SEMPER AUGUSTUS
INVESTMENTS GROUP LLC

PARTY LIKE IT'S NINETEEN NINETY-NINE

BAD BREADTH, INTRINSIC VALUE, AND A DEEP DIVE INTO BERKSHIRE HATHAWAY

2015 LETTER TO CLIENTS

February 1, 2016

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BAD BREADTH, INTRINSIC VALUE, AND A DEEP DIVE INTO BERKSHIRE HATHAWAY

I was dreamin' when I wrote this, forgive me if it goes astray;
But when I woke up this mornin', could've sworn it was judgment day.
The sky was all purple, there were people runnin' everywhere;
Tryin' to run from the destruction, you know I didn't even care.
Say two thousand zero zero party over, oops, out of time;
So tonight I'm gonna party like its nineteen ninety-nine - Prince

2015 went out with shades of 1999. The Federal Reserve raised interest rates, Luke Skywalker owned the box office, and a narrowing group of popular and increasingly overvalued stocks led the market to new highs, while the majority of stocks, including Berkshire Hathaway, lost altitude.

This year's letter begins with an overview of the unfolding deterioration of breadth in the stock market. It compares the current bifurcation to the period leading up to the 2000 bubble, then discusses our intrinsic value model, a tool we created in March 2000 that demonstrates the degree to which the S&P 500 is nearly as overvalued today as it was then. We ruminate about a group of four highflying tech names known fondly as the FANG's (Facebook, Amazon, Netflix and Google). We sense they will be licking major wounds going forward. Finally we examine Berkshire Hathaway, our largest holding, in detail so deep that it would put both Warren Buffett and Charlie Munger to sleep, permanently. We address last year's 12.5% decline in the stock and what it means for expected returns going forward. The report describes multiple approaches we use to value the business. It is a lengthy analysis; so long in fact, that the competition's drumming pink bunny can't keep going and going. The bottom line: Berkshire is increasingly durable and the stock is considerably undervalued. We expect to earn 8% to 12% per year depending on multiple expansion for at least the next decade and a half holding Berkshire, and the shares may earn double the return produced by the S&P 500. Berkshire is trading at 70% of intrinsic value, giving it 45% upside from today, just to get to fair value.

BREADTH LEADING UP TO THE 2000 BUBBLE PEAK, AND TODAY…

Yogi Berra's best malapropisms and expressions lacking logic included:

-The future ain't what it used to be.
-You can observe a lot just by watching.
-When you come to a fork in the road, take it.
-No one goes there nowadays, it's too crowded.
-It ain't over till it's over.
-It's like déjà vu all over again.

Each of these "Yogiisms" fits today's investment climate. The last is extremely apt here at the outset of 2016. The run-up to the bubble that burst in early 2000 involved such excesses and extremes that we really believed we'd never again see anything like it again. Well, history repeats, or at least rhymes, and in the words of Yogi, "It's like déjà vu all over again." Valuations and market behavior are frighteningly similar to what we saw in the late 1990's, even more extreme in some cases. The number of stocks moving down has exceeded those moving ahead since May. EVERY major stock market decline since 1929 was preceded by a breakdown in breadth leading up to each market peak. While we saw such divergence in late 2007 through the fall of 2008, the episode leading up to 2000's market peak is worth revisiting.

A Look Back at 1999

The stock market bubble peaked on March 10, 2000, with the NASDAQ closing at 5,048. The S&P 500 peaked two weeks later at 1,553, trading for about 40 times normalized earnings. The NASDAQ, dominated by high-flying tech and Internet shares, traded at an unbelievable 242 times earnings. We have fond memories of March 10, 2000, because from that day forward, for the first two years of the market collapse, which took the S&P down 50% and the NASDAQ by more than 80%, our stocks essentially went straight up. Under the surface, the market was breaking down long before March 10.

