ADDICTED TO LOANS

A BUBBLE IN DEBT, THE TROUBLE WITH EARNINGS,
THE SECOND GREAT PIVOT AT BERKSHIRE
PLUS: THE ROE YOU WILL NOT SEE!

2018 LETTER TO CLIENTS

February 14, 2019

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ADDICTED TO LOANS

Your lights are on, but you're not whole
Your assets are not your own
The bad checks, your banker shakes
An earnings miss is what it takes

You can't sleep, you can't eat
There's no doubt, you're in deep
Your cash flow's tight, you can't breathe
Another debt is all you need

Whoa, you like to think that you're immune to the junk, oh yeah
It's closer to the truth to say you can't write-off enough
You know you're gonna have to face it, you're addicted to loans

The negative signs, you start to bleed
Your triple B will be a C
Interest creeps in double time
Another miss and you'll be mine, a one-track mind

You can't be saved
Restructuring is all you crave
If there's some left for you
You don't mind if you do

Whoa, you like to think that you're immune to the junk, oh yeah
It's closer to the truth to say you can't write-off enough
You know you're gonna have to face it, you're addicted to loans

Might as well face it, you're addicted to loans
Might as well face it, you've got leveraged loans
Creditors table, you will not get a vote
Might as well face it, you've got bad CLO's
Might as well face it, you're addicted to loans

Your option shares have dropped so low
Your assets are not your own
Your stock tanks and cash grinds
Another miss and you'll be fired

Whoa, you like to think that you're immune to the junk, oh yeah
It's closer to the truth to say you can't write-off enough
You know you're gonna have to face it, you're addicted to loans

Might as well face it, you're addicted to loans
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IN THE LETTER – INTRODUCTION

Continuing with what had unintentionally been a seeming satanic thread to recent letters, *Running with the Devil* was to be the prescribed course this year had the stock market advanced another 20%. It didn't of course, and instead took a deserved header, so this year's letter pivots to a 1980's MTV standard, Robert Palmer's *Addicted to Love*, and marries it with another throwback to the decade, the launching of an all-encompassing credit bubble, the likes of which the world has never seen.

The birth of the credit bubble dates to 1982, spawned by Reagan's tax cuts and Volcker's breaking of inflation with record high interest rates, potent X and Y chromosomes to be sure. The progeny, an expansion, fueled by stimulative fiscal policy and declining interest rates, saw the stock market compound from a secular low in 1982 by 20.2% per year to the subsequent March 2000 secular high.

Semper Augustus was born at the end of the boom, at the end of 1998, and just celebrated our 20th anniversary! The climate more resembled what Amsterdam must have looked like at the heights of the Tulipomania, and we snatched our name from the peak of that insanity. The first two decades at Semper have been aided by none of the tailwinds that whipped along the 1982 to 2000 boom. Instead, the winds have been gale force, in your face, which is what you get when a society reaches maximum leverage. That our stocks have matched average returns over the past century, and nearly double those of the stock market for the last two decades, is testament to adherence to a dual margin of safety approach that combines business quality and price, overlaid with enough opportunism at times to produce a head start on a lifelong ambition to beat the market by a sizable margin. It's been a fun ride so far. Here's to the next twenty.

Your CIO and author also celebrated a milestone birthday in December, and now officially joins the ranks of those, in radioactive isotope terms, on the back side of the half-life. It goes fast. You realize life is a learning curve, and I hope I'm better at life than I was at 20 or 30 or 40. I believe we are far better investors than when we launched the firm 20 years ago. Mistakes in life and in investing make you better, particularly if you force yourself to learn from them. Without a willingness to learn, growth is an impossibility. Hard work makes you better, but it only allows you to keep up.

We devote a small section of the letter to an introspection of some of our *worst* investment decisions, all quite costly but also invaluable in terms of the lessons learned – those that we resolve to never repeat.

Berkshire Hathaway remains our largest holding by far, and for several reasons unique to the past year, again merits discussion. The business enjoyed a tremendous advance in earning power and intrinsic value, which was masked by the stock going nowhere, by an obvious large decline in the stock portfolio, and because of financial statements that are now *thoroughly* incomprehensible to most readers. Previously they were simply incomprehensible. The business is reaping huge benefits from 2017's tax code change. Thanks to the falling stock portfolio and to large net purchases at what appear to be low multiples, the portfolio shifted from overvalued to undervalued. Berkshire's myriad operating subsidiaries are enjoying record profits. We find the shares nearly as undervalued as they were at year-end 2015. The degree of undervaluation can be seen in our ten-year expected return forecast as well as the intrinsic value update. A section titled *Peanuts* laments the loss of some previously useful information from the Berkshire annual report and in it a barometer to keep an eye on.

The letter also goes back to Berkshire's 1998 purchase of General Reinsurance, which we believe was one of the two most important purchases in the past 54 years, the other being the 1967 acquisition of National Indemnity. If you will only skim the letter, after you read the first couple sections that are Semper specific, I'd encourage you to read this section. Berkshire is our largest holding and the nuances of the acquisition from 20 years ago makes clear the investment brilliance at the company. The General

Re deal, despite the business itself not evolving into one of the largest of Berkshire's subsidiaries (it's not even one of the most important insurance subsidiaries), the transaction marked Berkshire's brilliant pivot away from the stock market. We estimate Berkshire's stock portfolio at year-end has slightly trailed the 5.6% return logged by the S&P 500 for the past two decades. Berkshire's return on equity matches its annual change in book value per share, and having grown at more than 9% since 1998, the acquisition was an incredibly well-crafted and prescient one, though management at Berkshire won't acknowledge it.

Speaking of return on equity, to us the most important measure of profitability, the letter explores why and by how much investors in aggregate have seen their long-term returns fall dramatically short of the long-term return on equity of the stock market. A business owner should reap the return on equity, but in common stocks there exists a sizable drag.

On returns, the letter updates and walks through two tools indispensable to understanding our investment discipline and process – our intrinsic value report and our comparison of aggregate holdings as though they were a business contrasted with the S&P 500 in the same light. We have never had a better roster of businesses, run by incredibly talented managers. *At 12.3 times earnings, that our businesses also earn an unleveraged 12.4% on equity is remarkable in a market that we find dangerously overvalued.*

2018 saw our portfolios down about 1.3%, not bad especially given our sizable holdings internationally and in small and mid-caps in the U.S. The S&P 500 has been negative for five of our twenty years and in all five we outperformed, either with substantial gains in 2000-2001 or by declining less in the others. Of the remaining fifteen years, our stocks have beat the market in eight, more than half of the time. With portfolios that have earned more than 300 basis points per year over the S&P and the ACWI for 20 years, and with stocks that have earned 500 basis points or more per year over the two indices, the remarkable thing is how much of a calculable advantage we have for the next 15 to 20 years.

The mammoth debt bubble is explored, as well as its relationship with overvalued capital markets. A section on the quality of earnings, how we view the measurement of earnings, and various tools used in business valuation are evaluated. Private equity has exploded into a giant asset class and by our reasoning will have an impossible go of it putting its committed capital to work on economically acceptable terms. Of course, they will try. Another quick stab at the active versus passive investing debate is taken again, also amending one of the tables presented in last year's letter.

The length of the letter is again unintentional, and a call to Guinness is unfortunately in order. At 85 pages, last year's may have been the longest investment letter ever written. This year's not only smashes that mark, but breaks Wilt Chamberlain's single game scoring record. Now that we've gone this far, I suppose the only thing left to shoot for is Wilt's lifetime "scoring" total and see if our career pages written in the annual letter can surpass The Stilt's career mark of 20,000…

As the Gipper liked to say, "There I go again…"

INTRINSIC VALUE UPDATE – REPLICATING THE LAST TWENTY

> *The fellow that can only see a week ahead is always the popular fellow, for he is looking with the crowd. But the one that can see years ahead, he has a telescope but he can't make anybody believe that he has it – Will Rogers, The Autobiography of Will Rogers*

The Semper investment discipline seeks businesses of high quality and is dogmatic about price and value in its approach. Dual margins of safety in quality and price try to keep trouble away. For quality, we favor businesses that earn good returns on equity and on capital, and there can be a difference. At times, we own cyclical businesses and have an intermediate ownership horizon. Many businesses we buy have a return to par aspect to them. We have businesses that appear cyclical but really earn high returns on capital and can be great permanent or very long-term holdings. We do things opportunistically at times – special situations around bailouts, post-IPO blowups, deal related arbitrage, especially when one side is attractive on a stand-alone basis and the deal provides a nice entry point in a business we would like to own. Spinoffs can be attractive. Sometimes our thesis changes and a company that had opportunities to invest for growth can't, but management recognizes that and acts accordingly. Revaluation presents opportunity. In all, each of these themes that work for us involve buying businesses at a discount to our appraisal of intrinsic value and allowing time to close the discount. Sometimes the discount is permanent, but because we really own a business with great economics, attractive returns are earned over time even without closing the gap (really meaning the gap was even larger than assessed). There are always times that we will seem out of step, either with a business or with the portfolio, and that what we are doing isn't working.

March 2000 was a seminal inflection point. It marked the peak of a secular stock market bubble and most definitely the pricking of the technology bubble. It also marked the end of a depression in value. While the S&P 500 began a 50% decline that month and the NASDAQ an 80% slide, many good value-oriented managers made money over the three years through 2002. The pain they felt up to the March peak was brutal. Value had been left in the dust, "underperformance" was rampant. If an investor earned more than 20% in 1999, it wasn't "good enough," being nowhere near the 86% return clocked by the NASDAQ. Most value managers experienced capital pulled from them by individual and institutional investors, creating further pressure on the already undervalued stocks in their portfolios.

Semper benefited from the bifurcation in the market. As a new firm, we had capital to put to work and we found unbelievable bargains in washed out small and mid-cap stocks, many trading at single-digit multiples to earnings as the market traded at prices approaching 40 times and higher. But if you didn't own tech (and we refused to chase the bubble) it required a herculean effort to keep our new clients from abandoning our ship to chase the mania.

The intrinsic value report we created in March 2000 was useful in that it contrasted how fundamentally undervalued our portfolio was comped to an insanely overvalued market. It helped keep the restless natives on our reservation, and when the tech bubble broke and value took off, life became much easier.

The first report we ran on March 31, 2000 showed the Semper portfolio at 15.6 times normalized earnings and an earnings yield of 6.4%. By contrast the S&P 500 traded at over 40 times normalized earnings and an earnings yield of 2.5%. In our work, the earnings yield is the baseline for expected earnings over a ten to fifteen-year period and has proven accurately predictive, both for our holdings and for the market.

If our stocks are trading at discounts to our appraisals of intrinsic value, then as long as we have properly assessed earnings power, we should earn the earnings yield plus any accretion of the discount up to intrinsic value over time. In 2000, we would have added 2-3% per year to the 6.4% earnings yield to produce an expected annual return of 8.4% to 9.4% per year. Since March 31, 2000 our stocks averaged

9.3% per year. In addition, it's worth noting that for most of the past twenty years our portfolio was generally less expensive than at March 31, 2000. Not only were we up quite a bit that month, after the mean-reversion of tech imploding and value rising had begun, but we've generally kept the portfolio around 13-14 times earnings through our management process. As we reflect on our returns and sort through former decisions, despite what have been decent returns, they should have been better. A drag from maximum potential can be attributed to the inevitable mistakes – we'll elaborate on some of the more instructional ones in a bit. I'd like to think we are better, and that as we get better the mistake drag can be less. Investors will always make mistakes and we are no exception. As we have gotten better, older and perhaps wiser at least, our mistakes are fewer and less costly.

The S&P 500 wasn't priced for such robust long-term returns in March 2000. Our intrinsic value work suggested a 2.5% annual gain for the market and would likely see the market underwater for perhaps a significant time. As of year-end 2018, the index has averaged 4.7%, only above the 2.5% projection. The reason for the "better" result is that the market again trades well above normalized value today (closer to another secular peak as we'll discuss shortly). The index did indeed spend much of the past almost 19 years below the waterline, only sustaining a move in the black since 2012.

What does our report tell us today about the next 10-15-year horizon? As it was in 2000, the market is expensive by any fundamental yardstick. Valuations at the September and January highs last year were very secular peak looking, not far from those in 2000 and only earlier in 1929. The fourth quarter's 13.5% decline certainly helped valuation, as did 26% growth in per share earnings for the year. The market closed the year at 17.9 times trailing earnings, appearing much less overvalued than at the close of 2017, when it traded at a 23.4 P/E and a 4.3% earnings yield. If the high price a year ago foreshadowed the decline, then so be it. Few would have expected the 4.4% decline in the S&P, far more in most other indices, when earnings were growing 26%. To us, the judgment required here is the same that we applied in 2000. Normalized earnings are far lower than currently reported. Our work suggests a 5% best case return for the S&P 500 for the next 10-15 years, not much more than the projection in 2000 and in line with the 4.7% that came to pass. We wouldn't be surprised if the index and the market spend a fair amount of time submerged again.

Happily, the Semper portfolio is markedly undervalued, relative to the market but more importantly in absolute terms. In fact, our valuation has rarely been lower. The quality of our businesses has never been greater. From the intrinsic value report, our stocks are trading for 12.3 times earnings at year-end 2018, an earnings yield of 8.2%. The earnings yield is 1.8% higher than in 2000, and our discount to intrinsic value is greater, at 72 cents on the dollar of fair value. The upside to intrinsic value is almost 40%. We'd add 3%, perhaps more, to our baseline earnings yield to arrive at an expected annual return of 11.2% or so.

There is no intention of implying precision with the calculations. Lots of assumptions go into the valuation process, certainly in the estimation of earnings. The price part is easier. You can see it every day. Taking a current earnings number at face value as reported by a company, or index of companies, and extrapolating that number forward for a bunch of years is how you get in trouble. It's the same thinking that went on in the late 1990's and early 2000 and it's the same thinking so pervasive today. The advantages we have today are as great as they have been in a long time. Don't wait for a cyclical or secular low to make a change. Investors owning the broadly diversified market face more downside disappointment than upside potential. Historical long-term return assumptions don't work from prices around a secular peak, but opportunity always abounds. You need to know where to look, though. It seems opportunity is best when everyone else is either content or terrified. There exists an unusual amount of both today.

Fundamentals Versus the Market

Lots of work and thought goes into our assessments of business profit, and the results derived from our intrinsic value report are usefully predictive. The premise suggests an investor should earn the earnings of businesses owned. It's a basic concept but it works. Last year we walked through an exercise that we hope showed it's the *return on invested equity that matters in investing*, and appreciating the leverage required to produce those earnings. A fundamental snapshot of our portfolio holdings, aggregated as though they were a single business, was compared side-by-side with similarly aggregated figures for the S&P 500, everybody's favorite proxy for the U.S. stock market.

We tried to show it's not P/E's that matter, or profit margins on sales, but how much a business earns on the capital invested in it. The investing world knows this, and there are many operators that go to great lengths to make profits appear as high as possible, and to make the equity against which profits are measured as low as possible. It's the role of the investor and analyst to determine how much of the profit and equity are economically real and how much can be scraped from a bullpen (not the baseball variety).

We sidestep the dramatic build up to the conclusion this year and head straight to the side-by-side figures.

Key Common Size Figures for the Semper Augustus Portfolio and the S&P 500 at Year-End 2018

Income Statement Figures	**S&P 500**	**Semper**
Sales	$100	$100
Earnings Before Interest and Taxes	15.6	17.3
Interest Paid	2.2	1.1
Pre-Tax Profit	13.4	16.3
Tax Rate	21.0%	22.5%
After-Tax Profit	10.6	12.6
Dividends	4.1	2.4
Retained Earnings	6.5	10.2
Balance Sheet Figures		
Equity (Book Value)	$63.0	$102.0
Debt	74.6	35.0
Cash	18.6	30.7
Net Debt	56.0	4.3
Total Capital (Equity + Net Debt)	119.0	106.2
Leverage Ratios		
Debt / Equity	118.5%	34.3%
Net Debt / Equity	88.8%	4.3%
Net Debt / Total Capital	47.1%	4.0%
Profitability Ratios		
EBIT / Total Capital	13.1%	16.3%
Return on Equity	16.8%	12.4%
Return on Total Capital	10.4%	12.4%
Key Valuation Figures		
Price (Market Value)	$189	$155
Price / Sales	1.9	1.6
Price / Book Value	3.0	1.5
Price / Earnings	17.9	12.3
Earnings Yield (Earnings / Price)	5.6%	8.2%
Dividend Yield	2.1%	1.5%
Retained Earnings Yield	3.5%	6.7%
Dividend Payout Ratio	37.5%	18.3%
Enterprise Value / EBIT	15.7	9.2

Figures are rounded and may appear off

By any fundamental yardstick, our companies are cheaper and better. We trade at 160% of sales versus 190% for the index. Despite the lower price to sales, our businesses earn a higher profit margin of 12.6% versus 10.6%. Lower price for more profit seems advantageous. While we sacrifice return on equity

because of the lack of leverage, we make up for it with half the multiple to book value, at 1.5 versus 3.0 times. We have nearly as much dividend yield at 1.5% against 2.1%, but our companies retain more than 80% of profit versus 40%, and of the retained earnings, our businesses earn 200 basis points more on capital and even more, we measure, on incremental retained capital. We abhor the enterprise value to EBITDA measure because it serves to ignore leverage and required maintenance capital expenditures. On a more conservative enterprise value to EBIT basis, ignoring only leverage, our portfolio is much cheaper, at 9.2 times versus 15.7 times.

The most important figures in the table are the return on equity, the return on net capital, and the earnings yield, which is simply the inverse of the P/E ratio.

The "E" is the profit earned by the business or an index and is a component of all three of the important profitability and valuation ratios. It is the numerator in both the return on equity and capital ratios and the denominator in the P/E measure. The earnings numbers are stated here on a current twelve-month basis, with estimated figures for the fourth quarter just ended. The earnings number for our portfolio is normalized to adjust for accounting when the economics are different than those reported. For most companies this requires a downward adjustment. Any of our cyclical businesses are downward adjusted to reflect where we are in the cycle. The quality of accounting is very clean for our holdings, so we have little adjustment for things like unfunded pensions with aggressive assumptions or serial write-offs. We have adjusted upward for a portion of intangibles that are being written down where economics dictate otherwise. The adjustments we make to Berkshire Hathaway are materially upward after removing realized and unrealized gains. At times, unrealized gains at Berkshire will be abnormally larger or smaller now and reflected in their statement of earnings (see more in the Berkshire section later in this letter). In all, our adjusted earnings are extremely conservative and require no further downward adjustment. It's already done.

The index, on the other hand, reports earnings that we believe are typically overstated or unsustainable, particularly at certain times. Today is one of those. We'll elaborate on this logic in the section of the letter dealing with earnings (see *The Trouble with Earnings*). If we employed the required adjustments to the figures presented here for the index, the adjustment is materially downward. As it is, we give the reported numbers the benefit of the doubt for presentation here. Even without making our adjustments, despite last year's 26% advance in earnings per share and the decline in stock prices for the year, the index remains very expensive.

The return on equity figure reflects the profit earned by a business owner. It's the profit earned on the equity capital of the business. Equity, or book value, can be overstated or understated relative to economic reality. For the broad market, we find equity values to be understated, thus inflating returns on equity, made worse by our belief that profits, the return part of the calculation, are overstated.

The return on total net capital is a critical measure. It measures the profits earned on not only the owners' equity portion of capital but also on how much comes from debt, if used in the business. Typically, the greater the disparity between the return on equity and the return on net capital, the greater the leverage employed.

We aren't big fans of debt. It can be useful when intelligently applied, as with buying a business if the purchase is sustainably accretive. But we don't like leverage when used to maximize returns on equity when heed isn't paid to the dangers of taking on too much debt. Low interest rates can mask the degree of leverage used or can allow more debt to me taken on as the price of the debt declines. Acquisitions made in the name of top-line growth that sacrifice profitability are too common, made worse by poor results may not be seen for years, often after the culpable manager is gone.

Our businesses earn a collective 12.4% on equity, which is matched by the same return on net capital. There is a slight difference due to rounding, but the numbers can be identical when no net debt is used in the business. The return on net capital can in fact be higher than the return on equity of a business when the business operates with net cash. For most of our history the aggregate of our businesses utilized modest net debt. We prefer to measure profitability by stripping cash out of the capital. In the case of a company like Berkshire, we make an upward adjustment to earning power to reflect the optionality embedded in the likelihood that much of their large cash balances will be put to work at higher yields than is earned by owning T-bills. An interesting point, almost all the cash that sits on the balance sheets of companies in the S&P 500 is held by 5% of the companies. Once you move down the size spectrum most businesses have less cash as a percentage of assets than at any time in the last fifteen years.

Our 12.4% return on equity trails the currently reported 16.8% earned by the index as a group. You would naturally *think* the 16.8% is superior, and perhaps it is, but when you factor in the leverage it takes to produce that return, know that it comes with a lot of risk. The 16.8% figure is as high as it's been in a long time, *by a lot*. When earnings per share grow 26% in a year and stocks decline, that's what results. Sustainable? Every trade requires a buyer and a seller. When you net out the effects of debt from the index, our businesses, earning the identical return on net capital as on equity of 12.4%, out-earn the index at 10.4%. Leverage thrills and it kills. Ask GE.

The 200 basis point higher return on net capital our businesses earn versus the index is so critical that the importance can't be overstated. One of our primary roles as investors is to assess the return on not only current capital but on incremental capital – on the balance of earnings not distributed as dividends to us but retained by the companies for internal investment. On this front, the people running our portfolio businesses are outstanding. Their understanding of business value is uncommonly terrific. They push and pull the levers of capital management very well on average, and for that our expectation of returns that approach return on capital is immensely justified. The owner of an index fund or passive portfolio can have no such expectation. It is a massive advantage. These are the capital tools at the disposal of executives and their boards:

The Pickaxes and Shovels of Business Capital Allocation

- Internal Spending in the Business – Capex, R&D, Advertising
- Pay / Increase Dividends or Reduce / Suspend Dividends
- Pay Down Debt or Take on New/Additional Debt, Including Shifting Terms
- Make Acquisitions Using Company Stock, with Cash, with Debt, or with a Combination
- Repurchase Shares in the Open Market
- Issue Shares / New Capital
- Increase Wages
- Increase Executive Compensation (favored by many – though they don't highlight it)

Our businesses absolutely earn the 12.4% aggregate shown. In fact, the number is held in check by our largest holding, Berkshire, which earns 10% on equity and capital (net unleveraged) but resides in the portfolio as an anchor because the predictability and durability of that number is as knowable as with any company we know, and because the premium in today's price to the return number is modest. The position may wind up being lower over time, but for now it serves as our opportunity cost of capital. The balance of our holdings earns about 13.2%, well over Berkshire's 10%. We have many companies that earn into the high teens and even into the 20's. Again, if the baseline return expectation is our earnings yield, and the businesses earn high returns on unleveraged or lightly leveraged capital, our returns will

gravitate toward that return over time. *If you have high turnover, then thinking about return on equity and return on capital is irrelevant.*

The companies of the index earn way less on capital than on equity, employing just about as much net debt in the capital structure as they employ equity, 89% as much. Net debt represents 47% of total capital.

Do index businesses really earn the stated returns on equity and on capital? We argue they don't, most certainly not on retained earnings. After paying dividends, repurchasing shares consumes more than the balance of profits, and for most of the past six or seven years have taken place at earnings yields below 5%. To the extent dividends and repurchases exceed profits, the balance is funded with new debt. It's damn near a Ponzi, and, beyond the most recent skyrocketing earnings numbers, has driven returns on equity and on capital downward for years. Our companies don't do this. We monitor and assess repurchases closely. When they buy shares back, they are undervalued. Most are spending capital internally on growth initiatives at very attractive returns. It's how some companies can be 10 or 20 or 30 baggers (multiples of an initial investment).

We find the side-by-side analysis useful. As we said before, while seemingly less expensive than it was last year, thanks to materially higher current earnings and falling stock prices, the index remains nutty on both valuation and quality tests. The returns our businesses earn on equity and capital support the conclusions our intrinsic value work projects for expected returns over a 10 to 15-year horizon. That we are better investors today, more cognizant of pitfalls and risks, and having learned from the mistakes we have made in our past, combine to wield a significant advantage over broadly diversified or index-like portfolios.

Having mentioned mistakes made in the past, one of the most important things we do is review past decisions and try to learn from each. It's fun to relive the glories, but its revisiting the gaffes that's the most instructional.

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THE UNIVERSITY OF ROSS – Lessons Learned the Hard Way

They assign grades in school. Over the course of my academic learnin years, I'd say the grades were well. Straight gold stars and smiley faces when I was little. I mean rock star performance in kindergarten. When they started counting with letters it was A's mostly. A few B's occasionally, and only one C that I remember. Final semester of high school, the head volleyball coach, Mary Kvamme, I'll never forget her, awarded me a C in Volleyball/Weightlifting. That was a real class. I was a good athlete but recall not seeing the purpose of bumping a volleyball in the air 20 times to yourself instead of just playing a game in gym class and made some flippant comment to that effect. Fast forward to the last week of school. We had the state championship in track and field on Friday and Saturday and on Sunday was the state championship in powerlifting, where I was defending state champ. Ms. Kvamme gave us a final exam on Thursday to max out in the squat for the weightlifting portion of the class...The last thing you would do if you know about lifting heavy weights is max out anything in the week prior to a meet, and certainly not right before the state discus and powerlifting championships. So, I loaded up the bar with more weight than anyone in the class could squat (pretty much only the girls' volleyball team) and performed a rep. Satisfied, I returned the bar to the rack. Kvamme, hovering at the rail like Field Marshall Rommel, barked, "Not good enough, Mister Bloomstran, I know you can do better". I pleaded my case, to no avail, so loaded on two more plates and did another easy rep, but made it look hard, smirked at Kvamme, who was disapprovingly shaking her head sideways. At 18 you know everything, so I announced, "I'm not lifting another weight until Sunday. I don't care if you flunk me or not, but that's it. You want to see me lift, come this weekend." Both the discus and the powerlifting went better than I had imagined, and I didn't think about Kvamme again until I got my report card in the mail and saw her C smirking back at me.

Investing for consultants is a lot like school. You still get letter grades, but in the investing world the letters are Greek. When I was studying for the CFA designation 25 years ago, I could explain what all the letters meant. Today I don't remember. You are also graded on how well you do over intervals that change monthly and quarterly. In the short and intermediate-terms it's a little nuts. I'd hoped with Volleyball/Weightlifting and the CFA exams so far in the rearview mirror that anything to do with grades was long gone. Turns out not.

I believe that we are better investors today than we were yesterday, last year, ten years ago, when we started the firm 20 years ago and when I got in the business after college. A career as an investor is a lifetime education, and the most invaluable investment lessons have come from attendance at one school in particular. It wasn't Graden for kindergarten, Sierra for elementary school or St. Anne's for middle school. Nor was it the University of Colorado. It's the School of Hard Knocks, which is universally attended by everyone laying out a dollar today for two dollars down the road. My education has come more specifically at The University of Ross.

Investing is not a science, and as I look at our long-term returns and believe we have done a good job for our clients, I know that we have made countless mistakes over time. Just a list of the things we have owned contains names that I wished we had never purchased. There are the, "Wish we had bought more of this or less of that", or, "Wish we had sold this higher." Because we turn over lots of rocks each year

and thousands over time, there are the, "Why didn't we own that, it was so obvious." Those are the lessons learned at the S.O.H.K.

The lessons presented here are not the inevitable and all too common errors of omission – the, "Oh, if I'd only bought Microsoft after the 1985 IPO," or, "If I'd jumped into Apple when they came out with the iPod," or the, "If I'd just picked up Starbucks in 1992." No, our lessons are those committed with real capital, whose economic cost has been significant. The objective of going to school is to learn, and if we have been able to learn from our most costly gaffes, then the price of admission has been well worth it. If by learning from *our* mistakes saves you from making the same errors, then bully. The reality is we all have our own Ross Universities and the scars to prove it. It's how you learn and grow as an investor.

There are a few specific lessons that we endured at the University of Ross, however, that have been invaluable teaching tools in our ongoing education, that we have learned more from than nearly anything else, and only for a willingness to learn from our mistakes am I going to put them out there. The lessons learned from these episodes are now ingrained in our DNA. Each was a class, and like Volleyball/Weights with Ms. Kvamme, they all left an indelible mark. Class is in session…

Buying and Selling 401

Our first day jumps right in with an advanced level class. It's an advanced class not because of difficulty but because we'd taken so many of the lower level classes in the sequence simply by reading and following the educations and advice of so many before us. Here, all students of investing know the wisdom taught by Graham, Buffett, Fisher, Lynch, Klarman more recently and so many others that have been so generous to share the to-do's and the not to-do's on the page for all to see. This lesson they all have taught - if you know you want to buy something, then buy it. If you want to sell something, then sell it. Don't mess around with pennies and nickels when it's the dollars that matter. We all know that Mr. Buffett bought control of Berkshire Hathaway after being slighted by an eighth of a dollar per share on a tender offer, at which he was prepared to sell his shares. That of course, ultimately worked out splendidly, but most investing greats have talked about the price paid by being stubborn or too cute when trading.

We paid a great price with our most expensive trading mistake. Our case involves Brown-Forman, a business that we have followed for a *looong* time, have wanted to own for a *looong* time, and were finally rewarded for our patience in May 2007 with a decline in the stock to a price that we thought made sense to finally establish a position. Brown-Forman is a wonderful business and owner of the iconic brand, Jack Daniels. They have an array of spirits brands, have pruned and added to their portfolio opportunistically and intelligently, and are wonderful stewards of capital. We placed a limit order a few pennies below the bid price and had a partial fill for a tiny 200 shares on the close, which were properly assigned to our four smallest accounts. The shares traded up a bit the next morning and we were willing to sit there and wait for the price to come back to our limit. Instead of paying a bit more for a business we admired, had long wanted to own, and was being offered more than 20% below its high and at a reasonable entry point, we sat there and waited for the pennies to come back to us. The pennies never came back. Adjusted for three splits, the stock subsequently has risen about three-fold. Sales are only up by about 50% but profits have doubled as margins have grown considerably, as have returns on invested capital. The company pays out a bit over a third of its profits as dividends and reinvests the balance at obscenely high returns on capital.

Nearly twelve years after buying our 200 shares, now split adjusted upward three times, that initial position remains in our smallest client accounts. Operationally they tell me it's a hassle to have such a small position on the books. The BF/B shares are included in our list of composite holdings, which is silly. But they sit there in those clients' accounts and in our roster of holdings for a very good reason. They serve as a reminder to not make the same thrifty, seemingly disciplined mistake when initiating or liquidating a position. If you want out, get out. If you want in, get the heck in.

Knife Catching 101

This is a class you only take once. There is no 202-level class here. Hopefully the lesson learned doesn't kill you. If you are lucky enough to be merely badly maimed and survive then it's a lesson you will never repeat unless you are a masochist.

A client had a position when we started the firm in Williams Companies, the energy business with interests in midstream energy distribution, among other things. When you are a new firm and your large client says how much fun it would be to go hear management talk about the business, and the small fiber business that they were going to spin-off, you go to Tampa. The communications company to be spun was laying fiber in the energy company's decommissioned pipelines, cheap rights of way to be sure. The meeting was like none I had ever been to, until then or since. It appeared that the entirety of Wall Street's technology world was there. It was a spectacle, with light shows, music, golf, booze, the only thing that was missing was an ice sculptured cherub micturating a shower of vodka.

Taking in the fiber presentation by the Williams Communication people, you could only just stare in disbelief. Every single Janus (at the time the recipient of an unbelievable, unless you lived it, half of all the money flowing into the mutual fund complex in the U.S.) fund manager was there, taking notes and nodding in agreement and enthusiastically at the opportunity to behold. I sat there dumbfounded at what I was hearing and ultimately began playing around with some numbers on the back of an envelope, literally the envelope handed out when we checked in, and went through the Moore's Law math, borrowed from the semiconductor industry, about how much prices would lower as more and more fiber was laid and dark fiber lit. Given the amount of capacity being developed by the industry, it hit me that there was no chance to make the numbers work, and that once public, the WCG piece couldn't make it. They would burn through cash and fail. I snuck out of the presentation and hurried to the client's room, who had left the meeting due to length, the higher math and because it was that time of day for the customary nip of the Smirnoff he thriftily always traveled with to bring him up to speed. Over a vodka, I conveyed what I had just heard and explained that I thought there was no way for it to work. We had dinner, played golf the next day with Williams' CEO, where I was scared to death that I might mention that his fiber spinoff was headed to zero – that would have been ungracious given all their hospitality – and we did own the energy company after all. At the end of the day we watched the fleet of *ten* Williams' private jets take off, one after another, into the Tampa sunset.

Fast forward to 2002. A tracking stock had been issued at the same $40 per share price that the WMB parent energy company traded for. It hadn't taken long for the economics and the capacity of the industry to catch up and the WCG tracker, which was ultimately spun in 2002, had tanked. Once the stock had fallen by 90%, to $4 per share, we circled back and looked to see if there was a dead cat bounce to be had. The annual and quarterly filings were huge, often indicative of trouble [the AIG (which we didn't own)10-Q's had to be mailed to us in two envelopes in 2007 and 2008 before they went into receivership]. The balance sheet showed over $1 billion in cash, far more than the burn rate and enough to not immediately think we had to worry about the losses and $4 billion in debt. We didn't get to the language in the Q, buried in an unrelated paragraph, that all the assets of the firm had been hypothecated as collateral.

In any event, as I'm sure you can guess, and for clients at the time painfully remember, we took a short-term position with an expectation of a quick profit and thought we would get out before trouble hit. Well, it hit right away. We sold our shares prior to the bankruptcy filing but not without having suffered a permanent loss of capital. What was supposed to be a dead cat bounce was a falling knife. The lesson from the class, which we survived because the position size wasn't lethal, is don't mess around with falling knives (or dead cats for that matter).

A permanent loss, which is our definition of risk, is one which disallows recovery. Time can be no savior. It is what it's called – a permanent loss. The loss was expensive, embarrassing and was capital gone forever. That it took place during the 2000-2002 bursting of the stock market and tech bubble, a time when our stocks gained 25% while the market lost 40% only masked the debacle. It's not something that should happen at Semper and it was an invaluable lesson because it's one we resolved to never repeat. It was among the most expensive tuition credits we purchased, but also among the most valuable.

As a footnote to the debacle, we were redeemed with a bit of a saving grace. Some value was directly and indirectly salvaged among the ashes:

- We ultimately owned Leucadia with Joe Steinberg and Ian Cumming, two of the greatest investors, who had purchased Williams Communications' enormous tax credits out of the bankruptcy restructuring, which went on to shelter a few Leucadia deals and businesses from substantial taxes.
- Berkshire Hathaway, which we owned then and now, was called on to lend a hand to Williams Companies, the energy parent, when they hit trouble with some hedges in 2002. For a time, Berkshire enjoyed the usury rate of 34% interest for the temporary loan of needed capital, refundable at a huge premium, plus some preferreds, and wound up getting Williams' ownership position in the Kern River Pipeline, one of the crown jewels in Berkshire's energy business today.
- Thanks to some of the horrific disclosures made and not made by Williams Communications horrible management (Howard, we're still watching you…), we salvaged some of the loss in a class action settlement for non-disclosure.

Despite the salvage of some value thanks to Leucadia, Berkshire and the lawsuit, our grade was raised to a D- from an F, but we deserved the F…

Preschool

This lesson dates to way before Semper. At the outset of my education at the University of Ross, I'd been smitten with stocks, reading the Wall Street Journal every day, tracking stocks with candlestick charting and had even gotten into Bill O'Neil's CANSLIM method, which as far as I can tell, the only thing it could do was make your wallet more slim. In any event, I was early in my undergraduate senior year (Colorado, not Ross) and had some scholarship money that I was free to use as I wished. I'd been reading up on tracking stocks and now, armed with a little capital, there was an urgency to put it to work.

The Journal ran a "Heard on the Street" column about a promising investment in a Norwegian managed business that owned four secondhand supertankers for moving oil, very large crude carriers, or VLCC's as they are known. This was 1990. The company had been public for only a year, having been issued along with several other crude carriers that were structured to essentially self-liquidate by providing a healthy operating profit over a period of years to the shareholders before paying pretty much everything else to the general partners. The ships were old, ancient would be more appropriate, the business headquarters was in Liberia, and the stock traded on the Amex. What could go wrong? The company looked to have turned the corner. It had contracts on all its vessels, revenues were growing to something like $30 million from $20 million, and more importantly, not only was I getting confirmation from my candlestick charts, but with profits becoming positive and accelerating, and with the stock "breaking out", O'Neil's CANSLIM screamed buy at me. Plus, the guy in the Journal said it was a good deal. So, I took

my scholarship money and my life savings, which combined amounted to about $7,000, and headed down to Pearl Street in my Chevette to see a broker about opening an account, which I did.

The advice from the guy was on the order of, "Are you sure about this? Usually you are supposed to diversify." When I explained my reasoning, he agreed, we opened the account, I bought the shares and paid a commission which totaled around 7% of the purchase price, and the guy said he was going to buy some for himself as well. This was due diligence at its finest on all fronts.

You probably can guess where this is headed. It was unfortunate to say the least that within a month or two Saddam Hussein's army rolled into Kuwait, commandeering two of Nortankers vessels in the process. The ships were soon recovered, but by then the energy markets had turned down and Nortankers went from a self-liquidating company with a big dividend to a genuine liquidation, a bankruptcy. Everything was sunk and it went down fast. That was a crucial moment. The investment game was rigged so I contemplated a new career path. Volleyball? For whatever reason, I resolved to figure out what I had missed, which turned out to be everything. I obtained the company's quarterly and annual filings and the offering prospectus and read them, for the first time...Turns out it didn't require Saddam's army to seal Nortankers' fate. It was doomed from the start. Lousy capital structure, lousy assets, unviable liquidating scheme, lousy management, the company was going to fail anyway. While losing 100% of my capital was expensive, I was young, had a career in front of me, had time to make and save money, and had learned perhaps the most important lesson in investing – *If you have no idea what you are doing, don't do it*. So, I graduated investing kindergarten with a mission for first grade – to read everything and to think critically about businesses, and to approach every piece of data or any recommendation proffered with a jaundiced eye. The $7,000 tuition check provided the best lesson of them all in my first class at Ross.

The Doctorate Program at Ross University – Nobody Ever Got Hurt Taking a Profit

Our alma matter, where we remain enrolled, is named for a fleeting romance with Ross Stores. Digging through the Semper archives and quantifying what has been our single worst investment decision has been a painful trip down memory lane. Ross is the story of having dated the beautiful, rich, animal and children-adoring, philanthropic, giving, supportive and loving prom queen, and having rebuffed her proposal of marriage. She's the one that got away, the one you think about every bloody day. I cry as I write this.

Ross has been a terrific retailer. For the rest of this section I'm going to refer to Ross simply as she or her, the name itself is too painful to type. We bought her in 2000, a time where all things large cap and certainly all things internet, tech, media and telecom-related were in the stratosphere, in a bubble rivaled only by stocks in 1929 and tulip bulbs in Holland in 1637. She was cheap, but not in that way. She was a beautiful company with wonderful unit economics and a long runway to grow the store count with internally generated capital. She's the one you could have grown old with, sitting there in your matching rocking chairs on the porch, or in your side-by-side outside bathtubs, staring blissfully at the ocean, caring not about mortality because you would spend eternity together. Sigh.

When we had our first date, she had about 375 stores, revenues of $2.5 billion, and outside of well-negotiated real estate operating leases had net cash on her beautiful balance sheet, and had seen her shares nearly cut in half right before we bought her. Her market capitalization fell from $1.8 billion to $1.1 billion on a little earnings blemish and because she wasn't a techie, the other boys shunned her, despite her beauty. We paid less than 10 times earnings and under half of sales for her. She was a dream come true. The world then went in for sleek companies of the night, internet pet stores, who despite nice features were never someone you could take home to mama, or who would ever show a profit. So, we danced, and in a little over 2 ½ years we nearly tripled our money with her.

Then, in the folly of youth, in 2002 we sold her. We thought she'd come back to us after a respite. We promised we'd take her back. We'd done so well with her, thought there were dozens of her type around, so we took that profit. She had gone straight up during the worst market decline since 1973-1974. You can't go wrong doing that, right? Well, in the ensuing years she never lost her beauty or her charm. More mature now, store count has grown to over 1,700. Profit margins have doubled. I forgot to mention she was thrifty, too, a saver. She has bought back nearly half of her shares and taken on not a dime of debt to do so. Returns on equity and capital have done nothing but climb. She earns over 40% on stated capital, with a book value understated thanks to repurchases well over book value but hugely accretive given unit returns on each store. She now trades for 20 times earnings and north of twice sales. She's rarely traded for more than 20 times earnings, more typically in the mid to high teens. Her balance sheet is still pristine, despite her age. She's older now, her format under attack by the young, online girls. But what a run she's had. And we had her early, for 2 ½ years of bliss.

What did we give up? Since we sold her, she's grown from our $4.43 sale price (adjusted for three subsequent 2:1 share splits) to over $90 today. On top of that she has paid about 20% of her profits as dividends, reinvesting the balance back into one of the best retail concepts over the past decades. After we sold her the stock compounded at over 20% and is more than a 20 bagger.

What's the value of having earned a PhD at Ross University? Watching the train wreck of success after our purchase taught us about the importance of returns not only on capital but on incremental capital. The even more important lesson learned was that the application of traditional valuation yardsticks requires adjustment based on underlying returns on capital. For the better part of its history, we were a bystander. Yes, we made a ton of money in a short time by owning the shares. But we were a renter, a leaser. We weren't an owner. It's only ownership over a long period of time that teaches the lessons of how capital really works. The sacrifice of upside by selling the shares, the worst sin of commission we ever made, was painfully expensive. The failure to not capture the real upside was gargantuan. If the sacrifice made us better investors, and it has, then we have the next 20 or 30 or 40 years to not repeat the mistake. Au revoir my beautiful – I'll see you in my dreams. And now that I've done the math on what we left on the table by taking a profit, in my nightmares tonight. The fool who coined the phrase about nobody ever getting hurt taking a profit should be expelled. Or have their tenure revoked…

By now you know we find Will Rogers immensely quotable. Whether he pioneered each is irrelevant. Reflecting on mistakes and learning enough from them so as not to repeat them is infinitely valuable. Said better by Will, "Good judgment comes from experience, and a lot of that comes from bad judgment."

Appropriate heading into the next section, he's also credited for, "Give a man enough rope…"

ADDICTED TO LOANS

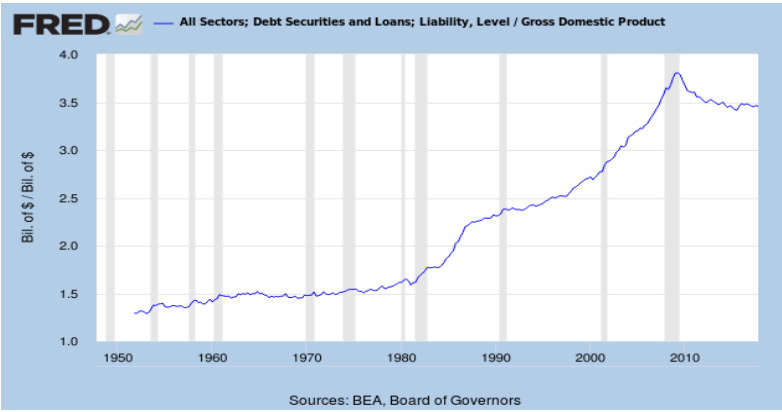
Our Robert Palmer knock-off kicked us off this year, but the letter could have easily led with the seldom remembered Merle Travis, writer and first recorder of the foreboding toe-tapper, *Sixteen Tons*, later popularized by Tennessee Ernie and covered by everybody. What *do* you get? Another day older and deeper in debt! St. Peter, don't you call me 'cause I can't go. I owe my soul to the company store. If this doesn't describe the state of affairs at U.S.A. Inc., at the U.S. Treasury and on Main Street, U.S.A., I don't know what does. Ditto the globe. The world is drowning in debt.

