March 2018

Berkshire Hathaway Intrinsic Value – Annual Update

Warning: The information provided in this newsletter is the opinion of Max Rudolph and is provided for general information only. It should not be considered investment advice. Information from a variety of sources should be reviewed and considered before decisions are made by the individual investor. My opinions may have already changed, so you don't want to rely on them. Good luck!

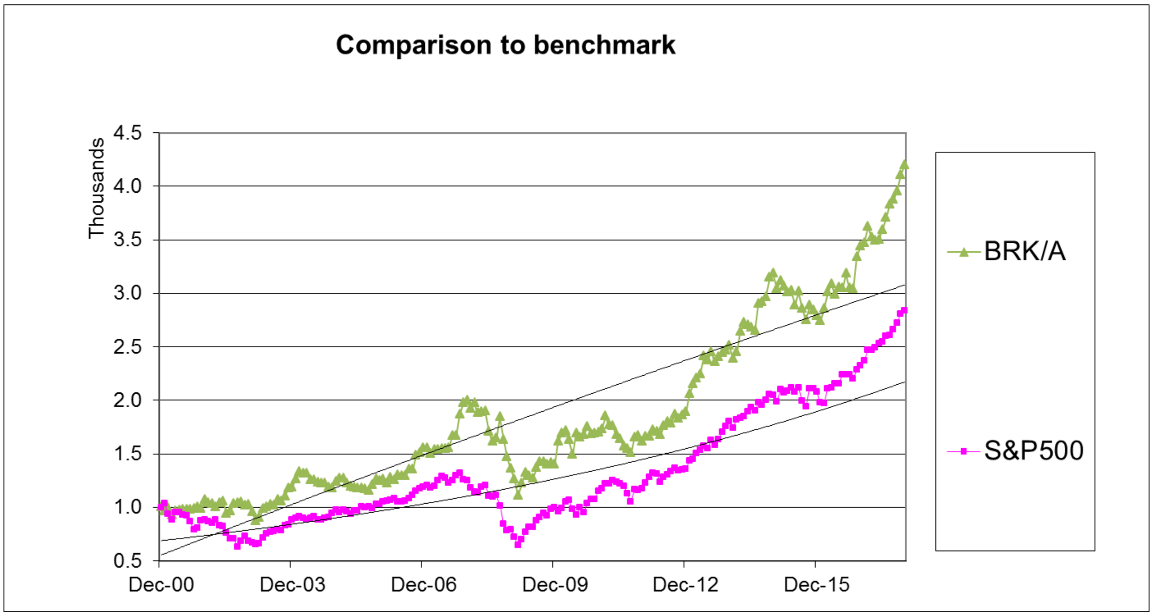
By Max J. Rudolph, FSA CFA CERA

Full disclosure: I am long Berkshire Hathaway and look forward to the release of Mr. Buffett's annual letter at the end of February each year. I have attended the BRK annual meeting most years since I became a shareholder in 1994. This post updates the analysis I have done annually starting in March 2013. At the end I will post the questions I submitted to CNBC right after the letter was released using #askwarren and the questions I anticipate submitting to the journalists asking questions at the meeting (I have had questions asked in both venues).

Many investor friends know that I closely follow Berkshire Hathaway and Warren Buffett, and occasionally ask if I think it is valued appropriately. Starting with the 2012 annual report Mr. Buffett included information that he would use to value BRK, so I took it as a challenge to develop a detailed process that was repeatable (unfortunately he took this section out in the 2016 report, making it a bit harder to find the details). In previous years starting in December 2012 I found the shares to be undervalued by 25%, 11%, 1% overvalued, 20% and 12%. In the most recent iteration of this process I found them to be undervalued by 13%, which makes the stock a hold given this small sample size.

So is it a buy? Many analysts will tell you no, it is not. They will say it is too big, Buffett is too old, or that he has lost his skills. Your follow-up question should be, when was the last time the analyst had a buy recommendation on BRK? The shares were $19 in 1965 and nearly $300,000 now. When did the analyst last (formally and publicly) think the stock was a good deal?