The late 1990's were brutal for value-oriented investors. We launched Semper Augustus in late 1998 and managed to generate decent gains on the stocks in our portfolios, keeping pace with the S&P in 1999. But we were so far behind the 84% posted by the NASDAQ that the pressure to own and chase the tech names that were making everybody else "richer" was enormous. The first 70 days of 2000 were brutal. The markets, led by the insanely overvalued tech names, marched higher on a daily basis, while nearly every stock we owned was in decline. Investors liquidated real businesses with real value for the names creating arguably the greatest bubbles in capital markets history. Janus' stock funds, all loaded with the same inflated tech names, were getting half of all of the money flowing into the entire mutual fund complex during the six months leading up to the March 10 peak. When the "markets" blew up, Janus blew up.

It took enormous effort to keep clients from chasing the tech bubble. We had cash on hand and as the stocks of real businesses got cheaper and cheaper, we put money to work at increasingly favorable prices. Several of our buys from that period we still own today. But it took every bit of energy we had to keep our clients on board and confident in the quality of businesses we were buying and in our favorable expectations, regardless of what the S&P or the NASDAQ did.

We penned a client letter in July 1999 titled, *Large Cap Stocks Still Overvalued; Some Bargains in Small-Caps and Mid-Caps.* The letter discussed a breakdown in breadth, the bifurcation in the market as a small handful of names drove the markets higher while the average stock lagged behind, many declining in price.

The blue chips, the GE's, Coca-Cola's, Wal-Mart's and Exxon's - the "new nifty fifty," peaked at over 40 times earnings during 1998. Tech heavy indices continued to defy logic, narrowing through the remainder of 1999 and into early 2000. Tech, media and Internet stocks led the way toward the end of the advance. Everything unrelated to tech or telecom was in decline while tech sprinted ahead.

Our stocks managed to keep pace with the S&P 500's 21% gain during 1999, but the NASDAQ was up an incredible 84%. We had lots of cash on hand, which muted our portfolio gains even more. As breadth

deteriorated, we were able to put money to work. Toward the end of the bubble, in early March of 2000, nearly everything we owned fell. On the morning of March 10, the day of the peak, I was sitting at my desk literally shaking as Microsoft, Sun Microsystems, Lucent, Cisco and Pets.com screamed upward as our portfolio names bled red. To maintain sanity I wrote a piece for Alan Abelson at Barron's which pointed out the market cap of the NASDAQ was set to pass that of the NYSE, yet the businesses on the NASDAQ generated less than 10% of the profits of those on the big board. The P/E ratio of the NASDAQ was 242 while that of the S&P was over 40. We had a portfolio trading for less than 15 times earnings, and it was falling fast on that day.

Then, it ended. Everything changed. The NASDAQ went red; my screen went green. We went on to post positive gains during the bear market that ensued, which took the S&P down by 50% and the NASDAQ by 80%. Late in the 2000-2002 rout, the Federal Reserve intervened, talking about "helicopter drops" of money and lowering Fed Funds to 3%. This sounds absurdly high by today's standards. Thanks, Ben. Short-term rates stayed at 3% for several years until the real estate bubble fully developed and the S&P, at least, by 2007 had recovered all of its losses. Then, in 2007, a breakdown in breadth began again, setting the stage for the 2008-2009 crisis. The movie began anew…

Fast Forward to 2015

We could well have written our July 1999 letter today. Star Wars is back, dominating the box office, and the Federal Reserve just raised interest rates by ¼ percent. As it was then, stock gains in 2015 were uneven with much of the market in decline, a decline in breadth that began in May 2015. The average S&P 500 stock was down almost 4% last year, but the median stock finished 2015 down more than 22%. Half of the stocks in the S&P 500 finished 2015 down more than 20% from their 52-week highs. The Russell 2000 was off 5%, the Value Line Geometric was down 11% and the Dow Transports shed almost 18%. Uglier still, more than 70% of Russell 2000 and 68% of NASDAQ stocks finished the year more than 20% below their yearly highs.

Profit margins, which peaked at an all-time record in the third quarter of 2014 at 10.1% (8.7% estimated for the fourth quarter 2015) for the companies making up the S&P 500, weren't evenly distributed. As an extreme example, Apple contributed 22% of overall S&P 500's margin expansion since 2009.

