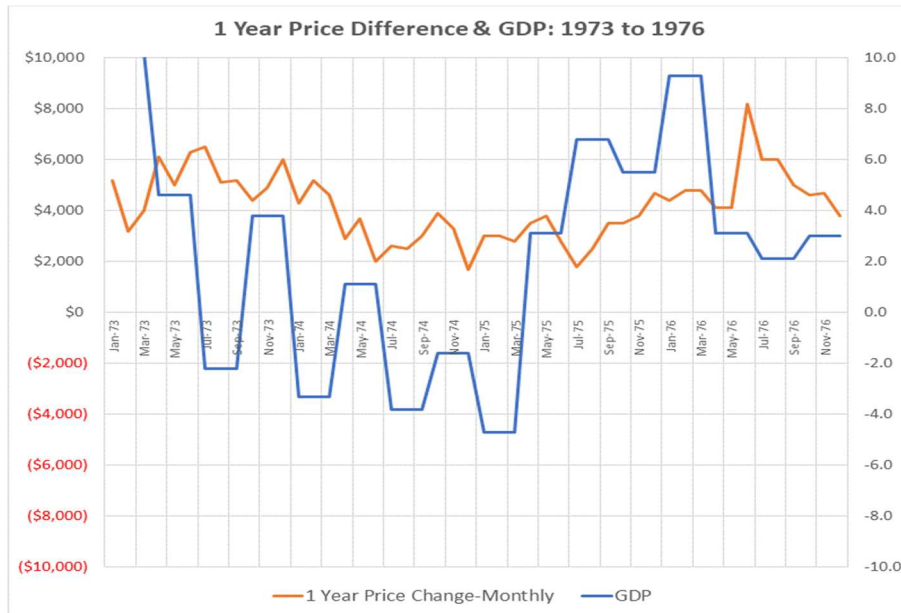


This appears to be due to a high degree of volatility in the price from month to month, as the market as a whole rose \$83,900, from \$251,500 to \$335,400 between Jan. 2013 and Dec. 2017.



No correlation

GDP went down strongly from 1973-75 but the Median Sold Price stayed positive.



Methodology:

The data sets were drawn from the Federal Reserve (<https://fred.stlouisfed.org>) for both GDP and U.S. Median New Home Sold Price for new homes. To get both sets to work together we

To be able to evaluate the numbers for new home sold prices, which was recorded on a monthly basis so we could use it with the GDP numbers which were quarterly, we took the average of the sales prices for the three months of each quarter. This allowed to compare the sets together.

It also had an added benefit of evening out the larger fluctuations in the new home sold price where it might jump or drop in a given month, as the data is not seasonally adjusted.

In order to isolate downward trends in the New Home Sold Price we averaged each quarters sales prices of the year and then subtracted the same quarter from the previous year to see if the current year's quarter was higher or lower than the quarter in the previous year.

Downturns would be shown by the numbers going into negative territory.

In this way we could see the interrelationship of GDP with New Home Sold Price and how they may affect each other.

We reviewed the data set for the Median Sold Price of Existing Homes, but the data set only went to 1989 and there were only 2 instances of year over year decline (Q4-1990 & Q1-1993) before the slowdown starting in Q3-2006 that lasted until Q1-2012. Not providing as influenced a data set we decided not to use it.