

Convexity Maven

A Commentary by Harley Bassman

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“House of Cards”



With remorse, I will disappoint you that this is not a Commentary focused upon the craven plotting of Claire and Frank Underwood (nor other salacious headlines). Nonetheless, with a spoiler alert provided, unlike those fictions that seem so real (and after a year of Trump, so much more benign), here we will expound upon a reality that could be a tad more unsettling. For as much as investors (and economists) worry about how a FED inspired increase in interest rates may slow the economy via the tightening of credit at the corporate level, the more realistic worry should be how such a rise may impact the housing market, the largest and most influential asset held by the US citizenry.

It is most important to appreciate that away from the cosseted 1%, most people do not “buy a house”, but rather they commit to a long-term payment plan. The rules have not changed too much over the decades: A financial institution will lend one collateralized funds to purchase domestic real estate so long as those

payments are limited to 28% to 35% of one's income. Now this rule is a tad squishy as there are no hard and fast rules, but rather a target range. Some believe the ratio applies to pure top line, pre-tax income while others presume the calculation only considers what is left after the IRS has finished its work. There is also some flexibility as to whether only the mortgage cost is considered or perhaps one should include the full cost of ownership with such expenses as real estate taxes and insurance included.

But no matter the precise formulation, ultimately the limitation for "how much house" can be purchased is driven by the relationship between income and expense. Of these two, the expense side deserves more focus since it tends to be more volatile than income (which on the macro level tends to rise on a slow trend). As per the expenses involved for the average consumer to make their largest purchase, the mortgage cost is by far the greatest component; and it is driven almost solely by the contracted interest rate.

It is a tautology to observe that it takes a buyer and a seller to consummate a transaction, but since the buyer of real estate is generally constrained by their funding source, it soon becomes clear that the key driver of housing prices is neither income nor the cost of labor and lumber, but rather mortgage interest rates.

Let's place pencil to paper to examine this relationship.

Suppose a single earner family has an annual W-2 income of \$75,000. A mortgage originator might lend subject to a 28% limitation, implying payments of \$21,000 per year or \$1,750 per month. If the borrower desired to finance a home purchase with a standard 30-year self-amortizing loan at 5%, one can back into what I will call the "available mortgage balance" of roughly \$326,000. Now if rates were to decline to 4%, and the income and borrowing limitations were unchanged, a \$1,750 monthly commitment would create an available mortgage balance of \$366,560. Simply stated, with no changes other than a 1% lower interest rate, a potential home buyer could pay 12.5% more for a house with no greater financial cost (or personal risk).

The bottom line is that most people do not buy a home but rather commit to a long-term payment scheme that just happens to result in owning a parcel of residential real estate.

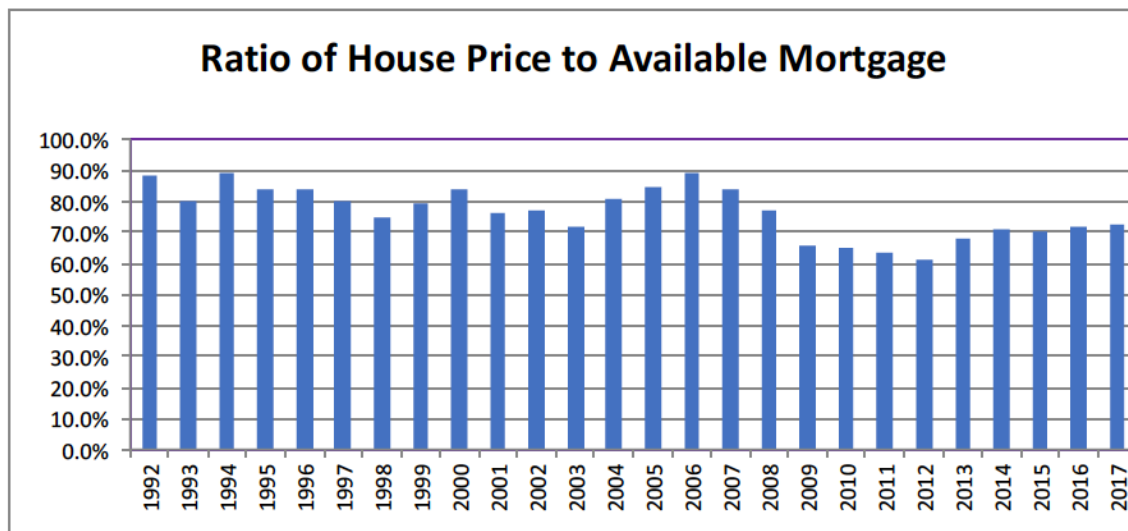
Is there evidence of this concept in practice; looking down from 10,000 feet it seems so. The rub is the variability of both real estate and income taxes, credit standards, and consumer confidence; after all, buying a home is still a stretch for most people.

The **-annabergite column-** in the table below is the 60th percentile within the range of US median income; the **-cordierite column-** is the monthly cash flow equal to 28% of this income stream; the **-cuprite column-** is the average retail mortgage rate for the year; and the **-spessartine column-** is the 30-year amortizing mortgage balance that can be afforded by spending 28% of the 60th percentile of the median income. (The 60th income percentile is used to adjust for the home ownership rate.) The **-amethyst column-** is the national average new home price.