Financial academics define risk as volatility. That may be fine for theory, but for those of us who live in the real world, we define risk as a permanent loss of capital. The likelihood of risk using our definition is always highest at the point where the general perception of risk is lowest. The years 1929, 1937, 1966, 1972, 2000 and 2007 all marked moments when the perception of risk troughed, and the stock market peaked. The ensuing bear markets saw stock indices plummet anywhere from 50% to 89%. As markets plunge, the perception of risk rises, with fear peaking as markets hit lows in 1932, 1942, 1970, 1974, 1982, 2002 and 2009. Fear, and the perception of risk, peak at a market low, not at market highs. Only after suffering devastating losses do people believe stocks are "risky". The reality is: we think 2015 will be added to the list above. But, which list?

The stock market is expensive. We said that last year, and the year before that and the year before that. Just because the stock market is expensive doesn't mean prices can't go up. Markets peak, however, following a period of time where the breadth of the market erodes, that is, where more stocks are declining than advancing. Yet, a narrowing group of popular leading stocks continues to make new highs. Breadth was positive and virtually straight up from the 2009 market low through May 2015.

These "bad breadth" episodes preceded *every single market peak listed above*. They also have lasted for anywhere from several months to two years. The three most extreme cases of divergence occurred in the years leading up to the 1929, 1972 and 2000 tops. For the holder of broadly diversified funds and indices, the deterioration in breadth is sending a warning shot over the bow. Coupled with extremely expensive valuations, risk is high.

INTRINSIC VALUE IN 2000 AND 2016

By the end of March 2000, despite a massive reversal that began on the 10th of that month, we still had no objective evidence that the bubble had popped. We needed a tool to help clients understand that we owned a portfolio of undervalued quality businesses. We also wanted to demonstrate how overvalued the market was. Thus, we developed our intrinsic value report (March 31, 2000) and have regularly updated since then. The report highlights each holding, what we paid for it, its current price, and how we valued its intrinsic worth.

The report contains our estimate of normalized earnings, and the P/E, earnings yield and dividend yield for each holding and for the portfolio as a whole. The earnings yield is essentially our base-case expectation for prospective annual returns over a long period of time. Each yardstick is measured on cost basis, current market value and on intrinsic value.

On top of expecting to reap the earnings yield, we further expect to earn any accretion of a discount to fair value that exists over some period of time (the market is very efficient over the very long haul). As stocks move up to fair value and are sold, we expect to earn an additional premium to the extent we are able to find additional undervalued businesses and repeat the process. Of course, you have to subtract for those mistakes we will invariably make, where any combination of lower business quality than envisioned, or developing poor economics, or simply erring on our appraisal of value or of lower actual growth than expected unfolds.

Our expectation of prospective returns is:

	Earnings yield %
+	Accretion of discount to intrinsic value %
+	Repeatability of process %
(-)	Mistakes regarding estimates of future profitability %
=	Expected annual return %

Per the first March 2000 report, we owned a portfolio of stocks trading at 15.7 times normalized earnings, which gave us an earnings yield of 6.4%. Next, our holdings were trading at 83 cents on the dollar of fair value, which mathematically implied we should earn about 20% over some period of time as the valuation gap closed. An immediate closing would be big but the gap seems to take on average about five years to close. At ten years the accretion would yield us a little less than an additional 2% annually, on top of our 6.4% earnings yield. Further add a little premium for repeatability, subtract a little for mistakes, and we thus expected to earn about 8.5% to 9.5% per year over a long number of years, beginning at March 31, 2000. How accurate was the report? Our stocks indeed produced our expected return over more than 15 years, which lends integrity to the report, its assumptions and expectations.

So what did the intrinsic value report say about expectations for the market? On March 31, 2000, the S&P closed at 1499. Our estimation of intrinsic value was 590. We calculated $37.05 in normalized earnings, scrubbed for accounting aggressiveness, where trailing operating earnings were $48.26. Trailing reported dividends of $16.79 equated to a scant 1.1% dividend yield, a fraction of the return produced historically by dividends over the years. In fact, that was the lowest dividend yield on record. Using our normalized earnings number, the index thus was trading at a nosebleed 40.4 times earnings, which equated to a puny 2.5% earnings yield. Even using trailing operating earnings without our accounting adjustments the P/E was 31, giving the market an earnings yield of only 3.2%.