Debt levels are unsustainably high, here, there and everywhere. Record low interest rates, even negative rates, and central banks that own high percentages of credit instruments, have masked a credit bubble like none seen before. Debtors concern themselves only with an ability to cover the interest, and too often forget the need to also return the principal. If all you are doing is earning enough to cover the debt cost, that's insane. Not all assets can exist in perpetuity. The pace of disruption over the past 20 years should hammer that home.

In the U.S., total credit market debt outstanding sums to $73 trillion. Against GDP of $20.8 trillion at year-end, debt is 3 ½ times the size of economic output. More than $250 trillion occupies the right side of the global balance sheet, 320% of $78 trillion in worldwide GDP. Sovereign government debt alone exceeds GDP globally, a level not only proven unsustainable but often foreshadowing crises. Japan tops the heap with its government debt totaling 250% of GDP, an impossible level from which to recover, certainly not with economic growth.

When debt exceeds 350% of GDP, a 1% interest rate takes 3.5% of the economy, but at 10%, the interest burden commands more than a third of output. Of course, interest is also booked as income by lenders and savers, but at high levels debt saps productivity and when the top line contracts, as in a recession, what was a burden can become cripplingly lethal.

Total U.S. Credit Market Debt to GDP



Source: Federal Reserve of St. Louis (great source of economic data)

Governments can erase debt. Central banks (some) can create money, purchase new debt issued by its country's treasury to finance budget deficits, and then have the treasury forgive the debt. Governments can inflate away original liabilities. Done quickly, inflation is of the *hyper* variety. Governments can also compel private creditors to forgive debt. Ask General Motors' senior creditors during the financial crisis

or student debt lenders more recently about that. The bankruptcy process can eliminate debt, but that usually involves a loss by equity or asset holders, unless your last name rhymes with Lampert.

C'mon Baby Light My Fire – Monetary Policy Meets Fiscal Policy

2018 witnessed an irreconcilable collision of interests. Quantitative Easing continued its course reversal to Quantitative Tightening, and the Fed raised the Fed Funds target rate four quarter-point notches and trimmed about $300 billion from what was its $4.5 trillion balance sheet, reducing its holdings of Treasuries and mortgages. The tightening in monetary policy ran headlong into a large tax cut, a loosening in the fiscal purse. Federal budget deficits require financing, and if the central bank is effectively shrinking its balance sheet, it may not be directly dumping bonds on the market but it's certainly not in the bond buying game, and according to my daughter's high school econ textbook by the brightest of lights, Krugman, budget deficits need bond buyers.

A long road remains ahead when it comes to shrinking the Fed's balance sheet, and when coupled with the nine increases in the Fed Funds target since December 2015, markets predictably spooked. Nearly all global assets fell in 2018. The Fed seemed determined in its tightening course, but suddenly new Fed Chair Jerome Powell blinked, perhaps motivated by a cajoling Tweeter-In-Chief, or perhaps gleaning wisdom at a pow wow with the former living Fed heads, except Volcker, of course, who trolls the world of the real. It seems the new chairman got the message and now understands the mandate. It's not setting policy around unemployment targets, for those have long been met. Record numbers are toiling for wage. Nor is it an inflation level, for those also were broached. Those are the "public" dual mandates. The true single mandate is that "Stocks Shall Not Go Down." Not only are further interest rate increases, only recently telegraphed as certain, now seemingly off the table, but it seems shrinking the Fed balance sheet to previously contemplated levels is up for study as well. Whispering at the Fed now involves keeping more bonds in perpetuity, and thus higher reserves in the fractional reserve banking system. "The Fed is having discussions" is code for, "write your buy tickets." Jim Morrison can be heard singing in the background when witches Al, Ben, Janet and now Jerry pass the peace pipe. Until the market recovers the ground lost in the fourth quarter, a recently lit fire blazes.

Quantitative Easing operations across the globe allowed central banks to consume all (or more than all) of government borrowing needs for the better part of a decade. Bond buying continues unabated in Japan and much of Europe. The lack of need for the public markets to finance budget deficits and gross Treasury issuance allowed private capital to be directed elsewhere. At our writing last year, credit spreads were narrow, yields were low and asset prices were generally high. We haven't begun the process of reducing absolute levels of debt relative to economic output, but the shuffling around of which creditors have extended themselves has changed. No doubt until 2018 stock prices were a clear beneficiary of the easy-money policies and money printing operations of central bankers. Stocks rose right out of the gate in 2018, tested new highs again in September, and fell rapidly in the fourth quarter, in December certainly. It sure looks like the highs during the year may have put in a major secular top. We'll see how high the latest fire lit under the market takes things during this early-year romp. C'mon baby…

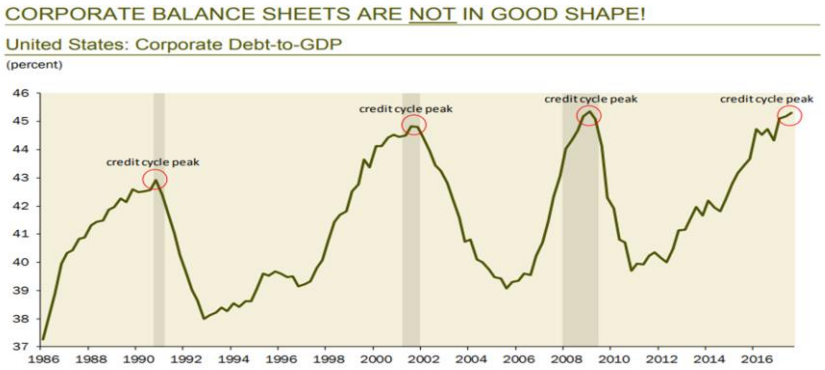
We'll also see what the Fed and its central bank brethren around the globe do about the size of their collective balance sheets and interest rate policy over the longer haul. Our bet is we are forever hostage to the Fed: Stocks down – no more rate hikes and no more QT. Stocks climb too high – rate hikes and QT. Stocks fall way too much – rates at zero and QE. I'm sure an elegant formula is appropriate here. Our bet is they are now stuck setting monetary policy indefinitely by stock market prices. They will never say it, but the time to hesitate is through. No time to wallow in the mire. Try now we can only lose. The Fed is a heroin dealer to addicted, junkie markets.

Corporate Debt Gone Wild

Government debt is concerning, but our primary concern is with an escalation that's taken place in corporate debt, specifically non-financial corporate debt. Globally, the publicly traded non-financial bond market is $12 trillion in size. Unlike governments, companies don't possess printing presses, and when they can't pay their bills they fail, legally or technically. Much of our banking system failed in 2008, and while the names Citigroup and Bank of America still take deposits and lend, among other societally accretive activities, their pre-2008 shareholders were effectively wiped out and replaced with new capital. Citi shares remain 90% below their 2007 high, a decline over a sufficient duration to comfortably call a permanent loss of capital. Bank of America has made a nice recovery, to now only 50% below its 2007 high. One more double to go. Of course, acquaintances they picked up along the way, like Merrill Lynch, effectively were zero. Some thrived, of course. Wells Fargo, the bad boy of retail sales practices, is nominally above 2007's high, but within it, Wachovia was a zero. Jamie Dimon has topped all, shrewd enough to have been handed Washington Mutual in the teeth of the storm, posting terrific gains from pre-crisis levels. As such, he speaks of a jog toward the White House, even if flippantly. Like seeing the cardiologist for chest pain, our big banks now take regular stress tests. For it, we are determined to not repeat the heart attack, now more than a decade removed. The finance sector, then handsomely leveraged, earned 15% on equity. Leaner now, some call it better capitalized, the group earns less than 9%. Even with the reintroduction of dividends at most big banks, the leverage involved pre-crisis killed many lenders.

A significant strengthening in financial capital adequacy masks a rise in other corporate debt. Corporate debt jumped to $9.2 trillion from less than $5 trillion in ten years in the U.S., far outpacing economic top-line growth. Corporate debt is now as large as mortgage-related debt. More problematic, the quality of today's higher debt balances is worse. Debt-to-EBITDA ratios are the highest they have been in years, approaching 2.5 times, up from 1.25 times as recently as 2007. The climb since 2007 has been steady.

Leveraged loans, made to already highly indebted borrowers, are almost 15% of total corporate debt. These are a hugely concerning animal. We are trying to figure out who owns all the paper, much of which comes wrapped in CLO funds (collateral loan obligation). "Not I" barked the sleepy Big Banks in their latest quarterly calls. We presume the usual suspects – the global life guys, the ETF's and the hedgies, and new to the party, private equity firms that also now own *huge* credit books. They must be the red hens. We think we'll be finding out before too long.



Source: Gluskin Sheff

Your Triple B's Will Be a C

Within the investment grade publicly traded debt market, bonds rated BBB are half of the market, the highest percentage ever. Bonds rated within the BBB tranche are the lowest rated still considered "investment grade." Thirty years ago, the BBB class was 20% of the investment grade market and as recently as ten years ago was still only 36%. The jump to 50% in a decade was swift and problematic. The highest ratings of investment grade debt, those rated AAA and AA, are almost non-existent, at less than 10% of the investment grade market. Combined, they were half in 1988. Of the global bond market, almost 60% of issuers are rated below investment grade today, again, the highest ever.

Today there are only two AAA credits – Microsoft and Johnson & Johnson. Exxon was stripped in 2016 and Berkshire Hathaway was stripped of the AAA in 2010 after buying BNSF, which was just ridiculous, particularly because Berkshire doesn't guarantee the railroad's debt. But these are the same raters that maintained GE's AAA until 2008 and had no idea how collateralized debt obligations worked but had no problem stamping AAA there, especially if the CDO's were of each other, so they got gun-shy we suppose.

The trouble with a BBB rating is where you go once downgraded. BB and below is kindly referred to as non-investment grade. In less polite circles we call it junk. And one problem with junk is there are a lot of debtholders that are prohibited from owning it.

Bond Rating				
Moody's	S&P	Grade	Risk	Market Size*
Aaa	AAA	Investment	Highest Quality	$111
Aa (1,2,3)	AA (+, , -)	Investment	Low Risk	$517
A (1,2,3)	A (+, , -)	Investment	Low Risk	$2,589
Baa (1,2,3)	BBB (+, , -)	Investment	Medium Risk	$2,963
Ba, B (1,2,3)	BB, B (+, , -)	Junk	High Risk	$572
Caa (1,2,3)/Ca/C	CCC (+, , -)/CC/C	Junk	Petition Filed, 0 Interest	$528
C	D	Junk	In Default	$164

*Market Size Source: ICE BofAML / Hotchkiss and Wiley; June 30, 2018 data

There is a potentially serious problem brewing given the growing size of the investment grade bond market rated in the BBB categories. The corporate bond market totaled $7.4 trillion at June 30, 2018, up from $2.3 trillion in 2007. Over $6 trillion of the U.S. market is investment grade, more than 80%. With half of the $6 trillion investment grade market now rated in the BBB tier (26% of which is the lowest BBB rating: BBB- and Baa3), a rash of downgrades will force many holders to sell. But to whom? The junk market is $1.3 trillion in size, *and shrinking*, thanks to a redemption cycle that began in 2018. Less than $600 billion is invested at the highest junk tier (BB/Ba). Have you ever tried to sell an asset when there is no bid? How about a home when there are no buyers around? Unlike homeowners, that generally make amortizing payments and ultimately own the house, most businesses do no such thing. They grow, and in doing so simply replace maturing debt with new debt. It's very convenient, until they can't. Ask GE, the AAA in 2007.

Private Equity

"Fools rush in where angels fear to tread" – Alexander Pope, 1711

We've seen how trouble is brewing in the BBB's. Corporate debt as a percentage of the economy has never been higher. And what 800-pound gorilla roams the sidelines, waiting to get put in the game? There's an asset class with enormous cash and committed cash that needs to get invested. Private Equity and its Venture Capital sidekick have something like $1.1 trillion that has been raised or that is callable when needed for investment. Consider the token percentage of equity capital that goes into deals and you will get an idea of how much new debt stands to be created if the private equity "asset class" puts the dry powder to work. If private equity deals are done with five times leverage, then perhaps $4.4 trillion in debt needs to be financed to put the equity sliver to work. Finding debt for private equity keeps investment banks in high cotton.

Trying to come up with words to describe the private equity phenomena escapes me. Too much money chasing too few deals? The leverage employed to manufacture decent returns? Equity is typically leveraged four to five times, and debt averages seven times EBITDA, multiples of leverage simply foreign to our way of thinking. We have friends in the private equity world and others that have been investors in deals for a long time. You won't get an argument here that historic returns haven't been fine for some investors. They have, particularly when measured against the 5% or so returns posted by the broad stock market for two decades. "We've had funds that have done 10-15% IRR's – most of our funds have outperformed our other asset classes" is a common reply to a query about how well they have done. My reply of, "So if your 15% was done with 5X leverage then your businesses earned maybe 3% unleveraged" usually falls on deaf ears. I get a quizzical look, and why not? It's worked – for a long time. In the back of my mind, I can't help but think that chasing private equity's high-return past will be like investing in the S&P 500 in 2000 – high-teens returns immediately became losses and turned into 5% or less for the next twenty years.

Methods for calculating returns vary, which is to be expected when fees can run at 2% of equity and 20% of the profits. It makes sense to us that returns be calculated on funds invested but also committed until they are called, assuming investment in T-bills until called. Some neglect the time that cash sits idle. It's like owning a rental house and assuming the annual rent reflects your return, even if it took a year to get your first tenant and the property goes unrented for four months out of the year.

Just think about the scale of what needs to be purchased if the $1.1 trillion in cash and committed cash leveraged at 5X (equity is 20% of the purchase price) gets put to work. That's $5.5 trillion, with debt comprising $4.4 trillion of it. The market capitalization of the S&P 500 was about $21 trillion at year-end 2018, so it could buy roughly a quarter of the market cap of the index (without considering control premiums, naturally). If you started with the smallest index member and worked up, presuming the S&P was private equity's hunting ground, they would have to buy 356 companies from the index – and this is the largest cap index in the largest economy in the world! The index comprises more than a third of the entire capitalization of all companies that trade publicly globally. Said differently, the 150 largest members of the S&P 500 make up a quarter of the value of the global stock market. Putting $5.5 trillion to work with typical private equity leverage would require buying 12.5% of the global stock market if the 144 biggest in the S&P weren't for sale…

We are talking about enormous sums, enormous leverage and enormous fees. Funds are typically invested in ten companies. Holding periods are five to ten years. It is very much the greater fool theory. So long as there is a fool willing to pay a higher price than you paid, then it works. Sans greater fool, you are stuck with what you bought at the price you paid. But in private equity, there is always a greater fool – the stock market. Buy a publicly traded company with leveraged capital, "run" it for a few years, adding more

leverage and stripping out much of the cash flow for yourself as dividends, then sell it by raising your now diminished equity stake to new equity capital. Who would be so foolish to buy that? The IPO market, and the Wall Street bankers always ready to take a cut, that's who. Private equity will even buy businesses from each other, presumably when a greater fool is not to be found. But why would a guy that needs to lever something up to make it work buy something from a competitor that's already levered up? Just maybe they need each other, and if the presumed holding period is 5-10 years, and no fool is around, where do you turn? If the client, the LP loses, and enough LP's realize the gig, then the gig is up. It is a wild thing, but only now has the size grown so great that the outcome, assuming current capital committed gets to work, is an impossibility. Never use that word because they will try…

What is meant by "committed capital"? This represents the cash you still have in hand but agreed to put into the private equity fund when they need it. Because funds can't and don't put the money to work right away, they let you keep it until demanded. Oh, fees are generally still charged on committed capital, even before it is invested. What? You changed your mind and don't (or can't) want to put in the rest of what you agreed to? In that case, you are usually out of luck. Either the money goes in, or you sacrifice the capital you already committed that was spent on the first deals. Often, investors can't "afford" to sit in cash waiting for their committed capital to invest, and because the cash isn't escrowed, many invest in stocks via ETF's. Can you imagine a scenario where huge amounts of committed capital, liquidity sleeves, are invested in S&P 500 or high yield credit ETF's during a major downturn? Could capital calls force continued liquidation of stocks or junk bonds to meet subscription requirements?

Capital is now controlled by allocators, not investors. It is an odd thing. When giant institutional funds move 10% from their stock market weightings to another asset class, we are talking about moving billions of dollars around. The movement comes with dislocations. Institutional investors have reduced targeted allocations to publicly traded stocks to make room for "alternatives", surely because stocks as an asset class have fallen far short of expected returns that were too high to begin with over the past couple decades. It dawned on us, that despite lousy two-decade returns for stocks, the run from the 2008 lows, with stocks so strong for a handful of years, that these giant institutions have rebalancing mechanisms, and they tend to allocate like each other. When stocks go up, to maintain allocation targets, stocks are trimmed and more and more capital flows to the alternates, namely real estate and private equity. You can see it in institutional portfolio after institutional portfolio. We've seen lowered targets for stocks and higher targets for alternates. The classic 70% or 60% allocation to common stocks has been in runoff. When stock portfolios rise above these lower receded targets, they get further sold and cash flows out. Voilà, that's why a cool trillion plus sits on the sidelines. If these private equity shops can really get the cash put to work, leveraged at whatever multiple they use, then debt issuance will continue upward and expected returns in private equity will fall as flat as they turned out for stocks when stocks were at bubble valuations. But the buyers won't know it for a *LONG TIME* because private equity, venture capital and real estate don't get marked to market! Man, are the capital markets totally screwed up. The more we think about it, the more we believe that the only asset class that's going to have a chance to meet expected returns is the Semper stock portfolio!

There is another aspect of what was traditional private equity – investing in a business and using bank loans or the public bond markets for debt capital. Now, with capital requirements in banking higher than pre-crisis, none other than the private equity firms themselves have become major players in the private debt game, often financing private equity deals for each other. At Blackstone and Apollo, for example, their private debt assets under management now exceed private equity assets. Across all private debt funds, there is almost $200 billion in cash alone that needs to be invested.

As I sit here writing about private equity as an investor in stocks the way we do, it dawns on me what fools we are. Investing in businesses with long expected holding periods. Avoiding but modest leverage. Managing risk. Earning reasonable investment management fees for doing so. Boy, to gear up results, to

earn 2 and 20, to flip businesses and do it again and again. I think we'll change our shingle. Semper Augustus Private Equity, G.P.. It has a nice ring to it.

Sweet Dreams (Are Made of This)

It's January 21 as I write this so naturally I had a dream. My MLK-REM slumber last night found me in charge of allocation for the markets. All of them. I was God of Asset Allocation. The name on the door read, "Chris the Magnificent Consulting Inc."

Mid-dream, our AUM is $28 trillion (nice fees). Our clients own the entire $21 trillion S&P 500 and all of the $7 trillion publicly traded corporate bond market. We have no allocation to other assets like mortgages, governments, real estate, timber, venture capital, or until now private equity. We *never* hold cash. For the last two decades, our stocks got the index return because, well, they were the index, earning 5.6% and our bonds 4.6% annually. Our clients are upset with us because we told them to expect *way* more two decades ago. *Way more.* Naturally, it's not our fault, we just allocate here, but something should be done, must be done. That something is to allocate 4% of our capital to private equity. We'll shift $1.1 trillion and take it from our stock allocation. Stocks aren't what they once were, after all. For good measure, we'll fire our value managers and take the allocation from them, because they are stupid lately. "Won't $1.1 trillion in equity sales make the market go down, after all we own all of the market? Who is there left to take the other side of our sell tickets?" a client asked, almost interrupting the deep sleep. Not to worry, the companies themselves will gladly repurchase their shares. Last year they bought $800 billion and only had to borrow $150 billion to do it after paying us dividends with their profits. "I have another question," the same client persisted. "The corporate bond market is only $7 trillion, and we own all of it. Where will the loans come from when our private equity gurus need to borrow $4.4 trillion to get our equity properly levered up?" Not to worry. Our friends on Wall Street are *very good* at raising money and we can surely get central banks to pitch in because they have a printing press and they know how to really buy bonds lately. And, if Wall Street and the central bankers can't do it all, then we'll just have the private equity guys just loan each other the money. Unfortunately, the alarm went off, just like the moment most nights when Brooke Shields and I leave the bar together on the way back to my estate. Damn alarm. Despite being a market holiday, the annual letter awaited. I wonder how things were going to turn out in the dream. It was just getting good. I'm sure everything turned out ok.

The investment world is now controlled by allocators and not value seeking investors. The price discovery mechanism is broken. What is perfectly rational in isolation, allocating to what are expected to be the highest yielding asset classes, invariably means those classes have outperformed recently. By replacing the underperforming, capital often flows *away* from value. Collectively, when these individually sound decisions are taken together, dislocation and misallocation of capital can happen. There is a massive misallocation of capital underway with flows away from stocks, and usually from undervalued stocks, to asset classes like private equity. The premise of capital allocation has completely distorted valuation by introducing otherwise impossible leverage into the system. While it was fun to be God of allocation in our dream scenario, it should demonstrate the unlikelihood of getting the mountain of private equity cash put to work, particularly with the leverage required to do so. To then expect decent returns on top of that seems further unlikely.

Back in the day, total credit market debt to GDP was a bit more than one-to-one for decades. The measure averaged about 150% from the 1940's through the early 1980's. I'd argue that debt had averaged that for much longer. A huge spike in debt to GDP seen in long-term charts and data series beginning in 1930

wasn't a credit bubble, despite the conventional view. When debt skyrocketed from 150% of GDP to 250% in 1933, the spike was not a huge increase in absolute debt. It was the near halving of nominal GDP. Most observers focus on a numerator when assigning cause, when changes in the denominator can have an equally dramatic effect. Aggregate debt declined during the depression, only at a much slower pace than output collapsed. I wrote about this in one of our early letters. The same thing happened during the financial crisis. Debt rose from 350% to 380% at the market and economic low because GDP had fallen. Credit has shrunk back to 350% but only for growing less quickly than GDP in the last couple years as the Fed slimmed its bloated balance sheet by a bit.

Until the 1980's, leveraged finance didn't exist the way it does today. Memories of the Great Depression kept animal spirits at bay. Businesses largely owned their real estate, they didn't lease it. Homeowners owned their homes, or they put serious deposits down for the required equity piece. Most certainly the world of private equity didn't exist. Leverage was treated with caution and respected. KKR, Thomas H. Lee and a handful of others started their firms in the mid-1970's, and raised their first institutional capital after the passage of ERISA in 1978. The 1980's brought the leveraged buyout, and the credit boom was off to the races. In 1980, private equity raised $2 billion. By decade's end the amount was ten times that, but still extremely small relative to the size of the economy and the stock market. The expansion of total credit market debt from 150% in 1982 to 350% 25 years later is a marvel never seen before. We have private equity and the embracement of debt, not an aversion to it, to thank for that.

Private Equity is misnamed. Instead of PE it should be either PLE or SE, for Private Leveraged Equity or Sliver of Equity. You choose.

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PEAKS OR TROUGHS?

Sales up. Profits up. Stock prices down. Check, check and check. That's the formula for a valuation decline, and indeed, while the fourth quarter exacted a toll on net worth and December statements read red, lower prices should equate to higher expected returns when measured against more recent higher prices. So, should we go ahead and call the Christmas Eve Massacre a new market trough, especially with the Fed seemingly having never actually removed the put?

We instead postulate that, despite the pain felt during the fourth quarter, certainly in December, and though the first weeks of January have been straight up, that we are far, far from a trough. A 20% decline in the S&P 500 over three months inflicted some much-deserved, long overdue hurt to be sure, and was unexpected by most. But complacency reigns at market peaks as memories of distant bears are long-forgotten. The ten-year old bull may have enjoyed doing some goring during its spectacular advance, but after a long hibernation, a hungry cub and a mama bear seem to have awakened from a long winter's nap.

2018 saw the confluence of several interesting dynamics. Corporate profits raced ahead again, far faster than sales and GDP. Despite four quarter point interest rate hikes (nine since December 2015) and a Quantitative Tightening induced $350 billion reduction in the Federal Reserve's balance sheet, the long end of the yield curve failed to sustainably rise, and instead the curve flattened at the one to two-year mark. While tech and several other industries soared, a great and growing number of businesses and their correspondent industries have either seen their shares decline or not keep pace with underlying fundamentals, bifurcating the market as it was in the late 1990's and perhaps telegraphing that the economic cycle was never, in fact, repealed. Throughout the year and certainly by the fourth quarter, an overwhelming preponderance of assets found no shelter from the brewing storm, with something like 90% of asset classes taking on water. A record amount of share repurchases failed to push stock prices higher. These oddities individually are interesting. In concert, they may portend something more sinister. Red skies in the morning.

Strong profits, low and falling unemployment, nascent inflation and continued economic growth are masking something large brewing on the horizon. We think that brewing storm perhaps has a lot to do with the unsustainable amount of credit finally having run its course, coupled with current profits that are artificially overstated, much of which will wind up having been fleeting and transient.

Three new columns have been added to our century of peaks and troughs table that we pulled from the archive and updated last year. Major secular peaks and troughs in stock prices are shaded in red and green respectively. We took the liberty then of shading year-end 2017 in red, naturally as an alternating color from the March 2009 low, but also because the yardsticks presented were more closely correlated to those at prior peaks. It's now shaded blue and only remains for now as reference to last year's table. We didn't want to be so bold to call a peak a year ago, but fast forward to either January 26 or September 20, 2018 and we're now up for ringing the bell and calling a top a top. Three new columns are rightmost in the table. We have a feeling 2018 may very well have seen the secular and a cyclical high, and it gets two columns shaded red. And red is no doubt the proper color at a secular market peak, because blood invariably runs heavily in the street.

100 Years of Peaks and Troughs

	9/29 Peak	7/32 Low	3/37 Peak	4/42 Low	2/66 Peak	8/82 Low	3/00 Peak	10/02 Low	10/07 Peak	3/09 Low	Y/E 2017	JAN 2018?	SEPT 2018?	12/18 No-Lo
S&P 500	34	4	20	7	102	102*	1527	777	1565	666	2673	2873	2931	2351
After-Tax Profit Margin	8.9%	-3.2%	6.4%	6.6%	6.7%	4.0%	7.4%	5.8%	9.4%	-0.1%	10.2%	11.4%	12.1%	11.7%
Price to Op Earnings (TTM)	26	NMF	8	7	18	8	33	19	22	NMF	23	25	22	18
Price to Earnings (CAPE)	30	4	23	9	25	7	44	23	28	15	32	33	34	28
Price to Sales	2.31	0.48	0.51	0.46	1.20	0.32	2.13	1.11	1.57	0.666	2.23	2.33	2.24	1.84
Price to Book Value	3.0	0.3	2.2	0.8	2.4	0.9	7.7	2.3	6.0	1.5	3.3	3.5	3.5	2.8
Dividend Yield	3.0%	17.5%	3.7%	8.7%	2.9%	6.1%	1.0%	2.0%	1.7%	4.0%	1.8%	1.7%	1.8%	2.3%
Market Cap All Stocks	93.3B	15.3B	66.2B	32.4B	624B	1.1T	14.0T	7.0T	15.9T	7.0T	28.9T	31.0T	32.2	25.6T
GDP	103.7B	58.8B	91.9B	162B	789B	3.3T	9.9T	11.0T	14.6T	14.4T	19.7T	19.8T	20.7T	20.8T
Market Cap to GDP	90%	26%	72%	20%	79%	33%	141%	64%	109%	49%	147%	157%	156%	123%
Total Credit Market Debt	175B	150B	159B	227B	1.12T	5.2T	26.7T	32.2T	51.2T	54.6T	69.0T	69.3T	72.6T	72.8T
Total Credit Mkt Debt / GDP	169%	255%	173%	140%	142%	158%	264%	293%	352%	380%	350%	350%	351%	350%
US Government Bond Yield	3.4%	3.5%	2.6%	1.9%	4.6%	14.6%	5.9%	4.7%	4.9%	3.5%	2.7%	2.9%	3.2%	3.0%
US Discount Rate	6.0%	2.5%	1.5%	1.0%	4.5%	10.75%	5.5%	1.25%	5.0%	0.75%	2.0%	2.0%	2.5%	3.0%
Inflation (CPI)	0.6%	-9.9%	3.6%	10.9%	3.7%	11.0%	3.4%	1.6%	2.9%	-0.4%	2.0%	2.0%	2.5%	1.9%
Unemployment Rate	2.3%	24.9%	11.7%	4.9%	4.2%	10.8%	3.9%	6.0%	5.0%	9.9%	4.1%	4.1%	3.7%	3.9%

*A peak price can equal the subsequent trough price following 17 years, especially when marked by high inflation

Take note of the rightmost column, Christmas Eve, shaded brown as the color you get by mixing green and red. The column is titled no-lo because we don't see it as remotely close to a secular or even cyclical valuation low. Our take is the market is no longer at a peak, but neither was it at a low on December 24. The index fell 20% from September 20, so we are well below what may have been the secular peak. But was the decline enough to put in a secular low. Spend some time with the figures in the table and determine if you think we are closer to a top or a bottom in terms of the fundamental figures.

Markets aren't identified as being at troughs with the following valuations:

- 18 times trailing earnings
- 28 times 10-year average earnings
- 1.8 times sales
- 2.8 times book value
- 2.3% dividend yield
- 123% market cap to GDP

These measures from December 24 are levels more commonly seen at peaks. The following table averages the figures seen at each of our peaks and troughs presented, with the two numbers for 2018 averaged and only therefore counted once.

Fundamental Measures at Peaks and Troughs

	Peak Averages	Trough Averages
Price to Op Earnings (TTM)	24.5	11.3*
Price to Earnings (CAPE)	30.6	11.6
Price to Sales	1.9	0.6
Price to Book Value	4.1	1.2
Dividend Yield	2.3%	7.7%
Market Cap to GDP	108%	38%

**Excludes two years with losses*
-The price to operating earnings and price to sales calculation excludes the depression induced 1937 numbers.
-Market cap/GDP requires upward adjustment for the portion of private versus publicly traded output and for increasing volumes of exports and imports.

You should take the averages in this table for peaks and troughs with a grain of salt. The data are skewed by differences both unique to each underlying extreme and to changing interactive dynamics over time. In the 100 Years of Peaks and Troughs table, study the differences between measures from each successive peak to the next trough and then that trough to the next peak. You will see how radically different each successive mark is fundamentally. December 24 was not a secular low.

The Long-Run Since Moses

The extreme long-run has seen stocks produce axiomatic returns of 10.1% per year. This number is taken as gospel among the investment community because it was brought down the mountain on stone tablets backdated to 1926 by none other than Roger Ibbotson, cloaked as Moses. The number is taken as a birthright. Invest thy capital in stocks and it shall double in value each seven years. Your $1 *million* will grow to $7 *billion*, and if Peter comes not for you for another two mere decades hence then ye and thy $50 billion shall ascend to be seated at the right hand of Father Warren, among the kings of the wealthiest, except for Bezos, who, of course, is God himself. Though, when Bezos soon parts with half of his Red Sea, his perch will be less elevated.

Two little-known secrets about long-term returns go unappreciated. One, nearly nobody has the psychological wiring or the longevity to be long-term. Two, unless you really have 92 years, then the long-term result can be dramatically skewed by both the beginning and ending brackets used for the measurement period. A third more well-known but under-appreciated truth is that frictional costs eat away chunks of return, and sometimes those chunks are gargantuan, particularly when compounded. If your buy-in happened to take place at the outset of Ibbotson's recorded history, then that's what you got, 10.1%. That's 92 years. 92 years is a long time. No investors we know have that long. Most that fancy themselves long-term investors can't tolerate deviation from the Ibbotson number for more than a couple years (unless, of course, the deviation is to the high side) and that's being generous. As intervals shorten, beginning and ending compounding series have been, are, and will be wickedly deviant. If you sin as the unfortunate high buyer and low seller, rest assured your penance will have you badly trail the numbers on the tablets. Conversely, the lucky soul who begins the compounding series closer to the dates that correlate to the green columns in our table, will reap the harvest of returns north of gospel.

One can argue as to whether the 2,931 September 20 S&P 500 record high or the earlier 2,873 record established on January 26 was more properly "peakish". While the September price is mathematically 2% higher, underlying fundamental measures such as sales and reported profits had grown even faster, making things like P/E's and price to sales measures more extreme at the earlier date. The P/E hit 25 times trailing and an all-time record 2.33 times sales on the January advance, making a very strong case for January as Everest. Even though valuations drive our core process here at Semper, we will call the higher nominal priced but lower fundamentally overvalued point in September the peak. Eh? Is one mountain's summit higher if marked by a man-placed tower of stones than its adjacent sister-mountain

unblemished with enhancement? The distinction may seem insignificant or petty, perhaps even wrongheaded to those who rightly would argue that a higher price is a higher price, and indeed it may be. But what if instead of eight months it had taken eight years to reach a new high? If sales and earnings had grown by 5% per annum and were each 50% higher, then fundamentally the valuation wouldn't have been even remotely near those seen at secular highs. It's the same reason the index peak at 102 in 1966 reached its subsequent trough at precisely the same price of 102 some 16 inflationary years later. Study the fundamental differences between valuations in those two years of extremes in the table.

If projecting expected returns over time is important, you ***must*** consider from where you now stand. Where are we on the valuation spectrum? Are we at a market peak or at a trough? Rarely is the market at an extreme, but it serves investors well to think about where prices are in the range and adjust the gospel according to Ibbotson accordingly. What you need is a lemma, a helping theorem, with more adjustment to the expectation required as the assumption period shortens. Investors should be thinking in 10 to 15 to 20-year horizons, minimum, when contemplating how much return you should expect. Consider the following:

Long-Term S&P 500 Returns from Secular Peaks and Troughs
"Da Brackets Matta'"

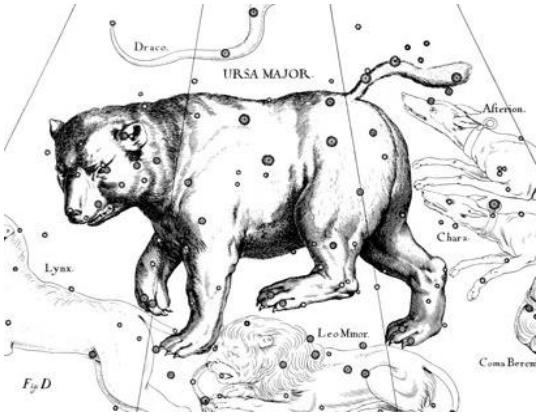
Start Date	Year-End 12/31/2018	Last Trough 3/9/2009
9/6/1929	8.7%	7.7%
6/1/1932	11.5%	10.9%
3/6/1937	10.2%	9.3%
4/8/1942	11.8%	11.1%
2/9/1966	9.6%	8.1%
8/12/1982	11.9%	10.2%
3/24/2000	4.7%	(5.7%)
10/9/2002	9.7%	(0.2%)
10/9/2007	6.5%	(43.3%)
3/9/2009	16.7%	-
1/26/2018	(11.9%)	-

Raw total return data source: Bloomberg

At the founding of Semper Augustus two decades ago, we saw Ibbotson as Judas because there was no way was the prospective long-term return going to even come close to the number from 1926. Those that preached the market would give you its historic returns were traitors to reason; they lacked judgment. The market wasn't yet at its eventual high, but it was closer to "peaky" than "troughy". The market peak in 2000 was a major secular peak akin to the 1929 top. You could argue it was more extreme. Either way, those two summits were the big kahunas of extreme. In March 2000, we calculated and argued that fair value was roughly 65% *below* the then current price. Only a kook would have said that, so we published it. The Ibbotson number was taken as gospel, which then was 10.6% (yes – the last 20 years of returns below the historic average have shaved by a full half percent per annum, which is hard to do to what was then a 72-year series). A 10.6% expected return was an impossibility for the markets, but you didn't hear that from Wall Street. We found the broad market extremely expensive and dangerous, yet found pockets of smaller businesses increasingly attractive. The unfortunate masses, however, had just been witness to one of the great bull markets of all time. Few participated in it at the start. All were "all-in" at the end. From the secular low in August 1982, stocks returned 20.2% per year, measured from the absolute low to

the March peak. A high-teens expected return was the new birthright, the New Testament expectation, and that flawed entitlement was evidenced in investor surveys and pension return assumptions alike. So, did the masses get their 20%, or did they at least get the more conservative Ibbotson gospel number? Nope. They got gruel.

The table above shows annual returns for the S&P 500 when calculated from the peaks and troughs in our 100-year table. The green rows again represent peaks, with red denoting troughs. It's enlightening to see how materially different returns can be when bracketing from extremes, even over very long periods. We view 1929, 1966 and 2000 as the Ursa Majors of secular peaks, and either 1932 or 1942, plus 1982 and perhaps 2009 as secular lows. Tops like 1937 and 2007 were more cyclical in nature, so would be the Ursa Minors, as were troughs like 2002 and 1974 (not shown). In fact, we argued in our 2003 client letter, that despite the halving of the stock market from 2000 to 2002 that valuations were far from a secular low.



As time passes, returns have indeed trended back toward the Ibbotson norm, but you never fully return when purchased around a peak. Look at returns from the 1929 peak. Through the year just ended, which we think much closer to another secular peak than to a trough or even to mid-cycle, you only earned 8.7% annually, a full 1.9% percent below Ibbotson's old 10.6%. It only requires a modicum of appreciation for compounding to understand that 190 basis points over nine decades is a ***BIG DEAL!*** $1 million compounded from the 1929 market peak at the actual 8.7% return, with no fees, taxes or other costs, grew to $1.8 billion. Had the same million grown at the original 10.6% Ibbotson figure, an investor would have $8.7 billion, nearly five times as much money. The unfortunate chap who bought the market peak in 1929, held on for more than 80 years, but sold at the market low in 2009, saw his annualized return shaved by another 1.0%, to 7.7%.

When the compounding series begins at an extreme, whether high or low, the shorter the successive interval the more deviant will likely be the returns. From the 1929 peak, it took 25 years for the market to surpass its price high (you earned dividends). How about returns from at or around the more recent secular peak in 2000?

From March 2000, those that began their compounding series from that lofty bracket earned all of 4.7% annually! We hung the Semper Augustus shingle 20 years ago. The market wasn't yet at a peak, but we believed it was a bubble. From the outset of Semper, the S&P 500 delivered a whopping 5.6% per year. Fortunately, we never owned "the market". *Value exists somewhere, always. The trick is finding it.* The Semper composite portfolio of stocks, with no cash and before fees, returned 10.6% from our inception. Saint Roger would be proud.

Two things really jumped out at me in putting together our returns chart. I mentioned how much was shaved from the Ibbotson number when measured from the 1929 peak instead of from 1926. The other was how much of the bull market from the 1982 low has been relinquished since the market peaked in March 2000. The bull ran for more than 17 years and produced its 20.2% trough to peak return. Now, nearly 19 years removed from the 2000 high, the subsequent 4.7% return has hammered the annual return

from the 1982 washed-out low back to 11.9% per year at year-end 2018. We have a pretty good handle on compounding around here and that last two sentences required a double check.

What is it about returns mean reverting around the 10% level? Why has that been the number? If you studied finance or sat for the CFA exams, you learned about risk premia. Ibbotson did work in the area. U.S. Treasury bills are free of risk (or are they free of return if measured against inflation, as we observe). Bonds are riskier than T-bills so they earn more, the longer the maturity or duration, and the less creditworthy the borrower, the higher the return. Stocks are said to be the riskiest, thus provide the highest return. Academics quantify that premium as about 6% over the "risk-free" rate. They even taught us that because smaller cap stocks were riskier than larger caps, that there is even more premium to be had there. I always asked if you couldn't take too much risk and compromise "expected" return. Professors didn't like that question. I also asked (and do to this day) if an unleveraged business couldn't be less "risky" than a bond issued by a company with *lots* of them. Professors didn't like that either. In fact, several professors didn't like *me* much. We could go off on another chapter (or book) here but let's get back to the point. Why 10%? Here's what we believe…

******

THE ROE IS NOT TO BE –

YOU WILL NOT SEE THE ROE

```
The stock you bought
         And paid a lot.
              You own the shares
                     But all for naught -
                           The profits there
                                 Are vaporware!
                                       Options grant
                                             Protest you can't…
                                                   Bad times come
                                                         Writedowns low.
                                                               Compound returns
                                                         You'll never sow.
                                                   The pension fund
                                             Has come undone.
                                       Share repos
                                 Your money goes -
                           Down a hole
                     You've no control.
              Prices high
       Value low.
              Add it up
                     It is a drag.
                           A scam you say?
                                 Returns just lag.
                                       But returns you need
                                             Your money bleeds
                                                   What's come to be?
                                                         You have not seen the ROE
                                                   Protest and plea?
                                             You'll never see the ROE
                                       Jump and scream?
                                 The ROE is not to be…
```

Apologies to Dr. Seuss…

If you own a business, you own the equity of the business.

If your business produces a profit you are entitled, as the owner of the equity of the business, to that profit. That is the return. The earnings. The net income. The profit.

The profit of the business as a percentage of the equity of the business is necessarily the return on equity.

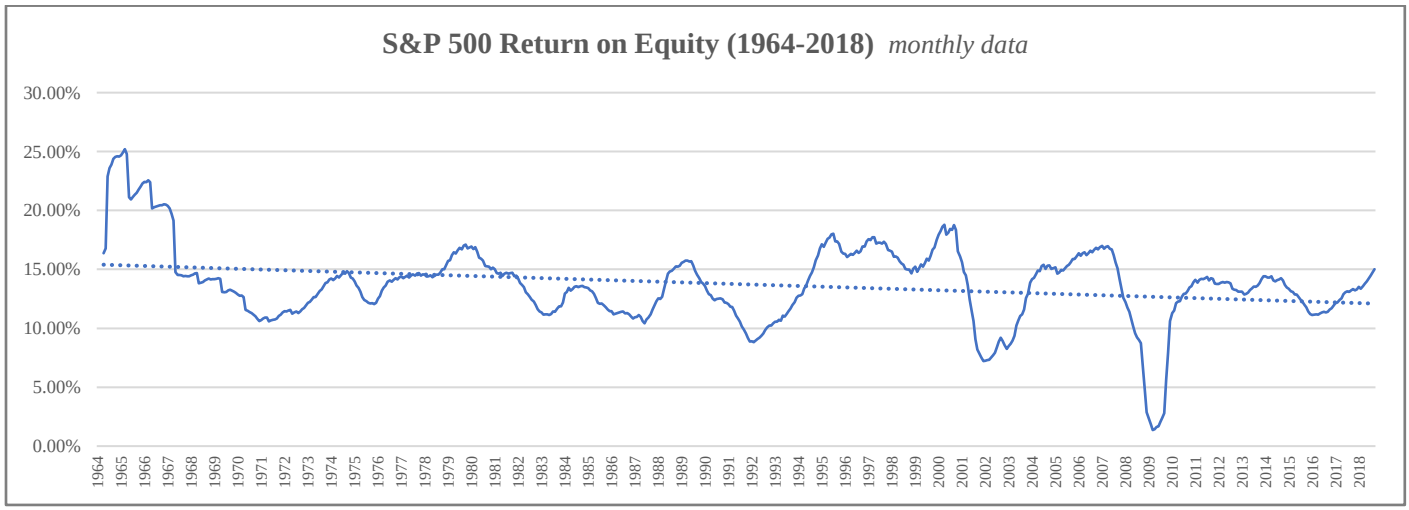
The business owner should earn the return on equity of the business. That's the ROE.