<u>Year</u>	<u>60%-tile Income</u>	<u>28% Monthly Payment</u>	<u>Mortgage Rate</u>	<u>Affordable Mort Balance</u>	<u>US National New House Price</u>
1992	\$44,811	\$1,046	8.35%	\$137,938	\$121,300
1993	\$46,006	\$1,073	7.21%	\$157,918	\$126,142
1994	\$48,087	\$1,122	8.44%	\$146,731	\$130,408
1995	\$50,047	\$1,168	7.98%	\$159,482	\$133,433
1996	\$52,260	\$1,219	7.91%	\$167,560	\$139,767
1997	\$54,969	\$1,283	7.67%	\$180,477	\$145,050
1998	\$57,546	\$1,343	6.89%	\$204,124	\$151,975
1999	\$60,447	\$1,410	7.54%	\$200,867	\$159,842
2000	\$62,769	\$1,465	8.02%	\$199,276	\$166,542
2001	\$64,092	\$1,495	6.96%	\$225,620	\$172,608
2002	\$64,507	\$1,505	6.40%	\$240,605	\$185,025
2003	\$66,365	\$1,549	5.67%	\$267,761	\$191,383
2004	\$67,642	\$1,578	5.80%	\$268,937	\$217,817
2005	\$70,161	\$1,637	5.86%	\$277,185	\$234,208
2006	\$73,440	\$1,714	6.40%	\$274,018	\$243,067
2007	\$76,663	\$1,789	6.23%	\$291,171	\$243,742
2008	\$76,871	\$1,794	5.98%	\$299,866	\$230,408
2009	\$75,435	\$1,760	5.03%	\$326,738	\$214,500
2010	\$75,974	\$1,773	4.72%	\$341,066	\$221,242
2011	\$77,132	\$1,800	4.49%	\$355,667	\$224,317
2012	\$78,969	\$1,843	3.82%	\$394,565	\$242,108
2013	\$81,769	\$1,908	4.23%	\$388,777	\$265,092
2014	\$85,007	\$1,983	4.31%	\$400,235	\$283,775
2015	\$86,707	\$2,023	4.03%	\$422,209	\$297,258
2016	\$88,441	\$2,064	3.83%	\$441,339	\$316,258
2017	\$90,926	\$2,122	4.22%	\$432,897	\$313,250

Supporting our notion that housing prices are tightly linked to the nexus between interest rates and income, the next chart represents the ratio of the price of a new home and the available mortgage balance.

Over the seventeen years between 1992 and 2008, between the last two significant recessions, this ratio was relatively stable at 81%. After the mortgage collapse precipitated by the Great Financial Crisis, this ratio declined sharply; however, it has been slowly rising to what may be a new plateau of about 72%.



While there could be many reasons for a ratio reduction, it can most likely be attributed to the tightening of credit conditions since the financial crisis as reflected by the roughly 40-point higher FICO score required for a conforming loan.

It is no great revelation that the cost of housing is well related to the overall financial status of a homebuyer, thus the publication of an *Affordability Index* by many mortgage publications; but many analysts focus more upon the relationship between income and house price. In contrast, the more important consideration should be the interest cost and that future mortgage rate variability may rattle the housing market more than one might expect.

Over the past thirty years, mortgage rates have vibrated about half of one percent annually. And with interest rates pressured by the FED to near 500 year lows, it is not inconceivable that the mortgage rate could rise by 100bp over the medium term if the FED changes course. Such a rise from the current 4.00% level would reduce the available mortgage balance by over 11%, which would eventually translate to the price of housing.

Additionally, such a change from the current rate would have a greater impact versus past times of rate volatility. The mortgage rate averaged a bit over 7% during the seventeen-year stretch prior to the GFC. So a 1%-point increase in rate to 8% (assuming current income levels) would reduce the available mortgage balance by about \$28,000. In contrast, a 1%-point increase in the national mortgage rate from 4% to 5% would reduce the available mortgage balance by nearly \$46,000. This should not be a shock since a 1%-point move from current levels is a larger percentage change.

While I am not predicting an imminent threat to the housing market, and there is certainly some cushion between the median price of a new home and what is presently mathematically affordable; it should be appreciated that the foundation of the recovery in housing prices has been built upon a Central Bank driven reduction in interest rates as opposed to the more traditional (and stable) increase in household income.

I am on the record as stating that digesting the demographic of the Baby Boomers will limit an increase in the US Treasury 10-year to no more than 3.50% over the next five years; but that is more than enough to flatten out home price appreciation, and perhaps create a slight dip. A 100bp parallel increase in the Treasury curve will have little impact on the ability of S&P 500 members to borrow, consumer credit card rates, or new business formation. But it will have a direct-drive transmission to GN/FN/FH MBS market rates which will quickly flow through to the purchase mortgage market.

Your comments are always welcome at harley@bassman.net

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