Our adjusted 2.5% earnings yield was thus the base-case expectation for annual market gains for a long period of time. Know that the investment world expected far, far more. Stocks produced a total return of

more than 17% per year since the bear market low of 1982, when P/E's were in single digits (7 times) and profit margins were extremely depressed (3% after-tax). Virtually nobody in the year 2000, save the small universe of investors grounded in price, believed stocks would only produce returns in the low single digits, or even losses, for far more than the next decade.

Our appraisal of fair value for the S&P 500 at March 31, 2000 assigned a 15.9 multiple to our normalized $37.05 in earnings, suggesting fair value at 590, demanding a not small 61% decline from 1499, or, as mentioned, requiring a whole bunch of years for underlying fair value to catch up with the inflated price.

We all know how the S&P fared subsequently. The index declined by 50% for the balance of 2000 through the low in late 2002. It then recovered by 2007, back to its former 2000 high, ballooned upward alongside the housing market with the Federal Reserve's hot air. By late 2007, valuations were again very high, though not quite fundamentally as extreme as in 2000 (same index price but with 40% growth in GDP). The market then rolled over again during the "Great Recession", seeing almost 70% of its price shaved away, bottoming at the demonic 666 level in early 2009. Enter Sandman; rather exit Greenspan and Enter Bernanke. With helicopter drops of monetary intervention, rounds of QE's accompanied by matching monetary policy abroad, we saw the S&P blow through its former highs in 2013 and touch 2134 this past April.

Putting it all together, the S&P produced a total return of only 4.0% per year from March 31, 2000 through the end of 2015, barely more than our normalized 2.5% earnings yield. The market spent much of that time underwater. Only with a push from central banking's quantitative easing did the market eclipse its 2000 and 2007 highs. Even with an ephemeral annual gain of only 4.0% per year, the market remains far from cheap. In fact, we still peg fair value below the 2000 and 2007 highs. The bear market that began more than 16 years ago has more work to do.

Using our intrinsic value report today, the index closed out 2015 at 2044. Trailing operating GAAP earnings (excluding write-offs and write-downs) will likely come in around $103 – down $10 or almost 10% year over year. Using this number, the market ended 2015 at 20 times earnings, which gives you an earnings yield of 5%. Not bad in a world of low interest rates. But we didn't use GAAP earnings in 2000 and we don't today.

The quality of earnings is again incredibly poor today. We normalize free cash profits at $70 for the S&P, 85% higher than our calculation in 2000. Nominal GDP grew by about 80% in 16 years. In addition to a poor quality of earnings, we also allow for some profit margin contraction over time from levels we think are too high. If our normalized number is more free cash correct, then the market is really trading for 29.2 times (2044/70), which equates to an earnings yield of 3.4%. That gets our long-range expectations for the market down to about what its done for the past 16 years.

A reasonable long-term multiple on profits is 15 times (6.7% earnings yield). Even if you don't use our more conservative adjusted number, using GAAP earnings of $103, fair value for the index would be 1545, demanding a nearly 24% drop to fair value, or, as before, simply not making money for a whole bunch of years until fair value catches price.

Incidentally, an index price of 1545 gets you precisely back to the 2000 and 2007 highs. Using our more conservative $70 in normalized free cash earnings, fair value drops all the way to 1050, nearly half of today's 2044 level.

The market forecast using our intrinsic value methodology is thus ugly. It's not quite as grim as 2000 but still pretty bad. So how do we size up against the market now?

From our current intrinsic value report, our prospective advantage versus the index is nearly as great as it was in March 2000. Our stocks are trading for 12.1 times our calculation of normalized earnings, which gives us an earnings yield of 8.2%. Compared to the S&P 500's GAAP earnings yield of 5.1%, or our more

conservatively estimated 3.4%, our annual advantage is between 3.1% and 4.8%. We believe we have a *huge* long-term prospective advantage versus the market. Our report in March 2000 suggested that then, and it suggests it today. The report now has nearly 16 years of history behind it so it's not merely a hypothetical. Again, the market is pretty darn efficient over the long haul, and those that appreciate that can benefit.