You can see in the following chart that Berkshire Hathaway has outperformed over the past 20 years, with especially nice runs in 2014 and 2016. Succession planning has been joined by the risk of having too much undeployed capital as the major risks for Berkshire. Mr. Buffett and Charlie Munger, Berkshire's long-time vice chairman, are not getting any younger, but today they have in place a strong team of operational managers and investment professionals. Greg Abel seems poised to be the next CEO, with Matt Rose (BNSF) leading a deep bench waiting to take on more responsibility. The undeployed capital is worrisome because so many copycats are trying to follow a similar model to Berkshire. Private equity has a large cash horde, and some of the large asset managers have set up funding vehicles designed to buy undervalued companies. It is hard for a public company to accept a bid from Berkshire as they must act in a fiduciary way only to their shareholders. Berkshire allows an owner to cash out while remaining in charge, often saving the employees jobs at the same time.



To make it easy for me to update this post in the future I will refer to the page numbers in the 2016 report where I found the information (I did not update this index for 2017). I will include all six years of data.

Most of the data is found in the section immediately following the annual letter, although some data is found there as well. Data was also found on pages 3, 11, 13, 14, and 19.

While the focus here is on relative value, the intrinsic value (my estimate of what the company is worth) grew 13.7% and the market price 14.7% annually over the past five years. The S&P grew at 15.8% annually over this period, so returns were good but not market-beating. During this period the amount held in cash/Treasuries has grown to over $100 billion, providing a headwind to current performance and potential tailwind in the future.

Acting as a floor, Mr. Buffett will consider share repurchases at 120% of book value. At year-end 2017 per-share BRK book value was $211,750, resulting in a floor of about $254,100 per share. Since year-end, Berkshire Hathaway "A" shares have traded as high as $325,000.

In my analysis there are three components of value for Berkshire Hathaway; investments, underwriting profit, and profit from non-insurance subsidiaries. Buffett has recently stated that he feels underwriting profit no longer needs to be averaged over many years due to large catastrophic policies. In 2015 he also started to include underwriting profit with operating profits of the other businesses. In 2017 the insurance business suffered large cat claims that generated losses for the current year. For projecting value I maintained the same profit level as in the prior year. Since float investment returns is ignored for this component, the result in immaterial at about 1% of the total intrinsic value. Had I used the actual results instead the result would have been negative for the underwriting profit value but still immaterial.