You are trying to get return on equity. But will you see it? The more debt jammed in the capital structure the more earnings can be squeezed out. But leverage must be accretive on a return on capital basis. The crazy thing is the more debt you get in, the lower the cost of capital and hence the lower the hurdle rate.

And the market pays more for a highly-levered return on equity than it does for an unlevered profit. That's just insane. It's how companies like GE can fail.

I'll just say it. The market is screwed up. It rewards a high return on equity but fails to discount the leverage employed in producing those returns. It further fails to penalize valuation when returns are overstated, dishonest or unsustainable and punishes those who employ a judiciously conservative capital structure, yet produce superior returns on net capital. Any success we've had over 20 years can be attributed to rewarding the latter and not only discounting but avoiding the former.

Below is a chart of the return on equity over time for the S&P 500 (getting the first 20 years of data for book value took a herculean effort – thanks JD). Return on equity for the aggregate of companies in the index averaged 13.8% since 1964. We tried to find book value data for the S&P for earlier years but failed. All we needed was even good price to book data, and because we have good earnings and P/E data sets, could easily figure out the longer-term ROE. We believe the ROE since the 1920's has averaged about 13% but don't have the data to support that number. If anyone has historical balance sheet and income data for the S&P 500 going way back we would absolutely love to see it. Annual numbers would be great. Quarterly would be better! Don't assume if you possess the coveted data that someone else will ship it our way. There may not be that many of you—readers that is…



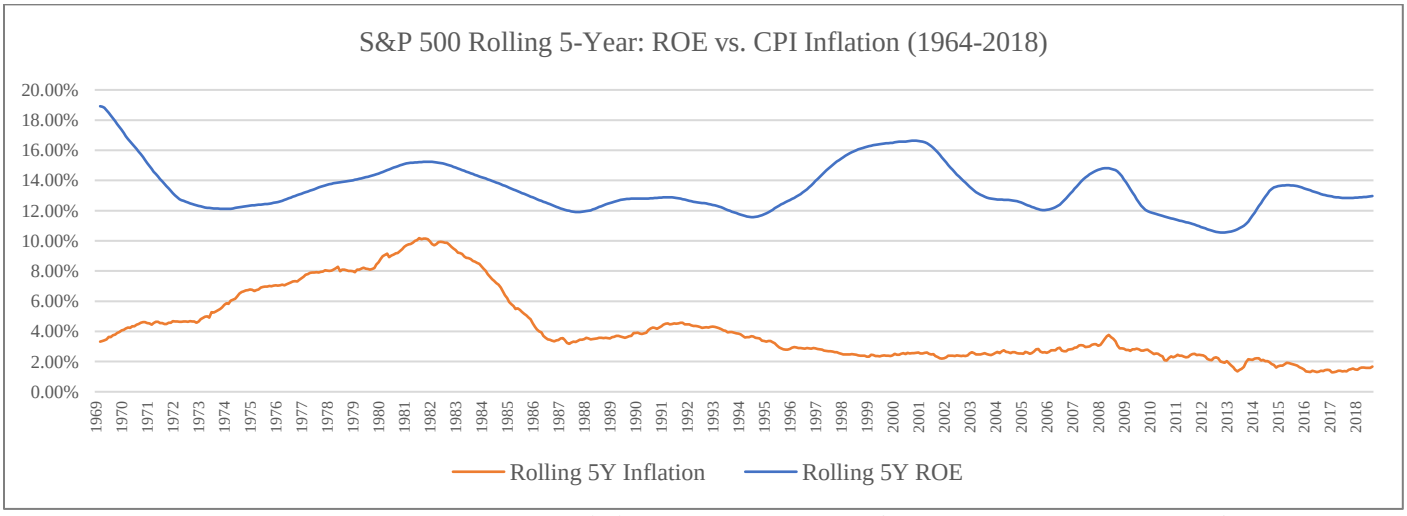
Semper Augustus Investments Group; Earnings Data Standard & Poor's

Return on equity for the market is steady between 13% and 14%. The chart and long-term averages get pulled down by the period of low and even negative profits during the 2008-09 financial crisis. Since 2007 the return averaged 11.9% and going back to 1999 averaged 12.9% through 2018. If you average the data from 1964 to 2007, just before the crisis, the long-run average was a higher 14.2%. The weakness imparted on the long-run averages during the crisis is the same profit-crushing logic in thinking the historic returns were pulled down by the Great Depression. Regardless, we think in terms of long-run returns on equity being around 13%. It's a measure that doesn't move around much, and isn't as affected by inflation levels or interest rates as one might think. The very high levels of inflation in the 1970's and early 1980's caused inflation adjusted losses for sure, even if nominal profits were positive. Conversely, during the past decade, the post crisis years, profitability is aberrantly high when viewed through the lens of low interest rates and low inflation.

When it comes to stock market returns, it should be somewhat intuitive that the longer the period measured, the long-run investment return will gravitate toward the long-run return on equity. Again, if you own the business, the profit earned is the return on equity. Using the Ibbotson number discussed earlier, and observed market returns over time, the long-range stock market return number is around 10%. However, in our opinion, the long-run number should have been higher, much higher than what was realized. *Returns should equal or replicate the return on equity of a business.* Returns are the profits and equity is the owners' share of the business. If the return on equity since Ibbotson averaged say 13%, then at 10% for stocks the drag is a full 3% of return. Where does the drag go?

The answer is a combination of things, naturally, but is largely due to the quality of earnings and to decision-making by captains of industry, which in both cases are less than ideal. The drag also comes from the initial purchase in a compounding series – stocks that earn decent returns on equity seldom trade for book value (usually the higher the return on equity the higher the premium), meaning it takes retained earnings and time to close the gap. Counterintuitively, dividends cause a similar drag as well, because when reinvested they must also generally be spent at premiums to book value.

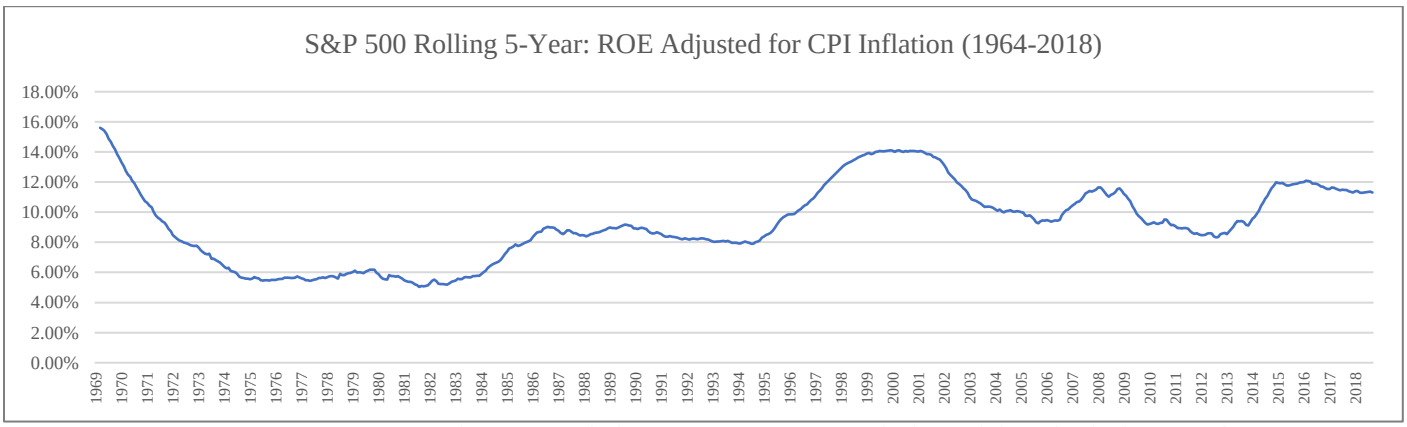
If you said inflation plays a part, you are wrong. In fact, the exact opposite is true. Inflation serves to *overstate* the return on equity, not to cause its understatement. Returns measured against a depreciated old asset that would be more expensive to replace in current dollars serves to understate economic assets and equity. Casual observation of our return on equity chart seems to throw the concept of risk premia on its head. If "riskier" asset classes earn a consistently larger premium to inflation over time, you don't see it in returns on equity. If the business owner earns the profits of the business over time, then owners are rewarded aberrantly well during periods of low inflation and are penalized during periods when it's high. Think about the bear that persisted with a flat to declining market from 1966 to 1982. The stock market investor earned dividends and nothing else. Next to average inflation rates over the period, the investor lost roughly 75% of purchasing power in stocks over the period, yet the return on equity barely wavered. Business owners were making profits, but their profits lost purchasing power. To compensate for inflation and conform to the theory of risk premia, returns on equity should have moved higher and stock market returns should have been much better. Neither did.



Semper Augustus Investments Group; Earnings Data Standard & Poor's; CPI Data Bureau of Labor Statistics and Federal Reserve of St. Louis

You can really see the dramatic impact of inflation on returns in our chart below. Returns on equity ground downward during the inflationary 1970's. The chart above illustrates the steady climb in inflation, which translates to the punitively low inflation adjusted returns seen below. If business profits could adjust upward for the erosion in purchasing power, they had plenty of time to do so but didn't. Inflation adjusted returns on equity averaged between 5% and 6% for nearly ten years. The same effect was seen on investment returns, when flat nominal returns slipped to painful losses. In absolute terms, returns on equity stay remarkably constant, regardless of the inflationary climate.

The last two decades have seen returns on equity clip along at their historic 13% to 14%, and with little drag from inflation business has been remarkably profitable. As we know, however, stock market returns have fallen well short of returns on equity, and even well shy of inflation adjusted returns.



Semper Augustus Investments Group; Earnings Data Standard & Poor's; CPI Data Bureau of Labor Statistics and Federal Reserve of St. Louis

The largest drag on equity results from the writing off and writing down of asset values. This is not the economic depreciation of fixed assets, which if properly reserved for and replaced can sustain ongoing normal profitability. These are write-offs and writedowns having to do with asset obsolescence or a sustained lack of profitability on the assets and on equity. Sometimes the charge is genuine – Borders didn't have much use for the real estate, the hardware and even the inventory it marked down when closing stores prior to its going out of business. But sometimes managements like to take an eraser to asset values, for an asset writedown equals an equity writedown, and if you look like a better manager because your return on equity is higher, then, well, you may prefer an understated equity value. Shocking, I know. Stock prices ultimately or usually catch on to this, however. The drag is huge.

Since the end of 1988, write-offs and writedowns have averaged almost 15% of profits per year. During slowdowns, the total is higher (think kitchen sink or big bath accounting if you are familiar with the terms). During heady times, the total is lower. But added up, losing 15% of profit over time is penal.

A 15% profit writedown shaves a 15% return on equity by 2.25% to 12.75%. If the return is 13%, the shave is 1.95%. Hence, a 13% headline return sees it trimmed to 11.05%. The latter represents the degree to which the historical return on equity has been reduced by write-offs and writedowns.

Focus here. The more debt that's employed in the capital structure, the less is equity as a portion of capital, and thus the greater the impact on equity when assets are written down. A leveraged capital structure is more sensitive to asset obsolescence. Leverage allows a dollar of equity to control more than a dollar of assets. Our observation over nearly 30 years researching lots of businesses is write-offs and

writedowns are more typically seen with businesses that use larger amounts of debt. The larger the concentration of leverage in the capital structure, the more likely will be impairment charges.

There are also some accounting nuances that have affected equity over time. Until 2001 goodwill was required to be written down, generally over 40 years, even if an acquired business produced adequate returns on the entire purchase price. Accounting rules eliminated this requirement with FAS 142, which now compels the periodic test of goodwill for impairment but otherwise leaves the full amount on the balance sheet, unamortized.

Besides write-offs and writedowns, another innocent and unlikely culprit is at constant work dragging returns for investors below the return on equity – dividends. The fact is, the stock market seldom has traded below its book value. Again, book value is equity. We have always said that our expected return begins with the earnings yield, and only over time will our return accrete upward toward the return on equity of the businesses. The larger the premium paid to book, the longer the horizon for returns to approach the return on equity. Well, dividends are a payment of profit to the owner. If we as owners reinvest our dividends, and for net savers we do, then ongoing purchases are invariably made at the earnings yield, which is the same as the adjusted yield against the premium we paid for equity. Every time we reinvest dividends into the same or a new business, each of those dividends begin their own compounding series.

Too many words? An example then. If we pay two times book value for a company that earns 20% on equity, our adjusted return is 10%. Even for an original shareholder or one who paid book value, both earning the full return on equity, dividends invested here begin at 10%, and the portion subsequently retained will gravitate to the company's return. If we pay three times book for a 15% return on equity, then the adjusted return is 5%, which also means the P/E was 20 times and the earnings yield the same 5%. It doesn't matter whether new purchases are made with fresh capital or with dividends paid to us. And don't forget, taxable investors have a natural drag each year as the taxes on dividends dilute the long-term return. Capeesh?

If you are fortunate to own a business that avoids write-offs and writedowns and avoids buying back shares at prices above intrinsic value, then if you buy the business at book value, you will earn the return on equity if at the future measurement date the price trades at book. As a corollary, if you pay a premium to book, but the terminal premium is the same, then you will also earn the return on equity. Berkshire should come to mind about now. If you got your Berkshire at three to book, say in 1998 as a General Re shareholder, and the stock in now 130% of book, then you lost 57% to multiple contraction, offset by the underlying return on equity, which has averaged 10%. You got 6% so far. But the longer you hold, if the return on equity averages 10%, the more your return will close in on 10%. But you will never get there, unless what? Unless the stock again trades at three to book. [If this paragraph was easy to follow, then you understand everything you need to know about investing.]

An appreciation of long holding periods should be self-evident. If you have high turnover, then thinking about return on equity and return on capital is irrelevant. The higher the portfolio turnover, the more likely the investment philosophy banks on the necessity of the greater fool. An investor can hold a business that earns good returns on equity for a long time and returns will gravitate to the underlying return. If a business operates with excessive leverage or earns subpar returns on equity, then a long holding period is likely to produce a disastrous result.

Of course, besides write-offs and write-downs and purchases made above book by investors, there's a biggie that grinds against returns, and it's a counterintuitive one.

Share Repurchases

If returns on equity and on capital are proper measures of profitability, and we think they are, then what impact, if any, do share repurchases by companies impact both the numerator and the denominator in the return calculation? Many believe that book value is a lousy proxy for shareholder value, and in many cases that is correct. Old, depreciated assets are carried at historic cost, which may be well below replacement cost, for example. But to what degree do repurchases impact book value and book value per share? The two are not affected the same unless made at book value.

Companies making up the S&P 500 repurchased a record $800 billion in 2018, 70% of reported profits and 3.8% of the average market cap of the index throughout the year. Share count declined by a lesser 1.7%, the offset being new shares issued thanks to stock option exercises and new share offerings (think REIT's). Book value per share probably averaged $840 for the year, roughly $7.1 trillion. Index market cap averaged about three times book value, about $21 trillion.

Shareholder's Equity will decline by the amount of cash spent to repurchase shares. Credit cash and equally debit equity, right? With $800 billion spent, shareholder's equity, book value, declines 11.4%, from $7.1 trillion to $6.3 trillion. Market value, price, will decline by the same $800 billion, equal to the amount of market capitalization repurchased, 3.8%. 11.4% is three times 3.7%, representing the three multiple to book value paid. Book value *per share* will decline because the price paid per share exceeded the book value per share. The decline in book value per share is 7.47%, representing the one-third of the purchase represented by book value and the 3x premium price paid for the equity. Offsetting the decline in book value and in book value per share are profits retained and not distributed as dividends, plus any new equity raised and new shares created for the year.

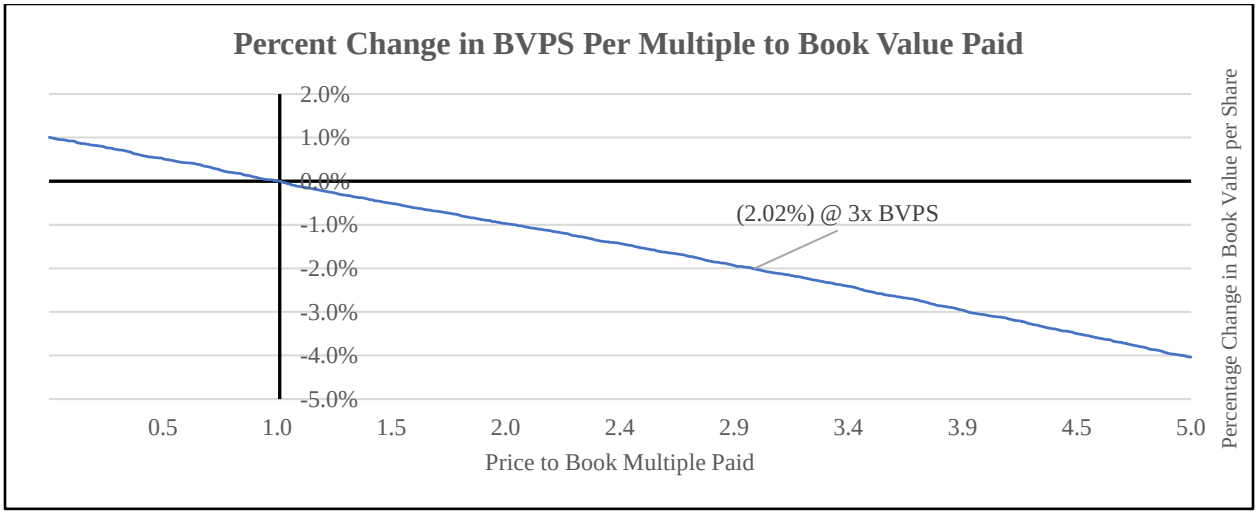
Putting it all together, book value per share for the S&P will likely have risen to about $850 per share, up 2.8% above $826.52 at year-end 2017. The net 1.7% decline in total shares outstanding means shareholder's equity in dollar terms only rose 1.1%.

The trouble we have with share repurchases made at prices above we would pay as investors, is the expensive use of capital, or the low returns on incremental capital invested. If 70% of profits are spent buying back shares at 20 times earnings, that's at a 5% earnings yield. It's the same math as paying 3 times earnings for a 15% return on equity. If incremental returns on capital invested are made at returns below current returns on capital, then overall returns will decline by the difference over time. Repurchases made at returns below the cost of capital are in essence capital destroying. Yes, book value per share is declining, seemingly pushing up current profits against equity, but the return on each repurchase is being incorporated into the overall return.

We thought it would be useful to visually illustrate the degree to which share repurchases above or below book value impact book value per share. It's not a linear relationship. Huge thanks to my Uncle Bill Thomas, a genuine rocket scientist, and to Dr. Tim Marlo, a professor at Southern Illinois University Carbondale, for helping convert our algebra into a usable graphical illustration. The chart is below.

2018's repurchases can be plotted on the chart. With repurchases taking place at 3 times book value, you can see for each 1% of outstanding shares repurchased book value per share declines by 2.02% (ok you can't really see it on this chart but that's what it is). Repurchasing 3.8% of outstanding shares at three times book value will lower book value by 11.43% and book value per share by 7.92%. It's not linear so when larger amounts of book value are retired and as the premiums paid grow, book value and book value per share can shrink to nothing. This can be seen in many companies that have been serial acquirers for years. A loss of equity isn't a terrible thing if earnings power remains intact. We'd argue that for a

business earning very high returns on equity, a share repurchase at a high price should be far less attractive than reinvesting in the business if similarly high returns can be had.



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It's often argued that repurchased shares simply offset the dilution that comes from option grants, and now that option compensation is an expense on the income statement that economically it's no big deal. We completely disagree. The shares repurchased invariably take place at prices higher than when the option shares were granted. Share grants and exercises are generally cashless, meaning the employee recognizes the difference between the grant price (strike price) and price upon exercise as compensation, so no cash is ever used. The expense accounts for the dilution. Yes, the sale of stock to the employee upon exercise at the exercise price may very well be done at prices above book value, thus increasing shareholder's equity by the amount of the strike price and raising book value per share. The trouble is the repurchases that offset option exercises take place at even higher prices. The difference represents the net change in shareholder's equity and in book value per share. Further, the dollars spent repurchasing shares, and the dollar value of market value of shares repurchased, far exceed the dollars "collected" from option exercises.

If in 2018, for example, companies spent $800 billion repurchasing 3.8% of outstanding shares, that dollar figure and percent of shares out is much greater than the percent of shares granted each year in option and restricted stock programs, which we believe are about 1.5% of shares outstanding each year, with total potential dilution from all options and performance shares outstanding at about 4% to 5%. In the late 1990's, grants ran over 2%. For technology stocks the dilution and cost to shareholders was staggering.

An investor should pay attention to the character of shareholder's equity. You will see with companies that repurchase larger amounts of their stock, the treasury shares accumulated balance can dwarf retained earnings. If the combined values of dividends and share repurchases exceeds net income, that tells you that operations and a portion of repurchases are increasingly funded by rising debt balances. Since 2009 more than 25% of buybacks have been funded with debt. The percentage was 35% in 2016 and 2017. 2018 saw a spike in repurchases to $800 billion, only 15% of which were debt financed. The lesser need for debt was due to the tax change which beginning in 2018 began taxing cash reserves held abroad, whether the cash is repatriated or not. It looks like roughly $600 billion in cash came home last year (leaving about $900 billion still abroad), much of which went toward repurchases. That 15% was still

funded with debt is astonishing in an unusual year like 2018. When $800 billion in repurchases can't keep stocks in the black for the year, one wonders how bad the next bear will be when repurchases dry up, as they always do when times get tough – and shares are the most attractive. Go figure.

Since 2009, S&P 500 companies have repurchased a staggering $5 trillion of outstanding stock. Against $21 trillion in market cap at year-end, you can see it's a big number. When you consider that the market cap of the index was $5.8 trillion at the low in 2009, it's hard to get your mind around the number. If repurchases hadn't helped to push share prices up, we could be close to having no stock market! Of course, there's a bid *and* an ask side so that was tongue in cheek. Kind of. When you further consider that profits for the ten years totaled about $8.8 trillion, it's apparent companies aren't doing much else with the dough. Book value and book value per share would be a lot lower except for the offset of share issuance to management. That ought to make everyone feel better.

Let's move on from the return on equity topic. It's been a drag…

The data point in our 100-year chart that compels the belief that we saw a secular peak in 2018, regardless of whether it was at the January or the 2% higher September record resides in the row labeled, "After-Tax Profit Margin". The reason we chose the September date for our peak column, despite fundamentals being seemingly more expensive in January, was due to what we believe will be the significance of the 12.1% after-tax profit margin charted at the end of 2018's third quarter. Two years ago, we wrote about the declining significance of a range-bound notion regarding profit margins due to the increasing amount of capital, largely debt financed, to produce a dollar of sales. We stand by that hypothesis and conclusion, especially in a secular sense. But economics being what they are, a soft science, you cannot repeal the immutable laws of the cycle. At some point, regardless of the amount of capital involved, profits can only be so high. I suppose if a business with revenues can eliminate all its expenses, then the sales margin would be the upper bound for the profit margin at 100%! That would be a *great business* – inventory given freely by suppliers, no workers to pay, or at least willing to work for free, no unnecessary marketing expense given the 100% gross margin (would that be a zero markup, an infinite markup or an impossible markup?), no interest to pay, no depreciation of assets, no rent, and no tax payments to everyone's favorite business partner. Gosh, it sounds a lot like proforma EBITDA! More on that shortly.

You heard it here first. There is a *great chance* the record profit margin recorded at 3Q 2018 will be it.

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THE TROUBLE WITH EARNINGS

A nightingale, sitting aloft upon an oak and singing according to his wont, was seen by a Hawk who, being in need of food, swooped down and seized him. The Nightingale, about to lose his life, earnestly begged the Hawk to let him go, saying that he was not big enough to satisfy the hunger of a Hawk who, if he wanted food, ought to pursue the larger birds. The Hawk, interrupting him, said: "I should indeed have lost my senses if I should let go food ready in my hand, for the sake of pursuing birds which are not yet even within sight." – Aesop

Earnings are the most integral element of business valuation. They are also the most misunderstood.

The valuation of any asset is made by determining the present value of a future stream of earnings or cash flows. The calculation involves an estimate or forecast of the future earnings or cash flows and discounting each and all those estimates back to the present using some appropriate measure for the cost of money, represented by a rate of interest that theorizes how much of a return can be made by taking zero risk and adding a premium to compensate for the degree of riskiness. It's the old question of whether a bird in the hand is worth more than two birds in the bush. In academia, the discounted cash flow formula is elegant and precise. Here in the real world, we are going to try to illustrate why just simply trying to figure out an estimate of earnings, or even which type of earnings to choose for the calculation, and then how much to pay for the unknowable earnings, creates all kinds of problems, and when misunderstood can create all kinds of danger. As sang Kenny Loggins, in a song partly responsible for a long ago miserable semester stint at the Air Force Academy, head right into the danger zone.

Let's frame our discussion of earnings with a few assumptions. We are dogmatic about certain beliefs, about our investment process and about our thinking being correct. We know we're right, but we can't prove it (thanks for the line, Daniel West). I'd suggest we have spent as much time thinking about earnings - how they are derived, what could go wrong - as we have breathing, except that couldn't be accurate. Breathing has intermittent gaps of time where air is neither taken in nor exhaled. I kid. These things we believe religiously, our attempt at proof:

- The profit margin achieved for 2018's third quarter was a record. This is a fact.
- At 12.1%, the record may stand for as long as Ted William's single season 400 batting average record, and perhaps for as long as Ted will remain frozen…
- Profits are cyclically elevated.
- Profits are elevated thanks to last years' changes to corporate taxes and tax rates.
- Profits are overstated due to aggressive and non-conservative accounting.
- Profits have moved higher as companies have shifted the rising cost of healthcare increasingly to the employee.
- The definition of profits used to determine price has been distorted by those with motivation for distorting stated profits higher (management, analysts, investment bankers, lenders – that encourage the sale and employment of debt), private equity, and hopeful investors, eager for tomorrow's price appreciation.

Taking these truths and beliefs together, the problem faced by investors is that the price paid for profits has been extremely high for a long time. High earnings cooked with high multiples is a recipe for trouble.

Earnings per share for the S&P 500 look to have grown by 26% in 2018, pushing the profit margin to a record high in the third quarter. We expect the record to stand, expect the rate of growth to plummet during 2019, perhaps even to a level below 2018's, and believe much of the current level of profitability exceeds the economic amount of profit actually earned by a sizable margin. Last year's 26% gain in earnings per share can be attributed to:

- Sales advanced by 8.3% (10.0% per share), far faster than in any year post financial crisis. Assuming margins in most industries kept pace with top line growth and assuming 2% gains from operational leverage, we'd ascribe 10.3% of the 26% overall gain to top line growth plus operational leverage.
- $800 billion in share repurchases (offset by sales to employees as compensation) helped drive the share count down by 1.5%, adding a little more than 1.5% to earnings per share.
- The corporate tax rate change from 35% to 21% thanks to the TCJA likely added about 7% to earnings per share growth.
- The balance of changes under the TCJA, primarily benefits from 100% deductibility of capital expenditures and increased expensing of R&D for the portion that had been disallowed by the alternative minimum tax, offset by increased taxes on repatriated earnings and interest expense being deducted at the lower 21% rate, likely combined to add another 3-4% to earnings per share growth. Capital expenditures look to have risen about 9.5% for the year.
- Profits in the energy sector rose about 50% from 2017 and nearly tripled over two years. The increased portion not attributable to tax code changes or sales growth probably added another 3% to index earnings per share. Energy profits accounted for about 5.5% of index profits for the year, compared to zero in 2016. Bear in mind profits in energy were rising off a low base in 2017 and from losses in 2016 at many companies.

Going forward, *incremental gains* from changes in the tax code are gone. The maximum incremental gain was seen in 2018 and ongoing benefits will be flat and ultimately decline. Prospective gains in energy will be harder to come by and may even drop in 2019, even though the industry has not recovered to pre-2015 levels, when oil prices fell from over $100 per barrel. The dramatic fourth-quarter drop in oil prices will likely hurt in 2019. With these benefits in the rearview mirror, gains going forward will come from sales growth, incremental margin improvement not due to taxes, and ongoing share repurchases. If information technology and communications continue to consume share of the economy and the household and corporate budgets, the very high profit margins here can continue to add margin to index profits. But the low-hanging fruit enjoyed in 2018 has been picked. Throw in the low-quality of earnings at many companies and you have the makings of a tough slog ahead.

A few observations on the specifics of our view of earnings:

TCJA Drives Profits – For Now

Last year's letter killed some trees breaking down the moving parts of the Tax Cuts and Jobs Act of 2017, acronymized in financial statement footnotes as TCJA. For U.S. headquartered firms and for firms' portion of pre-tax earnings earned in the U.S., the maximum corporate rate was changed to 21% from 35%. There were myriad changes for corporations, but for most this was the biggie. Lowering the effective tax rate on business from 35% to 21% implies an immediate increase in after-tax earnings of 21.5%. $100 in pre-tax earnings, taxed at 35% becomes $65 in profit. The same $100 taxed at only 21% yields $79 in profit. The $14 in additional earnings are 21.5% greater than $65.

Prior to the change in rate, the aggregate of the S&P 500 was taxed closer to an effective rate of 27%, the primary reason below 35% being the amount of business done abroad where corporate tax rates were already lower. We have tried to do the math on the degree to which the companies making up the index saw their rates cut, and in analyzing hundreds of companies over the course of the last year, you can see the immediate accretion in the numbers. Holding aside the one-time, non-cash adjustments that took place at the end of 2017, earnings for the index advanced smartly in 2018. While top line sales look to have grown at a rate of 10% per share, the highest rate of growth seen since prior to the great recession, profits expanded by 26% per share before write-offs. We think based on what had been a 27% tax rate, the portion of the 26% profit advance that can be attributed to the tax rate change was roughly 7%.

Further, the other big changes look to have benefited the companies in the index by an additional 3-4%. In total, of a 26% rise in earnings per share, roughly a third of the change can be attributed to the entirety of the tax code change. The balance of additional tax benefits beyond the rate change to 21% was:

- Interest expense deductibility is now limited to 30% of EBITDA, which reverts to EBIT after four years. This limitation impacts many leveraged firms. Regulated utilities, which employ large amounts of leverage, are exempted from the limitation.
- Because interest is tax deductible for corporations, the tax rate reduction raises the after-tax cost of debt.
- To stimulate the economy by encouraging investments in capital spending, depreciable assets (excluding structures) can be expensed in one year instead of being amortized over many years. This is accelerated depreciation on steroids. The equipment must have been purchased after September 27, 2017 and by December 31, 2022 (with an additional year for longer production property and certain aircraft). The immediate 100% expensing is reduced by 20% annually beginning in 2023 and is phased out entirely after 2026. Regulated *public* utilities are largely excluded from this benefit.
- Corporate Alternative Minimum Tax (AMT) is eliminated, which had been in force if a firm's rate was pushed below that threshold by tax credits. Under the AMT, firms couldn't deduct R&D or investments in low-income neighborhoods.
- Required taxation on and encouraged (deems) repatriation of more than $2.5 trillion in undistributed, non-previously-taxed foreign earnings held by "US shareholders" of "specified foreign corporations". The tax is charged at a one-time rate of 15.5% on cash and 8% on equipment. The tax payments can be spread over eight years, at 8% in the first five years, 15% in year six, 20% in year 7 and 25% in the final installment.
- Retention of tax credits for wind energy and electric vehicles.

Of the increase in profitability due to the aggregate changes, companies certainly increased their share repurchases, spending a record amount to repurchase shares in the open market during the year. In some cases, wages were raised, though national wage data doesn't indicate that pay advanced materially. Shock of shocks.

The most important question to ask about the benefit to profits from the tax changes is how much of them stand to be permanent. We conjectured last year that over time, much of the benefit would be competed away, perhaps over five years, as we have always believed that corporate taxes are more of a pass-through to the consumer than anything. Depending on the competitiveness of an industry, newfound profits, and that's what the change provided, can be either kept by the group or eliminated through competition. A recession would likely hasten the competitive effect.

Regardless, the maximum benefit of the tax change was going to be enjoyed in 2018. As benefits are competed away and are phased out as per the way they were written into the code, subsequent years will see a dilutive effect.

Profits are Cyclically Elevated

The economic expansion that began following the depths of the crisis in 2008 and 2009 is long in the tooth. If we don't see a recession by mid-year, the current "boom" will be the longest in U.S. history. But the boom has been a dud. Measured as rate of nominal growth, this has been one of the weakest expansions on record. Nominal GDP was $14.7 trillion at December 31, 2007, prior to the slowdown. Here at year-end 2018, GDP is likely to total $20.8 trillion. The 41.5% advance over 11 years annualizes at 3.2%. In real terms, after inflation, growth compounded at 1.6%. Stripping out 0.8% annual population growth, which saw an increase of 27 million to 328 million (our estimate for 2018), inflation adjusted GDP per capita grew by 0.8% per year.

Warren Buffett famously talks about the amazing six-fold growth of real GDP per capita during his lifetime, which dates to 1930. If we can extrapolate the 0.8% rate of population adjusted growth over another 77 years, to match Mr. Buffett's life to date, we will have seen a doubling of real GDP per capita, a far cry from the six-fold expansion enjoyed by Saint Warren from his birth during the depths of the Great Depression. Nominal GDP had peaked at $104 billion in 1929 and troughed at $57 billion in 1933, a 54% decline. Real GDP fell by 26%, considerably less "thanks" to deflation.

Lower interest rates have raised profit margins by 2% since the financial crisis. Interest as a percent of sales averaged about 4% of sales from the early 1990's through the financial crisis. With the decline in interest rates to zero on the short end of the curve, the percentage paid in interest was cut in half, to 2%. The ratio was as low as 1.5% of sales in 2015, before the Fed began its sequence of nine rate hikes. Short-term debt has been repriced upward, but we are far from pre-crisis levels of interest rates or interest burden. The benefit of record low interest rates has contributed significantly to today's record profit margins. At 2% of sales, the change in interest expense contributed to 20% of a 10% net margin (if interest expense were twice as high, margins would be closer to 8%). Until the crisis, interest expense averaged over 50% of profits, and margins were lower than 10%. We make no case for any long-term upward move in interest rates, rather think with the debt burden on society that barring hyperinflation, rates will stay far lower for far longer than most imagine. As such, the benefit to margin may be more durable than not.

Healthcare – With No Data…

Shifting healthcare burdens to employees has no doubt helped corporate profit margins as well. We think the positive impact on profitability has been big time, but perhaps not when considering the ongoing growth in the cost of healthcare and insurance. No doubt the employee is bearing a far greater share of the cost, but given the growth rates, a positive impact on profit margins may not be apparent. It makes sense that if corporations had continued to bear their former share of the healthcare burden that profitability would have suffered. Lacking time to quantify this effect on profits, it would make for a great research project. If you take this up, when the Nobel people call there's no d at the end of stran…

Aggressive or Non-Conservative Accounting – Lipstick on a Pig

Ever since Leonardo da Vinci's wingman, Luca Pacioli, is said to have invented double-entry bookkeeping, companies have been trying to make things appear better than they are. This is a big deal in valuation. We talked about the degree to which returns earned in stocks have lagged the return on equity by a substantial amount for a long time. Much of the drag can be attributed to economic earnings falling short of reported earnings.

Our valuation of Berkshire Hathaway, again updated later in this letter, is a great case study because its economic earnings are so materially deviant from reported GAAP (Generally Accepted Accounting Principles) profits. The same can be said for most publicly traded businesses, though in the case of Berkshire, the required adjustments to reflect reality are mostly to the upside. With Berkshire, we make upwards of nine material adjustments each year to various facets of its published financial results. Most companies require fewer adjustments. For the broad market, we classically make two downward adjustments and one upward adjustment. Unfortunately for investors, most of the adjustments required to arrive at economic profitability are to the downside.

Our downward adjustments involve adding back to equity a portion of write-offs and writedowns that take place over time, which remedy the understatement of equity and thus the overstatement of profits as a percent of equity. The return on equity is so important to assessing business profitability. We'll alternatively charge operating earnings by an amount reflecting a historic rate of write-offs and writedowns. The second primary adjustment involves the way defined benefit pension plans and health liabilities are funded over time and the assumptions that go with them. When we first began writing about our broad accounting adjustments in our 2002 to 2004 letters (now on our website), we made a third material downward adjustment to reflect the dilution and ongoing expense of paying executives in stock options and not including a charge against profits for the expense. That issue was largely improved with FAS (Financial Accounting Standards Board) statement number 123 in 2004 and made the material adjustment we had been making less necessary.

Many of the company by company adjustments we make can be seen in the case of our analysis of Berkshire later in the letter. Any business under review can require myriad ways to arrive at economic profits. In adjusting reality for an index, however, it's too difficult to capture the one-off impact made business by business. Collectively, some aren't material enough upward or downward, and in many cases adjustments you would make for one company's deferred tax assets, as an example, are offset by adjustments to another's deferred tax liabilities.

One primary upward adjustment is in the amortization of a portion of intangibles that companies are compelled to write-off over time, particularly after making acquisitions above book value. When a company is acquired at a premium to the carrying value of its net assets, tangible assets are revalued upward to current economic value and any additional premium is assigned to goodwill and/or other intangibles. Goodwill had been a required expense until 2001, and that expensing required an upward adjustment when calculating economic earnings. Now, with businesses less capital intensive, more of the premium is assigned to intangibles. Some of these truly decay and lose value over time. Patents would be an example. Others, like customer lists, should be treated more like goodwill post 2001 – they should just

sit on the balance sheet, reflective of the price paid in an acquisition. They generally don't lose value over time and an expense or charge against earnings distorts profitability downward. The analyst must decide which intangibles decay and which do not.

Other adjustments we broadly make or consider are:

- We capitalize the use of operating leases as debt when determining the degree to which companies use leverage in their capital structure. This is critical with industries that make heavy use of operating leases such as retailers. Now, beginning in 2019, companies will be forced to likewise capitalize their operating leases, and investors will see more clearly the use of debt in businesses and in some industries in particular.
- We assess material changes in the use of working capital over time and as their proportion changes relative to things like sales. Cash flows can be impacted by changes in working capital and can be indicative of decay or improvement in business conditions.
- When expenses are capitalized and industry peers use different treatment, it's worth exploring.
- Off-balance sheet liabilities can be crippling. Capital commitments across multiple years may become problems if business conditions worsen and the commitments can't be modified.

The downward adjustments we make for the S&P 500 are:

Pensions

325 S&P 500 index components maintain defined benefit pension plans, down from 347 fifteen years ago. More and more businesses have shifted to employee-funded and profit-sharing plans, which are not legal liabilities of the company. Despite the decline in the number of companies with plans and the shift to employee funded schemes, aggressive pension assumptions still impact company and index profits.

The primary trouble with pensions is that assumptions about investment returns have been too high for too long. *Far too high for far too long* would be a better way to say that. Actuarial assumptions for investment returns and growth in compensation, plus the discount rate used to calculate the present value of future liabilities, combine to dictate how much money a plan sponsor must contribute each year to keep the funded status of the plan solvent. If investment returns fall short or companies have under-contributed, they need to make additional contributions in addition to the amount required annually. When return assumptions are predictably too high, it is inevitable that companies will eventually cough up the bucks, and we like to know in advance that a capital call is coming.

We created and have used a process for the 20-year history of Semper that normalizes as an annual expense how much capital will be irrevocably going to the pension plan. Our method has captured the degree to which companies under-contribute to their plans on a regular basis, and invariably have had to make significant "one-time contributions" that effectively serve to overstate corporate profits by their ongoing exclusion. Instead of tolerating a CEO or CFO telling us to, "ignore the $2 billion one-time infusion", we would have rather ratably assumed ongoing profitability is overstated by a linear amount each year. After all, when the $2 billion is gone, it's gone. Know that the placement of a pension asset on the balance sheet is *never* an economic asset owned by the company.

We have assumed the typical pension fund would earn 4% on invested assets for two decades. With the stock market expensive for most of our history, and with interest rates historically low and not likely to rise sustainably, we find the 4% assumption perfectly reasonable. It's been an accurate estimation for a long time.

During the last 20 years, S&P 500 total returns averaged 5.6%. Bonds averaged about 4%. Cash returned a bit over 1%. In total, corporate pensions likely earned about 4.0% to 4.5% after fees per year. Contrast that with assumed returns of 8.6% in 2002. Expectations were over 9% at the end of 1999, just before the secular peak in the stock market. *Plan returns have badly trailed expectations, requiring large "one-time" expenses, which management and Wall Street instruct us to ignore.*

Another aspect to consider when thinking about prospective returns against our 4% assumption is that allocation to equities have been in decline, while fixed-income weightings have increased, and this in an era when interest rates have fallen. For the S&P 500, equities were 61% of plan assets in 2007, having been north of 60% back to the 1990's. At year-end 2017, allocation to stocks is 41%. Fixed-income allocations were 28% in 2002 and had risen to 45% by 2007, despite a yield curve that has been cut in half. Regardless of whether you agree that stocks are as overvalued as we find them, it's hard to make a case that they will underperform bonds for the next 20 years, particularly with today's low interest rates that, barring hyperinflation, won't likely rise materially and sustainably in our lifetimes given today's high debt burden.

It's interesting that return assumptions have round-tripped. Actuaries, consultants and CFO's get it the most wrong at the most ill-timed extremes. Back at the secular low for stocks and bonds, return assumptions were about 6% in the early 1980's. If you know your market history, then you know that in 1981 long-term U.S. Treasury bonds yielded over 15% at the peak and T-bills yielded over 20%. Stocks hit their secular low in August 1982. Of course, then, stocks had been in a bear market since 1966. Bonds, because prices fall when rates rise, had produced mind-numbing paper losses during the 1970's through early 1980's, while from 1966 to 1982, stock prices fell slightly (with intermittently painful dip and recovery regularity) and lost 75% to inflation. Naturally, because of the lousy experience, nobody thought they could earn decent returns, and trailing returns for ten and fifteen years were dismal. Expectations are usually set based on recent experience, which is the wrong way to think. Despite being able to invest in a 30-year bond and lock in 15%, and with stocks trading with low P/E's (high earnings yields) applied against low profit margins, assumptions were set at 6%. The lack of logic is unbelievable. Stocks, of course, blistered ahead at 20.2% per year to 2000 and still have earned 11.9% through year-end 2018. Bonds averaged about 9.7% (*Bloomberg Barclays U.S. Treasury Long TR is all UST's over 10-years; couldn't find a pure constant maturity longest bond index which would have a higher return; a 10-year Aggregate index returned 7.9%*), thanks to the high initial interest rates in the early 1980's. Even T-bills averaged 1.7%, despite spending the eight years from 2008 to 2015 essentially at zero.