Of course, our stock portfolio didn't get to 12.1 times earnings all of a sudden. Sixty percent of our long equity holdings were down last year. We owned 31 long equity positions during the year. Of those, 18 were down. Of the 13 that were up, one was sold entirely for a nice gain and would have been down had we kept it; and one was half sold and would have also been down otherwise. Our biggest position, Berkshire Hathaway, was down more than 12% last year, though it grew its profits and underlying value considerably. Our second largest holding, Exxon Mobil, was also down more than 12%, falling far less than the price of oil, but down nonetheless. Our third largest holding, Mercury General, was off almost 14% last year. The list goes on. This is most definitely the definition of declining breadth. Despite the price declines, on average our businesses grew their profits (even allowing for the notable exception of those who extract things from Mother Earth), which means the P/E multiple necessarily declined and our prospective earnings yield necessarily grew. The same thing happened in 1999 and early 2000, and also toward the end of 2007 and into 2008.

Combining asset prices in decline with underlying fundamental growth equals the expansion of value. How investors react to the unfolding of value dictates either long-term success or permanent failure. If you don't expect to need all of your money for consumption for many years, then such short-term changes in price, particularly extant correspondent changes in value, shouldn't matter. To the extent price deviates markedly from value, opportunity presents itself, whether as a buyer or as a seller. Understanding the difference between price and value is perhaps the most critical aspect of investing. Was the decline in Berkshire last year a loss? Was it giving back some of the gain from much lower cost bases? Does the decline indicate deteriorating permanent fundamentals inside the company and a reduction in long-term expected profits and gains? Is the decline in the shares really an opportunity to acquire shares, either by us or by management on our behalf at attractive prices? Does the decline increase our expected long-term return or lower it? Depending on how you answer those questions dictates long-term success or failure. It also necessarily dictates how well you sleep at night worrying about things beyond your control.

We spent the latter part of last year with our stocks in decline. It felt like late 1999 and early 2000. We watched a narrowing band of names; many of the tech variety, as well as a handful of branded consumer names, march ahead. Share prices in companies like Colgate, Clorox, Proctor & Gamble and Costco marched higher to very expensive levels, but none more so than a new era of tech favorites.

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FANG'S AND LEMMINGS

The investing world last year came to know the group of Facebook, Amazon, Netflix and Google (now Alphabet) as the FANG's. The FANG's are the Microsoft's, Cisco's, Sun Microsystem's and Lucent's of yesteryear, the narrowing band of stocks driving the averages higher late in the bull market while the masses decouple and descend. The FANG's were up on the order of 75% last year, and alone contributed roughly 4% to the return of the S&P 500; double that for the NASDAQ (no, the Naz never did pass the NYSE…). Without those four names, the S&P would have lost 3% last year instead of returning 1% with dividends.

Facebook, the "F" in FANG, has a market capitalization over $300 billion, remarkably about the same size as Berkshire. Berkshire and its $25 billion in diversified net income is the focus of most of the rest of this letter. Facebook, by contrast, trades for 83 times earnings and has annual sales, not profits, of $17.9 billion. It trades at 17 times *sales*, similar to the nosebleed prices of the Cisco's and Sun Microsystems in 2000. Amazon is much more reasonably priced at three times sales. But of course it's a retailer with tiny margins. It's trading at 545 times earnings. If it commanded the 1.9% profit margin enjoyed by Costco, Amazon would still trade for 159 times earnings. Amazon, like Facebook, also has a market cap as large as Berkshire. Stunning. Netflix is the baby of the bunch, with a market cap of only $51 billion. It has annual revenues of $6.7 billion, so trades for 7.6 times sales. Netflix earns very little profit. On a P/E basis it trades for 425 times earnings. Google, now Alphabet, actually has a great core business. We just don't like the price and some of their ancillary ventures. The company sports a market cap of $534 billion, 7.1 times revenues. Profit margins for now are very high so the business trades for a more modest 29 times earnings. We have been close to buying the stock at lower price points. We may still.