Rudolph
FINANCIAL CONSULTING LLC

Berkshire Hathaway Intrinsic Value Calculations							
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	
per share investments	113,786	129,253	140,123	159,794	154,901	184,882	
pretax EPS				12,304			
profit BNSF					3,569	3,959	million
profit BHE					2,287	2,083	million
profit manufacturing					5,631	6,208	million
profit financial					2,130	2,058	million
earnings per share (total)	8,977	11,850	12,092	14,656	14,645	27,326	
investment income $	4,532	5,196	5,052	5,357	4,725	5,144	
capital gains $	3,425	6,673	4,081	10,347	8,304	2,128	
earnings net of investment income/capital gains	4,134	4,630	6,533	5,098	6,720	22,905	
per share pretax earnings from non-insurance businesses	8,085	9,116	10,847	11,186	14,913	15,604	
UW profit from insurance over 10 years per share	1,132	1,338	1,151	1,434			
underwriting profit from insurance over 10 years	18.6	22.0	18.9	23.6			billion
UW profit from insurance per share pretax				1,118	1,296	1,296	
underwriting profit from insurance	1.625	3.089	2.668		2.131	(3.239)	billion
insurance goodwill	15.5	15.5	15.5	15.5	15.5	15.5	billion
total common stocks carried at market, cost	49.796	56.581	55.056	58.612	76.328	74.676	billion
total common stocks carried at market, market value	87.662	117.505	117.470	112.338	122.032	170.540	billion
class A equivalent common shares outstanding	1.643	1.644	1.643	1.643	1.644	1.645	million
class A equivalent book value	114,214	134,973	146,186	155,501	172,108	211,750	
tax rate	35%	35%	35%	35%	35%	21%	
P/E non insurance subs	12	12	12	12	12	12	
P/E insurance subs	10	10	10	8	10	10	
ability of long term uw profit to continue	50%	50%	50%	25%	50%	50%	
current year profit growth	10%	10%	10%	10%	10%	10%	
Intrinsic value							
per share investments	113,786	129,253	140,123	159,794	154,901	184,882	10.2%
adjust for capital gains taxes	8,066	12,970	13,296	11,445	9,730	12,239	
per share after tax investments	105,720	116,283	126,827	148,349	145,171	172,643	10.3%
per share after tax value of non-insurance businesses	69,369	78,215	93,067	95,976	127,956	162,721	18.6%
per share after tax value of insurance businesses	4,047	4,784	4,116	2,051	4,634	5,632	6.8%
Intrinsic value BRK ($billion)	294.3	327.6	368.0	404.8	456.6	560.9	
Intrinsic value "A" share	179,136	199,282	224,011	246,376	277,761	340,996	13.7%
Intrinsic value "B" share	119.42	132.85	149.34	164.25	185.17	227.33	
actual market price, end of February	102.16	115.78	147.41	131.92	171.42	202.76	14.7%
percent undervalued	14%	13%	1%	20%	7%	11%	
Insurance - Cash and cash equivalents					**23,581**	**25,460**	
Insurance - US Treasury bills					**47,338**	**78,515**	
Insurance - Investments in fixed maturity securities					**23,432**	**21,353**	
Insurance - equity securities					**120,471**	**164,026**	
Insurance - other					**14,364**	**-**	
Investments in KHC					**15,345**	**17,635**	
Railroads, Utilities and Energy - Cash and cash equivalents					**3,939**	**2,910**	
Railroads, Utilities and Energy - regulatory assets					**4,457**	**2,950**	
Finance - Cash and cash equivalents					**528**	**3,213**	
Finance - US Treasury bills					**10,984**	**5,856**	
Finance - equity and fixed maturity securities					**408**	**-**	
Finance - other					**2,892**	**7,644**	
Bank of America profit on warrants					**10,500**	**-**	
					278,239	304,102	

Methodology

Investments

The annual report shows the amount of investments per share and the basis for a block of investments.

Investments per share – tax rate x (market value – basis)/number of shares = value from investments

$184,882 – 21% x (170.540 B – 74.676 B)/1.645 M = $172,643 value per share

This number has grown 10.3% annualized over the past five years.

Underwriting Profit

Underwriting profit from insurance operations cycles depending on competitive pressures. Buffett is known to drop out of the market periodically when he (or Ajit Jain) feels premiums are insufficient, changing the rate of growth of float. BRK has entered new insurance markets recently and added a new AIG reinsurance contract. The total float is now $114.5 billion, up from $65.8 billion at the end of 2010.

A sustainability factor reflects the ability to earn this level of underwriting profit over long periods of time. The P/E works from future earnings, so a growth factor is needed to project profits forward one year.

underwriting profit per share x (1-tax rate) x P/E x sustainability factor x 1 year growth rate = value from underwriting profit

1,296 x (1 – 21%) x 10 x 50% x (1+10%) = $5,632 value per share

This reflects 6.8% annualized growth over the past five years, with much due to the reduced tax rate. This highlights an interesting part of the Berkshire story. If you ignore the float and value the insurance business simply as the present value of the underwriting profit there is not much there. If you consider the assets purchased as float it is huge. Their ability to maintain a positive U/W profit value is extraordinary. Most insurers rely on investment income to cover a combined ratio over 100%, so being below 100% allows claims and expenses to generally be paid from renewal premiums.