Our process is straightforward. We calculate returns on the fair value of plan assets as the difference between the plan return assumption and our 4% assumed return. The difference is treated as annual expense to the company on a pre-tax and after-tax basis. We further assume any underfunded status will be funded over a ten-year interval, and charge the pro rata amount on a pre-tax and after-tax basis against earnings. Finally, we amortize any unfunded OPEB health liabilities over ten years as well. Most of these liabilities are unfunded or are lightly funded in the first place. The method critically captures the amount of shareholder capital that has gone to pension plans that was never contemplated.

As discount rates, which are set based on various market interest rates, declined since the early 1980's, pension liabilities have been pushed higher. An aging workforce and increased number of retirees receiving pension (and health) benefits also are at work here, but that's a deeper discussion. The big moving parts, overlaid by the fact that actual investment returns have dramatically fallen short over the past 20 years, have compelled large corporate contributions beyond the annual service cost.

Here is the status of pension funds and the average assumptions employed for the S&P 500 in aggregate at year-end 2017 and 15-years prior.

	Pension Assets	Pension Obligations	Funded Status	Funded Ratio	Discount Rate	Return Assumed	OPEB Assets	OPEB Obligations	OPEB Funded Status
2017	$1.813T	$2.118T	($304B)	85.6%	3.47%	6.46%	$70B	$219B	($149B)
2002	$0.951T	$1.169T	($219B)	81.3%	6.64%	8.63%	$48B	$320B	($272B)

Source: Semper Augustus; Standard & Poor's; Bloomberg Data

Without going through all the math behind our adjustment, our annual charge against S&P 500 earnings is $90 billion pre-tax and $70 billion after tax. In per-share earnings terms it's $8.35 per share. The number as we calculated it in our 2003 year-end letter was $75 billion after-tax, $8.11 per share. The per share number is no higher today, despite pension assets and the funded status being twice as large. Why? First, our 4% return assumption is now applied against a lower 6.46% expected return, 2.17% lower than in 2003. Second, we tweaked our methodology several years ago and now amortize the underfunded status of both the pension and OPEB liabilities over ten years instead of over five years as before. The longer amortization shrinks the annual charge for those two liabilities, but the method for the projected investment return shortfall remains identical. Our charge now is perhaps less conservative but hits earnings less severely. In other words, it's less onerous of an issue today.

Now, the annual charge is less as a percentage of reported profits, at about a 6% haircut. On average over 15 years, without considering the precise company by company funded status, we'd estimate that the shave has averaged about 8% of reported profits per year.

You might ask if shaving 6% from profits for the index is worth the trouble? We think so, but more so when analyzing individual companies. Driving the shrinking number of companies with plans are the big additions to the index that are newer companies. No new company has a defined benefit plan. Legacy, old businesses aren't being added to the index. Thus, it's the company by company analysis, and the determination of how pensions and the assumptions that go into them that impacts our work. If you own the index it's a big deal, of course.

Over fifteen years, pension assets and the pension benefit obligation have both doubled. The discount rate has been halved, benefit payments exceed prescribed pension contributions each year, and investment returns have fallen short of assumed returns by probably 3% per year. Even as plan sponsors have been granted funded relief over the years by introducing smoothing techniques (using corporate bond yields instead of Treasuries and using 25-year averages of interest rates instead of 2-year as the discount rate, calculating investment returns over time instead of in real time). How in the world can the funded status still hover around the 80% level? The answer is the one-off contributions that companies have made, and we believe are likely to have to make going forward. Hard to believe? Read through the pension footnotes over the past fifteen or so years for companies like Ford, GM, FedEx, Lockheed Martin, Boeing, GE, AT&T, and United Technologies. You will see in a progression of normal employer contributions when the big one-off contributions take place. Relative to pension expense using service and interest cost with the return assumption, contributions are less linear. When investment returns fall materially short of return assumptions, the company digs deep into its pockets. We recently reviewed the histories of several big corporate plans and the one-offs are so revealing. Then overlay what the managements told you in their quarterly earnings calls and the spin is entertaining.

Reviewing 10-K pension footnotes will be an interesting exercise over the next couple months. There were a couple dynamics at work. Funded status for the S&P 500 was 85.6% at year-end 2017, with $1.81 trillion in pension assets against a $2.12 trillion pension obligation. With something like 90% of global assets having declined in 2018, investment returns for plans were likely generally negative (less severe with those smoothing). With benefit payments outstripping required company contributions, asset values

would typically be expected to be even lower. However, while the change in the marginal corporate tax rate to 21% from 35% went into effect on December 31, 2017, companies had until September 15, 2018 to make additional deductible contributions at the former 35% rate. Several companies we follow had announced sizable "one-time" contributions to take advantage of the higher deduction (and to shore up underfunded status). Further, the Pension Benefit Guaranty Corporation has been raising premium rates on underfunded pension balances from $9 per $1,000 of underfunded balance in 2013 to $34 in 2018 and finally to $42 in 2019, creating further incentive to make large contributions before the higher premium fees kicked in. It wouldn't surprise us, therefore, to see funded status improve in 2018, despite the fall in stocks and other assets. The additional contributions will be the reason. Our process will have predicted the large "one-offs" in advance, shareholder capital irrevocably contributed into the pension ether.

The sum-total of our pension exercise serves two purposes. One, it largely has steered us away from companies with large underfunded pension liabilities, especially when compared to the size of the business itself. Second, when analyzing our holdings against the index, it helps demonstrate the degree to which GAAP or IFRS accounting can understate what we view as true economic expenses, regardless that our process is far from actuarially correct. The good news, if you own the S&P 500 or the big companies with the legacy pensions, is that the number of companies and the size of plans relative to business size is slowly shrinking. But boy has our process proved invaluable for us over two decades.

Write-Offs and Writedowns

The largest contributing reason for shareholder returns lagging returns on equity is likely due to asset write-offs and writedowns. Managements are in business to make money, for themselves for sure and hopefully for the shareholder. One of the easiest ways to make your returns look better is to drive down the denominator against which profit measures are properly defined. When an asset is written down or written off, we are told it's an "accounting adjustment". However, if what was being written down was producing profit, it wouldn't require a charge. A write-off may not involve cash spent today, but it absolutely reflects the poor outcome of somebody's investment that didn't work out. It's easy to say it was on the last guy's watch, but that is irrelevant. "It wasn't me, honest. It was Fred – and Fred's dead. He bought the competitor 20 years ago for $2 billion and we're selling it for $500 million, but it was Fred's deal. I'm here to make you money so let's ignore the charge and move on." **When you see a write-off or complete writedown of an asset announced, simply think about finding a large stack of money…on fire.**

Since 1999, write-offs and writedowns for the companies in the S&P 500 totaled $220.92 per share, more than $1.84 trillion! Cumulative operating earnings totaled $1,616 per share, or $13.5 trillion, so the shave was 13.6% of S&P defined operating earnings. The percentage has moved down in the last couple years with charge-offs averaging about 10% of earnings, reflective of fewer and smaller charges when the economy and profits are strong. The opposite is always the case during recessions and when profits are weak. Until the recent expansion and profit boom the percentage averaged almost 15% of profits back to 1988, the farthest back we can get good data.

The problem with Wall Street and most company managements is, they encourage use of earnings before write-offs and writedowns are taken, before "one-off" funding of underfunded pension plans, and as a trend, now encourage use of pro-forma earnings numbers excluding things like the cost of compensating employees with stock options and restricted stock and other often recurring and normal costs of doing business. On top of their preferred aggressive earnings number, they forever use the lower written down or written off equity balance on which to calculate returns on assets and equity. It's a crazy notion. If

write-offs shave 15% from profits on average each year, then a 15% return on equity is reduced by 2.25% per year. A 13% return on equity is shaved by 1.95%.

Our method for estimating normalized earnings for the S&P 500 is simply to reduce the operating earnings number each year by 15%. Over time it eliminates the cyclicality of when the write-offs take place. Using year-end estimated operating earnings of $157 for the index, we knock off $23.55 from per share after-tax net income. Actual write-offs look to be over $17. You can use the more recent average charge-off rate of 13.6% if you believe we won't head back to the longer-run 15% rate once we encounter the next recession if you like. The thing you really shouldn't do is to apply earnings before write-offs and writedowns against a written down book value. In no way is that economically realistic or conservative.

An exercise we employ is to add back the cumulative running total of write-offs to book value to get an idea of how much less returns on equity would be. Write-offs since September 30, 1988, the earliest we have data, have totaled $260 per share for the S&P. Year-end 2018 book value is going to be about $850 per share. Adding back the cumulative charges makes the upwardly revised book value $1,100. Now, instead of an improbable 18.7% return on the written-down book value, you have a lower 14.3%, still high with profit margins near the third quarter's record.

Let's try to look at this another way. Since 1999, cumulative earnings totaled the previously mentioned $1,616. Subtract $561 in dividends and you are left with $1,055 in retained earnings that were reinvested on shareholder's behalf. You did get a matching $1,031 gain in price per share (validating the retention of profits – a fair conclusion if stocks were expensive then and remain so today – makes the brackets used in compounding valid), but book value only grew by $550 per share. Where did the missing $505 difference between retained earnings and book value go? We know that $221 was written-off. Most of the balance largely disappeared thanks to share repurchases at prices between two and three times book value. A purchase above book value will shrink book value and book value per share. Companies also took on $348 in debt per share, much of which financed additional share repurchases beyond what was paid in dividends.

There are, of course, periods where stock prices grow by more or by less than the amount of retained earnings. From September 30, 1988, the gain in S&P price points of 2,229.13 far outpaced earnings retained of $1,255.00. We credit the outperformance to multiple expansion.

Our process when analyzing companies is to assess any history of write-offs and writedowns. If the history is rife, then we probably won't own the business. As we turn over rock after rock, there is a common thread among the businesses we always say no to. Leverage. *Our experience has been that it's not the business that avoids debt or that maintains a conservative capital structure that regularly writes off assets and equity.*

But we follow a broader universe, and we determine a normalized charge-off rate for each business. We will also discount an overstated return on equity to reflect a diminished asset and equity base. We're trying to keep from being fooled by what looks like high current profits and returns on equity and on capital, especially if the base against which they are measured has been prettied up by masking what had been poor or unfortunate capital decisions in the past.

We applaud a CEO like Rex Tillerson, who, before his ill-fated decision to leave Exxon Mobil for what must have looked like greener pastures, or a call to duty, or simply due to a brain cramp, duly pointed out to groups (no quotes – I'm recalling what was said) that were encouraging the company to write-down energy assets because they deemed a lower future diminished carbon-reliant reliance. Tillerson's logical reply was *if we paid a price to put an asset on the books, we keep it on the books. We need to make a return on all investments. The danger of writing it down is it will make us look smarter in the future. We*

need to earn returns on our decisions, all of them, so the assets stay, and if we are penalized with lower returns in the future then so be it. I'm sure he was also thinking that *it's going to be hard to make plastics, clothes, medical equipment, battery-powered cars, without Exxon's assets in the ground so we'll just go ahead and keep 'em on the books…*

Amortization of Intangibles

When a company acquires another business at a price above the carrying value of net assets, tangible assets are revalued to an estimate of current dollar replacement value. Any premium above that is assigned to intangible assets – goodwill and other intangibles. In the "old days", prior to 2001, most premium was assigned to goodwill, with the goodwill balance being written down over an arbitrary period, usually 40 years. If the earning power of the business acquired was durable and economic returns could be earned against the full purchase price, then writing down the goodwill account served no economic purpose. A good analyst would add back the goodwill charge to more appropriately determine economic profits. The accounting profession came to its senses, not for lack of corporate clamoring about having to understate profits, and in 2001 adopted FAS 142, which ended the periodic amortization of goodwill. Post the accounting fix, companies are periodically required to test earning power against the carried value of the goodwill account. You can guess where that headed – I won't say that companies would dare to periodically take goodwill write-offs to state assets and equity lower, and return on equity higher. Oh shoot, there I went and said it…GE comes to mind here.

Today, partly because businesses are less capital intensive, much of the premium in acquisitions is assigned to "other intangibles". These can be identifiable assets like patents and trademarks, or more nebulous assets like customer lists. The accounting profession tries to determine whether these intangible assets have finite or infinite lives, and, like the former treatment of goodwill, amortize the intangibles determined to have finite lives over a period of years. As you can imagine, while the accountants mean well, they don't always get it economically right. Some intangibles really do lose value over time – think drug patents, which expire, opening the doors to competition. Others, like trademarks, often don't lose value. Perhaps the best decision made in the history of Coca-Cola was the one to not patent the formula, opting instead to only trademark the name and to rely on ownership of a "trade secret." A patent would have expired in 20 years and the recipe made public. A much later management team tried to change the recipe, thinking mixing it up would be good for the brand and sales, but that's a story for another day that most know.

Our process in analyzing a business is to determine which portion of intangible assets being amortized as having a finite life really doesn't lose economic value. It's not an easy exercise. We don't rely on any specific definition as a beginning guide. We generally deem intangibles like customers lists and relationships, and trademarks and trade names to have more durable characteristics. We'll listen to and talk to managements about how they view the subject. Those seeking maximum statement of profit likely already encourage ignorance of the entire amortization charge. The exercise needs to be done company by company. It's a highly unusual process. On one hand, we're looking for hidden sources of earnings. On the other, we are looking to determine where a management is overly aggressive in use of proforma disclosures and telling investors to ignore genuinely economic expenses.

For the S&P 500, we calculate that a little over $5 trillion in net "Goodwill and Other Intangibles" reside on the collective balance sheet. Goodwill totals $3.3 trillion and other *net* intangibles are $1.8 trillion. Net is simply the balance that has already been amortized downward. If the entire other intangible balance of $1.8 trillion were being amortized (it's not) over 12 years, the annual amortization expense would be $150 billion. With only experience to guide our assumption, we'd estimate perhaps half of intangibles are being amortized and of that portion, maybe half of that amount is a non-economic expense. As such, our

estimate for an amount to add to S&P 500 operating earnings annually is $37.5 billion pre-tax and $29.6 billion after-tax. The after-tax figure adds $3.53 to S&P per share earnings.

Stock Option Compensation

In the old days, we used to reduce company and index earnings with an expense adjustment for compensation paid in stock options. Despite what amounts to giving away shares (and the dilution that comes with it) for either free or at a current price with forfeiture of the upside share price, businesses argued that the use of shares was costless. Not so much. Despite the effort of technology company executives to dissuade the accounting treatment as an expense, in 2004 the Financial Standards Accounting Board (FASB) disagreed and compelled assigning an expense. In a Wall Street Journal article in 2003, Reed Hastings then and now CEO at Netflix, argued, "Why are the best and brightest fighting good accounting? Because to attack stock options is to attack our Way of Life in Silicon Valley." The caps in "*Way of Life*" were his. Reed, it was bad accounting, sorry. Today, because options are expensed, the issue requires far less accounting adjustment for us. Yet, accounting for stock options is still a hot button issue. Management teams implore you to use non-GAAP earnings and ignore the expense. You get pro-forma cash flow and income which ignores the treatment. Suggest to a CEO that if option compensation is not an expense and has no value when issued, then why don't they simply return his or her option shares and the shares already exercised to the company. Their answer will enlighten you as to why we choose to ignore the suggestion to ignore.

One interesting remnant of accounting remains post-2004 with regards to stock option compensation expense – the tax treatment. When employee incentive stock options are exercised, the company withholds taxes and receives a deduction in the amount of employee taxable income attributed to the sale in the same year as the exercise. Most options issued to executives are non-qualified and are not limited by the amount that can be issued. Taxation occurs at exercise and is based on the difference between the exercise price and the price of the shares upon exercise. Companies take a deduction for the amount received by the employee as income, even when the employee utilizes a "cashless" exercise. In cases where the stock price at exercise is far ahead of the strike price, the tax credits can be huge, and have been with the big tech companies that are still heavy issuers of options and that have also had rapidly rising stock prices over several years. There can be an offset when the stock declines – if fewer or no non-qualified options are exercised, the amount of tax credits having been taken in past years disappear and can raise the overall effective taxes paid. When analyzing a business, we will try to determine if taxes paid are impacted by the deductibility that stems from option exercise, but since the issuance is treated as an expense now, we don't make an overall downward adjustment to the normalized earnings we calculate for the S&P 500.

There is another consideration when it comes to stock options as compensation. Know that the Black-Scholes option pricing formula used in determining the value of options does a poorer job the longer the life of the option. Also know that many companies repurchase shares to offset the dilution caused from option exercise. Think about that dynamic – options are exercised when stock prices have risen, and perhaps at times when share prices are high, even above the underlying intrinsic value of the shares. Who better to know that than the CEO or CFO? We like it when management repurchases shares below intrinsic value. When the motivation is to offset the dilution that just came from the exercise of your own personal option shares, then perhaps sometimes the motivation is not with the shareholder in mind…

Combined Adjustments for the S&P 500

With option compensation no longer requiring a charge to earnings, the three big accounting adjustments we make for the S&P 500 are downward adjustments for pensions and for write-offs and writedowns and a smaller upward adjustment for the non-economic amortization of intangibles.

S&P 500 SAI Accounting Adjustments 2018

	Dollar Adjustment	Per Share Adjustment
Write-Offs and Writedowns	($195 B)	($23.55)
Pensions	($70 B)	($8.35)
Amortization of Intangibles	$30 B	$3.53
Total	($235 B)	($28.37)

Source: Semper Augustus

Our $235 billion downward adjustment reduces net income for the index by 18% from $1.317 trillion to $1.082 trillion. Again, the charge seeks to more accurately reflect economic reality and won't change much from year to year in dollar terms. It's also not evenly applied across all 500 index members. Some are larger abusers. If that word is too heavy, then simply understand that not all companies report GAAP earnings requiring like adjustments. Investors can make their own assumptions regarding use of GAAP and IFRS financial statements. These broad-brush modifications tilt us to the conservative, and it's served us well.

We admit an affection for Will Rogers. He probably didn't have the state of accounting in mind when he said, "When you put down the good things you ought to have done, and leave out the bad ones you did do – well, that's Memoirs." It fits, however.

Defining Earnings and Their Worth – No Magic Formula

Hard as it may be to believe, the definition of profit can be distorted by interested parties with a motivation for reaping reward due to its maximum statement, even if the number reported exceeds economic reality. Investors should be deriving how much *cash* a business can produce for the owner from now to eternity. At times, some in the investment arena – management, analysts, investment bankers, and borrowers and lenders both, for example – encourage an aggressive calculation of earnings. Too often as well, more debt than is reasonable is taken on in an effort to maximize profit. In doing so, numerous measures of profitability have been devised to serve the end in hopes of justifying the means.

Investors use numerous valuation yardsticks, each which serve a unique purpose but at bottom define profitability and the price one should pay for the defined profit. These yardsticks are supposed to measure the value of a business, the price a rational, informed buyer would pay to a rational, informed seller. At the beginning of this section we defined valuation as determining the present value of a future stream of earnings or cash flows by estimating or forecasting the future earnings or cash flows and discounting each and all those estimates back to the present using some appropriate measure for the cost of money, represented by a rate of interest that theorizes how much of a return can be made by taking zero risk and adding a premium to compensate for the degree of riskiness. In theory, each valuation measure used in practice should arrive at the same result – fair or intrinsic value. The investment world is full of interests highly motivated to make profits and multiples appear in various lights. Seldom is the motivation conservatism. Let's look at a handful of traditional yardsticks and at the base, how earnings can be defined.

The Price to Earnings Multiple

The P/E is surely the most common and used measure of valuation. When used properly, we think it's the best proxy for measuring value. But what price do you pay for a dollar of profit? It should be straightforward. Calculate earnings, determine if earnings will grow, by what rate and for how long, and then determine what price makes sense and takes into consideration the time value of money. Getting it only roughly right requires a huge amount of understanding of business, risk and judgment. Here's an off-the-cuff rundown of some of the things we think about regarding earnings, which is far from comprehensive:

- Should earnings measured with the current quarter's reported number and multiplied by four be the base for calculation of the earnings stream?
    - What about yearly cyclicality – think retailers selling more in December than an any other month.
- Should the most recent year's figure be used?
    - What if the year was depressed or elevated beyond a norm for some reason?
- Should a forecast for next year's figure be used, or for the next twelve months, or for the next few years?
    - Do forward earnings mean the next twelve months including the current quarter, or is it the four quarters beyond the current?
- Should you use an average of earnings over some historical period, say ten-years?
    - Does this method smooth out cyclicality?
    - If the answer is yes does it smooth cyclicality for all ten-year periods?
    - What if the period chosen is entirely aberrantly profitable or unprofitable for some reason (devoid of or because of any cyclical downturn or because of some structural change in the economy)?
- Are there any accounting conventions that would make the reported earnings number either economically high or low?
    - If so, should you adjust?
    - If you adjust, are comparisons to other businesses comparable? Now, historically or prospectively?
- If you are estimating future earnings, how much of the forecast numbers come from organic growth?
- How much future growth is derived from reinvestment of today's and ongoing earnings? How much comes from the utilization of new debt for investment and growth?
- How do changes in sales, operating costs, leverage and investments made impact earnings?
- How do volume, price and mix affect sales, various margin lines and earnings?
- How do scale or initiatives affect revenues, expenses and earnings?
- How competitive is the industry?
    - Is the nature of competition changing or has it changed recently?
- How much of current earnings are being paid back to the owners?
    - Will these dividends or the rate paid change for any reason?
    - Are dividends from profit earned or a return of capital?
    - Why are dividends being paid?
    - Are there other uses of capital that may be a better use of profits?
- How is management compensated and does the compensation structure align with owner's interests?
- Are estimates of liabilities and future expenses properly assumed?
- Are profits or pricing regulated?
    - Is the regulatory climate changing?

- Is the business currently spending enough to replace assets when they wear out?
- To the extent assets lose value over time, is the company assuming a proper life of the asset and have they set aside enough or contemplated the cost of replacing the asset?
- How are inventories accounted for? Are they affected by inflation?
- Are reserves established for liabilities and are they adequate?
- How do changes in commodity prices or interest rates affect profits?
    - Are any hedges in place and what impact do changes in the above influence their utility or efficacy?
- Will the business pay more in tax or less in tax in the future due to any accounting treatment of profits?
- Are reported taxes paid as cash or deferred in some way?
- What kind of opportunities does the business have reinvesting retained earnings?
    - Is the opportunity set limited or are there ample opportunities to invest large sums of capital at high or varying returns?
- Is the business spending enough on advertising or research and development to sustain or grow its competitive position?
- How much, if any, of current or future earnings will need to be spent on things not related to the core business?
    - Are there pension shortfalls to make up?
    - Are there commitments to pay for anything that hasn't been delivered?
- Are there plans to use profits to repurchase shares?
- Does the management think about the value of the shares?
- How much earnings will have to go to pay interest if the rate on any debt used changes?
- Will more debt or less debt be used in the future? How much more profit is being earned today thanks to interest rates being lower than they were over time?
- When is debt due to mature and either to be refinanced or paid off? Will the interest amount paid change?
- Will changes in tax rates alter the amount of profit being earned, historically, now or in the future?

We could keep adding here but the point is that there are countless moving parts that go into assessing profitability, the durability of profitability, and estimates that need to be made prospectively. On the point of which time series to use, it has been famously documented and discussed that the long-run P/E multiple is 15. Is it and if so, why? Interest rates and expected changes in rates certainly impact the number, but at extremes more weight seems to be placed on a historic series as opposed to a pure formulaic calculation. It has become common convention to calculate the P/E on *next* year's earnings estimate, despite nearly all the historical data sets used *trailing* P/E's. Naturally, if next year's earnings are expected to be higher, then the P/E calculated on next year's higher figure will be lower. Are you kidding yourself about valuation if you are using a number that makes things conveniently appear cheaper than had a different, more conservative calculation been previously used? The earnings period generally used to calculate historic P/E's was generally trailing. Using historic data for four quarters ended December 31, 1978 for example, would include the fourth quarter's earnings during 1978. When using trailing earnings, but when calculating in real time shortly after the end of a quarter, are you careful to estimate the current quarter or are you going back to the prior quarter? A nuance yes but it can make a difference, and an investor should appreciate the difference.

Another point – way too many investors lose sight of whether earnings are temporarily elevated or depressed. When profits approached zero in 2008 and 2009, P/E ratios ballooned because they were being applied against profits that weren't going to be depressed for long. Conversely, a big portion of this past year's earnings growth was due to changes in the tax code. The new 21% tax rate itself pushed the portion

of profits that were previously taxed at 35% up by 21.5%. What if the tax cut winds up being repealed in three years or what if the newfound profit being enjoyed today gets quickly competed away? If a determination suggests that's the case then future profits will be lower, at least by the tax rate applied.

I don't like the section above because it's far from comprehensive. All businesses are different and evolve over time. It's the portion of analysis, though, that's the most important. We spend a lot of time trying to understand how a business works and how the people running it think about its durability and competitive position. The easier part is the valuation, but only if you are comfortable in your understanding of the business. With that, let's move to valuation and the price an investor should pay for those earnings, the "P" in P/E. More stream of consciousness to that end:

- How profitable is the business measured against its equity capital?
- How much leverage is employed in the business?
    - Does leverage affect the price you would pay for a dollar of profit?
- What are current and projected interest rates?
    - Do rates affect the price?
    - If so, against what interest rate do you measure opportunity cost?
- How permanent or predictable are the lines of business?
    - Does the business grow and by how much? How does it grow? How much new capital does it need to grow? Have past investments by the business produced good returns or not? What are the prospects for future investments?
- How does the business invest capital among equity, debt, dividends, internal investment, acquisition or divestment and maximization of competitive position?
- How are other businesses comparably priced? Now? Historically?
    - What if all comparatives are over or underpriced? Does relatively less overvalued equate to a good return?

A P/E approach is simple and straightforward. To use it effectively an investor needs to fully weigh a few quantifiable and qualifiable variables and to understand their interaction as a pricing tool. Proper use of a P/E multiple approach requires a thorough understanding of key variables that affect price and value. An academic approach is use of discounted cash flows.

Discounted Cash Flow Analysis

There are so many questions and variables that go into defining and determining earnings, and then determining the right price to pay for those earnings. The process can be properly defined as laborious and requires a good deal of judgment. The questions asked above only scratch the surface of the those requiring an answer.

Financial academia leans on a discounted cash flow (DCF) formula that combines the proper mathematically defined inputs that go into the valuation "model." It is the most common, and *theoretically* accurate tool for valuing businesses, subsidiaries of businesses and projects a business may undertake. The problem is, unless all inputs into the model are correct, you can get a wildly wrong answer. Further, seemingly small changes to the inputs, double counting or exclusion of others can produce dramatic changes in the output. We don't use DCF models at Semper. Instead, we think all the time about all the moving parts that go into the model, and with experience invest using what we think are proper and reasonable prices to pay for different businesses. It's understanding why changes or mistakes in a DCF model translate to valuation changes reconciled against why we will pay a certain multiple for a business and why that multiple can or should change as the business or environment changes that is

important. Tweaking the inputs in a DCF model to justify a predetermined outcome is no different than choosing a multiple that is flawed or will lead to a different total return over time than had been expected.

Further, there is a maxim that all businesses or assets have a price that represents value. A DCF model will spit out a number for everything. Too many investors focus on price first and business quality later, if at all. While every asset has a price, there are many we wouldn't touch at any price, or with a ten-foot pole. **Price is not value**.

The inputs and variables involved in a DCF calculation are:

- Cash Flow
    - Estimated over future periods (very hard to define, let alone estimate in future – à la the incomplete list of questions regarding defining earnings above)
    - Incorporate a reconciliation between depreciation and maintenance capital expenditures; Free cash flow is ideal but does not differentiate between growth and maintenance capital expenditures
    - Estimate of a growth rate in perpetuity (it's hard in most cases to know what's going to happen in the next year let alone to eternity…)
- Weighted Average Cost of Capital; WACC (will the capital structure change over time)
    - Cost of Equity Capital
        - Risk Free Rate of Return
        - Beta (ridiculous measure of risk – stock drops by half, no fundamental change, beta as a risk proxy suggests more risk at half off)
        - Market Risk Premium (we discussed risk premia and its utility or lack of)
    - Cost of Debt Capital
        - Pre-tax interest
        - Tax adjusted net interest
    - Marginal Tax Rate (can be different from effective tax rate)
- Interest Rate (used to discount future cash flows)
    - Which rate to use? Current rate or expected over time?
- Debt and Cash
    - Typically, cash is added to and debt is subtracted from the calculated present value
        - Problems with treatment of other liabilities can produce errors

Here's a thought on how messed up financial theory can be. Most analysis reflexively assigns say, 10% to the equity cost of capital, presumably to reflect the long-term Ibbotson return or the risk premium for the type of stock (large cap/small cap). Investments or projects need to earn a return at least equal to this hypothetical cost to make sense. Now layer on increasing amounts of debt. If a firm can borrow prodigious amounts of money at say, a 5% rate of interest, then the more debt the company takes on the lower the firm cost of capital. As long as the average interest rate is lower than the assumed cost of equity, then an incentive to lever up exists. As the capital structure become more debt-laden, the lower blended cost of capital lowers the bar for investment decision making. Someone needs to convince us that leverage really lowers the hurdle rate for investment. There is a now politically incorrect word I would have liked to use here to summarize this line of thinking. I'll settle on ridiculous. GE comes to mind here.

An entire paper can be written to discuss the flaws in assumptions that go into using DCF and weighted average cost of capital inputs. Conversely, we can spend the same amount of time debating why one business is worth 20 times earnings while another is worth only 10 times. Or why a business can be worth 10 times earnings one day and the same business be worth 20 times another day. It all boils down to an understanding of how profits are derived and sustained and how much you should pay for those profits.

No method can be used with precision, but a lack of understanding of the inputs that go into the DCF model can be disastrous. The problem is use of the model itself can be more disastrous.

EV/EBITDA

When using P/E multiples, you must know how to adjust multiples for the underlying leverage in a business. Use of a measure like enterprise value as a percentage of cash flow allows analysis of returns before consideration of interest payments and capital intensity so includes both equity owners as well as debtholders when measuring valuation. It's a measure that allows comparisons of businesses before considering leverage. It's a measure we dislike because it uses cash flow before considering the amount of depreciation of fixed assets and the amount of maintenance capital expenditure that should be spent or reserved for to replace assets over time. You won't find "maintenance capex" in any financial statements. We have found that those who favor leverage in the capital structure also favor use of EV measures, especially when applied to EBITDA. Properly calculated, this EV/EBITDA measure is best used in determining whether a business is earning its cost of capital. You can have rising EBITDA and declining returns on capital. When the return on capital falls below the cost of capital you are losing money. Private equity firms love EV/EBITDA. In fact, private equity and the leveraged buyout crowd probably invented the measure. It ignores leverage and whether cash flow drops to the bottom line as profit for the equity owner. So long as deals trade on cash flow and cash flows are high enough to service the interest burden, then who needs net income? EBITDA/Interest is a coverage ratio which can measure a company's ability to meet interest obligations. We don't measure it here. If it needs to be calculated then it's too much debt for us.

The only profit that we are concerned with is the amount that inures for our benefit. If someone tells you that they would have made money except for the cost of replacing the equipment and paying the bank as interest, then guard your wallet. The EV/EBITDA measure fails to consider changes in deferred tax assets and liabilities, underfunded pension treatment, and other off-balance sheet liabilities and deferred expenses like deferred compensation. A business with great EBITDA but that can't drop enough profit to the bottom line to produce an adequate return on equity is not a great business. It can be traded among those who use EBITDA as their pricing tool, but can't be owned long-term with an expectation of producing a good return.

Another huge flaw that should have become apparent this past year was due to the tax code change. If the marginal tax rate was lowered from 35% to 21%, a full domestic taxpayer saw a 21.5% increase in profit. That's more profit in your pocket immediately and less owed to Uncle Sam. With a P/E ratio, since profit is up 21.5%, the price should move up 21.5% all else equal, requiring no change in the P/E. If you are using EV/EBITDA, wouldn't you have to move your multiple up? Your pre-tax cash flow is no higher, only your after-tax profit. I've been stunned at the pros that didn't get this over the past year. If the capital intensity of the business changes, if the amount of interest changes, and if tax treatment changes, the EV should change accordingly. Debt is debt. The market value piece of the EV is what changes, and EV/EBITDA misses that without the adjustment or thinking it through. Beyond last year's tax code change, the measure makes no adjustment for how much taxes are actually paid as cash versus the calculated GAAP or IFRS tax expense.

One last note on EBITDA – it's the measure that is now most often "adjusted". We used to see it frequently with earnings. When a management is incented to report maximum profitability, you will frequently see a proforma series of adjustments to EBITDA for non-cash or non-recurring items, even if those items recur. Examples are in share based compensation, litigation expenses, all varieties of write-offs and writedowns, one-time gains and losses, non-operating income or losses and foreign exchange gains and losses. An analyst needs to determine the economic relevance of ignoring or excluding any of these "adjustments" to a measure we already find flawed.

EV/EBIT

This is the same measure as EV/EBITDA except it measures cash flow after deducting depreciation and amortization expenses. It's a more conservative calculation of profit but will not be reliable if maintenance capital expenditures are greater or less than depreciation expense. You have to know whether depreciation overstates or understates economic decay and what portion of capital expenditures, past, present and future, have been for growth related initiatives. EV/EBIT is a great measure of profitability when overlaying with return on capital. Again, as with EV/EBITDA, you can have a business with a changing return on capital and fail to grasp the significance. It also ignores the tax flaws mentioned above as well as also having missed underlying changes in taxes unless you think to adjust multiples for differences in taxes.

Earnings and Valuation Footnote

I'm not happy with the way this section turned out. The commentary doesn't do justice to the topics of measuring earnings and valuation. In practice, it's more art and less mathematical rigidity, which I just found makes it hard to explain. Hopefully a takeaway from the cursory discussion of earnings and the price paid for them is the requirement of Judgment and Experience. There are so many moving parts to understanding how profits are derived and how predictable their future that no formula or multiples approach can work with precision. Comparison of one business or asset with another is often of value, as is an understanding of historical valuation, and nuances regarding the evolution of valuation. Often the market gets the pricing function spot on. At other times prices can miss the mark wildly. Therein lies the opportunity for investment gain. Done well it's relatively simple, but it's never easy.

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ACTIVE V. PASSIVE UPDATE – Back Down the Rabbit Hole

Last year's *Activity V. Passivity – The Coming Passive Investing Unwind* section of the letter generated terrific response. Huge thanks for all the nice feedback. It seems the passive investing crowd doesn't gravitate to 85-page annual letters on investing, and, why would they? Those that reached out all wore the familiar active tread marks, having been run over by the S&P 500 for some portion of time since 2008-2009. The passive crowd, indexers and pseudo-indexers alike, rich from aberrantly strong returns that outpaced business growth for too long, have about as much intellectual curiosity for examining the downside of the coming passive unwind as a dormouse would. Look, it's 3:30 in the morning, that was a horrible thing to write and an unfair comparison. I apologize to dormice everywhere, you didn't deserve that.

Bottoms Up

We did get a question about how flows to index funds or passively invested products could disproportionately affect the larger components of capitalization weighted indices, which the evidence seems to show does happen. The question has considerable merit. It presumes money invested into an index product should have an equal impact on all components, because the dollars invested are allocated exactly in proportion to the components (not really the case when float adjustment is considered). I've given this question a lot of thought. The best answer I have as to why inflows to an indexed product would more greatly affect the larger components is because the flows in are typically *not new flows*. The money is most typically a reallocation from some other vehicle. Often the money going to passive strategies is coming from active investors. How many active investors do you know that own 500 stocks, or 2,000, or 5,000? In the value corner of the investment world we know none.

On any given day, money has been moving from active investors to passive vehicles. Disproportionately, the flows going "out" are coming from investors of the value persuasion. Let's look at an example. Assume a large institutional investor, call it Ivy League University Endowment Company, decides they are going to fire an active manager and replace them with an S&P 500 ETF. The unlucky active investor, Bottom's Up Value Capital in our example, may have a terrific long-term record of beating the index by a wide margin. But when the allocation decision was made by Ivy League, they looked at Bottom's Up's dismal five-year return, which despite their stocks beating the S&P by 5% *annually* for 20 years and even by 3% for the last year and 5% for the last three, only earned 7% on average for the "five-year interval", which badly trailed the S&P's 8.5%. Can't have that. So, Bottom's Up gets the call. "You're out, Bottom." Ouch. "We like you and all but we're allocating the core to passive, and you know how important the five-year is to us here, so no hard feelings, right? In fact, we'll keep you on the watch list, I mentioned we like your process and all, right? Maybe you should start an international strategy, ex-U.S. and Europe and overweight Zimbabwe and Venezuela, I hear there may be a search." Ivy League assumes the helm of the portfolio managed two seconds ago by Bottom, and with the flip of a switch liquidates the 30 stocks in the Bottom account and simultaneously purchases a long futures contract on the index, lest not a single second of exposure to cash take place.

With Bottom's Up out, consider what happened when Ivy flicked the switch. What are the odds that Bottom's Up's 30 stock portfolio looked like this?

Bottom's Up Top 10?	**Portfolio Weight**
Apple	3.8%
Microsoft	2.9%
Alphabet A&C	2.8%
Amazon	2.0%
Facebook	1.8%
Berkshire Hathaway	1.7%
Johnson & Johnson	1.6%
JP Morgan	1.6%
Exxon Mobil	1.6%
Bank of America	1.3%

I knew the hypothetical folks (almost said guys there) at Bottom's Up, and Senator, that's no Bottom's Up. That's the top ten components of the S&P 500 going into 2018, with 21% of the 500-stock index in just the ten largest companies.

Here's Bottom's top ten, with the portfolio weight and the weight in the S&P 500:

The Real Bottom's Up Top 10?	**Portfolio Weight**	**S&P 500 Weight**
Unlevered Exceptional Conglomerate, Inc.	15.8%	1.7%
High ROC Coffee Corp.	6.9%	0.3%
Best Damn West Coast Auto Insurance Corp.	5.5%	-----
Major Oil and Gas to ROE Corp.	5.0%	1.5%
Scandinavia's Finest Engineering S.A.	4.3%	-----
Lowest Cost Glitter Corp.	3.8%	0.08
You Want Lo Cost Retail We Got It Corp.	3.3%	0.11%
Companie 65 Gross Margin Watch & Jewel	2.5%	-----
Building Products Arbitrage Ltd.	2.5%	-----
You Can't Beat This Retail Corp.	2.1%	0.3%

Bottom's portfolio looks nothing like any index we've seen. Suppose this was a $100 million account. Sure, the $100 million in proceeds will be instantly and *perfectly* invested in the index. Of the $100 million, $3.8 million goes to Apple shares. Microsoft gets $2.9 million, so on and so forth. $21 million goes to the index top ten and the remaining $79 million buys the remaining 490 index components' shares. To the question's point, the purchase should have roughly equal impact on the prices of each shares (holding aside that not all companies are equally liquid at any moment). We agree. In theory, the $3.8 million purchase will have the same impact on Apple's shares as the $6,400 purchase of News Corp, the smallest index component. However, flows don't flow in a vacuum. They are fluid and collide against each other.

The argument that passive flows will impact each component equally ends when you consider the other side of the trade. When Bottom's portfolio was liquidated in a flash, look at their top holdings. In this case, Bottom's top two holdings are also in the index. Their top holding is large and will require a $15.8 million sale. On the other side, if done simultaneously, the ETF or futures contract compels a $1.7 million purchase equal to the index weight, so a net $14.1 million in Bottom's top holding needs to be sold. Now. The second largest holding offsets a $6.9 million sale against a $300 thousand-dollar index purchase, putting $6.6 million in downward pressure on the stock, which is an index component. If there are other

buyers of these two stocks, they may not fall in price, but that is downward net pressure on an index component.

Think about the four stocks in Bottom's top ten that aren't even in the index. These just get sold. Two of the holdings appear to not even be U.S. headquartered firms. If two are small cap and included in some small cap index, does the sale impact the price?

Circling back to the question, we think it's aggregate flows that are driving the largest components of the index higher. It's the capital flowing out of the smaller names in the index, held in larger percentages by active managers being fired, than their index weights, that is corrupting the price seeking efficiency of the market. We saw this in the late 1990's as well. All things value, small cap and mid cap especially, saw redemptions for several years. When the world chases what's hot, it's not just the flows into the hot that pushes everything hot up. When the flows are also coming out of what's not hot, selling pressure puts downward pressure on stocks that in many cases have already been under selling pressure. Ultimately the bifurcation can only go so far, but it's not the passive investor that comes armed with value mind. Bifurcation can be a wonderful thing for those with a price discipline. It's just not wonderful during the lead-up phase which often comes with redemptions. How about the great managers that suffered mightily in the late 1990's, when the world ran away from them? Templeton, Buffett, Schloss. They all fell behind, and many saw investors that had been clients for decades leave them or sell out, despite vast outperformance, and chase what was hot. Ultimately, they were vindicated. If it reminds you of the late 1990's today it should.

Atoning for a Sin

Last year's letter contained a table showing compartmentalized returns for 11 stock market indices for 2017 meant to illustrate the degree to which performance across most was being driven by the largest components in most of the indices. Sorting through the data required countless iterations and adjustments to get the data right. Several early runs which dramatically skewed the results sorted returns by ending market cap and not beginning. With the index sorted by quintile, naturally some strong performers would move up to the next quintile and poor performers would move down. The bottom quintile thus captured poor performers from the larger group(s) above it, but losers at the bottom had nowhere to go but further toward the bottom of the quintile. We caught that issue when putting together the table as well as numerous other adjustments (to reflect float weights instead of full market caps, to adjust for companies being added to or deleted from the index during the year, to not double count companies with dual share classes, and many more). We especially took care to label each related table denoting that *beginning* weights were used, which would be correct. As it turns, out, when putting together the final table we inadvertently grabbed an earlier data set that had been sorted by ending and not beginning weights. Thus, the final product was a flawed table, requiring restatement. The correct table appears in the appendix, and though the results aren't as dramatically skewed to favor the larger groups as was presented in last year's letter, the effect of net flows impacting the larger components and smaller components remains.

For the current year, we ran the data again for 2018, and because the year changed course from September 20 through Christmas Eve, thought it would be interesting to run a second table for the period only including the downturn. The results remain telling, both for the year and for the bear phase we think, and confirm that flows more greatly impact the larger components. Our answer to the question posed above, that it's not just new flows to passive indices but the active decisions to allocate away from active investors, who disproportionately own smaller components and in more concentration, that's contributing to the size impact.