TO FANG, OR NOT TO FANG?

	Sales *	Net Profit *	Price/Sales	Price/Earnings	Market Cap #
Facebook	$17.9 B	$3.6 B	17.0x	83x	$305 B
Amazon	107	0.6	3.0	545	325
Netflix	6.7	0.12	7.6	425	51
Google/Alphabet	75	18.5	7.1	29	534
Total	$206 B	$22.9 B	5.9x	53x	$1,215 B
Berkshire Hathaway	$220 B	$25 B	1.5x	13x	$325 B

* Sales and Net Profit are 2015 Estimates
# Market Cap at December 31, 2015

The group, particularly the first three, is insanely priced. Their moonshot performance last year skewed some of the popular indices higher, masking the deterioration underway in the majority of stocks. In the table above we total revenues and net profits for the four FANG's. We contrast the group total to Berkshire, which alone is larger than the FANG's combined by sales and net profits. Berkshire is not larger than the group by market cap, however, trailing $325 billion to $1.215 trillion. Yes, trillion. Mr. Market values the FANG's nearly four times as great as Berkshire, despite having fewer sales and less net income. Of course the FANG's are growing far faster than Berkshire, so Mr. Market values them collectively at 5.9 times sales and 53 times earnings. They better grow fast or they will be defanged.

Watching this horserace will be fun. None of the FANG's pay a dividend. Neither does Berkshire. Time will determine who the better capital allocator is. Net profits for the FANG's total $22.9 billion against $25 billion for Berkshire. Every dollar of those profits will be reinvested. It would be an interesting bet if both had the same price. They don't of course. FANG's owners are laying four to one against Berkshire. It's interesting.

If we had been clever in 2000, we could have come up with the precursor acronym to the FANG's. Then, the high-fliers to own were the LEMMINGS! (Lucent, Enron, Microsoft, Micro Strategy, Intel, Nortel, GeoCities, Sun Microsystems) Each of these names either disappeared or still resides below their 2000 prices. You have to hand it to the creative types. We're envious somebody came up with FANG's. It's priceless. Rather, they're pricey.

We didn't own the FANG's last year and as such, didn't reap their 75% gain. We're ok with that. Did the underlying value of those businesses compound by the same 75% rate? We don't think so. We have never had a problem watching others get richer faster over short periods of time. For some that's hard to do. If you owned the S&P 500 last year, those four FANG's added 4% to the portion of your net worth in the S&P. Investors in the S&P 500 should know that for every $100 invested in the index, $7 are now a bet on the FANG's. Berkshire gets less than $2. Facebook alone gets more than Berkshire. Would we be better off with a company like Facebook than with Berkshire Hathaway?

To own Berkshire, or to own Facebook? That is the question. Here on February 1, Mr. Market seems undecided, even favoring Facebook by a bit. Facebook, with its $18 billion in *revenues*, commands a $330 billion market cap, now *larger* than Berkshire's. Our bet of course is on Berkshire and its $25 billion in annual *profit*. One of the key traits of successful investing is knowing what you don't know. We know, or at least we have a very grounded and educated idea of, what Berkshire will look like and how profitable it will be ten years hence. Will Facebook grow faster than Berkshire this year? Most likely so. What will it look like ten years out? We have zero idea. It could be a home run or it could be a LEMMING. One thing is certain; we couldn't be remotely confident enough of its evolution to pay 17 times sales. Facebook will have to grow its sales by 32% *per year* for its current revenues to equal its market cap. Mr. Market says Berkshire and Facebook should be interchangeable, both worth just over $300 billion. We all know Mr. Market can be a little manic.