Profit from Non-Insurance Subsidiaries

This is the most straightforward calculation.

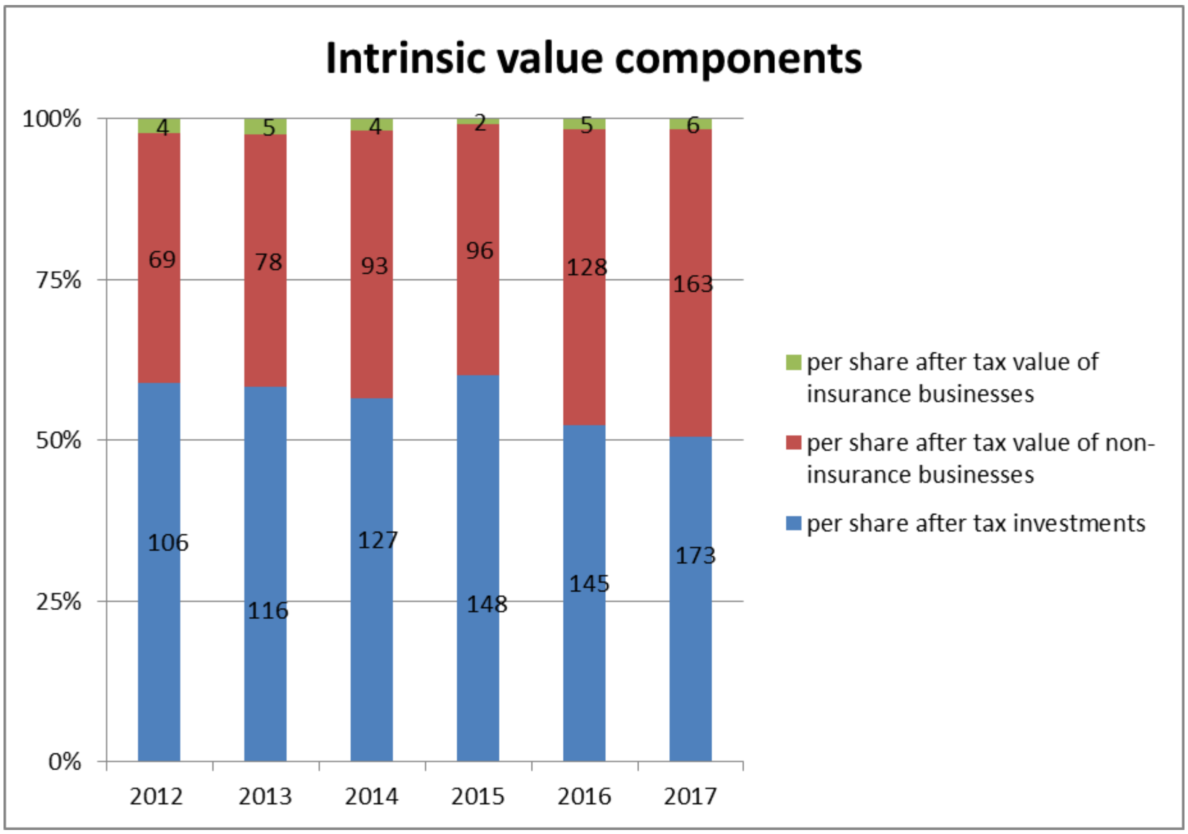
Profit per share x (1 – tax rate) x P/E x (1 + growth rate) = value from non-insurance subs

15,604 x (1 – 21%) x 12 x (1 + 10%) = $162,721

As Berkshire buys more companies outright the impact is seen here. Over the past five years it has grown by 18.6% per annum. Recent additions include Pilot Flying J and numerous bolt-on deals by subsidiaries like Clayton and Home Services.