2018 Index Returns Distributed by Largest Members and Quintiles

	Index Total Return	Largest 5	Largest 10	Largest 25	Largest Quintile	2nd Quintile	Middle Quintile	4th Quintile	Smallest Quintile
MSCI Emerging Market	-14.0	-19.7	-17.9	-14.8	-14.2	-13.6	-13.2	-9.9	-17.2
Russell 1000 Growth	-1.2	3.6	3.7	1.4	0.9	-2.3	-4.0	-3.0	-7.7
MSCI EAFE	-13.1	-4.5	-7.3	-9.4	-13.0	-11.4	-13.6	-13.7	-13.0
MSCI ACWI	-8.7	3.5	-2.2	-2.7	-6.2	-10.6	-11.7	-11.3	-13.5
Russell 2000 Growth	-8.9	6.5	11.0	11.3	-2.2	-1.1	-2.4	-10.7	-14.6
S&P 500	-4.4	3.6	-0.4	-0.7	-2.4	-5.6	-8.8	-11.3	-5.1
Russell 1000	-4.8	3.6	-0.5	-0.8	-2.9	-9.1	-8.3	-5.9	-10.4
Russell Midcap	-9.1	8.3	3.2	-6.3	-8.4	-9.3	-4.6	-5.1	-11.4
Russell 2000	-10.8	9.9	6.7	4.1	-6.2	-8.4	-7.9	-11.0	-12.5
Russell 1000 Value	-8.3	-7.4	-8.4	-5.7	-7.3	-12.6	-7.1	-9.5	-11.4
Russell 2000 Value	-12.7	-6.0	-6.5	-8.0	-11.3	-9.4	-8.7	-10.0	-1.7

Source: Bloomberg Raw Data; SAI Calculations; Index components derived from ETF Index Holdings; Component weights using year-end 2017 weights.
Returns for the two international indices, MSCI EM and MSCI EAFE are in US Dollars. The global index, MSCI ACWI, is just under half international, and is also in US Dollars. The dollar gained against most currencies during 2018, negatively affecting international investments when translated to dollars. The returns for each index in local currency terms would have been higher by the amount of the decline in the US Dollar.

9/20/18-12/24/18 Index Returns Distributed by Largest Members and Quintiles

	Index Total Return	Largest 5	Largest 10	Largest 25	Largest Quintile	2nd Quintile	Middle Quintile	4th Quintile	Smallest Quintile
MSCI Emerging Market	-7.84	-13.3	-11.9	-9.7	-9.3	-6.5	-2.9	-3.0	-5.7
Russell 1000 Growth	-21.1	-25.2	-23.7	-22.7	-21.4	-19.4	-22.8	-23.6	-20.0
MSCI EAFE	-13.5	-4.7	-6.3	-8.6	-12.6	-15.6	-15.5	-14.7	-11.0
MSCI ACWI	-16.3	-25.0	-23.7	-19.5	-17.0	-16.9	-15.8	-14.7	-6.8
Russell 2000 Growth	-27.2	-20.9	-27.1	-27.8	-26.9	-27.2	-30.0	-29.0	-27.5
S&P 500	-19.3	-24.1	-23.3	-19.8	-17.5	-17.3	-19.5	-20.2	-23.3
Russell 1000	-19.7	-24.2	-23.3	-19.8	-19.1	-20.1	-21.0	-21.0	-24.8
Russell Midcap	-21.1	-19.3	-18.7	-22.2	-20.2	-20.7	-21.2	-22.3	-24.8
Russell 2000	-25.6	-17.6	-26.1	-27.5	-25.1	-25.7	-26.1	-27.3	-28.9
Russell 1000 Value	-17.9	-19.7	-17.7	-16.0	-16.8	-19.2	-20.1	-22.9	-23.8
Russell 2000 Value	-23.8	-17.5	-15.9	-19.3	-23.2	-24.2	-25.0	-24.4	-27.0

Source: Bloomberg Raw Data; SAI Calculations; Index components derived from ETF Index Holdings; Component weights using 9/20/18 weights.
Returns for the two international indices, MSCI EM and MSCI EAFE are in US Dollars. The global index, MSCI ACWI, is just under half international, and is also in US Dollars. The dollar rose against most currencies during 2018. The returns for each index in local currency terms would have been higher by the amount of the decline in the US Dollar.

If these charts aren't pretty darn correct you won't see their reappearance next year because there will be no letter. Your CIO will have made the leap from the Tallahatchie Bridge.

Interpret the results from the tables as you will. A picture tells a thousand stories. Our focus is primarily on the S&P 500, and its cousin the MSCI ACWI, which despite being global, has a 55% U.S. weight, so the top of the index looks like the top of the S&P 500 (the top ten is about 10.6% of the ACWI, about half the concentration of the S&P, and all the top names are identical). With the S&P, the top 5, 10 and 25 stocks, as well as the entire top quintile, clearly outperformed the index for the full year. The quintiles followed suit, with only the bottom two (much smaller caps) reversing order. The ACWI was a clean sweep for the year, with large trumping small top-to-bottom.

For the "bear market" period, September 20 to December 24, the results for the S&P 500 require more interpretation. Clearly the five largest members bled the most, and performance was worst from large to small through the 2nd quintile. The ACWI was remarkably uniform in distribution again, but instead of the best yearly performance from top to bottom, once the bear took hold the entire table shifted, and as the index dropped, the performance was worst in the largest holdings and improved consistently from left to right. The contrast is interesting. The index was negative for the year, but the largest components were up, with the entire first quintile outperforming for the year. It's clear that the bigs outperformed during the bull phase but were most harmed during the bear decline. Flow driven? We think so. Active investors will have more impact when it comes to price discovery as cap sizes become smaller.

The most amazing thing we observe is the contrast between the MSCI ACWI with the MSCI EAFE for both periods. **They are mirror images for the year but complete opposites during the downturn.** For the entire year, the best performance was in the larger holdings for both indices and declined with size. But look at the table for the bear period. How in the world (literally) can one index, the EAFE, have the best performers consistently from top to bottom during a bear while the other, the ACWI, performed completely opposite, with the worst at the top? The answer must be the exclusion of U.S. stocks in the EAFE, which are more than half of the ACWI. With only the data points in the table to go on, we suspect some major-league institutions rebalanced during the three-month decline, selling the S&P 500, which drives the ACWI, and investing the proceeds in the EAFE (as well as lining up to give private equity their committed slug).

Another interesting take is comparison of the Russell Value and Growth indices. For the entire year, growth *again* led value, and the largest components of the growth indices beat the smaller components within the same growth indices. Compare the Russell 1000 Growth to the 1000 Value and then the Russell 2000 Growth to the 2000 Value. The reversal in fortune from growth to value during the decline is apparent. Value won during the downturn. You can conclude that the decline was consistent across the capitalizations within each index, but it's the comparison of growth to value that's so interesting.

Finally, institutional flows most likely left the MSCI Emerging Market index during the year, leaving active investors to seek value through price, helping the incrementally smaller cap businesses.

It just strikes us that big institutions are driving short-term performance with allocation flows. Good luck to those who can figure out what the big institutions will do on a given day. As an investor navigating the long-haul, it appears and it feels like flows are driving these big indices against each other. For the value oriented, meaning where price matters, the group has wandered around the desert for too long. But if you survived the late 1990's and the idiocy that went with money chasing performance, the values became not only obvious, but allowed an opportunity to post market beating returns for many years. Perhaps the blood spilt in the fourth quarter and the snapback here in early January are a precursor to the unwinding that unfolded in March 2000. We can't say it for sure, but it sure feels similar.

The following table is an update from last year as well. We debated leaving it out, but a few things are interesting here. The table shows component weights at the beginning of the year (as the numerator) and

at year-end 2018 as the denominator. An argument for passive investing rests on the diversification it provides. Run your finger down the columns containing the largest components. These indices are far from equally-weighted or diversified. 37.1% of the S&P 500 is invested in the top 25 companies alone, with a full 15.3% in the five largest. The Russell 1000 growth captures the degree to which growth has trounced value, given its larger than S&P 500 weightings at the top (they are largely the same companies). Also interesting is the concentration at the top of the MSCI Emerging Market index. Some naturally think about emerging market investing as lots of small companies in small markets. If we owned that index we'd surely want to know what the top five or ten companies were, what they did and how they were valued. More than a quarter of the index began the year concentrated in the top ten holdings. With the top five and ten down 19.7% and 17.9% respectively, more than the 14% decline in the index for the year, you can't help but wonder if a little fundamental analysis going in could have prevented losing nearly 20% of your money.

2018 Beginning and Ending Year Component Weights

	Index Total Weight	Largest 5	Largest 10	Largest 25	Largest Quintile	2nd Quintile	Middle Quintile	4th Quintile	Smallest Quintile
MSCI Emerging Market	100	19.7 / 17.6	25.5 / 23.4	35.3 / 33.9	63.5 / 66.0	13.8 / 14.4	8.7 / 8.8	5.5 / 5.5	2.9 / 2.3
Russell 1000 Growth	100	23.7 / 26.0	31.4 / 34.7	45.6 / 48.6	76.2 / 77.7	12.9 / 11.8	6.6 / 5.7	3.5 / 2.9	1.2 / 0.9
MSCI EAFE	100	7.4 / 8.1	12.1 / 12.8	21.9 / 22.67	62.1 / 62.8	17.8 / 18.1	9.8 / 9.8	6.2 / 6.1	3.6 / 3.5
MSCI ACWI	100	8.1 / 7.9	11.7 / 11.6	19.1 / 19.8	60.1 / 61.2	18.2 / 17.7	10.7 / 10.6	6.8 / 6.8	3.0 / 3.4
Russell 2000 Growth	100	3.0 / 3.0	5.3 / 5.2	11.2 / 11.2	59.0 / 60.5	23.9 / 23.4	10.7 / 9.6	4.2 / 4.0	1.1 / 1.1
S&P 500	100	13.4 / 15.3	21.1 / 22.5	35.1 / 37.1	65.5 / 67.0	16.6 / 15.7	9.1 / 8.4	5.8 / 5.4	3.5 / 3.3
Russell 1000	100	11.9 / 13.5	18.8 / 20.1	31.4 / 33.4	72.4 / 74.0	13.8 / 13.2	7.2 / 6.9	4.3 / 4.1	2.3 / 2.0
Russell Midcap	100	2.4/ 2.5	4.5 / 4.8	10.2 / 10.7	43.7 / 44.9	24.4 / 24.4	15.8 / 15.4	10.5 / 10.3	5.7 / 5.1
Russell 2000	100	1.7/ 1.5	3.0 / 2.8	6.3 / 6.1	53.5 / 53.8	24.2 / 24.4	12.6 / 12.1	6.2 / 5.8	2.5 / 2.2
Russell 1000 Value	100	13.6 / 12.7	23.0 / 22.1	38.7 / 39.6	73.6 / 73.6	13.9 / 13.8	6.9 / 7.2	3.9 / 4.0	1.6 / 1.5
Russell 2000 Value	100	2.5 / 2.5	4.6 / 4.7	10.3 / 10.6	59.1 / 60.4	22.6 / 22.4	10.8 / 10.5	5.4 / 5.0	1.8 / 1.4

Source: Bloomberg Raw Data; SAI Calculations; Index components derived from ETF Index Holdings; Component weights using year-end 2017 and year-end 2018 weights. Due to rounding the weights may not add to 100%.

When Passive is Manic

We aren't big fans of making mistakes here, but rest assured that some good came from the bad. To ensure that the restated table was accurate this year, or at least as accurate as it needed to be, we now know *way* more about how indices are rebalanced. We have noted many times over the years how "active" the S&P 500 really is, with component replacement due to merger, obsolescence, bankruptcy and so forth accounting to about 4.6% turnover per year (23 names per year since 1963). If you didn't instinctively already multiply that out, the *500-stock index* has had more than *1,250 components* since 1963, about one year before Warren Buffett took control of Berkshire Hathaway. Only in peeking under the hood of some of the others does one realize how active some of these seemingly passive indices and portfolios built to replicate them really are. Turnover in the Russell indices makes Semper's 16% annual turnover over two decades look decidedly passive.

The Russell indices go through a large annual and smaller quarterly rebalances, based on constituent size. Like the S&P 500, 400 and 600 (large, mid, small-cap), Russell's indices also stack on each other. The Russell 1000 is the large cap, and closely mirrors the S&P 500 despite including the next 500 smaller U.S. headquartered companies because at the top, the Apple's, Microsoft's, Alphabet's, and Facebook's dominate in size. The Russell 2000 is a small-cap index containing the next 2000 stocks below the Russell 1000. The Russell Microcap sits under the 2000. Every June, the index-keepers rebalance based on current float-adjusted market cap, so if you finished atop the Russell 2000 and are larger than companies at the bottom of the 1000, you switch seats. Ditto from the bottom of the Russell 2000 into the Microcap. Shrink enough and down you go. Grow and you graduate.

If you had to guess what kind of turnover this rebalancing introduced each year, what would you guess was the average annual turnover??? I can't pause long enough in my typing to wait for your answer, but you must have known when I asked the question that it would be high. The answer is in two parts. From 1996 to 2005 the average was *29.8% per year!* For a "passive" index. From 2006 to 2017 a tightening of the allowed "bands" was broadened and the turnover dropped to an average 12.1% per year. I was shocked that Russell still published these figures on its website (of course you have to dig). If you were selling passive, these figures aren't it. The turnover percentages reflect market value, not number of companies. During the earlier period, it was 495 companies per year out of the 2000, and recently the average is 258, 12.9% of the names. In 2000 alone, ***fifty (50)*** percent of the index was rebalanced! How on earth can an investor in funds that track these indices be called passive? Somebody pass the lithium.

While "better", the Index Committee at Standard & Poor's, somewhat rule-based but also free to shoot from the hip, were forced to boot 56 companies from the index during the implosion of the tech bubble in 2000, many of whom had only been admitted shortly prior. For market historians and data junkies, the record S&P 500 turnover year was 1976, when the committee admitted financials for the first time, making forever comparisons to olden days less useful. And who can forget the 2002 booting of international companies from the index? USA! USA! Seven large companies were sent packing. No children were detained, fortunately. So much for open borders though. But seriously? More than 10% in a year? For the king of the passives? We have years here at Semper lower than that. Except for 2008, when we thrived on the volatility, our turnover has been lower than much of the passive world. With our median turnover of 12.5% over two decades, we make the Russell indices look like day traders.

More recently, in a move we don't recall seeing before, the committee that governs component constituency within the S&P 500 and related indices effectively introduced a "split" in 2018. Typically, a split refers to a company simply changing the number of shares outstanding, which is done for various reasons. The split at the S&P 500 involved a sector growing so large it was exceeding many investor concentration limitations. In the past, often when a sector became disproportionately large, that was a sign the sector may be overvalued and worthy of caution. Technology in the late 1990's, immediately prior to the bursting of the "tech" bubble; and finance in 2007, immediately before the "financial" crisis come to mind. No doubt technology's modern giants have dominated the market, and at a 26% weight in the early fall, the move north of 25% was going to compel sales by lots of investors, simply for size reasons. How illogical is that!!! Oh wait, every index does it, look at the Russell brain trust. So, the gurus responsible simply split the S&P Technology sector. Mechanically, the Telecommunications sector was renamed Communications Services, and in September had 6 tech stocks (Apple and Facebook, for example) and 23 from the Consumer Discretionary sector moved to it. We won't argue that technology is consuming a larger and larger share of the global economy, so perhaps yesterday's red flag about sectors approaching the mid-20's level is irrelevant, but perhaps not. Maybe the new red flag is at 100%...

Until we had to dig into the data to ensure proper methodologies for our index return table, we really had no idea that turnover was so high in Passive Land. One thing is for sure – passive investing is no Rip Van Winkle…

RANTS AND A RAVE

Have you heard the one about the guy that walks into Costco? He was looking for a book to give to some friends and colleagues for the holidays. Costco has the book, he secures 40 copies, loads them into the cart and heads to the checkout. After ringing in the third book, the price increases by a dollar. Upon ringing in the fourth book, the nice front-end associate tells him that he's reached his limit, that Costco has a new policy of no longer making items in stock available for purchase in volume beyond four. Stunned, the man leaves with his four books and heads down the road to the competition.

True story? No. Costco would absolutely sell you everything in the store if you have the cash, a check or the Citibank Costco Visa card. But the events that transpired did happen – at Amazon Prime.

We tried sending 40 copies of Kate Welling's recently released, *Merger Masters – Tales of Arbitrage* as gifts in the week before Christmas. Because the books were gifts, we keyed in information for each recipient separately and included a gift message. After the price increased on book three, we literally received the message saying, "You have reached your maximum for allowed purchases of this item. Thank you for shopping at Amazon." Reaching out to customer service at Amazon, no easy feat, came this the reply (typos and poor grammar retained for relief):

> "This is Amanda from Amazon Business Customer Service. It was a pleasure assisting you today.
>
> A quantity limit is the maximum number of any item that can be purchased. These limits can't be increased. The quantity limit on the item you mentioned is 4
>
> Items with quantity restrictions have very low prices and/or a limited supply, and we want to ensure that many customers are able to order them. As our prices and product supply change, these limits may change too.

They weren't out of stock, though. We ultimately had a couple of our staff send four each from their personal Prime accounts. After Christmas, it seems the limit was lifted and we sent the balance of the books, albeit at rising incremental prices. We understand that Amazon will purchase a truckload of books and have exclusivity to sell weeks in advance of bricks and mortar retailers.

What retailer would limit the number of purchases you can make if they have the goods in stock and the customer has the cash? We've noticed that Amazon Prime is more limited than it was, with minimum basket sizes. Fewer goods qualify for free shipping. We suppose there is finally a profit motive at the company, and that once you kill all your competition, then you are free to behave as a monopolist.

Now for the rave. *Merger Masters* is the best business book of the year. I had the pleasure and privilege of reading an advance draft and suggesting a very small handful of quick edits for Kate, who is a great friend and the best financial journalist extant. Mario Gabelli worked his network of fellow practitioners and business execs to allow Kate to do her thing and interview the best of the best in the merger arb arena. If you are a student of investment history, or want to better understand the practice of arbitrage, or simply want to enjoy a great investment and business book, then buy a copy. Just don't buy it on Amazon if you happen to be in the market for more than four…

Rant was Plural in the Header…

Health Insurance: Man, is the health system in this country screwed up or what? We have suggested for years that components of an economy can't grow faster than the economy forever – specifically healthcare and the cost of undergraduate and postgraduate education. We've been wrong for years.

Having just received the umpteenth premium increase of more than 20%, it now looks like the average cost of insurance for a family runs over $1,000 per month, more than $12,000 per year. Throw in a typical deductible schedule of $3,500 per person and $7,000 for the family. If the max out of pocket excluding premiums equals the family deductible of $7,000, then at $19,000 per year before the insurance company kicks in a dime, the family cost is now a third of median household income. Soon, when the cost of health insurance equals household income, there will be no need for medicine because everyone will be dead from starvation, especially if we are still paying for Apple devices…

Education: Next year, when my baby girl Lucy will be in her first year of college, I will rant about the cost of education. Holy cow! I just got a glimpse of what I'll be spending.

Databases: Within the database ecosystem, it's been our observation that the salespeople are the most valuable to their respective organizations. There is a reason Mike Bloomberg can self-finance a run for the White House, and it isn't because he created a business long on customer service.

Gamers: I was slow to learn there really exists a thing where *adults* pay *big money* to watch *other adults* play *video* games. I thought it was an urban legend. It's like the boom in golf course development in the 1920's before the depression, but worse. Then, at least, you were outside and walking. Our country is getting outworked, and we deserve what's coming to us as the credit bubble unwinds. Leisure peaks along with economies. If you are through school, playing video games and living in your parents' basement, then I'm certain you are not reading this letter, so I risk offending no one, here at least…Well, until now. I just heard Merrill Lynch has an arm in private wealth that works with what are known as "eSports pros." These are the same bulls that stampeded themselves through the financial crisis into a new home inside of BofA…

The Ivy League Academic Index: There really exists a thing where the aggregate population of incoming NCAA athletes at each of the eight Ivy's must have collective scores on grades and the college boards, the ACT and SAT. It seems the schools favor their men's football and basketball over the other sports and are willing to take athletes into those programs with *far* lower scores than for the balance of their sports teams, especially the women's teams. In women's golf and tennis, for example, even if you can get admitted to the schools without the help of the athletic teams, they won't take you even as a walk-on. If you have a 4.0 GPA, a 36 on the ACT and a 1600 SAT, you can play there. If not, don't bother. A 25 ACT as a great wide receiver, no problem. This was a rant, not a rave incidentally.

College Football: Money has ruined college football. The four-team playoff and the "power conferences" have destroyed something great. Playing in a bowl game used to be a big deal that the whole country got excited about. Win the Big-10 and the Pac-10 and you meet in the Rose Bowl. Win the Big-8 and the SEC and you play in the Orange and Sugar Bowls, respectively against a great at-large opponent. Winning your conference and making the bowl game was the goal. Now, look at the attendance and viewership of the bowl games outside of the three playoff games. Even the seniors with NFL aspirations are skipping the bowls. It's a shame. I know my prediction from January 2000 about the commercial nature of sport set to decline was a flop. How I wish I had been right, however.

Crowds: Airports have never been more crowded. Planes are full of people who see no problem reclining into the person 18 inches behind them. Restaurants are crowded. People are paying hundreds, even thousands of dollars to see concerts, Broadway shows, plays and professional sports games. Bubble behavior. Recessions are great for the thrifty and crowd-averse.

Bitcoin: You got what you deserved.

The Last Rant – You Better You Bet

Who among the actives, those working at *investing* on behalf of investors, adhering to principled disciplines and ethically adding value, hasn't had enough of "The Bet"?

For the uninitiated, a certain midwestern "oracle" proposed a $500,000 bet more than ten years ago that a passive index would outperform a portfolio of five hedge funds, after fees and expenses, over a ten-year period. The bet was taken and lost by a gentleman, who, instead of picking five hedge funds, each with a base layer of fees and a second layer of performance fees, chose five fund-of-funds which add a third layer of fees, all combined before even considering transaction expenses and costs. The oracle's horse in the race was the S&P 500.

The Bet began at the outset of 2008, and by year-end each of the five fund-of-funds had lost less than the S&P's 37% decline for the year. No mention was made of the bet in 2009, neither in the oracle's 2008 letter to his shareholders nor at the small annual gathering of his closest shareholders. The next year, the index was still down 20% and still trailed all five funds. Again, crickets. At year three, the index, still down 8%, had passed one fund and tied another. The bet was mentioned at the annual confab that year. Jumping to year nine, the index had finally passed all five of the compensation schemes posing as funds. Many trees were killed in the 2016 annual report, with three full pages recounting the certain triumph and the rationale why the result was never in doubt. The 2017 report laid to waste an entire forest, not only dedicating three full new pages of the oracle's letter recounting the bet, but then reprinting all three pages again from the prior year. That's six pages for those of you keeping track. God willing I'm still writing, even living when I'm 87, but enough already.

The Bet bothers me for many reasons, and I'm not alone. Equally affronted are countless peers, their character and work ethic I described in last year's letter, individuals working what we believe are noble careers and doing good for countless investors and savers. Many of the aggrieved gather yearly to celebrate a culture, hosted by the oracle himself. It's all very unusual. I attend as well. The purpose of The Bet's recounting was to laud the praises of passive investing and to cast aspersion and warn of the evils of the active side.

Know, however, that:

- A 10% gross return, at a 2 and 20 fee structure, with fund-of-fund overlay of 1%, is halved after fees to 5%. A 20% gross return is shaved by 35% to a net 13%. That's a difficult fee structure to overcome (requires lots of "alpha"), lest against an index with near zero fees.
- The oracle ran partnerships before gaining control of his current holding company. The fee structure was 0/6/25, meaning no fee on the first 6% and 25% of all profits above 6%. A 10% gross return nets to 9%, and a 20% gross return shaves to a net 16.5%.
- Simple math reveals a 0/6/25 structure, while less than the modern 2 and 20 plus 1, is still far more than fees on a passive fund.
- If your average gross return for twelve years is 29.7% and your fee is 5.93% per year, your investors should be happy, and you, having made 5.93% per year on other people's money, plus no fees on your own money, can become rich, even if you started with little.
- Unless my math is confused, a 5.93% fee per year for twelve years is higher than fees charged by index funds. Some would call a 5.93% fee an active one.
- In The Bet itself, after a period of years, and after the Federal Reserve came to the rescue of the stock market (when a Fed official says, "data", feel free to replace data with, "stock market"; as in, "We're keeping an eye on the data" becomes "We're keeping an eye on the stock market."). The relief was zero interest rates. In The Bet, each side posted enough cash to purchase $500,000 par value U.S. Treasury zeroes at $318,250, which in ten years were to mature at the face

$500,000. When the Fed came to the rescue, which necessarily helped the index side in the bet, being unhedged, the value of the zeroes quickly moved to close to par. The sides in The Bet agreed to sell the zeroes and invest in something else more "profitable". The side running his own hedge fund-of-funds, one of five in The Bet, suggested using his fund for his capital but the charities involved as the beneficiaries of the bet were restricted, so instead the oracle suggested investing the combined capital in shares of his own holding company for the remaining duration of the bet, and in doing so would guarantee any downside from that level for both sides. The sides agreed and the holding company produced terrific returns for the balance of The Bet, to the charities' benefit, paying much more than the original $500,000 at risk for each side. If you picked up on the salient meat of that, the part driving the rant, the oracle made a ***very active bet*** **on a *single stock* for a *short-duration horizon***, and in doing so didn't even use his own passive pony that was racing in the bet. He could have invested the sides in The Bet in the index and wouldn't even do that. He made the ***active*** decision to make an ***active investment*** in a stock which ***outperformed the S&P 500***.

- Separate from The Bet, but during the period of The Bet, the oracle made the *active* decision to hire two *active stock pickers* to help invest the capital at his holding company, one in 2011 and the other in 2012. Both were *hedge fund managers* prior to joining the oracle's holding company. It is my understanding that neither invested in index funds in their hedge funds, nor do they invest in the S&P 500 at the holding company. Early in their time at the holding company, the oracle reported, in his annual report and at the annual gathering, that both stock jockeys had outperformed the S&P 500, and in doing so were paid handsome performance bonuses for doing so. Of late, an acute lack of discussion regarding the success of the jockeys' performance would lead one to conclude that said jockeys have been lagging. Such a lag wouldn't happen passively and could certainly be done without unnecessary compensation and performance fees since paid and gone, frictional costs to be sure.
- Cash balances at the oracle's holding company have exceeded $100 billion in recent years. He seemingly waits for better yielding investments to present themselves, an *active* decision to hold cash and intelligently wait for opportunities. In the meantime, the unmanaged S&P 500 has run circles around cash, and the opportunity cost perhaps has been expensive. Regardless, jamming $70 billion into a low-cost index would be easy. And it's the "right thing to" do for investors. Except for the holding company.
- For the last twenty years, based on disclosed holdings in the 13-F, the stock portfolio at the oracle's holding company has slightly lagged the S&P 500. Slightly, but a lag is a lag. And in both cases, the index and stocks at the holding company have earned for twenty years about half of the returns earned annually in stocks since 1926.
- Remove active investors from the investment world, and good luck with price discovery, good luck with rewarding the deserving and shunning the unworthy.

Riddle me this: What is a slatten, capacious coffer that encapsulates a herbivorous - yet dangerous, semiaquatic mammal native to sub-Saharan Africa?

Hint: Cheval Eau

It would be bad form to end a rants and rave section with a rant. Hence, a final second rave, and a somber one at that:

John C. "Jack" Bogle passed away on January 16, the day after I penned the section seen immediately above. Mr. Bogle did more good for the investment world than any single individual, past or present. More than Ben Graham. More than Warren Buffett. Mr. Bogle's advent of the index fund and the growth of Vanguard's massive mutual fund complex brought low-cost investing to the masses, particularly to the

place where most households both voluntarily and involuntarily save the most financial assets for retirement outside of their homes – their 401(k)'s and profit-sharing plans. The advice for the average family to save first, save regularly, avoid large unnecessary fees and to avoid psychological human biases and instincts to react when prices behave aberrantly, is sound if adhered to.

Mr. Bogle was necessarily a hero of Mr. Buffett's, for Mr. Buffett knows that, while difficult, the market can be beat over the long haul. Mr. Bogle also knew that there are those that can beat markets. Each know and knew that few are those that can, and for the average family to find them is a near impossibility. To keep them permanently, once found, is another matter altogether. For that, and despite my avocation and my defense of the intelligent investor who can beat markets, and for those who don't, but who treat clients fairly and are helpful when help is most needed – when fear or greed are widespread, his contribution to savers will never be outdone. We are privileged to have shared the arena with Jack.

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BERKSHIRE HATHAWAY: THE PIVOT – IMMUNIZATION TO THE BEAR

The impenetrable fortress that is Berkshire Hathaway was built on deliberatively shrewd stock picking, augmented with a type of leverage that people would kill for – the less than free variety.

At the precise moment that a decades-long tailwind in stocks that had pushed Berkshire to the top of the mountain shifted to an in your face gale, it pivoted from the very things that made it and ran hard to controlled assets. Today, when a single quarter shaves $43 billion from its stock portfolio and amounts to a blip, not even a dent in the armor, then consider the pivot sufficiently successful. In a year when gains and losses in investment securities now flow through the income statement and a $38 billion hit to the stock portfolio fails to produce a net loss across the entire business, leaving book value per share with perhaps a modest *gain,* then the business is now insulated from all but the nastiest stock bear markets.

We had hoped to only update our valuation work and 10-year expected return on Berkshire in this year's letter. Thanks to the hugely beneficial but confusing tax changes discussed last year, now fully implemented, and to the large decline in the stock portfolio, Berkshire's financial statements at year-end will be completely useless and indecipherable to any but those willing and able to sort through the mess. For that we decided to again dig a bit into the company and work through the accounting and adjustments we make to arrive at an appraisal of intrinsic value. Under the hood, a flat stock price in 2018 combined with the beneficial tax changes, a now undervalued stock portfolio, large net stock purchases in companies with seeming tremendous earning power, plus advancing profitability among Berkshire's subsidiaries, all leave Berkshire's shares nearly as undervalued as when we wrote our 2015 year-end letter. At that time, the stock had fallen 12.5%, compelling the write-up, and was set to climb 50% over the next two years. Here we are again.

In addition to updating our appraisal of Berkshire's intrinsic value and 10-year expected returns scenarios, we'll try to break down what fourth quarter and full-year GAAP financials are likely to bring, and highlight the adjustments we make to arrive at fair value. Lamentably, with some useful group information now no longer presented in Berkshire's Chairman's Letter, we dig into the company using the MSR group and commiserate a bit about the additional complexity facing the analyst attempting to decipher profitability at Berkshire. To begin the Berkshire discussion, we go back twenty years to what we think was one of the most important transactions made in the storied history of the company. The Chairman may disagree, but we present our case.

Our discussion of return on equity earlier in the letter concluded that shareholder return falls short of return on equity. That's certainly been the case for investors in the broad stock market and the S&P 500 over time, and it's unfortunately the case for investors in most businesses. However, across our investment portfolio, Semper returns over time approach and replicate the underlying return on equity of our holdings. Bought right, we can and have earned considerably more. Berkshire is a case in point where, unless purchased badly or exceptionally well, most investors earn the returns approaching Berkshire's return on equity over time and should continue to do so over many years to come. They have for the past 54 years.

On this point, it's the price you pay for the return on equity and the subsequent price at which the market values the equity. It's not that complicated, except for the understanding of earning power and how it's derived. In Berkshire's case, a shareholder will earn the return on equity over time plus or minus any change in price to equity from acquisition to measurement date. This can easily be seen using the case of

Berkshire's acquisition of General Reinsurance. General Re shareholders were paid in Berkshire stock valued at $80,882 per Berkshire A share in 1998. Through year-end 2018, they have earned 3.8 times their money, 6.7% per year compounded annually. Our appraisal of Berkshire's intrinsic value was a bit more than half of the price at the time the General Reinsurance deal was announced. Semper bought its first shares shortly thereafter, in February 2000 at $43,744 per share. We have earned 6.8 times our money, 10.9% per year on that initial purchase.

What accounts for the 4.2% annual difference between the General Reinsurance shareholders' experience with owning Berkshire and ours, having bought the stock less than 18 months later? Berkshire's book value per share compounded at 9.0% per year for the last 20 years since Berkshire closed the General Re deal and at 9.5% for the 19 years since we bought our shares, similar either way. Because Berkshire has paid no dividends, the gain in book value per share closely matches the return on equity. General Re shareholders 6.7% annual return combines the 9.0% return on equity with a decline of 50% in Berkshire's book value per share from the 2.9 multiple paid to the current 1.4 multiple at year-end 2018. By the same token, our 10.9% gain combined Berkshire's 9.5% gain in book value per share annually, roughly the return on equity, plus a gain of 25% over 19 years for the increase in the share's price to book multiple from 1.1 times to 1.4 times. Said more plainly, as shareholders, we and GenRe earned Berkshire's ongoing return on equity of 9.0% to 9.5%, minus 50% for General Re over their 20 years of ownership, and plus 25% for Semper over our 19 years of ownership. Have I mentioned already that price matters? It brackets the endpoints in any compounding series and can make a great business a terrible investment if the price paid was too high. **The corollary is that price can make a great business an even better investment if the price paid is low enough**. Does the index investor appreciate the distinction?

Ted Nugent Live is terrible for writing.

General Reinsurance – The Pivot: Part Deux

The Berkshire cult knows the original textile business was lousy. Current management gained control of the company in 1965. The textile business was closed 20 years later, in 1985. Quickly recognizing the economics of the operation were going to consume capital instead of creating it, the company pivoted, diverting capital to insurance. National Indemnity, the insurance operation that today remains the crown jewel of the holding company, was acquired in 1967. Without the pivot from textiles to insurance, Berkshire certainly wouldn't exist today. Precisely three decades from the acquisition of National Indemnity, Berkshire pivoted again, this time by *buying an insurance company* which allowed it *to shrink from insurance* and the leveraged stock portfolio that created so much value for 30 years. We think the second pivot was every bit as important to the longevity of Berkshire as the first, marking the economically rewarding shift from insurance, primarily the investing that goes with it, to energy production and distribution, railroads, and a host of manufacturers, retailers and service oriented businesses. Our view is not universally shared.

Our 2015 letter included detail on Berkshire's acquisition of General Re and this summary:

> Next to their acquisition of National Indemnity in 1967, Berkshire's purchase of General Re in 1998 is arguably the next single best investment made in the history of Berkshire, and not because General Re was a great business at the time of acquisition. It may wind up being Berkshire's best deal. The acquisition was made using inflated stock and served to materially reduce Berkshire's equity allocation in its investment portfolio. It also signally marked the moment when Berkshire intentionally reduced its reliance on insurance and the stock market. From 1998 forward, Berkshire's capital focus shifted to expanding a diversified base of

> businesses that generate good returns on capital and can withstand systemic shocks to the capital markets and to global economies.

The Berkshire Chairman's letter in the following year's 2016 annual report made this comment about the General Re purchase:

> Unfortunately, I followed the GEICO purchase by foolishly using Berkshire stock – a *boatload* of stock – to buy General Reinsurance in late 1998. After some early problems, General Re has become a fine insurance operation that we prize. It was, nevertheless, a terrible mistake on my part to issue 272,200 shares of Berkshire in buying General Re, an act that increased our outstanding shares by a whopping 21.8%. My error caused Berkshire shareholders to give far more than they received (a practice that – despite the Biblical endorsement – is far from blessed when you are buying businesses).

Here I defend my initial summary. It was precisely the use of the "boatload" of Berkshire's shares in the purchase of General Re that was so seminal and materially beneficial to Berkshire over the subsequent twenty years. Yes, those shares would now be worth $83 billion at year-end 2018. But it was the purchase of General Re's investment assets, namely its 90% allocation to fixed-income, that marked Berkshire's pivot away from a massively overvalued stock market, from its own massively overvalued stock portfolio, which alone was 15% *larger* than Berkshire's entire book value, and from its business concentration in property casualty insurance and reinsurance. You might question the last part of that – the move from insurance, given that General Re, the acquiree, was, in fact, a reinsurer. Yes, but it wasn't so much the insurance operation that was attractive – it was the ability to purchase a $25 billion investment portfolio, overwhelmingly bonds, using a stock trading at three times book value when fair value was half as much. It was the ability to shrink a stock portfolio from 115% of book value to only 69% and to do so by paying no capital gains taxes, then at a 35% corporate rate. Did management at Berkshire anticipate two decades of subpar stock market returns? Did they recognize that at three times book they possessed overvalued currency? An acknowledgment of that would suggest perhaps that Berkshire took advantage of General Re, and Berkshire would never utter that. But from Berkshire's 1997 Chairman's letter, written only months prior to the acquisition:

> We gained enormously from the low prices placed on many equities and businesses in the 1970s and 1980s. Markets that then were hostile to investment transients were friendly to those taking up permanent residence. In recent years, the actions we took in those decades have been validated, but we have found few new opportunities. In its role as a corporate "saver," Berkshire continually looks for ways to sensibly deploy capital, but it may be some time before we find opportunities that get us truly excited.
>
> Though we are delighted with what we own, we are not pleased with our prospects for committing incoming funds. Prices are high for both businesses and stocks. That does not mean that the prices of either will fall -- we have absolutely no view on that matter -- but it does mean that we get relatively little in prospective earnings when we commit fresh money.
>
> Under these circumstances, we try to exert a Ted Williams kind of discipline. In his book *The Science of Hitting*, Ted explains that he carved the strike zone into 77 cells, each the size of a baseball. Swinging only at balls in his "best" cell, he knew, would allow him to bat .400; reaching for balls in his "worst" spot, the low outside corner of the strike zone, would reduce him to .230. In other words, waiting for the fat pitch would mean a trip to the Hall of Fame; swinging indiscriminately would mean a ticket to the minors.
>
> If they are in the strike zone at all, the business "pitches" we now see are just catching the lower outside corner. If we swing, we will be locked into low returns. But if we let all of

today's balls go by, there can be no assurance that the next ones we see will be more to our liking. Perhaps the attractive prices of the past were the aberrations, not the full prices of today. Unlike Ted, we can't be called out if we resist three pitches that are barely in the strike zone; nevertheless, just standing there, day after day, with my bat on my shoulder is not my idea of fun.

Action speaks louder than words. Data compels action. The market rose another 25% in 1998 and saw the intra-year azimuth of what we call the "New Nifty 50", recast from 1972's original version which held that you could own the top 50 stocks forever and make good returns. Then the market fell by half in 1973 and 1974 and was negative through the 1982 low, putting to bed the nifty Rip Van Winkle approach. Berkshire's core equity holdings peaked in 1998 at prices approaching 40 times earnings.

Those that lived it will never forget the tech bubble. Most seem to have forgotten how expensive the New Nifty 50 were in 1998, two years prior to the peaking of the S&P 500 and most definitely the NASDAQ. 1998 was the peak of the blue chips. As an aside its very interesting to see how many high-quality, high-return on equity portfolios today are full of consumer staple and consumer discretionary names at prices that resemble those seen twenty years ago. The Berkshire portfolio at year-end 1998:

Berkshire Hathaway Stock Portfolio Holdings (12/31/1998)

Company	Cost Basis	Market Value	P/E (12/31/98)	Dividend Yield
American Express Company	$1,470	$5,180	22.1x	1.0%
Coca-Cola Company	**1,299**	**13,400**	**47.9x**	**0.9%**
Walt Disney Company	281	1,536	27.9x	0.8%
Freddie Mac	308	3,885	27.9x	0.7%
Gillette Company	600	4,590	38.3x	1.1%
Washington Post Company	11	999	26.4x	1.4%
Wells Fargo & Company	392	2,540	24.7x	1.9%
Others	2,683	5,135	N/A	N/A
Total Common Stock	7,044	37,265	33.2x	0.9%

Source: Berkshire Hathaway; Bloomberg Data; Semper Augustus

Coca-Cola alone had risen more than ten-fold in just nine years since Berkshire's 1988 purchase and from a $5.5 billion position in 1994 to $13.3 billion three years later. When stocks were 15% *larger* than book value at year-end 2017, Coca-Cola, at 36% of the stock portfolio, was 42% of Berkshire's entire book value! The stock had compounded at 33.8% per year from year-end 1988, the year Berkshire first bought Coca-Cola to its 1998 high – right when Berkshire bought General Re. Since then, from year-end 1998 through year-end 2018, Coca-Cola compounded at 4.3% per year! Think about that, 33.8% for a decade and then 4.3% for the next two decades! The other amazing thing is how much two decades of middling gains can whittle down previously wonderful performance. For the 30 years that Berkshire has owned the stock the annual gain is now only 12.6% per year. It's the same math that's driven the 20.2% earned by the S&P 500 from the 1982 low to the 2000 peak and what's now only an 11.6% annual gain for the entire period. Tell me again Berkshire didn't know what it was doing…

Berkshire's Three Decade Ownership of Coca-Cola (1988 to 2018)

Year	Shares (millions)	Cost Basis (millions of USD)	Cost Basis per Share	Market Value (millions of USD)	Market Value per Share
1988*	226.8	$593	$2.61	$632	$2.79
1989**	373.6	1,024	2.74	1,804	4.83
1994***	400.0	1,299	3.25	5,150	12.88
1997	400.0	1,299	3.25	13,338	33.34
2018****	400.0	1,299	3.25	18,940	47.35

*Initial Buy (14.1725m shares)
**Second buy (9.1775m shares)
***Third buy (1.65m split adjusted shares)
****2 for 1 split in 1990, 1992, 1996, and 2012
Source: Berkshire Hathaway; Semper Augustus

When Coca-Cola drove the stock portfolio to its peak during 1998, Berkshire's stock peaked as well. The market wasn't wrong in valuing Berkshire at three times its book value at its peak, just as driving using solely the rearview mirror is a safe way to motor. It had assumed that Berkshire's past returns of 24.9% annually since 1965 (which equaled the return on equity – note the theme) could be sustained. Most would gladly pay three times book for a 24.9% return on equity. With stocks levered by 15% (to the "E" in ROE) and at 40 times earnings in mid-1998, we think management at **Berkshire knew to pivot, wisely pivoted, and their ongoing actions over the next two decades confirm the pivot.** If Berkshire earned 9.0% on equity since 1998, how much of that return came from its investments in stocks?

Before answering, first back to Berkshire's 2016 letter that was critical of the General Re deal:

> Early in 2000, I atoned for that folly by buying 76% (since grown to 90%) of MidAmerican Energy, a brilliantly-managed utility business that has delivered us many large opportunities to make profitable and socially-useful investments. The MidAmerican *cash* purchase – I was learning – firmly launched us on our present course of (1) continuing to build our insurance operation; (2) energetically acquiring large and diversified non-insurance businesses and (3) largely making our deals from internally-generated cash. (Today, I would rather prep for a colonoscopy than issue Berkshire shares.)
>
> Our portfolio of bonds and stocks, de-emphasized though it is, has continued in the post-1998 period to grow and to deliver us hefty capital gains, interest, and dividends. Those portfolio earnings have provided us major help in financing the purchase of businesses. Though unconventional, Berkshire's two-pronged approach to capital allocation gives us a real edge.

Perhaps instead Berkshire could have just said, "When our stock trades at three times book, we spend it in deals, when it trades below 1.5 times, we use cash." Hmm….

It was the wholly-owned operating businesses that Berkshire pivoted to immediately after diversifying away from Coca-Cola and its other stocks that have provided the lion's share of gains post the General Re acquisition. Growth in book value per share averaged 10.6% over 21 years if you go back one year to 1997, which thanks to Berkshire's huge spend of shares in 1998 at three times book value saw book value per share rise that year by 48.3%, 38% from the General Re acquisition alone. If Berkshire traded at three times book value today, we would spend them, and we expect Berkshire would be thinking about spending them again.