We'll leave Facebook and the ANG's alone now and put it in the drawer with our 2000 write-up on Microsoft. That drawer contains files on those businesses where shareholders are likely to lose money for 10 or 15 years. The rest of this letter is devoted to a business we know very well. Its file comes from the drawer labeled, "Undervalued, Economically Advantaged Businesses with Fortress Franchises, Good and Durable Returns on Capital, Conservative Accounting, Honest Management, With Enough Size, Scale and Diversity to Generate Knowable and Predictable Returns for Many, Many Years". We like that drawer, though we wish it had less room…

A discussion of Berkshire follows.

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BERKSHIRE HATHAWAY IN 2016 AND BEYOND

INTRODUCTION

Investors are hard pressed to find a better, more durable, more honestly and intelligently run business than Berkshire Hathaway. Their understanding of value and value creation is not only remarkable, but also unrivaled. The business owns myriad diverse and profitable earnings streams - its capital structure a fortress. It owns an enormous portfolio of free-cash producing operating businesses that are each far better off as part of Berkshire than they would be alone. The accounting is conservative and shareholders are regarded as owners. You don't see material write-offs or spin-offs of underperforming subsidiaries. Shareholders aren't diluted by the issuance of vast sums of option and restricted shares to management or the Board. The business has a five-decade history of using its shares in acquisitions when they are dear and will repurchase them when they become cheap.

Berkshire's shares can be purchased at a very cheap 13 times normalized trailing profits today. You can hope to sell them at a higher multiple in the future. That might happen quickly, or it might not. We are more concerned with the long-term durability of the franchise. Berkshire is earning $25 billion on $255 billion of GAAP book value, which makes return on equity 10%. Our examination focuses on what kind of returns the business will earn going forward. We can see return on equity dropping to no less than 8% over many years. But at 8% to 10% you get a solidly profitable enterprise with a high degree of predictability.

Our goal is to understand the true economics of any business we own. In this letter we will walk through adjustments to reported GAAP income to arrive at a more normalized level of economic profitability. We will slice return on equity many ways. Returns are examined pre-tax, after-tax, including goodwill, excluding goodwill, adjusted for equity-like liability components, and adjusted for other balance sheet modifications. The different iterations of examining ROE are each one-off, where we isolate individual factors that impact returns. The intent is not to confuse. Ultimately we get to what the business really earns on its invested capital, and that is of paramount importance. For now at least, Berkshire retains all of its net earnings. An investor requires a confidence in assessing the prospects for capital deployment and redeployment.

Berkshire's shares trade at 70% of intrinsic value, giving us 45% upside just to fair value. In addition, we own a business that can earn 8% to 10% on equity for many years, and should grow at least at that rate. Our investment in Berkshire is our largest by far, having first purchased shares in February 2000. Over the years we opportunistically added to and reduced our holdings at favorable prices.

We will devote a few pages discussing the 12.5% decline in the shares last year and what that means for investors. The majority is spent walking through the various ways we value the business. We conclude with some thoughts on many of the risks and challenges facing Berkshire, and the things that can go wrong either suddenly or over time. Monitoring the risk factors becomes increasingly important as the business evolves.

THE STOCK DECLINE IN 2015 EQUALS AN INCREASE IN THE EXPECTED RETURN

We fielded questions about the decline in our Berkshire Hathaway shares during 2015. Our investment in Berkshire is far and away our largest so questions are warranted. We put together what was going to be a brief overview demonstrating that while Berkshire's shares fell 12.5% last year, both the underlying profitability and the intrinsic worth of the company instead rose by a considerable amount. The "brief" overview turned into the following tome.

The investment case for holding Berkshire Hathaway is driven by how much the business earns on equity and the sustainability of those returns. We calculate Berkshire is earning about 10% profit as a percentage of its reported equity. Because Berkshire doesn't pay a dividend, the earnings it produces, not only on current net assets but also on reinvested earnings, is critical. Given Berkshire's mammoth size, the opportunity set for reinvestment is limited. We use a floor 8% return on equity for at least the next fifteen years, though today's 10% remains viable. We need to be vigilant in our analysis, however, to ensure they are meeting our expectation. It won't be immediately obvious if they aren't. Gone are the days of 20% annual returns. The margin for error is much finer today. Fortunately, today's share price gives us a huge margin of safety.