Value of Components

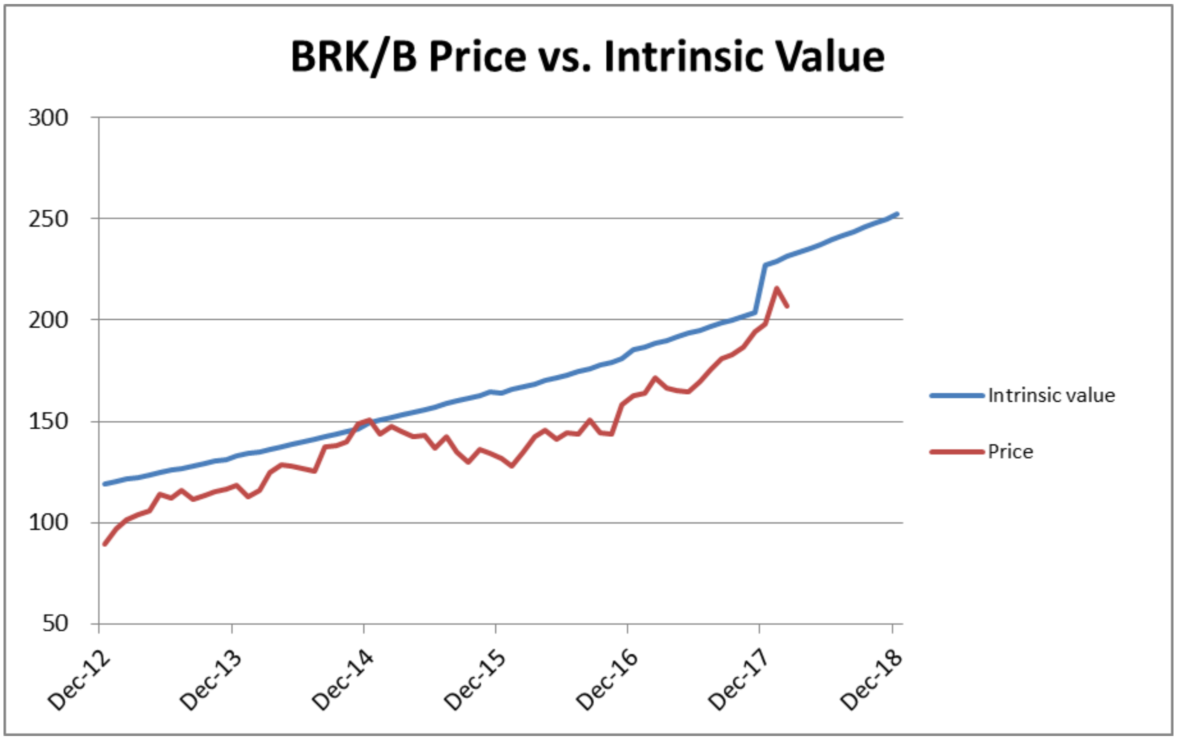
You can see that the primary growth over this period is due to the non-insurance businesses, and this is expected to continue as Buffett/Munger have set up BRK for after they are gone. A good case study would be to analyze the incentives they provide their subsidiary CEOs. My understanding is that they charge them for capital used at 15% but reward them generously beyond that. It also becomes clear how minimal the value of the insurance underwriting profit is without the investment income.