20 Years of "Bliss" – Returns From 12/31/1998 to 12/31/2018

Gain in Book Value Per Share	9.0%
Gain in Berkshire Hathaway Stock	7.6%
Gain in Berkshire Hathaway Portfolio of Stocks*	5.5%
S&P 500 Total Return	5.6%

* Total return estimated using only disclosed positions in Berkshire's 13-F filings
Bloomberg and Semper Augustus Calculations

How well has the stock portfolio performed for the last two decades? At year-end 1997, just before buying General Re, the portfolio had a market value of $36.2 billion, five times its $7.2 billion cost basis. Here at year-end 2018, the stock portfolio is valued at $182 billion (including Kraft Heinz) against a cost basis of $119 billion. Gone is the five-fold gain over cost basis. The portfolio is now 53% above cost and we calculate has earned 5.5% annually, only slightly *trailing* the S&P 500's 5.6% annual gain.

We calculated Berkshire's stock portfolio performance using only its 13-F filings from 2000 to 2018 and estimating a 1.1% price gain and another 0.9% in dividends in 1999 using beginning and ending balances for stocks and its small net sales for the year. For many years, Berkshire enjoyed an exemption courtesy of SEC from having to disclose every equity position. We think they had convinced the regulators that having to disclose certain positions would cause disruption (copy-catting), so enjoyed an exemption enjoyed by nobody else that we know of. In addition, not all foreign holdings need be disclosed (we have a few holdings here as well that utilize the foreign exemption).

Progression of Berkshire Stock Portfolio as a Percent of Book Value and Assets

Year	Stocks	Cost Basis	UnGain/Loss	Realized Gain	Net Purchases	Net as % of Avg	Equity	Stocks as % of Equity	Total Assets	Stocks as % of Assets
1997	$36,248	$7,207	$29,041	$1,106	-$1,302	-4.1%	$31,455	115.2%	$56,110	64.6%
1998	37,265	7,044	30,221	2,415	-2,823	-7.7%	57,403	64.9%	122,237	30.5%
1999	37,008	8,203	28,805	1,247	-691	-1.9%	57,761	64.1%	131,416	28.2%
2000	37,619	10,402	27,217	4,499	-2,725	-7.3%	61,742	60.9%	135,792	27.7%
2001	28,675	8,543	20,132	1,488	-2,806	-8.5%	57,950	49.5%	162,752	17.6%
2002	28,363	9,164	19,199	918	416	1.5%	64,037	44.3%	169,544	16.7%
2003	35,287	8,515	26,772	4,129	6,765	21.3%	77,596	45.5%	180,559	19.5%
2004	37,717	9,056	28,661	3,471	-578	-1.6%	85,900	43.9%	188,874	20.0%
2005	46,721	15,947	30,774	5,408	6,392	15.1%	91,484	51.1%	198,325	23.6%
2006	61,533	22,995	38,538	2,635	5,395	10.0%	108,419	56.8%	248,437	24.8%
2007	74,999	39,252	35,747	5,509	11,057	16.2%	120,733	62.1%	273,160	27.5%
2008	49,073	37,135	11,938	-7,461	3,300	5.3%	109,267	44.9%	267,399	18.4%
2009	59,034	34,646	24,388	787	-1,056	-2.0%	131,102	45.0%	297,119	19.9%
2010	61,513	33,733	27,780	2,346	-1,621	-2.7%	157,318	39.1%	372,229	16.5%
2011	76,991	48,209	28,782	-830	1,497	2.2%	164,850	46.7%	392,647	19.6%
2012	87,662	49,796	37,866	3,425	-712	-0.9%	187,647	46.7%	427,452	20.5%
2013	117,505	56,581	60,924	6,673	4,689	4.6%	220,959	53.2%	484,624	24.2%
2014	117,470	55,056	62,414	4,081	1,118	1.0%	239,239	49.1%	525,867	22.3%
2015	136,017	68,412	67,605	10,347	1,473	1.2%	254,619	53.4%	552,257	24.6%
2016	150,432	75,628	74,804	8,304	-11,596	-8.1%	282,070	53.3%	620,854	24.2%
2017	195,840	84,476	111,364	2,128	814	0.5%	348,296	56.2%	702,095	27.9%
2018 (e)	182,172	111,638	70,534	1,169	24,388	12.9%	349,340	52.1%	736,459	24.7%

Source: Berkshire Hathaway; Semper Augustus Calculations

Berkshire Hathaway Stock Portfolio

Year	Berkshire Portfolio Total Return	CAGR to 12/31/2018	CAGR from 12/31/1998	S&P 500 Total Return	CAGR to 12/31/2018	CAGR from 12/31/1998
1999*	2.0%	5.6%	2.0%	21.0%	5.6%	21.0%
2000	8.6%	5.8%	5.2%	-9.1%	4.9%	4.9%
2001	-17.4%	5.6%	-3.0%	-11.9%	5.7%	-1.0%
2002	0.2%	7.2%	-2.2%	-22.1%	6.8%	-6.8%
2003	27.5%	7.6%	3.1%	28.7%	9.0%	-0.6%
2004	5.6%	6.4%	3.5%	10.9%	7.8%	1.3%
2005	6.0%	6.5%	3.9%	4.9%	7.6%	1.8%
2006	18.5%	6.5%	5.6%	15.8%	7.8%	3.4%
2007	1.3%	5.6%	5.1%	5.5%	7.1%	3.7%
2008	-24.4%	6.0%	1.7%	-37.0%	7.3%	-1.4%
2009	19.6%	9.6%	3.2%	26.5%	13.1%	0.9%
2010	15.0%	8.6%	4.2%	15.1%	11.7%	2.0%
2011	6.5%	7.8%	4.3%	2.1%	11.3%	2.0%
2012	14.7%	8.0%	5.0%	16.0%	12.7%	2.9%
2013	28.8%	6.9%	6.5%	32.4%	12.2%	4.7%
2014	7.7%	3.0%	6.5%	13.7%	8.5%	5.2%
2015	-4.5%	1.8%	5.9%	1.4%	7.2%	5.0%
2016	13.1%	4.0%	6.3%	12.0%	9.3%	5.4%
2017	15.2%	-0.2%	6.7%	21.8%	7.9%	6.2%
2018**	-13.6%	-13.6%	5.6%	-4.4%	-4.4%	5.6%

*Internally estimated BRK portfolio return

**Holdings as of 9/30/17-9/30/18

Source: Berkshire Hathaway; Semper Augustus Calculations; Bloomberg Data

Given that Berkshire's stock portfolio had compounded at a mid-20% rate for more than two decades, and then abruptly subsequently compounded at 5.5% for the next 20 years, immediately after Berkshire spent its shares to buy General Re and shrink its exposure to its own overvalued portfolio, we'd call the pivot genius, a masterstroke. Management won't acknowledge it, though. Any inkling that General Re's shareholders were "taken advantage of" wouldn't be whispered. The reality is, General Re's shareholders have been *far better off* with their investment in Berkshire. General Re is a better business inside Berkshire. If Berkshire pivoted from Coca-Cola, stocks and insurance, it was the pivot that allowed Berkshire's shares to compound by 7.6% post-merger. Had Berkshire not pivoted, it would have remained more leveraged to its stockholdings, and subsequent results would have been dismal. We'd argue that General Re shareholders would have posted gains well below those realized by retaining the Berkshire shares received as currency in 1998. There's even an argument to be made that General Re might have failed as a standalone business in 2008-2009. GE and their disastrous insurance reserving comes to mind.

Berkshire paid $22 billion in stock for General Reinsurance, with $14.5 billion attributed to goodwill. The 272,200 shares of equivalent A shares that Berkshire used in the acquisition were priced at $80,882 per share, roughly three times its book value at March 31, 1998. At the time of the merger, we appraised Berkshire's intrinsic worth at just half of that price per share. To our thinking, Berkshire had bought General Re for $11 billion, not the $22 billion purchase price when adjusting for the premium valuation in Berkshire's currency.

Prior to the merger, Berkshire's $36.2 billion stock portfolio was 75% of $47.5 billion total investment securities and the 115% of total book value as mentioned earlier. When General Re's nearly 90% allocation to fixed-income securities were added to the mix, Berkshire's investments in bonds and cash increased by $21.2 billion – from $10.0 billion to $31.2 billion, shrinking the allocation to stocks to 50% of the total investment portfolio and 69% of Berkshire's new book value.

In addition to immediately shrinking stocks to 69% of book value, the General Re merger served to likewise lower total firm assets in stocks to 30% from 65%, right at the outset of the Berkshire stock portfolio heading into a two-decade slumber, working off the hangover of the boozy run-up during the late 1990's. *Since 1997, equities have averaged only 23% of firm assets, where for the prior more than two decades they averaged almost three times that amount*, a period where wonderful investment returns, leveraged or not, were enjoyed.

Berkshire also tripled the size of its insurance float by acquiring General Re. General Re had roughly $14.9 billion in float at the end of 1998, compared to Berkshire's $7.4 billion. With the addition from General Re, Berkshire's combined float ballooned to $22.7 billion and increased invested assets at Berkshire by about $25 billion. It was an astounding transaction, paying $22 billion in stock which was worth only about half that and adding $15 billion in float which financed an additional $25 billion in investment assets.

General Re instantly became a better company inside Berkshire. Berkshire's capital strength allows General Re to *retain* more of its reinsurance business. The business writes roughly equal amounts of property and casualty and life and health reinsurance globally. Prior to the merger, General Re had a stand-alone AAA credit rating, and without Berkshire's diversity and surplus capital had to rely heavily on the retrocessional market, and even to turn away attractive business to keep volatility of earnings low.

The *wrong* way to view General Re is in light of its premium volume being not much larger now than it was at the time of the 1998 merger. For most of the past two decades in the Berkshire fold, General Re's annual premium volume averaged a little more than $6 billion annually and most of its profits over the years have been paid as dividends to Berkshire. The company has dealt with industry overcapacity by intentionally not growing. Our sense is the business is writing as much business as it profitably can. For the first time in years, volume is up recently, and is approaching $8 billion in premiums earned during 2018. Underwriting margins at General Re were consistently negative in the handful of decades leading up to the merger with combined ratios averaging 102% for every ten-year interval up to 50 years. By retaining more business, underwriting profits post-merger have been consistently profitable.

The impact of the pivot on Berkshire's health can't be overstated. If the stock portfolio averaged 5.5% unleveraged for 20 years while Berkshire's return on equity and annual gain in book value per share averaged 9.0%, then everything other than stocks and investments did better than 9.0%. Considerably better.

Berkshire's growth in book value averaged 28.6% over the 23 years ended 1997 (again, the return on equity). Equities averaged about 105% of book value, so equity returns were slightly leveraged. The stock picking alone produced terrific returns, even without leverage. Throw in the balance of investment assets, which were mostly fixed-income securities with modest cash equivalents also in the insurance companies and the business enjoyed leveraged returns with assets averaging 150% of book value. Most liabilities consisted of non-interest bearing float and deferred taxes against stock portfolio gains. It was an incredible ride, culminating with a parabolic ascent from 1994 to mid-1998.

Pull up the stock price charts of Coca-Cola, 42% of the 1998 stock portfolio, and American Express, Capital Cities/ABC (Disney by 1998), Freddie Mac, Gillette, Washington Post and Wells Fargo for that parabolic period. The P/E's were in our table but the price charts from that era were incredible. Imagine you were the Chairman, with a deep understanding of value, watching your portfolio race ahead far faster and far longer than the underlying businesses are growing. What do you do? Sell and pay a 35% tax on gains that are more than five times your cost basis? Nope. You figure out a way to diversify out of stocks without paying the taxman. Ergo, enter General Re.

Given that Berkshire's stock portfolio returns averaged 5.5% for the next 20 years, in retrospect it would have been just as easy had Berkshire taken its own advice in the modern active versus passive debate and just owned the S&P 500. Perhaps the subsequent returns have influenced the advice. That was written tongue in cheek. In fairness, it took time to work off the degree of severe overvaluation that existed in the portfolio when Berkshire "happened" to buy General Re.

Perhaps instead of lamenting how much it cost in today's Berkshire dollars to have bought General Re then, one should acknowledge what the purchase allowed the balance of Berkshire not only to do, but also what it was able to avoid. Further, instead of comparing General Re's lack of success to the wonderful history of National Indemnity and eventually GEICO, perhaps consider those businesses were bought for different reasons in different eras. The same hand guided Berkshire's stock portfolio and allocation to its book value for three decades before the General Re's merger and for the two decades since. If the stock portfolio has earned a fraction of what it had under the same guiding hand in a different era, it's logical to applaud everything else that was subsequently acquired and has contributed to the most recent 20-year run of 9% to 10% returns in a world where the stock market has done half that. Berkshire's extraordinary success in stocks leading up to 1998 handicapped its subsequent performance. The company had the high-class problem of having made too much money too soon and played that hand beautifully. **It's worth applauding the pivot and the results both prior to and following it.**

Let's conclude this section with a recasting of the familiar first page of Berkshire's Chairman's letter updated each year. We show the three familiar columns that reflect change in book value per-share, change in stock price, and S&P 500 total return, all presented annually since 1965. We then supplement two extra columns for each original measure. For each metric, we add a compound annual growth rate for each year beginning in 1965, progressing forward, and a compound growth rate working backward. The backward working figures simply measure the one-year return, two-year average returns, three-year average returns and so forth using December 31, 2018 as the final year in each series.

*** Table on Next Page ***

Berkshire's Performance vs. the S&P 500: Annual Returns + Growth Rates Forward and Backward

Year	Book Value per Share Growth	CAGR back from 2018	CAGR from 1965	Market Value per Share Growth	CAGR back from 2018	CAGR from 1965	S&P 500 Market Value per Share Growth	CAGR back from 2018	CAGR from 1965
1965	23.8%	18.8%	23.8%	49.5%	20.6%	49.5%	10.0%	9.7%	10.0%
1966	20.3%	18.7%	22.0%	-3.4%	20.1%	20.2%	-11.7%	9.7%	-1.4%
1967	11.0%	18.7%	18.2%	13.3%	20.6%	17.8%	30.9%	10.2%	8.3%
1968	19.0%	18.8%	18.4%	77.8%	20.8%	30.6%	11.0%	9.8%	9.0%
1969	16.2%	18.8%	18.0%	19.4%	19.8%	28.3%	-8.4%	9.8%	5.3%
1970	12.0%	18.9%	17.0%	-4.6%	19.8%	22.1%	3.9%	10.2%	5.0%
1971	16.4%	19.0%	16.9%	80.5%	20.4%	29.1%	14.6%	10.3%	6.4%
1972	21.7%	19.1%	17.5%	8.1%	19.4%	26.3%	18.9%	10.2%	7.8%
1973	4.7%	19.0%	16.0%	-2.5%	19.6%	22.7%	-14.8%	10.0%	5.1%
1974	5.5%	19.4%	14.9%	-48.7%	20.2%	12.5%	-26.4%	10.7%	1.4%
1975	21.9%	19.7%	15.5%	2.5%	22.5%	11.5%	37.2%	11.7%	4.2%
1976	59.3%	19.6%	18.6%	129.3%	23.0%	18.4%	23.6%	11.2%	5.7%
1977	31.9%	18.8%	19.6%	46.8%	21.2%	20.4%	-7.4%	10.9%	4.6%
1978	24.0%	18.5%	19.9%	14.5%	20.7%	20.0%	6.4%	11.4%	4.8%
1979	35.7%	18.4%	20.9%	102.5%	20.8%	24.2%	18.2%	11.5%	5.6%
1980	19.3%	18.0%	20.8%	32.8%	19.2%	24.7%	32.3%	11.3%	7.1%
1981	31.4%	18.0%	21.4%	31.8%	18.9%	25.1%	-5.0%	10.8%	6.4%
1982	40.0%	17.6%	22.4%	38.4%	18.6%	25.8%	21.4%	11.3%	7.1%
1983	32.3%	17.0%	22.9%	69.0%	18.1%	27.8%	22.4%	11.0%	7.9%
1984	13.6%	16.6%	22.4%	-2.7%	16.9%	26.1%	6.1%	10.7%	7.8%
1985	48.2%	16.7%	23.5%	93.7%	17.5%	28.7%	31.6%	10.8%	8.8%
1986	26.1%	15.9%	23.6%	14.2%	15.7%	28.0%	18.6%	10.3%	9.3%
1987	19.5%	15.6%	23.5%	4.6%	15.8%	26.9%	5.1%	10.0%	9.1%
1988	20.1%	15.4%	23.3%	59.3%	16.1%	28.1%	16.6%	10.2%	9.4%
1989	44.4%	15.3%	24.1%	84.6%	14.9%	30.0%	31.7%	10.0%	10.2%
1990	7.4%	14.4%	23.4%	-23.1%	13.1%	27.4%	-3.1%	9.3%	9.6%
1991	39.6%	14.7%	24.0%	35.6%	14.6%	27.7%	30.5%	9.8%	10.4%
1992	20.3%	13.8%	23.8%	29.8%	13.9%	27.7%	7.6%	9.1%	10.3%
1993	14.3%	13.6%	23.5%	38.9%	13.4%	28.1%	10.1%	9.1%	10.3%
1994	13.9%	13.6%	23.2%	25.0%	12.4%	28.0%	1.3%	9.1%	9.9%
1995	43.1%	13.5%	23.8%	57.4%	11.9%	28.9%	37.6%	9.4%	10.7%
1996	31.8%	12.4%	24.0%	6.2%	10.3%	28.1%	23.0%	8.3%	11.1%
1997	34.1%	11.6%	24.3%	34.9%	10.5%	28.3%	33.4%	7.7%	11.7%
1998	48.3%	10.6%	24.9%	52.2%	9.4%	28.9%	28.6%	6.6%	12.2%
1999	0.5%	9.0%	24.2%	-19.9%	7.7%	27.2%	21.0%	5.6%	12.4%
2000	6.5%	9.5%	23.6%	26.6%	9.3%	27.2%	-9.1%	4.9%	11.8%
2001	-6.2%	9.7%	22.7%	6.5%	8.5%	26.6%	-11.9%	5.7%	11.0%
2002	10.0%	10.7%	22.4%	-3.8%	8.6%	25.7%	-22.1%	6.8%	10.0%
2003	21.0%	10.7%	22.3%	15.8%	9.4%	25.4%	28.7%	9.0%	10.5%
2004	10.5%	10.1%	22.0%	4.3%	9.0%	24.8%	10.9%	7.8%	10.5%
2005	6.4%	10.0%	21.6%	0.8%	9.3%	24.2%	4.9%	7.6%	10.3%
2006	18.4%	10.3%	21.5%	24.1%	10.0%	24.2%	15.8%	7.8%	10.5%
2007	11.0%	9.7%	21.3%	28.7%	8.9%	24.3%	5.5%	7.1%	10.3%
2008	-9.6%	9.5%	20.5%	-31.8%	7.3%	22.6%	-37.0%	7.3%	8.9%
2009	19.8%	11.7%	20.5%	2.7%	12.2%	22.1%	26.5%	13.1%	9.3%
2010	13.0%	10.8%	20.3%	21.4%	13.3%	22.1%	15.1%	11.7%	9.4%
2011	4.6%	10.5%	19.9%	-4.7%	12.4%	21.4%	2.1%	11.3%	9.3%
2012	14.4%	11.4%	19.8%	16.8%	15.1%	21.4%	16.0%	12.7%	9.4%
2013	18.2%	10.9%	19.8%	32.7%	14.8%	21.6%	32.4%	12.2%	9.8%
2014	8.3%	9.5%	19.5%	27.0%	11.5%	21.7%	13.7%	8.5%	9.9%
2015	6.4%	9.8%	19.3%	-12.5%	7.9%	20.9%	1.4%	7.2%	9.7%
2016	10.7%	10.9%	19.1%	23.4%	15.7%	20.9%	12.0%	9.3%	9.8%
2017	23.0%	11.1%	19.2%	21.9%	12.0%	21.0%	21.8%	7.9%	10.0%
2018*	0.3%	0.3%	18.8%	2.99%	3.0%	20.6%	-4.39%	-4.4%	9.7%

*2018 SAI estimated change in BVPS; CAGR calculations are SAI internal

The pivot is delineated with the solid line under 1998, right after the General Re acquisition closed. That was the moment the record changed, or the day the music died, as the case may be. To that pivotal point, since 1965 book value per share had compounded at 24.9% while the stock advanced by 28.9%. By contrast the S&P earned 12.2% annually. Returns for all three series since then would gradually grind downward (it takes a lot to move a 30-year average). 1998 was the best it would get.

Working backward, you can see the 20-year record with book value having compounded at 9.0% and the stock at 7.6% since 1998. Both beat the 5.6% posted by the S&P by a nice margin, but are a far cry from the 24.9% and 28.9% annual returns enjoyed up to the pivot. Had the pivot not taken place, and Berkshire remained leveraged to Coca-Cola, investments in marketable securities and insurance, the 20-year record to year-end 2018 would have been only modestly better than the 5.5% return its stocks posted (better due to the leverage derived from insurance investing). Thanks to the pivot, Berkshire's shareholders are at least 3% to the good for the last two decades, which over two decades is a lot. It's the difference between today's $349 billion in shareholder's equity and the $107 billion that 1997's book value would have grown to at 6% per year.

General Re was an extraordinary move. Calling it a mistake is absurd. Whether the brass at Berkshire will acknowledge the pivot as genius or as luck is for the brass to know. I know what we believe.

Berkshire Hathaway: Ten-Year Expected Return

Berkshire's 2.8% stock price gain in 2018 trailed our estimate of its gain in intrinsic value. A 13% decline in the market value of the stock portfolio and a 42% decline in Kraft Heinz overshadowed the enormous gain in earning power underway at the company.

Berkshire's GAAP financial statements will be more useless to the analyst in 2018 and 2017 than in a typical year. In a typical year, the financials are completely useless. The 2017 changes to the tax code have proven a huge benefit to Berkshire, and most of the company's businesses are hitting on all cylinders. Yet, the GAAP figures for net earnings will show an 87.5% decline from $44.9 billion in 2017 to our estimate for the published figures of $5.6 billion. Instead, our normalized measure of after-tax profits comes to $37.1 billion.

The decline in the stock price coupled with a progression in normalized profitability creates an undervalued opportunity for investors to deploy capital into a predictable, reliably profitable and conservatively managed enterprise. Our ten-year projection for the annual expected return of the stock moves up by about 1% versus our projection last year, to a range of 11% to 13% per year as outlined next.

Showing how the prior year progressed relative to projections for intrinsic value is useful. Our intrinsic value projections are not intended to be one-year forecasts. We have no idea how any stock or the stock market will fare over such a short period. When you start thinking in terms of decades, however, projections have more utility. Last year's estimate for year-end market cap was $655 billion, which valued the business at 18 times our normalized earnings estimate. To trade at intrinsic value would have required a 33.9% advance in the shares (seen in the red column). Given the 2.8% gain, you should expect the progression and expectation one year later to be necessarily higher.

Here are last year's figures, with 2017 updated to reflect final 2017 numbers versus what were estimates in our letter last year. 2017 merited two columns – one shows earnings using the old tax code and the second jumped ahead and hypothetically used the new code as though it had been in place for all of 2017. If you read our letter last year and made it through the tax section, you know quite a bit of moving parts inside Berkshire were affected. I'm happy to say we got most of it correct. In the table to the right were ten-year projections assuming Berkshire earns 8% annually on equity in the first case and an average 10%

return on equity in the second. Projected market cap is presented in a range of terminal multiples to earnings, with our normalized case of 18 times shaded in light green. If Berkshire were to average 10% on equity for ten years, an investor would have earned 12.2% per year with the stock trading at 18 times earnings in 2027. We use market cap here as a proxy for the stock. If Berkshire is set to endeavor using the shares more actively, either through repurchases or issuance in acquisitions, we will change the presentation to share price from market cap in future reports.

Ten-Year Expected Return at Year-End 2017 with ROE at 8% and 10%

	2014	2015	2016	Final 2017	Final 2017	2018 (e)	10- Year: 2027 8% ROE and growth				10- Year: 2027 10% ROE and growth			
		-12.5%	23.40%	21.9%	21.9%	At Int Val	13x	15x	18x	20x	13x	15x	18x	20x
					@new tax									
Market Cap	$371 B	$325 B	$401.2 B	$489.4 B	489.4 B	$655.2 B	$930 B	$1073 B	$1287 B	$1430 B	$1117B	$1289 B	$1546 B	$1718 B
Net Income	$23 B	$25 B	$27.5 B	$29.1 B	$31.8B (H)	$36.4 B (e)	$71.5 B	$71.5 B	$71.5 B	$71.5 B	$85.9 B	$85.9 B	$85.9 B	$85.9 B
P/E	16.1x	13.0x	14.6x	16.8x	15.4	18x	13x	15x	18x	20x	13x	15x	18x	20x
Earnings Yield	6.2%	7.7%	6.90%	6.2%	6.5%	5.6%%	7.7%	6.7%	5.60%	5.0%	7.7%	6.7%	5.60%	5.0%
Price Change							90%	119%	162%	192%	128%	163%	215%	252%
Gain Per Year		-12.5%	23.4%	21.9%	21.9%	33.9%%	6.6%	8.2%	10.2%	11.3%	8.6%	10.2%	12.2%	13.4%

Source: Berkshire Hathaway; Semper Augustus

Next, we update the projection for the next ten years from year-end 2018. The tan column shows our estimate of net income compounded at 10% through the end of 2019 and an intrinsic value calculated at an 18 multiple. Again, we are not projecting a 46.1% gain in Berkshire's shares for the year. We would expect to earn the gain to intrinsic value over time coupled with the average return on equity for the business averaged over time. We use two cases, an 8% and a 10% average return on equity assumption. Our base case has been an expected 10% over our twenty-year duration as shareholders, which is spot on to Berkshire's realized return on equity and progression in book value per share. The 8% case is conservative, and here in today's climate, may perhaps become the reality, particularly if a portion of the tax benefit being enjoyed today is competed away. A portion is scheduled to phase out over time. 10% continues to be our base assumption for return on equity and growth in intrinsic value, and we don't see results exceeding that.

Ten-Year Expected Return at Year-End 2018 With ROE at 8% and 10%

	2014	2015	2016	Final 2017	Final 2017	2018 (e)	2019 (e)	10- Year: 2028 8% ROE and growth				10- Year: 2028 10% ROE and growth			
		-12.50%	23.4%	21.9%	21.9%	2.8%	At Int Val	13x	15x	18x	20x	13x	15x	18x	20x
					@new tax										
Market Cap	$371 B	$325 B	$401.2 B	$489.4 B	489.4 B	$502.5 B	$734 B	$1,041B	$1,202B	$1,442B	$1,602B	$1,251B	$1,443B	$1,732B	$1,924B
Net Income	$23 B	$25 B	$27.5 B	$29.1 B	$31.8B (H)	$37.1 B (e)	40.8 B	$80.1B	$80.1B	$80B	$80.1B	$96.2B	$96.2B	$96.2B	$96.2B
P/E	16.1x	13.0x	14.6x	16.8x	15.4	13.5	18x	13	15	18	20	13	15	18	20
Earnings Yield	6.2%	7.7%	6.9%	6.2%	6.5%	7.4%	5.6%%	7.7%	6.7%	5.60%	5.0%	7.7%	6.7%	5.60%	5.0%
Price Change								106%	139%	187%	218%	149%	187%	245%	283%
Gain Per Year		-12.5%	23.4%	21.9%	21.9%	2.8%	46.1%	7.5%	9.1%	11.2%	12.3%	9.6%	11.1%	13.2%	14.4%

Source: Berkshire Hathaway; Semper Augustus

Our normalized intrinsic value estimate falls at 18 times our calculation of normalized earnings in the columns shaded green. The 18 multiple approximates the combination of our intrinsic value estimates and

is derived from our handful of valuation methodologies, centered on normalized earnings power on equity capital and assets.

From the rightmost tables, the stock will return 11.2% per year if return on equity averages 8%, and will return 13.2% if return on equity averages 10%. Both earnings estimates are 1% higher than a year ago. The stock closed 2018 at 13.5 times estimated our calculation of normalized earnings, down from 15.4 times a year ago (using the updated tax assumptions we made for 2017). If the current multiple to earnings remains unchanged from today's 13.5 a decade from now, you will earn Berkshire's return on equity. If return on equity averages 8%, you will earn 8% absent any multiple expansion or contraction. If return on equity averages 10%, you will earn 10%. You can interpolate this scenario between the 13x and the 15x earnings columns in each table. An investor should be thinking in these terms.

If average annual return on equity falls to 8% for the next decade instead of our 10% projection, and if the multiple to earnings contracts from 13.5x to 13x, you will earn a respectable 7.5% per year. That's earning the return on equity minus the multiple contraction over a decade's time. This is our worst-case assumption and exceeds a conservative estimate for returns in the broad stock market.

Estimating Fourth Quarter and Full Year GAAP Net Income and Change in Book Value

Berkshire can on one hand be a beast of a company to get your mind around and at the same time be immensely understandable and predictable in terms of sustainable earning power. The uninitiated user of Berkshire's GAAP financial statements will glean no utility from the reported numbers, which require myriad adjustments to arrive at an understanding of how and where the business makes money. With the 2017 tax code change, reported figures for 2017 and 2018 are totally useless, and that's before the market, and Berkshire's stock portfolio took a header.

The Stock Portfolio, and Kraft Heinz

The stock portfolio drove results for the fourth quarter down with a capital D. Last year we applied a 10% discount of $16 billion to our estimate of fair value for the Berkshire stock portfolio, believing it overvalued at year-end 2017. Consider the discount erased. Stocks began the year at $170 billion, lost about 13% for the year, suffered an 18% haircut in the fourth quarter, and finished with $2 billion less than at the beginning of the year (assuming no fourth quarter buys that also declined). Considering that Berkshire purchased a net $24.4 billion through the third quarter, it would be ok to say, "Ouch!" The stock portfolio totaled about $207 billion at September 30 and declined by $37 billion. And that doesn't include an $11.3 billion decline in the market value of Kraft Heinz during the year from $25.3 billion to $14.0 billion.

Stock market purchases for the first nine months totaled $38.6 billion. Sales proceeds were $14.2 billion, with realized losses offsetting gains, which totaled only net $307 million, meaning Berkshire took enough losses on sales to not incur cash taxes on capital gains, a common theme to the company's approach.

The news regarding the Berkshire stock portfolio is not so bad on three fronts. First the balance sheet decline was partially offset by the deferred tax liability for the calculation of book value. The new 21% tax rate shaves the decline in book value by only 79% of the headline $37 billion decline. Thus, the net book value of the stock portfolio will be shaved by "only" $29.2 billion, while the deferred tax liability shrinks by the difference, or $7.8 billion. We typically disregard the liability for deferred taxes on investments because Berkshire has proven averse to realizing cash based capital gains. Second, presumably Omaha spent more of its $103 billion cash reserves during the fourth quarter on shares perhaps "less overvalued" than those acquired earlier in the year. We'll find out when the 13-F is released

in mid-February. Finally, joy, none of the monster decline in Kraft Heinz will be felt on the balance sheet or in the statement of income! Because the shares are carried using the equity method, the position is carried at its cost basis, adjusted upward and downward each period by Berkshire's share of Kraft Heinz's earnings and dividends, respectively. Of course, the stock itself is now down by more than half since its early 2017 high, and much of Berkshire's gain since getting into the "deal" with the Brazilians is gone, at least for now. The current position size at $14 billion was twice that much a little more than a year ago. Cost on the balance sheet was marked up for accounting purposes when Heinz merged with Kraft and for Berkshire's share of profits less dividends using the equity method of accounting. The economic cost, the original price paid for Heinz plus additional capital invested at the Kraft merger, is $9.8 billion. The Brazilians and Berkshire are living the parable of the mix-up between the bad business and a great management and the business usually winning lesson.

Our hope with the Kraft Heinz position is for Berkshire to pay a huge capital gains tax to the IRS. Berkshire has proven adept at swapping assets to avoid capital gains. A swap would be even better. When the market value soared to $28 billion for Berkshire's share of the business, it would have been great to have moved on, pocketing what had been a triple in price. The current price suggests it wasn't a triple in value.

We don't know what happened when Kraft Heinz danced with Unilever and failed to consummate a merger. Kraft is handicapped with processed domestic brands in decline. You can't put two marginal at best businesses together and produce a gem, which is what you got in the Kraft and Heinz mix-up. The Vice Chairman at Berkshire has used the term "turds" in answers to numerous questions over the years at Berkshire's annual meeting. The noun fits here. Kraft Heinz brands are under attack by private label. They are in the same boat with companies like Kellogg and General Mills. These businesses have adopted the Brazilian 3G approach to budgeting and cost management. Sure, there was and is plenty of fat to cut out of large bureaucratic businesses. But cut muscle and tendon and you can kill brands. If shrinking the advertising budget, for example, at the sacrifice of sales and market share, is the ticket in the face of the onslaught of cheaper private brands looking for shelf space, then you can kiss these storied brands goodbye. It's like the chef on the Titanic looking to shrink portion sizes on tomorrow's meals.

Reported Earnings

Expected Fourth Quarter and 2018 Full Year Results

(In billions of USD)	First 9 months	SAI Q4 Est.	SAI 2018 Est.
Change in Investment Portfolio (Ex KHC) *	$12.7	-$38.8	-$26.1
Derivative Contract gains (losses)	$0.3	-$0.7	-$0.4
Operating Earnings	$23.7	$8.5	$32.2
Earnings Before Tax	$36.7	-$31.0	$5.7
GAAP Income Tax	$7.0	-$6.8	$0.2
Effective Tax Rate	19.1%	-21.9%	4.1%
Net Income	$29.7	-$24.2	$5.5
Earnings Attributable to Noncontrolling Interests	$0.3	$0.2	$0.5
Net Income Attributable to BRK Shareholders	$29.4	-$6.9	$5.1

*Includes gain/loss on fixed income

Berkshire's first nine months of 2018 saw $36.7 billion in earnings before taxes, $29.7 billion in earnings after taxes and a $27.3 billion increase in book value from $348.3 billion to $375.6 billion. During the fourth quarter Berkshire's stock portfolio (excluding Kraft Heinz) declined by $39.1 billion, likely offset by a small gain in the fixed income portfolio. To estimate what GAAP earnings are apt to look like for the quarter and the year, we figure the rest of Berkshire, outside of its stock market investments, will report

an estimated $8.5 billion before taxes during the fourth quarter. Unrealized gains and losses join realized gains and losses on the income statement for the first time in years beginning in 2018. These receive different tax treatment than operating earnings, which are taxed differently across all of Berkshire's individual subsidiaries. Putting the investment losses during the fourth quarter together with Berkshire's operating earnings, we estimate Berkshire will report on the order of a $24.2 billion net loss for the quarter.

For the year, we calculate Berkshire will show $5.7 billion pre-tax income and $5.5 billion in profit after-taxes. You read that right. Assuming a typical quarter on the operating front, Berkshire will show virtually the same amount in net income and in pre-tax income and a tax bill for the year of only $200 or so million, a tax rate of about 4%. Lordy.

As is always the case at Berkshire, the stated figures are always far from economic reality. On a GAAP basis, the stock market decline for the quarter and the year is "sheltered" by a reduction of the deferred tax liability that exists thanks to the stock portfolio trading at a gain above its cost basis. Gains and losses are offset by deferred taxes calculated at the 21% new federal rate. The $39.1 billion "loss" in the fourth quarter on the stock portfolio (excluding KHC) produced a tax "benefit" of $8.3 billion. The assumed $8.5 billion pre-tax income earned by Berkshire's businesses will be taxed at approximately 18% for the quarter (and year). The rate is below the new federal 21% tax rate largely thanks to wind energy credits being paid to Berkshire to subsidize its large investments in wind power. The company had been reporting a 19% combined tax rate for the year, which is a combination of the tax rates across all the businesses and the deferred tax treatment at 21% of unrealized gains and losses in the investment portfolio. We'll get to it in a bit but the cash taxes paid by Berkshire are even below this 19% number.

On the book value front, Berkshire's $24.1 billion net loss for the fourth quarter will shrink book value by the same amount. The company had also spent approximately $928 million repurchasing shares through the third quarter (we *expect* and hope further shares were repurchased during the final quarter as the stock traded at attractive prices – we were a buyer if that means anything). Repurchases reduce shareholder's equity by the dollar value of the purchase (offset a small bit by an amount representing capital in excess of par). Book value *per share* will decline slightly more due to the purchases having been made above book value. Throw in perhaps another negative $1 billion to $2 billion for transactions with noncontrolling interests and other comprehensive income and most of what had been a $27.3 billion gain in book value through September 30 for the year will have disappeared thanks to the 13% fourth quarter decline in the stock portfolio. If we learn the fourth quarter saw additional repurchases, any new stock market buys that declined by year-end, or any weakness in operating subsidiaries or insurance underwriting losses then the book value may have declined for the year. We've already quoted Tony Romo, but with the Super Bowl coming up, as Tony would say, "Oh boy, this is going to be close, Jim!" Good news for cheerleaders is that a flat book value will have beat the 4.4% decline in the S&P 500.

The truly better news, if you have read our letters for the last few years, you know there are enormous economic earnings earned at Berkshire that generally go unreported in the GAAP financial statements. A flat book value for a year necessarily implies better prospective returns to come both in intrinsic value and in the price of Berkshire's shares.

Berkshire Hathaway Intrinsic Value Update

We estimate that Berkshire increased intrinsic value during 2018 by 12.4% to $668 billion, $57 billion over our assessment last year. The gain is remarkable given the decline in the investment portfolio and what will likely appear as an 89% decline in reported net earnings, from $44.9 billion to $5.1 billion. Yet even more confusing and remarkable is that the $38 billion loss in Berkshire's stock portfolio (including Kraft Heinz), will exceed pre-tax earnings for the remainder of the company, yet the company will likely report a modest profit.

Our process in analyzing and thinking about Berkshire involves several methods, as would be the case with any business we work on. You can measure earnings power, you can measure net asset values and you can blend the two. Many followers of Berkshire conflate earnings power and balance sheet nuances, often double counting or under counting in places. Our measures all are used to reconcile to each other, and we prefer measurement of earning power, primarily our GAAP adjusted financial approach, which requires myriad adjustments to the published financial statements. The other methods are used as reconciling tools that are more impacted in the short term by swings in the publicly traded stock portfolio, 97% of which is held within Berkshire's insurance group.

GAAP Adjusted Financials Approach

Here we walk through modifications to Berkshire's GAAP statement of earnings to arrive at our "normalized" earnings number, which in our world more accurately approximates the economic earning power at the company. Berkshire, as a conglomerate with lots of moving parts, is a great ongoing case study in accounting for economic reality. Many of the adjustments made when analyzing any business are used in our analysis of Berkshire, and in Berkshire's case so many of them are required! Berkshire reported net income of $44.9 billion in 2017. Our adjustments that year calculated net income of $28.3 billion, a $16.6 billion reduction. After stripping out realized gains and losses and the large non-cash tax change adjustment for the year, which most investors properly do, the remainder of our adjustments added just under $10 billion to what we call normalized earnings. **Our normalized earning number for 2018 is $40.6 billion, roughly $35.5 billion more than we expect Berkshire to report as net income for the year!** The primary adjustments we make each year are:

- Remove realized (and now unrealized) gains and losses on the investment portfolio of the insurance companies and other groups.
- Remove derivative contract gains and losses.
- Add retained earnings of equity investees in the investment portfolio (this is the offset to the removal of realized and unrealized gains and losses). It is a normalizing factor that assumes retained earnings will translate into at least an equal dollar of market value.
- Remove underwriting gains and losses.
- Add normalized underwriting profit at 5% pre-tax underwriting margin.
- Add income for deferred tax liabilities that are created with property, plant and equipment capital expenditures, reflecting the degree to which cash taxes paid are less than GAAP taxes as reported.
- Add a portion of the amortization charge against intangible assets created in acquisitions that do not reflect economic decay.
- Add an optionality premium to the portion of cash balances likely to be invested at higher yields in the near to intermediate horizon.

- Reduce net income to reflect a higher normalized pension expense using our pension methodology discussed earlier.
- Other adjustments that are one-off are made as needed (the above are more recurring in nature).
    - 2017 required a $28.2 billion non-taxable downward adjustment to reflect the impact of restating downward net deferred tax liabilities, which increased taxable income by the same non-taxable amount.
    - The equity method treatment of Kraft Heinz also required a one-time 2017 adjustment of $2.9 billion pre-tax, $1.2 billion after-tax, to reflect downward revision of Kraft Heinz's similar non-cash gain in net income to reflect revalued deferred net tax liabilities. Kraft Heinz is held by the holding company as it receives beneficial 4.2% (20% of the federal rate) tax treatment there.

Remove Realized and Unrealized Gains and Losses

Beginning in 2018, FASB rule ASU 2016-1 required the income statement under GAAP accounting to include unrealized gains and losses each quarter in the income statement. Previously only realized gains and losses were included. Unrealized gains and losses were recognized on the balance sheet, with unrealized gains offset by a deferred tax liability for taxes to be paid if, or when, holdings are sold. Those unrealized gains and losses will still be a balance sheet item. In periods of price declines, as we saw in the fourth quarter, declines are offset by a correspondent offset of the portion of tax that will no longer be required to be paid. These unrealized gains and losses are taxed as deferred at 21%, where prior to the 2017 tax change were taxed at 35%. In other words, investment securities move up and down in price, and the movement in either direction is offset by a 21% tax now, with the net amount moving shareholder's equity up or down by the net amount. Deferred taxes mute the up and down impact of stock volatility.

In 2017, we removed $2.1 billion pre-tax and $1.4 billion after-tax gains from the income statement. For the first nine months of 2018, we removed $13.1 billion pre-tax and $10.3 billion in after-tax gains.

Within Berkshire's balance sheet, now that unrealized gains and losses affect net income, accumulated net unrealized appreciation on equity securities was reclassified from "accumulated other comprehensive income" to retained earnings. The movement screws up the progression of retained earnings for the analyst as a useful proxy of earnings over the history of the firm. Now, retained earnings will bounce around with the stock market as will net income on the income statement. Shareholder equity, of which retained earnings are included, already bounced. It was nice to have the segregation of the components of shareholder's equity, however.

Our treatment always removed realized gains and losses from the income statement. Their timing can be arbitrary and controlled by management. It has not been uncommon to see a management book gains to help overall reported profit if another subsidiary was falling short. GE comes to mind here.

Now we simply remove both realized and unrealized gains and losses from investments, including from derivative liabilities. Removal eliminates the volatility of financial assets affecting underlying earning power.

If you think about it, including both realized and unrealized gains and losses in the income statement *is* more economically correct than excluding them as irregular. It's just that inclusion is correct but more wildly so. If stock prices reflect the earning power of the business over time, then inclusion of gains and losses, whether realized or unrealized, will be correct – over time. It's "over time" that's the problem. To satisfy the logic for removal, taking away short-term price volatility, we must offset the removal with a better proxy for tracking economic gains and losses. To serve that purpose, we take the next step.