Totals

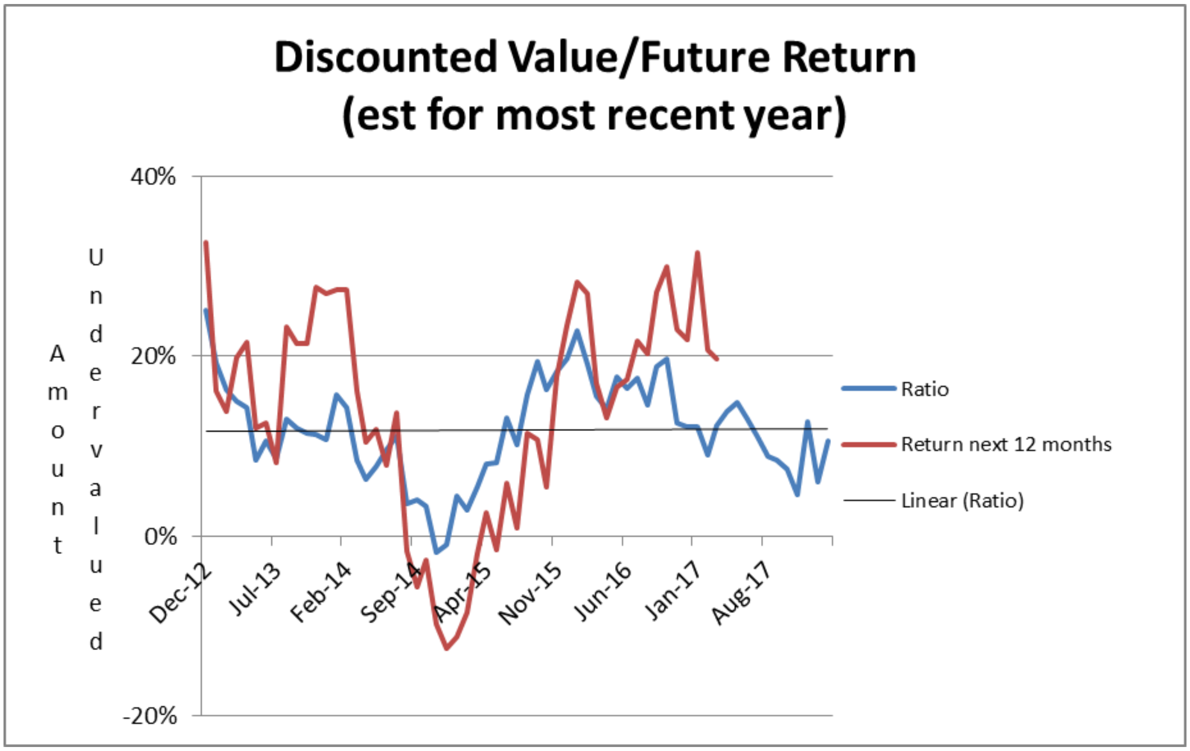
In total the value as calculated is $340,996 per A share, much greater than the actual price in March 2018. There is both uncertainty and conservatism around this calculation. It is lower than a true intrinsic value with insider information. The actual market price rarely gets as high as the calculated value, so anything over 90% might be considered ripe for a correction and less than 80% might reflect a buying opportunity. My goal in this calculation is to show relative value at different points in time, and it seems to do that.

This next graph estimates the intrinsic value during the year, truing it up each year in December. It compares the projected IV with month end market prices. The minimal discontinuity for IV makes it realistic that over this period Berkshire Hathaway's intrinsic value has grown smoothly at a 11.0% rate with a discontinuity at December 2017 to reflect the tax change.

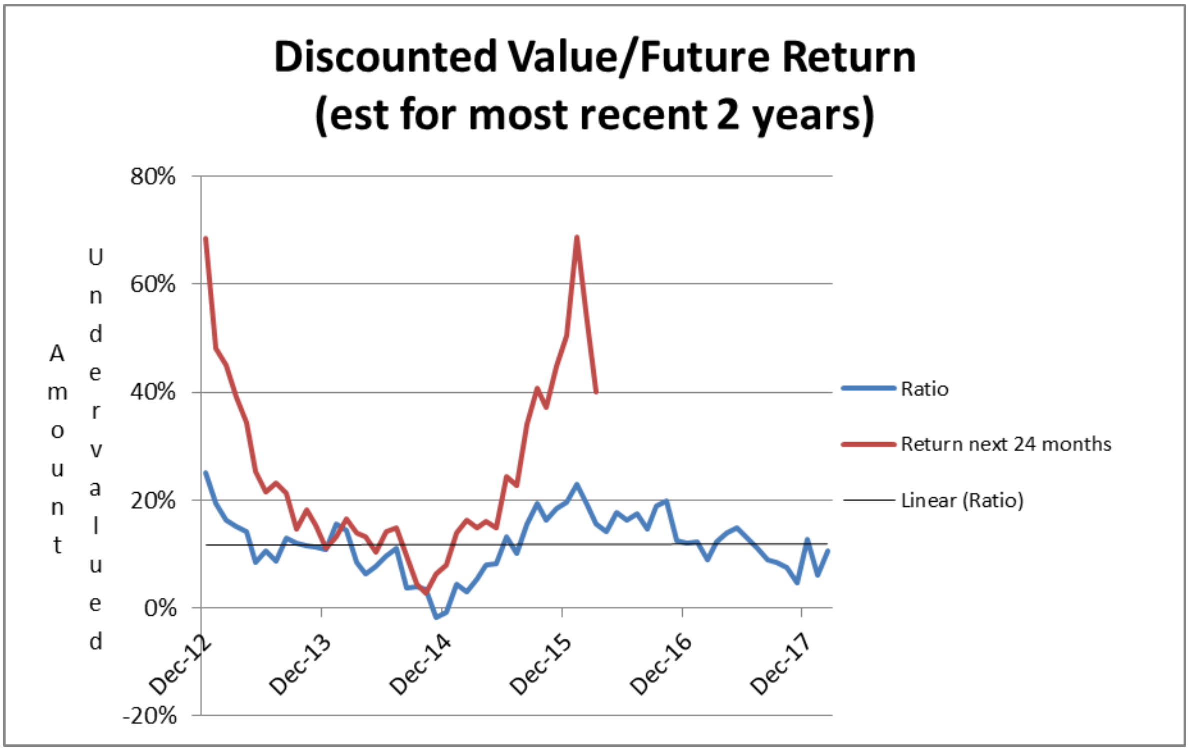


The tax reform bill reduced the corporate tax rate from 35% to 21%. This is material, both for subsidiaries and capital gains. Buffett sold almost all of the position in IBM, which had a loss, prior to 2018, and is more likely to sell some of his long-time holdings under the new, lower rate.

Comparing the ratio of intrinsic value to price against the following 12 month return provides a 73% correlation R^2. The strong correlation into its second year continues to surprise me. The picture is indeed worth a thousand words in this case.



With more data available, a 24 month return period was compared and the R^2 was even higher at 87%.



#AskWarren

<u>Submitted to CNBC when 2017 letter was released</u>

Starting with the 2012 report, Berkshire included specific info to value shares as part of the letter. This was greatly appreciated and useful. I'm disappointed that last year he backed off and this year completely abandoned the quest. Why?

As Clayton Homes expands its offerings will we see a mini house or container house at the exhibit hall this year?

Mr. Buffett has spent a lot of time and money on nuclear proliferation in the past but not so much effort on climate change, which seems to imply broader disruptions at this point in history. Will this change in the future?

<u>Submitted to journalists before the Berkshire Hathaway annual meeting April 2018</u>

In a world where driverless investing, often called indexing, becomes more popular do you think investment themes/stories (e.g., demographics or sector investing) become more important?

Newspapers seem generally to be a cash cow at best, and there are few options to use content across regional papers. I was surprised when columnist Brad Dickson was let go by the Omaha World-Herald as he seemed to be someone who could provide a lollapalooza moment for Berkshire, and quite a few people have canceled their subscriptions over the firing. He previously wrote for The Tonight Show. He wrote the Breaking Bad column, which made fun of both local and national events. An example from recent tweets – *There's a new World's Oldest Man. Man, they keep dying. I'm beginning to think that title is cursed.* And following an April snowfall *The kid who was supposed to fertilize my yard today: "You want me to shovel your driveway instead?"*

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