Add Retained Earnings of Holdings

The removal of realized and unrealized gains and losses as irregular and unpredictable requires an offset when assessing the earnings power of Berkshire. The offset is the addition to reported earnings of the retained earnings of equity investees in the investment portfolio. **You own a business for the profits it produces, not simply for the portion of profits paid to you as dividends.** Profits retained by a business should (and need to) inure for the ultimate benefit of the shareholder. It is simply a reinvestment of your profits, a choice made by others if you happen to not be in control, but it's an investment nonetheless. This is a normalizing factor that assumes retained earnings are invested appropriately by the companies retaining our profits as shareholders and will ultimately translate into at least an equal dollar of market value.

This is where the getting got good in 2018. Concluding that the year was terrible at Berkshire because the stock portfolio "lost" a ton, or that because book value is likely to be roughly unchanged for the year misses the important goings on under the hood. Berkshire has many investors that understand the concept of what we define as retained earnings yield.

Two things happened during the year. Even though the prices of Berkshire's stock market holdings declined, the underlying profits of most of those businesses grew, and in several cases substantially so. Second, Berkshire deployed a sizable portion of its large cash reserves, investing $24.4 billion in net stock market purchases, initiating several new positions and adding to others. The $24.4 billion net stock market buys are a dollar record for a single year at Berkshire. As a percent of average invested stock market assets, the buys were 12.9% of the average portfolio size over the course of the first nine months. Over the last 20 years, 2003 saw 21.3% in net buys and 2005 and 2007 saw net purchases at 15.1% and 16.2% respectively. Of course, 2018's buys were for nine months. Given the blood spilt during the fourth quarter, the 2003 mark should be in jeopardy when quarterly activity is announced in mid-February.

Combining net purchases plus the progression of annual profit and lower share counts at many companies, Berkshire's retained earnings of its common stock holdings are now $9.8 billion, up from $5.8 billion last year. That's the pre-tax adjustment we make, that is then hypothetically taxed at 3%, which blends the new 8.4% rate that Berkshire pays on dividends earned by its insurers and the fact that most holdings are held indefinitely. In most cases, Berkshire holds core positions for a very long time and ongoing profits are ultimately earned in part through higher dividends over time. When positions are sold, Berkshire has proved adept at asset swaps, which avoid payment of current cash taxes. We don't create a full 21% immediate tax expense when estimating current earning power. Retained earnings are already taxed at the individual companies' tax rates. 2018's estimated and 2017's final after-tax adjustments for retained earnings are $9.5 billion and $5.3 billion respectively.

The 67% increase in retained earnings is a huge additional $4 billion earned and retained by the companies Berkshire owns shares in. Some of the increase in earning power is shuffling around the sources of earnings. Clearly the $24.4 billion in net purchases were already earning interest when invested as T-bills (the amount also represents roughly one-years' worth of free cash after-tax profits earned by Berkshire's operating subsidiaries). You will see shortly that our process also includes in normalized profitability an optionality premium for expected yield on a portion of cash reserves expected to be invested in the short and intermediate terms. Thus, a portion of the pickup in earnings yield on the stock purchases had already been accounted for by our process elsewhere, so the portion of new earnings on the $24.4 billion is not pure new addition to earning power, but at today's prices stand to be substantially accretive relative to having held cash long-term.

Berkshire watchers know that the company's stock market investments have been concentrated in money center banks and in Apple. Berkshire is not paying high multiples for banks now trading at 10 times earnings and Apple at 13 times. On recent purchases and in longstanding holdings, the portfolio holdings are benefiting mightily thanks to the tax reduction on domestically earned profits.

Instead of trading at a premium to fair value, Berkshire's stock portfolio now appears undervalued. If you recall, we had considered Berkshire's stock portfolio roughly 10% overvalued last year and shaved $16 billion as an adjustment to market value. This adjustment is picked up in our sum of the parts method for valuing the company and does not impact the profitability analysis. With the decline in the stock holdings, plus the net new buys, instead of shaving value, we now add $34 billion to the appraisal, a full $50 billion swing. The increase generically assumes the stock portfolio is worth 15 times earnings. Stocks declining in price, coupled with earnings progression and a lower tax rate applied to domestic profits, combine to add substantial value to the earning power of the investment portfolio.

Berkshire's Stock Market Investments, Dividends and Retained Earnings

	12/31/17	12/31/18
Market Value **	$170 B	$168 B *
Earnings	$9.5 B	$13.5 B
Dividends	$3.7 B	$3.7 B
Retained Earnings of Investees	$5.8 B	$9.8 B
Earnings Yield (E/P)	5.6% (P/E 17.8x)	8.0% (P/E 12.4x)
Dividend Yield	2.2%	2.2%
Retained Earnings Yield	3.4%	5.8%

* Berkshire paid $24.4 billion for net additions to the stock portfolio in 2018
** Market Value here includes stocks in insurance group plus $5.1 billion at 12/31/18 in rail and finance groups, $6.2 billion at 2017. MV excludes $14.0 billion market value KHC at 2018 and $17.9 billion at 2017. KHC earnings are picked up as equity method. KHC economic cost basis is $9.8 billion. Balance sheet cost is $17.4 billion
** Market Value estimated for 12/31/18 and assumes no net 4Q purchases
Source: Semper Augustus

Remove Derivative Contract Gains and Losses

Realized and unrealized gains and losses on derivative contracts are stripped along with those on investment securities in the first adjustment above.

Berkshire wrote a series of put option contracts just prior to the financial crisis with several life insurance companies as counterparties. The life insurers had written (and still write) annuities to their customers which guarantee a smaller percentage of the gain on named stock market indices along with a base minimum annual return and a guarantee of no loss or a floor loss (for the record we have seen some of these that people own and have never seen them produce much of a profit, if any, for the annuity holder, even during rising markets – something about high embedded fees, but that's another story for another day). Naturally the insurers lose big if the stock indices decline, and so look to hedge their downside exposure. For a price, Berkshire provided the protection. The options written were European style, meaning they are payable only at the expiration of the option, which in the case of those Berkshire wrote were all well over ten years. Berkshire received $4.1 billion upfront as a premium on the contracts remaining on its books that expire between this year and 2026. The company carried a liability of $1.9 billion on its books at September 30, 2018 reflecting the undiscounted value of the amount they would have to pay out today calculated using the Black-Scholes option pricing formula to determine fair value. The contracts contain no collateral posting requirements.

Each quarter, Berkshire includes an unrealized gain or loss in the income statement to reflect any increase or decrease in the liability amount as the indices move up and down. When markets rise, Berkshire records a profit. When they decline, as they did in the fourth quarter, they show a loss. The fourth quarter "loss" could be as much as $700 million. The gains and losses are non-cash and non-tax, because as mentioned, Berkshire only pays at expiration.

We calculate the likelihood that Berkshire will owe anybody a dime on the contracts as a probability of 0.00001%. I hate to round with such precision, implying expertise that doesn't exist and preferring the roughly right to precisely wrong approach, but in this case, we've done the math and made our bet. What the Berkshire skeptics about the contracts fail to grasp is that the options were written at the money, meaning the strike price was set at the market price of the indices at the time the contracts were written. Think of the strike for all four (three were European indices) as 1,400 on the S&P 500. Then think about the length of the contracts and the fact that retained earnings over a long enough period invariably push share prices upward, unless reinvested earnings are truly squandered. With the options being European style, the indices would have to be *below* the strike price on the *exact day* of exercise. These contracts were originally written with 12 to 19 years to maturity. Sure, markets have been negative in price for more than 12 years before, and in fairness the options were written close to a cyclical/secular peak, but they would have to be negative on the specific day, *and* the contracts have staggered maturities.

Our thinking is either clarified or confused regarding the accounting treatment of the quarterly reported gains and losses deriving from the put contracts. Within the finance and financial products group, we had been adding $400 million to pre-tax earnings in the finance group (where the puts are housed) only for our sum of the parts analysis of Berkshire, not for the GAAP adjusted approach done here, to allow for the ratable amortization of the present $1.8 billion liability into income as the contracts expire worthless and the liability shrinks. This is an ok assumption. Thinking through the accounting treatment and economics of the contracts, perhaps a better way to treat the puts is to *not* add $400 million ratably to income, but rather to ignore the $1.8 billion liability. We could ignore it because the options are *DEEP* out of the money and extremely unlikely to be in the money at the exercise date.

I don't know if I have been wrong in adding income. The gains and losses recorded on the income statement are properly ignored. However, if we are correct and the options expire worthless, the remaining liability will disappear and equity of the finance group and Berkshire will rise by a like amount, which will be $1.8 billion over the next seven years. It's probably the same either way – upward adjusted income on lower book value or no income on an upward adjusted book value. If any readers A: have made it this far, and B: have a clarifying opinion, drop me a line. We're always interested in hearing where we are wrong. It happens a lot.

From a cash standpoint, Berkshire received the $4.1 billion premium from the remaining options upfront. The proceeds are invested and have been producing income and perhaps gains. If the contracts expire worthless, Berkshire keeps the entire $4.1 billion. If the indices are all at zero, the maximum payout is $27.4 billion (it was $37 billion before some of the contracts were renegotiated and before the first contract expired worthless in 2018).

The actual probability that Berkshire pays at expiration on any of the remaining index put contracts is much higher than the number we stated earlier. There have been periods when stock markets were negative for periods of 12 years or more (excluding dividends). Japan is still negative back to 1989, which is extraordinary. Our markets were negative from 2000 to 2012, traded consistently below 1966's high until 1982, and took 25 years to regain 1929's peak. With the strikes written at the money, to lose would require declines of 40% to 50% from now to the precise day of expiration. We believe writing the index puts were great wagers by Berkshire.

Adjust Earnings to Reflect Accelerated Depreciation Tax Treatment for Capital Expenditures

Berkshire spends enormous sums on capital expenditures, most of which takes place in its energy and railroad businesses. Deferred tax liabilities are created on qualifying investments in property, plant and equipment. Companies like railroads and utilities are incentivized to make infrastructure investments for the public good. The use of accelerated depreciation in the tax books arises from higher depreciation of fixed assets allowed for tax purposes in the early years of amortizing an asset's life, made up for with lower tax deductible depreciation expense in later years. The higher early depreciation results in lower taxes paid in the early years and consequently higher taxes in later years. The future higher taxes are carried on the balance sheet as a deferred liability. It's a present value benefit, and we adjust net income upward to reflect the benefit.

For both 2017 and 2018 we increase after-tax net income by $1.4 billion. We detail the method and use of accelerated depreciation in the 2015 to 2017 letters. Last year's devoted space to how the change in the corporate tax rate from 35% to 21% would affect each group and subsidiary. We leave the $1.4 billion unchanged this year on the assumption that less benefit from the lower tax rate will be offset by increased spending on qualifying capital expenditures.

It looks like we got the treatment at the energy businesses and at the railroad correct. We leave the boost to income unchanged for the year. Getting the math down with precision is difficult and without depreciation schedules by assets or groups of assets requires a broad estimate. Know however, that Berkshire continues to spend vast sums on capital, much of which drives down the bill payable to the feds each year, and given the current window for immediate expensing under the tax code, capital expenditures are benefitting the company even more than before.

The 2017 code change allows for depreciable assets (excluding structures) to be expensed in one year instead of being amortized over many years. This change became accelerated depreciation on steroids for many businesses. Equipment must have been purchased after September 27, 2017 and by December 31, 2022 (with an additional year for longer production property and certain aircraft). The immediate 100% expensing is reduced by 20% annually beginning in 2023 and is phased out entirely after 2026. Regulated *public* utilities are largely excluded from this benefit. It is a huge benefit for the railroad, but also for Berkshire's other non-regulated businesses that in many cases now also are enjoying accelerated depreciation where previously they weren't. As assets depreciate over their actual useful lives, approximated by depreciation charges in the GAAP income statement, the beneficial tax benefit eventually runs its course, and in the later years of an asset's useful life, an even higher effective tax rate than the marginal rate will be applied for the tax books.

Remove Underwriting Gains and Losses; Add a Normalized 5% Underwriting Profit

Berkshire's insurance companies are likely to have produced roughly $56 billion in premiums earned during 2018. Underwriting profits are extremely volatile from year-to-year. Our preferred method removes pre-tax and after-tax reported underwriting profits and replaces them with a normalized 5% pre-tax underwriting profit on premiums earned. It's a similar approach to removing investment gains and losses and replacing them with the retained earnings of the stock market holdings.

We have a running disagreement with Berkshire (in our minds at least) on the logic of determining intrinsic value by either including underwriting results in operating results, removing them (as is logical with realized and now unrealized gains and losses on investment securities), or removing them and then assuming some normalized sustainable underwriting margin, which is our method. A more conservative method is to strip underwriting profit entirely and just ignore it. Berkshire had advocated this approach

for years following a period of underwriting losses. Then the company produced an underwriting profit for 14 consecutive years (rarely seen in property casualty) so management felt it again prudent to include them, the old self-serving having your cake when times are good method. Berkshire recorded a sizable underwriting loss in 2017 due to hurricanes, fires and earthquakes, and on the stance of whether to include or not to include, the company has gone radio silent. See our "Moving the Goalposts" section in our 2016 letter and in the 2017 appendix, titillating reading to be sure.

In any event, when we analyze property casualty insurers and reinsurers, we spend a lot of time trying to determine sustainable underwriting margins, which can be positive or negative depending on the type of insurance written and the economic climate, particularly with interest rates, inflation, and competitive capacity.

With Berkshire's underwriting losses of $3.2 billion pre-tax and $2.2 billion after-tax for 2017, we stripped those from the record. Poof. We then added in $2.6 billion pre-tax and $1.7 billion after-tax (at the old 35% rate) to the income statement. The swing in net profit was a positive $3.9 billion! Lest you think we have lost our sensibility, ignoring losses like so many CEO's and Wall Street analysts are inclined to do, if Berkshire showed a $10 billion underwriting *profit* on $50 billion in premiums earned, we would ignore that as well.

For 2018, on $56 billion in premiums, a 5% underwriting margin produces $2.8 billion in pre-tax and $2.2 billion in after-tax underwriting profit. We add these figures to the income statement. If the fourth quarter develops in line with the first nine months of the year, the company ironically stands to have earned our assumed average annual target of 5% underwriting profit, resulting in our adding back the identical amount withdrawn. It's usually not this easy!

Add a Portion of Intangibles Amortization Expense to Income

Intangible amortization was discussed in our *Trouble with Earnings* section of the letter. For Berkshire, we increase economic earnings by almost $900 million to reflect the amortization of intangibles created in acquisitions which do not economically decay. Berkshire recognizes this reality each year, formerly in a supplemental presentation in the Chairman's letter and beginning last year in the MD&A segment presentation of the Manufacturing, Service and Retail group in the 10-K. Unlike many public companies, Berkshire does not present a pro-forma or supplemental set of financials excluding various expenses. The goodwill and intangibles footnote makes clear the types and amounts of intangibles being amortized. The balance of intangibles being amortized with no economic decay is now much larger. We had been adding back 80% of the amortization charge for intangibles, which resulted in economic earnings being roughly $600 million higher after-tax than GAAP profits for 2010 to 2015. Gross intangibles are $41.3 billion at September 30, 2018. Accumulated amortization is only $8.0 billion. In addition to trademarks, intangible assets such as trade names and customer relationships generally lose little, if any, economic value over time.

We don't want to keep going down the path of knocking the brass at some companies, but there are those that instruct analysts to add back all amortization, which is usually aggressive. Bearing in mind the motivation of some managements is to report profits as high as possible, the good analyst needs to determine which intangibles truly decay and which do not. There are businesses where 100% of the amortization charge is economic, yet management pro-formas their results and adds back amortization expense to profits. It's not an easy analysis for many firms, but Berkshire makes it easy and trusting their judgment is safer than any other if you aren't doing the research work yourself. Berkshire's GAAP pre-tax and net income are net of all intangible amortization, which is where we make our adjustment. Berkshire makes the requisite adjustment only in the footnotes. Our MSR analysis excludes from profit

the portion of amortization expense that management deems not economic, and our process agrees with their presentation.

Add an Optionality Premium to a Portion of Cash Balances

Berkshire is oft criticized for its sizable cash balances maintained in recent years. The market value in part is capitalized as though the pedestrian yields earned on a mountain of Treasury bills will persist in perpetuity. Our view here deviates from conventional wisdom. We rather expect a large portion of not only today's cash, but ongoing free cash flows generated by operations, will be invested at higher yields over the near to intermediate term. Recall the discounted cash flow discussion from earlier in this letter. We are trying to measure not only today's profits but also those to be earned in the future, discounting the entire stream back to a present value at some sensible rate of interest. Remember, our methods for valuing Berkshire are done first with a determination of earning power, now and as far down the road as we can reasonably guess, and separately based on the net assets owned by the business, their individual earning power, the cost of financing their existence to the extent leverage is incorporated in the capital structure, and the differential in earning power likely to transpire when one asset is swapped for another. It's this last variable, the likelihood that a current asset, a T-bill in this case, will be sold and exchanged for an asset earning higher yields, be it partial ownership of a publicly traded company, a control or shared equity interest in a privately held business, or some type of higher yielding fixed-income or equity hybrid security that we are thinking about. It's the expectation that a lower yielding asset will be converted to a higher yielding one, a guess as to when the conversion will transpire, the yield differential between the assets exchanged, their respective tax treatments, and the opportunity cost of investing in assets of differing riskiness and growth prospects.

Our method begins with Berkshire's cash on hand in the insurance group and held at the holding company level. We exclude cash held in the energy, rail and finance groups on the presumption that cash there is a necessary part of working capital and not set aside for future investment in anything other than internal need. We have seen surplus cash and profits regularly upstreamed from each of these groups to the parent over time. We assume the balance of insurance group cash and holding company cash can be invested permanently in long-duration assets, apart from a reserve amount that Berkshire says is $20 billion, and which we believe is closer to $32 billion today, that reflects a permanent cash reserve. Berkshire has not attributed a need for the permanent cash reserve to an identified purpose, but if we were running the business would keep one year of expected insurance losses to be paid as cash on hand always to meet that need against any material decline in fortune throughout the remainder of the enterprise.

Cash across Berkshire totaled $103.6 billion at September 30. As an aside, interest bearing debt was $97.6 billion and capitalizing operating leases would add about $6 billion in debt to the balance sheet (it will this year for all businesses – hello retail!). Combined, the business operated with no financial leverage. Most remaining liabilities on the right side of the balance sheet are non-interest bearing and economically non-maturing, as has been the case at Berkshire for more than five decades. Back to the point about cash. Of the $103.6 billion in cash, $7.2 billion was held by the energy, rail and finance groups. We estimate (hard to do in this case, more on this soon) that cash held in the manufacturing, service and retail group was $13.5 billion. Excluding those groups, of the remaining $82.9 billion, $59.3 billion was held by the insurance companies and the balance of $23.6 billion was at the holding company. I'm sure we'll be off between the allocation between the MSR companies and the holding company cash, but c'est la vie, withhold precious and once previously disclosed data, the analyst is forced to guess.

For all the minutiae in the preceding paragraph, it would be easier to have said Berkshire has $82.9 billion in cash in groups where it can be invested long-term. Of that, we think $32 billion is permanently ring-fenced as a liquid reserve for insurance losses, so roughly $51 billion can be invested outside of T-bills. Our method assumes a 7% present value investable yield, minus approximately 2% earned bills. The net

5% optionality premium produces an assumed $2.5 billion higher pre-tax yield. We also changed our assumed tax treatment of the optionality premium this year. We don't know the proportion of future investments between public stocks and entire businesses, or where the investments will be held and how they will be taxed. If in common stocks the logical place is in the insurance companies, where dividends are taxed at only 40% of the marginal federal rate of 21%, making the tax on dividends 8.4% (prior to receiving dividends the profits both paid and retained by investees are already taxed at those companies). If the investments are made in control positions in private businesses, then they will be taxed at that new subsidiary's own tax rate. Our method used to tax the optionality premium at the full federal rate, now 21%, 35% prior to this year, on the assumption that we could have used a lower rate to reflect an expected blend of investments to be made in common stocks or in wholly-owned subsidiaries. We didn't however, as an offset to time, not knowing how quickly cash will be invested.

To heck with time…Beginning this year, we are now hypothetically taxing the optionality premium at the sheltered dividend rate of 8.4%. So, we're no longer conservative. You can say we've gone wild here at Semper. The reality is Berkshire thinks about taxes and structures its investments appropriately, in its drive to maximize after-tax earning power and shareholder value. Our calculated $2.5 billion produces a hypothetical $2.3 billion in after-tax profit, which we believe will be earned over time on that portion of cash likely to be invested. For 2017, the figures were $3.5 billion pre-tax and $2.7 billion after-tax. The pre-tax adjustment is $400 million lower for 2018 thanks to Berkshire's $24.4 billion net spend in common stocks for the first three quarters offset by our new and improved lower tax rate. See – they do spend cash sometimes…

Reduce Net Income to Reflect Higher Normalized Pension Expense

We discussed our pension adjustment methodology earlier, in the section of the letter on earnings quality. Using our 4% assumed rate of return on pension assets versus Berkshire's conservatively assumed (more than most, except by us) 6.4%, and amortizing its $1.7 billion underfunded status over ten years, we assume Berkshire will have to commit an additional $589 million pre-tax and $465 million after-tax to its pension funds annually. These figures are using 2017's published financials. This adjustment is immaterial enough that we don't try to figure out what 2018's plan will look like until the 10-K is released at month's end. We are far from actuarially correct, but the method has proven reliable for twenty years. For details on how the method works, it's presented in the pension section. Mercifully, we are proving right here in this section our well-known proclivities to brevity and avoidance of redundancy…

Other Non-Recurring Adjustments

From time to time we make additional adjustments as necessary. We mentioned the non-tax adjustments at year-end 2017 for the Tax Cuts and Jobs Act of 2017. One adjustment made irregularly is to the balance sheet and doesn't affect our earnings based approach. If the stock portfolio trades at a level we find to be dramatically overvalued or undervalued, we adjust the market value of the holdings with a discount or premium. At the end of 2017 we felt the stock portfolio was overvalued and marked it down by roughly 10%, or $16 billion. With the decline in the stock portfolio and the net new buys of $24.4 billion through the third quarter, much at "seemingly" low multiples, we now find the stock portfolio undervalued by $32 billion. The premium is added to our appraised asset value, mostly within the insurance group. That's a $50 billion swing, which again doesn't impact our earning power adjustments as those are made on estimated income and earning power. We had last marked up the stock portfolio at the end of 2008 and had dramatically marked it down in the late 1990's, when Berkshire made the "pivot" away from stocks.

We also have been recently marking down the position in Kraft Heinz, even though it is carried on the balance sheet at cost as determined using the equity method of accounting. Two years ago, Berkshire's position in Kraft Heinz had a market value of $25.3 billion, a balance sheet cost basis of $17.6 billion, and a true economic cost basis of $9.8 billion. On the premise that you can only squeeze so much blood out of a turnip (that's a Brazilian expression – its American translation is you can only squeeze so much Cheez Whiz out of a domestic can of processed brands that have no international distribution and declining domestic appeal – that's a loose translation, of course), we had marked down market value by half. Here we are at half-off so that discount is suspended.

The final periodic adjustments we make, and here the adjustments do affect earning power, are if a business or group is under earning or over earning relative to normalized potential. For the last few years, we had made an upward adjustment to Burlington Northern and a handful of the manufacturing and industrial businesses because we felt current profitability was depressed. We're pleased to report that no such upward adjustments are required today, as the railroad and most of the other large businesses are chugging along nicely.

There exists one final adjustment to contemplate, and that's the degree to which the benefits Berkshire and other businesses are currently benefiting from the tax changes at year-end 2017. Some of the components phase out and expire. Some will surely be competed away. We attempted to capture the decline in the benefit, which is hard to contemplate and even harder to estimate, in our sum of the parts method for calculating Berkshire's intrinsic value.

Summary of our GAAP Adjustments to Economic Earnings

After-Tax GAAP Adjustments to Economic Earnings: 2017 Final and 2018 Expected; in billions	**2017 Final**	**2018 (E)**
Normalized Recurring GAAP Adjustment to Economic Earnings		
Add retained earnings of equity investees, taxed at 3% (1/7th of new 21% federal rate)	5.3	9.5
Add income for DTL's created with PP&E capex to reflect cash tax<GAAP tax	1.4	1.4
Add 80% of amortization charge for intangibles	0.9	0.9
Add optionality premium for near/intermediate investments with cash>1-year insurance losses	2.7	2.3
Reduce net income to reflect higher normalized pension expense	-0.5	-0.5
Normalized Recurring GAAP Adjustment to Economic Earnings (before removing realized g/l)	**$9.9**	**$13.6**
Periodic or Irregular in Amount or One-Time Adjustments to GAAP Net Income		
Remove realized gains/losses, including from derivative liabilities	-1.3	20.9
Remove reported underwriting gain/loss **	2.2	-2.2
Add normalized 5% underwriting profit **	2.1	2.2
Berkshire TCJA Adjustment one-time non-cash	-28.2	
Kraft Heinz TCJA Adjustment one-time non cash	-1.7	
Remove Noncontrolling Interests	0.4	0.5
Total Periodic or Irregular in Amount or One-Time Adjustments to GAAP Net Income	**-$26.5**	**$21.4**
GAAP Net Earnings (From Income Statement)	**$44.9**	**$5.6**
Total Adjustment (assumes no 4Q18 gain/loss on investments or irregular underwriting gain/loss)	**-$16.7**	**$35.0**
Semper Adjusted Net Income; Economic Earnings	**$28.3**	**$40.6**

** Adding normalized underwriting profit was moved from annual adjustment. It is an offset to removing actual underwriting gain/loss. Some years the two are similar, some years not. 2017 was a $4.4 billion swing.
Source: Semper Augustus

The methods described above are summarized here. The third row from the bottom, GAAP Net Earnings, is the figure seen in Berkshire's income statement, with 2018 as our expectation. The $44.9 billion in 2017 far overstated economic reality, and the $5.6 billion expected for 2018 understates it.

The top section shows the modifications made each year that are essentially "hidden earnings." You won't find these by any cursory read of Berkshire's annual report or SEC filings. The increase in these hidden earnings that rose dramatically from $9.9 billion in 2017 to $13.6 billion for 2018 come from the impact of the 2017 tax code change applied for 2018 while the older code was used in 2017. Also, you can see the huge progression in the retained earnings of equity investees, which aren't recognized by Berkshire each year, but which more accurately represent ongoing earning power and not what was earned in the specific year. The tax code change, Berkshire's large equity purchases, yearly progression of profitability of the companies in the portfolio, and subsidiaries like the railroad no longer operating with depressed profitability, combined to drive the figure up significantly.

The middle section strips out realized gains and losses in 2017 and both realized gains and losses in 2018, thus ignoring the portfolio decline for the year. The section also highlights normalized insurance underwriting, removing annual results and replacing them with our long-term expected underwriting margin. If you don't believe Berkshire's insurers will underwrite at 5%, feel free to insert your own number or simply ignore any add-back if you think underwriting will be breakeven going forward. If you think Berkshire will instead underwrite over time at underwriting losses in a world of low interest rates, you shouldn't own the stock. Finally, the section cleans up the non-cash one-time impact of the 2017 tax change, ignoring the non-cash income both at Berkshire and at Kraft Heinz, which is carried using the equity method.

Our economic earnings estimate for 2018 seems about $2 billion to $3 billion too high, and we'd attribute that to the big jump in retained earnings of the stockholdings. Usually that number grows in line with the underlying businesses. A more conservative approach would be to use an average for the year of the difference between beginning and ending values for retained earnings. In doing so, however, your expected value created prospectively would need to be higher to capture the improvement only apparent using the year-end number. We use the more conservative number this year when capitalizing profits. Much of the logic in doing so is a belief that some portion, perhaps half or more, of the benefit currently enjoyed thanks to TCJA 2017 will phase out and be competed away. We also have a sense that given our governmental structural budget deficits, the next power change in Washington will likely come with more taxes and not less, so we discount the good times a bit. We are doing this across most of our U.S. headquartered businesses for the portion of profits produced domestically. I hope we are wrong.

Below are the results of our Net Income Basis approach. These figures incorporate our valuation methods from the bottom up. It's effectively the earnings we estimate in our Sum of the Parts method. We placed them here to make comparison to the GAAP adjusted figures easy. The results seen later in our Sum of the Parts table are derived using these earnings estimates. Here we are deriving pre-tax and after-tax earnings for each subsidiary, adjusting for normalized underwriting and pension expense. We add the earnings derived from the investment portfolio, including our normalization processes regarding optionality and cash taxation. Reconciling these figures to the GAAP earnings adjusted table above, you will see that these are our normalized profitability measures by reporting group. The primary difference is in our longer views on the durability the tax benefits being enjoyed today. We view these numbers as more reflective of Berkshire's steady state.

Net Income Basis – 2018 Year-End Estimated (*dollars in billions)*

	Pre-Tax Income	After-Tax Net Income
Operating Groups		
Berkshire Hathaway Energy	$3.3	$3.8
BNSF	6.9	6.1
Manufacturing, Service and Retail	10.4	8.0
Finance and Financial Products	2.5	1.9
Operating Group Subtotal	**23.1**	**19.8**
Insurance Underwriting Normalized Gain	2.8	2.2
SAI Pension Expense	-0.5	-0.4
Operating Group Plus Insurance Underwriting	**25.4**	**21.6**
Investments		
Investment Income (Insurance and HoldCo)	**16.6**	**15.5**
Totals	**$42.0**	**$37.1**
Cash Tax Rate		**11.7%**

Source: Semper Augustus

One note from the table. You correctly read the pre-tax and after-tax income figures for the Energy business. The company is receiving large tax credits for its investments in alternative wind (mostly) and solar energy. We further lower the tax bill for the ongoing use of accelerated depreciation on qualifying capital expenditures. You won't see that portion of tax savings in the 10-K subsidiary presentation. We included an updated reconciliation between cash taxes and GAAP taxes in the appendix.

Other Methods for Valuing Berkshire

Each of our methods for valuing Berkshire are used to reconcile to each other. Below is our summary table for intrinsic value at Berkshire for 2017 and 2018 using each of the methodologies. There a few housekeeping and clarifying items and modifications in our thinking that are summarized immediately below the tables. We'll skip a detailed discussion of each method. Past letters provide as much detail as you may like. We do again include detailed data for each approach in the Appendix.

2017 Intrinsic Value by Market Cap and Per Share

	Market Capitalization	Price Per A Share	Price Per B Share
Sum of the Parts Basis	**$630 billion**	**$383,049**	**$255**
GAAP Adjusted Financials	**595 billion**	**361,768**	**241**
Simple Price to GAAP Book Value	**609 billion**	**370,247**	**247**
Two-Pronged Approach (Ours)	**610 billion**	**370,895**	**247**
Simple Average	**611 billion**	**371,463**	**248**

2018 Intrinsic Value by Market Cap and Per Share

	Market Capitalization	Price Per A Share	Price Per B Share
Sum of the Parts Basis	**$659 billion**	**$401,274**	**$268**
GAAP Adjusted Financials	**668 billion**	**406,754**	**271**
Simple Price to GAAP Book Value	**611 billion**	**372,046**	**248**
Two-Pronged Approach (Ours)	**672 billion**	**409,190**	**273**
Simple Average	**653 billion**	**397,316**	**265**

Source: Semper Augustus

In most years, our methods used in estimating Berkshire's intrinsic value produce similar results. Our primary process with Berkshire and throughout our portfolio usually involves a focus on sustainable economic profitability first and foremost and then secondarily the price we are willing to pay for those profits. With Berkshire, our Net Income Basis – GAAP Adjusted Financials approach drills down to our assessment of economic profits. Getting to the profit number requires several modifications to the published numbers and now yields more than $13 billion in annual earning power that you won't find in the financial statements. At our estimate of fair value, the **hidden earnings account for $234 billion of Berkshire's intrinsic value**. Thus, a little more than a third of our appraisal is derived from the adjustments we make.

The preferred earnings power approach values Berkshire's intrinsic value at $668 billion at year-end 2018. The approach is somewhat lower than with our pure GAAP adjustments, which fully captures how much higher retained earnings held by Berkshire's stock market investees, fully captures the maximum benefit of the tax code change, and does not discount for higher future taxes due to expiration or revision or for profitability competed away. If we used the method at present, the $40.6 billion in fully GAAP adjusted earnings, economic earnings in our view, would value Berkshire at $731 billion, about 9% higher than the number we come down on right now. We modify downward that maximum GAAP adjusted figure in our Sum of the Parts valuation and have made downward adjustments to the price we'd pay at some of the groups based on our thinking on taxes. Regardless, each of our approaches calculate value as materially higher than the current price of Berkshire's shares in the market, which makes us a happy owner and happier buyer.

Sum of the Parts Basis

December 2018 Sum of the Parts Valuation *(dollars in billions)*

Operating Groups	
Berkshire Hathaway Energy	$50 - 57
BNSF	95 - 105
Manufacturing, Service and Retail	140 – 150
Finance and Financial Products	30 - 33
Operating Group Subtotal	**$315 - 345**
Insurance Underwriting Norm Capitalized Value	33
Operating Group Plus Insurance Underwriting	**$348 - 378**
Investments	
Insurance Investments	241
Insurance Investments Valuation Premium/Discount	34
Holding Company Investments (Net)	21
Investments (Insurance and HoldCo) Total *	**$296**
TOTAL VALUATION	**$644 - 674**

*Excludes Investments and Cash in Operating Groups
Source: Semper Augustus

Our Sum of the Parts work necessarily involves an individual appraisal of each subsidiary. Our subsidiary appraisals are conservative in terms of valuation, and we have not fully moved multiples upward to capture the full effect of the tax code change. Even without the tax changes, our valuations are very conservative. As an example, if the energy subsidiaries and the utilities were publicly traded, they would command a much higher valuation. We don't actively invest in utilities today and there's a reason for that, rooted in price and value. We do adjust upward the value of Berkshire's stock market investments to

reflect what we now believe is a degree of undervaluation. A year ago, we applied a haircut. The adjustment in either direction adds a net $50 billion to the year-over-year comparison thanks to the portfolio having declined in price and for new buys in businesses with low multiples. This method understates our pure earning power approach because of conservative valuations applied to the main groups.

The valuations for each operating group are derived from the Net Income Basis table seen earlier. You can find more granular data for each reporting group in the appendix.

Simple Price to GAAP Book Value Basis

				Simple Per-Share Price to Book Value Basis- "A" Share Data							
	BVPS	Avg BVPS	1x BVPS	1.2x BVPS *	1.75x BVPS	2x BVPS		High	Low	Range vs.	Avg. BVPS
1994	10,083	9,469	10,083	12,100	17,645	20,166		20,800	15,150		
1995	14,426	12,255	14,426	17,311	25,246	28,852		30,600	20,250	250%	165%
1996	19,011	16,719	19,011	22,813	33,269	38,022		38,000	31,000	227%	185%
1997	25,488	22,250	25,488	30,586	44,604	50,976		48,600	33,000	218%	148%
1998	37,801	31,645	37,801	45,361	66,152	75,602		84,000	45,700	265%	144%
1999	37,987	37,894	37,987	45,584	66,477	75,974		81,100	52,000	214%	137%
2000	40,442	39,215	40,442	48,530	70,774	80,884		71,300	40,800	182%	104%
2001	37,920	39,181	37,920	45,504	66,360	75,840		75,600	59,000	193%	151%
2002	41,727	39,824	41,727	50,072	73,022	83,454		78,500	59,600	197%	150%
2003	50,498	46,113	50,498	60,598	88,372	100,996		84,700	60,600	184%	131%
2004	55,824	53,161	55,824	66,989	97,692	111,648		95,700	81,150	180%	153%
2005	59,337	57,581	59,337	71,204	103,840	118,674		92,000	78,800	160%	137%
2006	70,281	64,809	70,281	84,337	122,992	140,562		114,500	85,400	177%	132%
2007	78,008	74,145	78,008	93,610	136,514	156,016		151,650	103,800	205%	140%
2008	70,530	74,269	70,530	84,636	123,428	141,060		147,000	74,100	198%	100%
2009	84,487	77,509	84,487	101,384	147,852	168,974		108,450	70,050	140%	90%
2010	95,453	89,970	95,453	114,544	167,043	190,906		128,730	97,205	143%	108%
2011	99,860	97,657	99,860	119,832	174,755	199,720		131,463	98,952	135%	101%
2012	114,214	107,037	114,214	137,057	199,875	228,428		136,345	113,855	127%	106%
2013	134,407	124,311	134,973	161,288	235,212	268,814		178,900	136,850	144%	110%
2014	145,619	140,013	146,186	174,743	254,833	291,238		229,374	163,039	164%	116%
2015	154,935	150,277	155,501	185,922	271,136	309,870		227,500	190,007	151%	126%
2016	171,542	163,239	172,108	205,850	300,199	343,084		249,711	187,001	153%	115%
2017**	211,750	191,646	189,318	254,100	370,563	423,500		299,360	238,100	156%	124%
2018(e)	212,718	212,234	240,774	255,262	372,257	425,436		335,900	279,410	158%	132%

Berkshire waived restriction on authorized share repurchases below 1.2 times BVPS in 2018
** 27.2% increase in book value for 2017 includes a $28.2 billion non-cash increase from 2017 TCJA tax code change
1,642,269 A shares outstanding at 2018; $372,257 per share equals market cap of $611 billion at 1.75x BVPS at 2018
Source: Semper Augustus

We have held valuation on a price to book value basis at 1.75 times for a long time. If the changes to the tax code are durable and ongoing profitability of Berkshire's domestic businesses is sustainably higher thanks to the code, then the multiple should be higher to reflect that. We haven't made that change. Also, because of the large fourth quarter decline in the stock portfolio, our previous discount applied is now a premium, and we think the stock market values are understated. For these reasons, a 1.75 multiple to book value is too low today, so we deemphasize this measure for now.

Two-Pronged Approach

						Two-Pronged Basis #										
						(dollars in millions)										
	Per-Share					Per-Share										
	Pre-Tax Earnings					Investments	Per-Share Investmens + Capitalized Pre-Tax Earnings					Market Cap	Intrinsic Value			5% UW	Add Cap UW
		10x	12x	13.5x	15.4x ^		plus 10x	plus 12x	plus 13.5x	plus 15.4x^	shares out M	at 10x	at 12x	at 13.5x	at 15.4x^	Capped	
2005	2,441	24,410	29,292	32,954	37,591	74,129	98,539	103,421	107,083	111,720	1.541	151,849	159,372	165,014	172,161	10,998	176,012
2006	3,625	36,250	43,500	48,938	55,825	80,636	116,886	124,136	129,574	136,461	1.543	180,355	191,542	199,932	210,559	11,982	211,914
2007	4,093	40,930	49,116	55,256	63,032	90,343	131,273	139,459	145,599	153,375	1.548	203,211	215,883	225,386	237,425	15,891	241,277
2008	3,921	39,210	47,052	52,934	60,383	77,793	117,003	124,845	130,727	138,176	1.549	181,238	193,385	202,495	214,035	12,763	215,258
2009	2,250	22,500	27,000	30,375	34,650	90,885	113,385	117,885	121,260	125,535	1.552	175,974	182,958	188,196	194,830	13,942	202,138
2010	5,926	59,260	71,112	80,002	91,261	94,730	153,990	165,842	174,732	185,991	1.648	253,776	273,308	287,958	306,513	15,375	303,333
2011	6,990	69,900	83,880	94,365	107,646	98,366	168,266	182,246	192,731	206,012	1.651	277,807	300,888	318,199	340,126	16,038	334,237
2012	8,085	80,850	97,020	109,148	124,509	113,786	194,636	210,806	222,934	238,295	1.643	319,787	346,354	366,280	391,519	17,273	383,553
2013	9,116	91,160	109,392	123,066	140,386	129,253	220,413	238,645	252,319	269,639	1.644	362,359	392,332	414,812	443,287	18,342	433,154
2014	10,847	108,470	130,164	146,435	167,044	140,123	248,593	270,287	286,558	307,167	1.643	408,438	444,082	470,814	504,675	20,627	491,441
2015(S)	11,562	115,620	138,744	156,087	178,055	148,675	264,295	287,419	304,762	326,730	1.643	434,237	472,229	500,724	536,817	20,647	521,371
2015(B)	11,186	111,860	134,232	151,011	172,264	159,237	271,097	293,469	310,248	331,501	1.643	445,412	482,170	509,737	544,657		
2016(S)	12,532	125,320	150,384	169,182	192,993	168,902	294,222	319,286	338,084	361,895	1.643	483,407	524,587	555,472	594,593	22,941	578,413
2016(B)	11,984	119,840	143,808	161,784	184,554	186,520	306,360	330,328	348,304	371,074	1.643	503,349	542,729	572,263	609,674		
2017(S)	12,289	122,890	147,468	165,902	189,251	190,161	313,051	337,629	356,063	379,412	1.644	514,593	554,995	585,296	623,677	25,199	610,495
2017 (B)	10,320	103,200	123,840	139,320	158,928	202,322	305,522	326,162	341,642	361,250	1.645	502,492	536,439	561,899	594,148		
2018(Se)	14,066	140,660	168,792	189,891	216,616	172,590	313,250	341,382	362,481	389,206	1.645	515,202	561,471	596,173	640,128	32,200	672,328
2018(Be)	15,520	155,200	186,240	209,520	239,008	185,188	340,388	371,428	394,708	424,196	1.642	559,009	609,985	648,217	696,644		

Two-Pronged basis intrinsic value excludes capitalized value for ongoing insurance underwriting profitability, $2.6 billion currenty valued at $30 billion, or $18,240 per-share

**Berkshire changed the methodology for calculating both earnings and investments per-share. See "Moving the Goalposts". Semper estimates use our traditioinal methods.

(S) is our SAI method which excludes underwriting profit and loss from earnings. We exclude cash inn MSR, Finance and Energy/Rail groups and include equities and other investments in non-insurance

(S) Our earnings exclude underwriting profit or loss. Instead we capitalize at 11.5 pretax (was 10x pretax pre 2017 TCJA tax reform) Excuded from table.

(S) As of 2015, we now include, as does Berkshrie, warrants, preferreds, equities and fixed from finance group

(S) Underwriting profit at 5% capitalized at 11.5x beginning 2018 and 10x 2017 and prior adds to IV: 2013 18.3B; '14 $20.6 B; '15 20.7B; '16 22.9B; '17 25.2B; '18(e) 33.0B ($1,804 per A share '18)

(B) is the new Berkshire methodology beginning 2015 which includes underwriting profit or loss in earnings and now includes cash from MSR, Rail and Energy, and Finance businesses

^ New 15.4 multiple in 2017 applied to earnings reflects 12.4% increase in after-tax earning power from a lower tax rate, requiring a like 12.4% increase in the multiple to pre-tax earnings

Source: Semper Augustus

We gave up on trying to compel a public airing of some changes to this method. See our *Moving the Goalposts* section in last year's appendix. This approach remains extremely useful for a back of the envelope snapshot of value. It simply takes estimates of both the value of marketable securities per share and pre-tax earnings per share of all profit produced in all areas outside of investment securities. We have the data used here in the appendix, and past letters thoroughly discuss the approach. Here, we did adjust upward the multiple we would pay for a dollar of per-share earnings earned by all non-insurance businesses from 13.5 times to 15.4 times, capturing a portion of the benefits being reaped thanks to lower tax rates, plus several additional tax related benefits. Our method differs from the one Berkshire used for many years, in both the calculation of earnings and in the estimate of investment securities (which itself changed several times – again, see last year's appendix as well as our 2016 letter – I'm trying to be good and refrain this year). We also add a capitalized value for normalized underwriting profits, where Berkshire in some years included reported underwriting results and in some years ignored them (refrain, refrain). Because we adjust the multiple we would pay for pre-tax earnings on operations to 15.4, our method is accurate. In the event the stock portfolio may be undervalued; no adjustment can be made with this approach. If you think the stocks are cheap, then adjust you must, but not with only two prongs at your disposal.

Peanuts

Who among us hasn't suffered with Charlie Brown? Determined, all he ever wanted to do was kick the football. When Lucy would tempt fate, again and again, we hoped that just once…Ugh.

Nobody likes to have the football yanked away from them. It was with dismay that we found last year's Chairman's letter devoid of some summary financials and figures that had been provided by management for years. First the dual yardsticks were snatched from the 2015 letter. The yardsticks were nice to have, though now missing are replicable, albeit with some work and understanding of what goes into each and how to use them. But the group summary data presented each year in the Chairman's letter was invaluable in certain ways. Here's Lucy pulling the ball in the 2017 annual report:

> For many years, this letter has described the activities of Berkshire's many other businesses. That discussion has become both repetitious and partially duplicative of information regularly included in the 10-K that follows the letter. Consequently, this year I will give you a simple summary of our dozens of non-insurance businesses. Additional details can be found on pages K-5 – K-22 and pages K-40 – K-50.

Before we investigate what's missing and where proper analysis in some ways has become guesswork, let's go to the tape. From the 1998 Chairman's letter:

> What needs to be reported is data - whether GAAP, non-GAAP, or extra-GAAP - that helps financially-literate readers answer three key questions: (1) Approximately how much is this company worth? (2) What is the likelihood that it can meet its future obligations? and (3) How good a job are its managers doing, given the hand they have been dealt.
>
> In most cases, answers to one or more of these questions are somewhere between difficult and impossible to glean from the minimum GAAP presentation. The business world is simply too complex for a single set of rules to effectively describe economic reality for all enterprises, particularly those operating in a wide variety of businesses, such as Berkshire.
>
> The greater the number of economically diverse business operations lumped together in conventional financial statements, the less useful those presentations are and the less able investors are to answer the three questions posed earlier. Indeed, the only reason we ever prepare consolidated figures at Berkshire is to meet outside requirements. On the other hand, Charlie and I constantly study our segment data.
>
> Now that we are required to bundle more numbers in our GAAP statements, we have decided to publish additional supplementary information that we think will help you measure both business value and managerial performance. (Berkshire's ability to discharge its obligations to creditors - the third question we listed - should be obvious, whatever statements you examine.) In these supplementary presentations, we will not necessarily follow GAAP procedures, or even corporate structure. Rather, we will attempt to lump major business activities in ways that aid analysis but do not swamp you with detail. Our goal is to give you important information in a form that we would wish to get it
> if our roles were reversed.

Then, this comment repeated year after year:

> Now, let's examine the four major sectors of Berkshire. Each has vastly different balance sheet and income characteristics from the others. Lumping them together therefore impedes analysis. So we'll present them as four separate businesses, which is how Charlie and I view them.

Modified by this in 2013:

> Now, let's examine the four major sectors of our operations. Each has vastly different balance sheet and income characteristics from the others. So we'll present them as four separate businesses, which is how Charlie and I view them (though there are important and *enduring* advantages to having them all under one roof). Our goal is to provide you with the information we would wish to have if our positions were reversed, with you being the reporting manager and we the absentee shareholders. (But don't get any ideas!)

There's plenty more, but you get the point. When you play football, everything you do is filmed. Every game certainly, but every practice, every drill, the camera rolls always. When asked, usually not in a sugar-coated delivery, "Bloomstran! What in the hell were you thinking???" You quickly learn few words

and honesty are the best policies. If I heard it once I heard it a million times, "The eye in the sky don't lie." Here, with the snatching of the supplemental data, the tape don't lie either.

Yes, the 10-K is chock-a-block full of data, much of it useful. Segment reporting persists, though as Berkshire has grown, data once granular for individual businesses gets swallowed up in a giant black hole of matter. It turns out that gads of individual subsidiaries deserve the matter of the Berkshire black hole because they are immaterial to the whole. Proud of that line…

That said, if profitability is properly measured as profit on equity capital and total capital invested, then good luck to the analyst armed only with the trusty 10-K. Certain elements of necessary data, previously provided in supplemental group presentation in the Chairman's letter are *most certainly not specifically identifiable in the annual.* Good luck allocating the equity of the whole of Berkshire to each group, particularly within the group named "Insurance and Other". The energy business and the railroad each file their own financial statements, so reporting there is terrific. Beyond those groups, however, net deferred tax liabilities are not allocated – they are instead lumped together as a standalone line item as a liability on the balance sheet below group reporting. The assets of each group are lumped together, as are the liabilities, meaning the tax liabilities separately impede defining equity at each group. If we are trying to measure return on equity, which we do (theme of the letter), you can't do it accurately at the group level now.

The additional huge problem is lumping the assets and liabilities of the insurance businesses together with the MSR group and with assets and liabilities of the holding company, the latter two being the "Other" in Insurance and Other. Turns out "Other" is not small. Forget just assigning the net tax liabilities, try figuring out how much cash is now held by the MSR's versus the holding company (insurance cash is defined separately in the footnotes). Importantly, which of these three subgroups get the lumped Goodwill, or the debt, or the receivables and payables?

I've spent more time this year trying to assign data points that I think are useful to each subgroup to come up with gearing and proper profitability measures. The 10-K gives us various margin data and helpful breakouts across segments like capital spending, interest expense, income tax expense, and goodwill. It's nice to know where the goodwill is, but how much of the $31.6 billion in other intangibles are at the MSR businesses? Assuming the holding company has none, does the insurance subgroup have any? We'd guess not but who knows? Knowing where to assign the clearly defined "other assets" and "other liabilities" categories is a fun exercise.

If we are going to rely on the 10-K and the segment data currently being presented, then more of the individual assets and liabilities need to be segregated in each group. Since the Chairman's letter contained summary balance sheet and income data items through 2016, because there were few acquisitions last year interpolating and guessing gets us in the ballpark, we think. But when Berkshire spends some of its dry powder on new wholly-owned operating businesses, good luck determining how profitable the groups are on equity capital. Either separate insurance, MSR and the holding company as stand-alone, or provide more data in the segment reporting in the 10-K. Do other companies with subsidiaries make it easy or even possible to calculate return on invested capital anywhere but at the top level? No, but we don't even think most managements understand the importance of the measure. Everybody talks about EBITDA margins at their subs and measures success that way.

Maybe, just maybe, the supplemental segment data disappeared for cause. We recreated the summary figures back to 2003 for the MSR group, when they were first presented. We dropped in calculations of profit measures for return on equity, return on tangible equity, return on net tangible equity and return on capital. Some like to mention return on tangible equity as indicative of the core profitability of a business and perhaps in ability to reinvest profit at that rate. Others, us, include goodwill and intangibles in the

assets and equity accounts when measuring profitability. We happen to think an acquired business needs to produce enough profit on the *full price paid*, not just on what the dreamy enterprise looked like before paying a control premium to get it.

Below are figures for the MSR's back to 2003, with a best effort and piecing in data for 2017 and now estimated for 2018. The figures for 2017 and 2018 are our very rough estimates and are most likely garbage.

Manufacturing, Service and Retail Group Summary Figures 2003-2018
2017-2018 Estimated (MSR*ably*)

USD in millions																
Assets	**2018E**	**2017E**	**2,016**	**2,015**	**2,014**	**2,013**	**2,012**	**2,011**	**2,010**	**2,009**	**2,008**	**2,007**	**2,006**	**2,005**	**2,004**	**2,003**
Cash and Equivalents	13,519	13,519	8,073	6,807	5,765	6,625	5,338	4,241	2,673	3,018	2,497	2,080	1,543	1,004	899	1,250
Accounts and Notes Receivable	13,197	11,756	11,183	8,886	8,264	7,749	7,382	6,584	5,396	5,066	5,047	4,488	3,793	3,287	3,074	2,796
Inventory	16,793	16,187	15,727	11,916	10,236	9,945	9,675	8,975	7,101	6,147	7,500	5,793	5,257	4,143	3,842	3,656
Other Current Assets	1,039	1,039	1,039	970	1,117	716	734	631	550	625	752	470	363	342	254	262
Total Current Assets	44,548	42,501	36,022	28,579	25,382	25,035	23,129	20,431	15,720	14,856	15,796	12,831	10,956	8,776	8,069	7,964
Goodwill and Other Intangibles	70,611	71,503	71,473	30,289	28,107	25,617	26,017	24,755	16,976	16,499	16,515	14,201	13,314	9,260	8,362	8,351
Fixed Assets	23,947	19,694	18,915	15,161	13,806	19,389	18,871	17,866	15,421	15,374	16,338	9,605	8,934	7,148	6,161	5,898
Other Assets	3,183	3,183	3,183	4,445	3,793	4,274	3,416	3,661	3,029	2,070	1,248	1,685	1,168	1,021	1,044	1,054
Total Assets	142,289	136,881	129,593	78,474	71,088	74,315	71,433	66,713	51,146	48,799	49,897	38,322	34,372	26,205	23,636	23,267
Liabilities and Equity																
Notes Payable	2,054	2,054	2,054	2,135	965	1,615	1,454	1,611	1,805	1,842	2,212	1,278	1,468	1,469	1,143	1,593
Other Current Liabilities	12,464	12,464	12,464	10,565	9,734	8,965	8,527	15,124	8,169	7,414	8,087	7,652	6,635	5,371	4,685	4,300
Total Current Liabilities	14,518	14,518	14,518	12,700	10,699	10,580	9,981	16,735	9,974	9,256	10,299	8,930	8,103	6,840	5,828	5,893
Deferred Taxes	10,100	10,100	12,044	3,649	3,801	5,184	4,907	4,661	3,001	2,834	2,786	828	540	338	248	105
Term Debt and Other Liabilities	10,943	10,943	10,943	4,767	4,269	4,405	5,826	6,214	6,621	6,240	6,033	3,079	3,014	2,188	1,965	1,890
Total Liabilities	35,561	35,561	37,505	21,116	18,769	20,169	20,714	27,610	19,596	18,330	19,118	12,837	11,657	9,366	8,041	7,888
Non-controlling Interests	579	579	579	521	492	456	2,062	2,410	0	0	0	0	0	0	0	0
Berkshire Equity	106,149	100,741	91,509	56,837	51,827	53,690	48,657	36,693	31,550	30,469	30,779	25,485	22,715	16,839	15,595	15,379
Income Statement																
Revenues	131,000	126,533	120,059	107,825	97,689	95,291	83,255	72,406	66,610	61,665	66,099	59,100	52,660	46,896	44,142	32,106
Operating Expenses*	120,335	117,026	111,383	100,607	90,788	88,414	76,978	67,239	62,225	59,509	61,937	55,026	49,002	44,190	41,604	29,885
Net Interest Expense	265	264	214	103	109	135	146	130	111	98	139	127	132	83	57	64
Pre-tax Income	10,500	9,243	8,462	7,115	6,792	6,742	6,131	5,037	4,274	2,058	4,023	3,947	3,526	2,623	2,481	2,157
Income Taxes	2,540	3,035	2,831	2,432	2,324	2,512	2,432	1,998	1,812	945	1,740	1,594	1,395	977	941	813
Net Income	7,960	6,208	5,631	4,683	4,468	4,230	3,699	3,039	2,462	1,113	2,283	2,353	2,131	1,646	1,540	1,344
Profit Margin	6.1%	4.9%	4.7%	4.3%	4.6%	4.4%	4.4%	4.2%	3.7%	1.8%	3.5%	4.0%	4.0%	3.5%	3.5%	4.2%
Return on Equity	**7.5%**	**6.2%**	**6.2%**	**8.2%**	**8.6%**	**7.9%**	**7.6%**	**8.3%**	**7.8%**	**3.7%**	**7.4%**	**9.2%**	**9.4%**	**9.8%**	**9.9%**	**8.7%**
Return on Tangible Equity	22.4%	21.2%	28.1%	17.6%	18.8%	15.1%	16.3%	25.5%	16.9%	8.0%	16.0%	20.9%	22.7%	21.7%	21.3%	19.1%
Return on Capital	7.9%	6.6%	6.2%	8.7%	9.1%	8.5%	7.8%	8.2%	7.2%	3.6%	7.1%	9.4%	9.4%	9.6%	9.6%	8.8%
Return on Net Tangible Equity	22.7%	21.6%	22.6%	17.6%	19.3%	15.4%	15.0%	19.6%	12.1%	5.8%	11.4%	17.4%	17.3%	16.1%	16.3%	14.5%

*Including depreciation of 605 in 2003

Source: Semper Augustus; Berkshire Hathaway

Return on equity and on capital in the MSR group registered non-recessionary lows in 2016. Returns had been above 9% prior to the financial crisis. We assess each acquisition as closely as possible, and have watched returns generally decline across the largely unleveraged group, where returns on equity and on capital are matched. Measuring returns on incrementally committed capital and on new investment is critical with any business, particularly for one that retains all the profit. If size forces payment of a large enough control premium in acquisitions to drive returns downward, it could be a problem. For our investment thesis to work over time, we bank on the amalgamation of businesses at Berkshire to earn 10% on what we call unleveraged capital. We thus watch capital deployment closely. Only $500 million was spent on bolt-on acquisitions during the first nine months and $24.4 billion went out the door last year to purchase of common stocks. We'll see if buying large banks and airlines at what seem to be attractive

prices drives value creation. In 2016, Berkshire closed on its single largest acquisition to date. The jury is out on whether Berkshire got a deal or got dealt.

We think Berkshire paid a full price for Precision Castparts (we owned the stock and wouldn't have paid the control price). It also turns out the business may not have the moat around it that it once did. The business had grown via acquisition, and in some areas, is faced with disruptive technologies. It was telling that Precision bought a 3D printing business shortly after the sale to Berkshire. It was also interesting to have seen Berkshire write-down some inventory and "other" impairments in 2017. The history of Berkshire is mostly devoid of write-downs. The purchase price was $32 billion.

I wouldn't suggest the decline in profitability at a recent large acquisition, one that coincided with profit measured against equity at the entire MSR group registering a non-recessionary low, had any cause on removal of such useful supplemental information from the annual report. Regardless, we will do our best to assign shareholder's equity and any net leverage employed to the respective groups and segments at Berkshire. For the MSR group, a guess for the equity balance at year-end 2018 is $100 billion. Our table shows $106 billion, but only because we couldn't get everything to tie out. $6 billion here, $6 billion there, pretty soon you're talking about real money. Try as we might, without knowing more of the asset and liability values assigned to the group than we can tease out of data in the 10-K, we are only guessing.

Finally, MSR group profits in 2018 were dramatically helped by the tax code changes. The companies in this group are predominantly domestic in operations and sales. If without the benefit of lower tax rates and a handful of other benefits from 2017 TCJA, returns continue to languish at the levels seen in 2017, then our long-term expectation for return on equity across all of Berkshire needs to be weighted from our 10% base case toward our 8% worst-case projection. Are we concerned enough to think about selling any portion of our holding? No and far from it. The shares remain unbelievably cheap with far more upside potential than downside from current levels. But we watch the decision making closely. As our 40th president was famous for saying, "Trust, but verify".

If we were made responsible for reporting at Berkshire, we'd add to 2013's original and oft-repeated statement over the years. Our addition is the second paragraph:

> Now, let's examine the four major sectors of our operations. Each has vastly different balance sheet and income characteristics from the others. So we'll present them as four separate businesses, which is how Charlie and I view them (though there are important and *enduring* advantages to having them all under one roof). Our goal is to provide you with the information we would wish to have if our positions were reversed, with you being the reporting manager and we the absentee shareholders. (But don't get any ideas!)
>
> We separated "Insurance and Other" into three distinct segments – Insurance, MSR and the Holding Company. Each are assigned the relevant asset and liability figures to arrive at the equity capital and any net debt. We kept the railroad and BHE together, because each report their own set of financial statements. Finance and Financial Products remain stand-alone. For each segment, we allocate to each their respective portion of net deferred taxes. With our insurance group, in addition to reporting statutory surplus, our GAAP shareholder's equity will be provided.

A word count check will reveal our second paragraph required 87 words, the identical number found in the Berkshire original immediately above it. See how easy that can be. Simply following the prescription in the paragraph will provide the information we'd like Berkshire's management to have if our roles were reversed.

Good grief – just hold the ball…

******

SUMMARY

Try as we may, the concept of brevity remains unmastered. The letter writing process involves a year's worth of texts to self, mostly at the oddest wee hours of the morning, begins with a few thematic subjects, proceeds to an outline and then the letter. The writing is the easy part. Editing not so much. Maybe next year we'll try a shorter outline. Or sleeping pills…

Berkshire enjoyed a tremendous advance in earning power and intrinsic value, masked by the stock going nowhere during the year, by an obvious large decline in the stock portfolio, and because of financial statements that are now *thoroughly* incomprehensible to most readers. Previously they were simply incomprehensible. The business is reaping huge benefits from the 2017 tax code change. Thanks to the falling stock portfolio and to large net purchases at low multiples during the year, the portfolio shifted from overvalued to undervalued. Most subsidiaries are enjoying record profits. We find Berkshire's shares nearly as undervalued as they were at year-end 2015, when the stock had fallen 12.5% and clients were wondering if we had lost it, or if the folks in Omaha had. Our 2015 letter was an attempt to allay those concerns. Whether the letter served its purpose, or the subsequent 50% gain both in Berkshire and in our stock portfolios, we can't be sure. With Berkshire's 2.8% gain in 2018 and the 1.4% decline in our stocks, we are thrilled to be sitting here staring at substantial upside again. It's remarkable that at a time when so many assets are overvalued that we have been able to put together a portfolio of such high business quality and low price, with Berkshire as the cornerstone.

The process of writing this annual letter is cathartic, introspective and educational. It forces thought in areas that the day to day turning over of rocks and analyzing business after business doesn't allow. For example, we have always conceptually known that investor returns fall short of underling returns on equity, but quantifying the drag and digging into the reasons for it made the exercise of the letter worthwhile for us. The letter helps clarify and refine our thinking about investments.

Intelligent investing can only be done with a constant appreciation of risk and a never-ending asking of the questions "Why?" and "What can go wrong?". The theme of this year's letter was Addicted to Loans. The ballooning debt bubble is front and center today. While it's been an obvious issue for years, the rising corporate component is of particular concern. Our process shuns leverage, and certainly excessive leverage. It's not our game. Neither was investing in tech and internet names in the late 1990's, but that didn't mean we couldn't see it and take requisite measures to avoid the places that would be affected by its fallout. It's hard to know how the debt bubble will rectify itself. It could be slow or it could be quick. One thing's for sure, there won't be many places to hide. That allocation flows to places that employ maximum leverage, like private equity today, is mystifying. Allocators chase past returns, and the embedded risks in asset classes that thrive on the razors edge of bankruptcy now harvesting gargantuan flows that in no way can be put to economic good is comical, because we've seen this picture show before. It's like watching Jamie Lee Curtis and Jason in Halloween. Parts are satirically hilarious, but then everyone gets chopped up. This iteration of the picture show, which relies on increasing debt in a world already maxed out in it, poses systemic risk. It's Halloween in the capital markets.

The passive investing game is overdone. Many are taking risk with capital that isn't clear. Intelligent active investment, done properly leans heavily on judgment and provides huge relative and absolute advantages at times. Capital flowing from active and value corners into passive is breaking the price to value mechanism. That a portfolio of outstanding businesses can be bought for a song while at the same time the overleveraged and over recognized trade at insanely high prices is remarkable.

Our portfolio provides meaningful fundamental and valuation advantages. Business quality is greater today than at any time in our twenty-year history. The managers leading our portfolio holdings are just

outstanding. Capital allocation is done *very* well, top to bottom. Many are founders or have purchased large ownership positions. They think like owners because they are owners. With our stocks trading at 12.3 times normalized earnings, our 8.2% earnings yield is a full 2.3% higher than the S&P 500's, and way higher when quality of earnings (or lack thereof is considered). Using any fundamental measure our businesses are cheaper. Our businesses are net unleveraged, with a collective 12.4% return on equity *and* on invested net capital. Retained earnings are invested at terrific returns and we do our best with redeployment of dividends paid to us. Across the stock market, valuations are high and retained earnings are poorly reinvested, mostly now spent repurchasing overpriced shares. Capital destruction runs rampant.

The portfolio should generate favorable returns for many years. When overlaid with the low amounts of risk tolerated we sleep well at night, unless in letter writing mode, of course...

Being allowed to do what we do day to day is a privilege and more fun than should be allowed. The assembled team here at Semper is remarkable in their talent, drive and character. They are a joy to work with. We remain humbled by your confidence and are singularly focused on our responsibilities as stewards of your capital. Thanks to all of you for making the last twenty years so enjoyable. It seems like only yesterday that we planted our flag. Here's to the next twenty.

As always, we appreciate your willingness to tolerate our thoughts in this annual letter. We welcome your comments and feedback.

The letter opened with a Will Rogers quote. Let's wrap this record breaker with another…

Never miss a good chance to shut up.

Christopher P. Bloomstran, CFA

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Appendix A

Key Business Segment Information – Berkshire Hathaway 2018 Expected

Berkshire Hathaway Energy (90.2% owned)	
Revenues	$21.0 B
EBIT	$5.1 B
Pre-tax Income	$3.3 B
Net Income (GAAP, net of non-controlled interest)*	$3.3 B (2.6B@21% tax)
Net Income (adjusted for cash taxes)	$3.8 B
Reported Tax Rate (derived MD&A-not cash adjusted)	-10.0%
Cash Tax Rate (deferred taxes exceed reported tax)	negative%
Goodwill (from BHE 10-Q and K's)	$9.7 B
Deferred Tax Liability	$8.9B
Depreciation and Amortization	$2.8B
Capital Expenditures (Mgt. Estimate)	$6.3B
Equity (estimated)	$30.0 B
Debt	$39.3B
Cash	$1.4B
Interest	$1.8B
After-Tax Interest	$1.4B
ROE GAAP w/ 35% DTL (includes $9.7 billion goodwill)	11.0%
ROE (adjusted for cash taxes)	12.7%
ROC Net of Cash	7.8%
Estimated Value	**$50-57 B**
Implied P/E	15
* ROE will Decline to 10-11% as tax change evolves	

HoldCo	
KHC 26.7% (BS cost $17.4 B; Economic cost $9.8 B)	$14.015
Equity Securities	$5.100
Cash and Equiv	$23.600
Fixed Income Securities	$0.214
Notes Payable (BS - HoldCo y/e = balance to MSR	$18.767
Deferred Tax Liability Unassigned to Groups	$3.294
Equity Method Earnings KHZ (increase cost basis)	$1.172
Dividends KHZ (reduce cost basis of investment)	$0.814
Dividends of equities	$0.000
Interest Income	$0.833
Retained E of 5.1B rr, energy and fnce equities	$0.270
Optionality of holdco cash (32 B offsets insurance cash)	$1.180
Interest Expense (not allocated to subs)	-$1.600
Net Investment Income Pre-Tax	$0.683
Net Investment Income After-Tax	$0.737
Normalizing Net Pension Expense for GAAP Adjustment	-$0.465
Estimated Value (Investments - HoldCo Debt)	**21.6 B**

Source: Semper Augustus

BNSF	
Revenues	$24.0 B
EBIT	$7.9 B
Pre-tax Income	$6.9 B
Net Income (norm tax rate now 24%)	$5.2 B
Net Income (cash tax adjusted)	$6.1B
Goodwill (BNSF SEC and STB filings)	$14.9 B
Equity (estimated from STB and GAAP filings)	$43.0 B
Debt	$23.2B
Cash	$2.3B
Interest	$1.00
After-Tax Interest	$0.76B
Deferred Tax Liability	$13.9B
Equities as an Investment	$1.6 B
Depreciation and Amortization	$2.3B
Capital Expenditures	$3.0B
ROE GAAP Net Income	12.1%
ROE Adjusted for Cash Taxes	14.2%
ROC Net of Cash	10.7%
Estimated Value	**$95-105 B**
Implied P/E (on net adjusted for cash taxes)	16
* Cash tax rate est at 11% for 2018 and will rise over time as 100% expensing phases	
** Cash tax benefit declines over time; less immediate benefit - accelerated depreciatioin was already used for taxes	

Source: Semper Augustus

MSR Businesses	
Revenues	$131 B
Pre-tax Income	$10.4 B
Net Income at 23% assumed tax rate	$8.0 B
Profit margin	6.1%
Goodwill and Intangibles	$71.5 B
Equity	$100 B
DTL (Unallocated from assignment to Fnce)	$10.1B
Depreciation of Tangible Assets	$2.1 B
Capital Expenditures	$2.8 B
Total Debt (assume BS - HC y/e debt)	$5.5 B
Cash (from reported y/e 2017)	$13.5 B
Interest	$0.265 B
After-Tax Interest	$0.2 B
ROE	7.6%
ROTE (excluding goodwill & other intangibles)	23.9%
ROC Net of Cash	8.1% (7.6% if c>d to HoldCo)
Estimated Value	**$140-150 B**
Implied P/E	18

Finance and Financial Products	
Equity (From BS - No DTL Assigned)	$23.9B
EBT	$2.1B
EBT w/ $400M derivative amort	$2.5 B
Net Income at 25% tax rate	$1.9 B
Goodwill	$1.6B
Equities	$4.0 B
Deferred Tax Liability (from stocks)	$0.7B
Depreciation and Amortization	$0.7B
Capital Expenditures	$1B
Debt	$10.8B
Cash	$3.9B
Interest	$0.30
After-Tax Interest	$0.25B
ROE With Derivative Amortization	8.0% **
ROC Net of Cash	7.1%
Estimated Value	**$30-33 B**
Implied P/E	16
** Assume group has $1 B in net DTL assigned by SAI for $3.8 B stocks in group	

Source: Semper Augustus

Insurance Operations		**Insurance Investments (December 31, 2018 estimated)**	
Premiums Earned ($41,41,46 B "14-'16) 62B '17 incl 10.2 AIG	$56 B *	Equity Securities (ex KHZ) (120.4 B 2016, 164 '17)	$163.1 B
Statutory Surplus (Equity) 129 B '14, 124 B '15, 136 B '16	$170 B	Fixed Income Securities. (23.4 B 2016)	$18.1 B
Book Value GAAP at December 31, 2017	$179 B	Pfds, Warrants (14.3 B '16; 3.3 B RBI 9% pfd call 12/17)	$0 B
		Investment in Kraft Heinz	At HoldCo
Float (84 Billion 2014, 88 B 2015, 91 B 2016, 114.5 B 2017)	$120 B	Cash (62.8 '16, 73.3 '17)	$59.3 B
Losses Paid (2014 22.7 B; 2015 24.5 B, 2016 27 B, 30 B 2017)	$32 B	**Total Investment Assets (205.8 '16 ex KHZ, 261.7 '**	**$240.5 B**
Normalized Underwriting Margin: 5% Pre-tax	$2.8 B		
Normalized Underwriting Net Profit	$2.2 B	Investment Income and Earnings (to reconcile)	
Capitalized Value from Underwriting ***	$33 B	Dividends (annualized at 12/31 estimated)	$3.7 B (2.17% div yield)
		Retained Earnings of Common Stocks	$9.8 B (5.8% REY)
DTL (Unassigned on group BS, DTL $22.2B 9/30 incl. non-ins)	$15.4 B	Total Earnings of Common Stocks	$13.5 B (12.4 p/e;8.0% EY)
Insurance Estimated Value		Interest and Divs on Preferreds - gone	$0
Total Investment Assets	**241**	Interest on Fixed Income and Cash	$1.9 B
Equity securities Valuation Premium/Discount	**+ $34 B**		
Capitalized Value from Underwriting	**$33 B**	Total Pre-Tax Earnings of Investments	$14.7 B
Estimated Value	**$318 B**	Optionality of Cash > One-Year Losses Paid #	$1.4 B
		Pre-tax Earnings with Optionality of Surplus Cash **	$16.1 B
ROE (Investment net income + net underwriting/BV	9.9%	Paid and Hypothetical Taxes	$1.101 B
		Investment Net Income	$15.0 B

Investment Assets + Premium $263 B = 15.8 x Pre-tax earnings w/optionality

* Included $10.2B AIG Retroactive Premium in 2017

*** Same 15x after-tax underwrinting profit

DTL includes $400m for unrealized gains on 5.1 B non-insurance stocks

* Kraft Heinz will be accounted for under the equity method and will not be held as an insurance company asset; preferred called in 2016

** Divs tax old 14% (now 8.4%; ret earnings presumed nearly permanent taxed at 3%;

Source: Semper Augustus

Appendix B – Capital Expenditures and Depreciation; Deferred Tax Liabilities

CAPITAL EXPENDITURES AND DEPRECIATION; DEFERRED TAX LIABILITIES

(Dollars in millions)

Berkshire Total (All Operating Businesses)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 (E)	Total
Capital Expenditures	1,278	2,195	4,571	5,373	6,138	4,937	5,980	8,191	9,775	11,087	15,185	16,082	12,954	11,708	10,040	125,494
Depreciation	941	982	2,066	2,407	2,810	3,127	4,279	4,683	5,146	5,418	6,215	6,673	7,411	7,719	7,169	67,046
Difference	337	1,213	2,505	2,966	3,328	1,810	1,701	3,508	4,629	5,669	8,970	9,409	5,543	3,989	2,871	58,448

BHE

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018(e)	Total
Capital Expenditures			2,423	3,513	3,936	3,413	2,593	2,684	3,380	4,307	6,555	5,876	5,090	4,571	6,300	54,641
Depreciation			949	1,157	1,128	1,246	1,262	1,333	1,440	1,577	2,177	2,451	2,560	2,548	2,800	22,628
Difference	-	-	1,474	2,356	2,808	2,167	1,331	1,351	1,940	2,730	4,378	3,425	2,530	2,023	3,500	32,013

BNSF

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018(e)	Total
Capital Expenditures							1,829	3,325	3,548	3,918	5,243	5,651	3,819	3,256	3,000	33,589
Depreciation							1,221	1,480	1,573	1,655	1,804	1,932	2,079	2,304	2,300	16,348
Difference	-	-	-	-	-	-	608	1,845	1,975	2,263	3,439	3,719	1,740	952	700	17,241

BHE + BNSF

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018(e)	Total 26,130
Capital Expenditures			2,423	3,513	3,936	3,413	4,422	6,009	6,928	8,225	11,798	11,527	8,909	7,827	9,300	88,230
Depreciation			949	1,157	1,128	1,246	2,483	2,813	3,013	3,232	3,981	4,383	4,639	4,852	5,100	38,976
Difference	-	-	1,474	2,356	2,808	2,167	1,939	3,196	3,915	4,993	7,817	7,144	4,270	2,975	4,200	49,254

DEFERRED TAX LIABILITIES *

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 **	2018
Investments	11,020	11,882	14,520	13,501	4,805	11,880	13,376	11,404	16,075	25,660	26,633	36,770	27,669	24,251	
Def Ch Reinsurance Assumed	955	828	687	1,395	1,373	1,385	1,334	1,449	1,392	1,526	2,721	2,798	2,876	3,226	
PP&E	1,201	1,202	4,775	4,890	7,004	8,135	24,746	28,414	29,715	32,409	34,618	36,770	39,345	26,671	
Goodwill and Intang												2,770	11,344	7,204	
Other	1,174	1,165	2,591	2,743	4,024	4,236	5,108	6,378	6,485	6,278	6,396	4,555	5,550	3,216	
Total	14,350	15,077	22,573	22,529	17,206	25,636	44,564	47,645	53,667	65,873	70,368	83,663	86,784	64,568	Annual update

* Only deferred tax liabilities. Deferred tax assets not presented ($10.327 billion at year-end 2016; $8,386 at y/e 2017)

** Revalued downward for the new federal maximum tax rate by $28,200 to reflect 21% Federal tax rate vs. 35% under the TCJA

Source: Semper Augustus

Appendix C – Cash and GAAP Tax Reconciliation

CASH TAXES AND GAAP TAXES

	Cumulative	2018 (9 mos)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Earnings Before Tax	297,765	23,147	23,838	33,667	34,946	28,105	28,796	22,236	15,314	19,051	11,552	7,574	20,161	16,778	12,791	10,936	12,020
GAAP Taxes **	89,590	4,440	6,685	9,240	10,532	7,935	8,951	6,924	4,568	5,607	3,538	1,978	6,594	5,505	4,159	3,569	3,805
Net Income *	208,175	18,707	17,153	24,427	24,412	20,170	19,845	15,312	10,746	13,494	8,441	4,994	13,213	11,015	8,528	7,308	8,151
Tax Rate	30.1%	19.2%	28.0%	27.4%	30.1%	28.2%	31.1%	31.1%	29.8%	29.4%	30.6%	26.1%	32.7%	32.8%	32.5%	32.6%	31.7%
Current Taxes	60,353	3,944	3,299	6,565	5,426	3,302	5,168	4,711	2,897	3,668	1,619	3,811	5,708	5,030	2,057	3,746	3,346
Deferred Taxes	29,237	496	3,386	2,675	5,106	4,633	3,783	2,213	1,671	1,939	1,919 -	1,833	886	475	2,102 -	177	459
Total Tax	89,590	4,440	6,685	9,240	10,532	7,935	8,951	6,924	4,568	5,607	3,538	1,978	6,594	5,505	4,159	3,569	3,805
Current as Percent of Total Tax	67.4%	88.8%	49.3%	71.0%	51.5%	41.6%	57.7%	68.0%	63.4%	65.4%	45.8%	192.7%	86.6%	91.4%	49.5%	105.0%	87.9%
Deferred as Percent of Total Tax	32.6%	11.2%	50.7%	29.0%	48.5%	58.4%	42.3%	32.0%	36.6%	34.6%	54.2%	-92.7%	13.4%	8.6%	50.5%	-5.0%	12.1%
Current Tax Rate	20.3%	17.0%	13.8%	19.5%	15.5%	11.7%	17.9%	21.2%	18.9%	19.3%	14.0%	50.3%	28.3%	30.0%	16.1%	34.3%	27.8%
Deferred Tax Rate	9.8%	2.1%	14.2%	7.9%	14.6%	16.5%	13.1%	10.0%	10.9%	10.2%	16.6%	-24.2%	4.4%	2.8%	16.4%	-1.6%	3.8%
Total Tax Rate	30.1%	19.2%	28.0%	27.4%	30.1%	28.2%	31.1%	31.1%	29.8%	29.4%	30.6%	26.1%	32.7%	32.8%	32.5%	32.6%	31.7%

* Before earnings attributable to noncontrolling interests

** GAAP Taxes for 2017 exclude one-time nontaxable gain of $28,200 for TCJA; Offset is deferred taxes as reported were (24,814) adjusted to $3,386; the $24,814 is a reduction of net DTL's

Source: Semper Augustus

Appendix D – Amended Table of Index Returns 2017

CORRECTED

2017 Index Returns Distributed by Largest Members and Quintiles

	Index Total Return	Largest 5	Largest 10	Largest 25	Largest Quintile	2nd Quintile	Middle Quintile	4th Quintile	Smallest Quintile
MSCI Emerging Market	37.3	68.4	62.1	56.9	40.7	34.7	32.8	29.0	28.9
Russell 1000 Growth	30.2	45.2	41.1	35.3	30.7	17.0	26.1	20.2	19.3
MSCI EAFE	25.0	21.9	19.1	19.9	20.9	24.5	21.0	21.1	22.1
MSCI ACWI	24.0	32.2	25.7	24.0	25.0	23.1	25.1	25.7	27.5
Russell 2000 Growth	22.2	8.8	9.8	9.5	18.0	19.8	17.2	19.0	5.4
S&P 500	21.8	31.8	28.4	23.3	22.3	22.6	21.0	14.8	16.5
Russell 1000	21.7	31.9	24.1	22.9	22.3	20.0	20.1	15.9	14.6
Russell Midcap	18.5	14.9	16.4	15.0	16.9	18.0	19.3	15.4	14.6
Russell 2000	14.7	-3.6	1.9	9.2	12.1	14.0	13.7	14.7	13.8
Russell 1000 Value	13.7	12.5	9.5	12.3	13.8	15.9	10.9	10.6	12.5
Russell 2000 Value	7.8	-3.7	3.7	5.2	5.7	5.9	8.7	11.3	9.3

Source: Bloomberg Raw Data; SAI Calculations; Index components derived from ETF Index Holdings; Component weights using year-end 2016 weights.

Returns for the two international indices, MSCI EM and MSCI EAFE are in US Dollars. The global index, MSCI ACWI, is just under half international, and is also in US Dollars. The dollar declined against most currencies during 2017. The returns for each index in local currency terms would have been lower by the amount of the decline in the US Dollar

SEMPER AUGUSTUS
INVESTMENTS GROUP LLC

Composite Performance

Year End	Gross of Fees	Net of Fees	Gross of Fees Equities Only*	MSCI All Country World Index	S&P 500
1999**	29.9%	29.5%	29.1%	27.5%	19.9%
2000	26.8%	26.4%	30.7%	-14.0%	-9.1%
2001	20.8%	20.1%	23.1%	-15.9%	-11.9%
2002	-15.5%	-16.0%	-22.0%	-19.0%	-22.1%
2003	21.8%	20.7%	38.2%	34.6%	28.7%
2004	9.2%	8.2%	16.3%	15.8%	10.9%
2005	6.2%	5.6%	7.4%	11.4%	4.9%
2006	14.2%	13.4%	18.4%	21.5%	15.8%
2007	3.8%	3.1%	3.1%	12.2%	5.5%
2008	-20.3%	-21.3%	-21.6%	-41.9%	-37.0%
2009	22.0%	21.0%	27.9%	35.4%	26.5%
2010	12.8%	11.8%	14.4%	13.2%	15.1%
2011	6.9%	6.2%	7.1%	-6.9%	2.1%
2012	6.5%	5.7%	6.8%	16.8%	16.0%
2013	15.5%	14.7%	17.3%	23.4%	32.4%
2014	4.6%	3.9%	5.2%	4.7%	13.7%
2015	-8.7%	-9.3%	-10.3%	-1.8%	1.4%
2016	22.1%	21.3%	27.7%	8.5%	12.0%
2017	13.5%	12.7%	18.0%	24.6%	21.8%
2018	-1.3%	-2.0%	-1.4%	-8.9%	-4.4%
	Gross of Fees	**Net of Fees**	**Gross of Fees Equities Only***	**MSCI All Country World Index**	**S&P 500**
Cumulative Since Inception*	430.0%	359.8%	637.8%	168.0%	195.7%
Annualized Since Inception*	8.8%	8.0%	10.6%	5.1%	5.6%

* This is supplemental information

** Inception Date February 28th, 1999

Firm Overview:

Semper Augustus Investments Group, LLC claims compliance with the Global Investment Performance Standards (GIPS®). For the purpose of complying with GIPS, SAI defines itself as Semper Augustus Investments Group, LLC, an independently registered investment adviser. For purposes of determining firm assets under management, SAI includes all discretionary and non-discretionary assets as well as all fee paying and non-fee paying.

Composite Description:

The Semper Augustus Fundamental Intrinsic Value Equity consists of portfolios managed for Semper Augustus' clients according to the firm's published investment philosophy. Semper Augustus employs a fundamental value investment strategy, identifying companies earning free cash returns in excess of a realistic estimate of the firm's cost of capital. Our firm defines risk as a permanent loss of capital, not as volatility around some mean. Portfolios have generally contained fewer than 30 holdings and are often concentrated in a small handful of businesses with high business quality and share prices at a significant discount to conservative appraisals of intrinsic business value. These dual margins of safety are crucial to the investment process, and lend themselves to generally long holding periods and low portfolio turnover. During periods of high volatility, turnover can be opportunistically higher. Investments are made across all market capitalizations, in both domestic and globally headquartered businesses. Our firm makes international investments in businesses domiciled in industrialized countries where the rule of law is strong and accounting standards are high. We are benchmark agnostic. Industry weightings are not a consideration. The composite includes the income and performance derived from various option-writing strategies in some client accounts. Allocations to cash are a byproduct of the investment process and not a permanent allocation. To be included in the composite, accounts must meet certain thresholds of equity securities purchased by SAI. This method generally excludes accounts that are managed as "balanced" accounts and client accounts that have not met the required threshold for inclusion. Cash and equivalents have been significant holdings at times.

Index Return Information:

The MSCI ACWI returns are gross of any fees required to replicate the index and are also pre-tax. The index is theoretically passive (unmanaged) but in reality, replication requires trading costs and some management fees. Fundamental Intrinsic Value Equity may differ materially from the index as the Fundamental Intrinsic Value Equity owns concentrated positions and the MSCI ACWI has a bias towards large cap stocks. Fundamental Intrinsic Value Equity has included varying investments in small, mid and large cap stocks in addition to investments in cash and short-duration fixed income securities. The MSCI ACWI is broadly used as an investment benchmark. The MSCI ACWI index is the benchmark for Fundamental Intrinsic Value Equity.

The S&P 500 returns are gross of any fees required to replicate the index and are also pre-tax. The index is theoretically passive (unmanaged) but in reality, replication requires trading costs and some management fees. The Fundamental Intrinsic Value Equity may differ materially from the index as the Fundamental Intrinsic Value Equity owns concentrated positions and the S&P 500 has a bias towards large cap stocks and holds only U.S. domiciled companies. Fundamental Intrinsic Value Equity has included varying investments in small, mid and large cap stocks, both foreign and domestic, in addition to investments in cash and fixed income securities. The S&P 500 is broadly used as an investment benchmark and is presented in this document to provide a clear measure of how the strategy did against the general stock market.

Composite Return Details:

Supervised assets are defined as assets acquired by SAI in client accounts based on the discretion granted in client agreements. This process involves the establishment of a model security and the dates whereby the security is held. For securities received into an account prior to or after the model period; directed purchases by a client; or corporate actions arising from non-model securities; these securities have been excluded from the supervised assets. SAI must have initiated the trade or the security was a model security when transferred into an account for its performance to be included in the Composite. Returns are presented both gross of management fee and net of management fees and performance fees and include the reinvestment of all income. The Composite was created on March 1, 2018. The U.S. Dollar is the currency used to express performance. Returns are presented net of all commissions and any margin interest expense incurred in the management of portfolio accounts. Actual returns will be reduced by investment advisory fees and any other expenses that may be incurred in the management of the portfolio accounts. The collection of fees produces a compounding effect on the total rate of return net of management fees.

Gross of Fees Equities Only: Represents the actual performance of all equity securities included in the composite, including reinvested dividends. It is a pure equity only return and does not have any cash equivalents or fixed income securities included. Actual returns will be reduced by investment advisory fees and other expenses that may be incurred in the management of the account. The collection of fees produces a compounding effect on the total rate of return net of management fees. As an example, the effect of investment management fees on the total value of a client's portfolio assuming (a) quarterly fee assessment, (b) $1,000,000 investment, (c) portfolio return of 8% a year, and (d) 1.00% annual investment advisory fee would be $10,416 in the first year, and cumulative effects of $59,816 over five years and $143,430 over ten years. The annual composite dispersion presented is an asset-weighted standard deviation.

Past performance is not indicative of future results.