Berkshire was by far our largest holding at the outset of 2015. Few investors allocate so much capital to a single investment. Berkshire is so undervalued and is such a strong and uniquely diversified business that a single concentrated investment in Berkshire at the right price arguably satisfies any reasonable diversification standard.

Our A shares entered 2015 at $226,000 and fell to $197,800 at year-end. Our B shares declined from $150.15 to $132.04 (each B share is worth 1/1,500 per A share, and the B's generally trade at a very negligible discount to the A's due to immaterially lower voting rights). The market cap of Berkshire fell from $371 billion to $325 billion. In the meantime normalized profit grew from $23 billion to $25 billion. Our cost basis remains far below the current price.

	Recent EPS	Normalized EPS	Dividend	Earnings Yield	Price/ Earnings	Dividend Yield	Growth Rate
At Cost				15.0%	6.7	0.0%	
At Market Value	$11.63	$15.22	$0.00	7.6%	13.2	0.0%	8%
At Intrinsic Value				5.6%	18.0	0.0%	

EPS figures are 1/1000 per A share; represents typical portfolio; Intrinsic Value Report at 11/30/2015

On $23 billion in core normalized profits at year-end 2014, the stock entered 2015 trading for 15.9 times earnings, which gave us an earnings yield of 6.2%. Because the stock dropped 12.5% in price while underlying profitability likely *rose* by about $2 billion, the stock is now *far cheaper* and thus prospectively even more attractive, barring any permanent future diminution in earning power. With a year-end market cap of $325 billion on $25 billion in earnings, the stock closed 2015 trading for exactly 13 times trailing earnings, which equates to an earnings yield of 7.7%. You can see the changes between 2014 and 2015 in the table below.

	2014	2015	2016		2025 8% ROE and growth				2025 10% ROE and growth			
			No Change	Down 10%	13x	15x	18x	20x	13x	15x	18x	20x
Market Cap	$371 B	$325 B	$325 B	$292.5 B	$702 b	$810 b	$972 b	$1080 b	$845 b	$975 b	$1170 b	$1300 b
Net Income	$23 B	$25 B	$27.5 B	$27.5 B	$54 b	$54 b	$54 b	$54 b	$65 b	$65 b	$65 b	$65 b
P/E	16.1x	13.0x	11.8x	10.6x	13x	15x	18x	20x	13x	15x	18x	20x
Earnings Yield	6.2%	7.7%	8.5%	9.4%	7.7%	6.7%	5.60%	5.0%	7.7%	6.7%	5.60%	5.0%
Price Change		-12.5%	0%	-10%	116%	147%	199%	229%	160%	200%	260%	300%
Annual Gain Per Year					8.0%	9.5%	11.6%	12.7%	10.0%	11.6%	13.7%	14.9%

The 7.7% earnings yield becomes our base case low-end expected return for holding Berkshire, assuming no change in the multiple to earnings. To the extent the stock price moves up more quickly than profits grow, the P/E multiple thus obviously moves up and the earnings yield declines (that was the case for each of the three years 2012-2014). Conversely, if the price falls faster than profits grow (or shrink), then the P/E drops and the earnings yield increases. That was the case last year. Let's now look at both a one-year scenario and a longer set of 10-year scenarios.

Moving rightward in the table, we show two scenarios for the upcoming year. In one case we assume no change in the share price and in the other we show an additional 10% drop in the share price. The no change in stock price effectively measures the current price against a forecast of next year's earnings. As an aside, this is generally how Wall Street often values markets and businesses, by using an expectation for next year's profits, but the Street is generally too optimistic about profit development. Index multiples historically are calculated on trailing earnings. There is a big difference between using a P/E on trailing earnings or on earnings one year hence. Far too many investors fail to grasp the difference or the significance.

Neither illustration of no change in the stock or a 10% decline is a forecast. Rather, both are used to demonstrate what happens when stock prices decline in the absence of a decline in core profitability and/or a diminution in intrinsic value. In both cases we have net income at Berkshire advancing to $27.5 billion, a gain of 10%. More on this later. In the case of no change in the stock price, you can see that with 10% growth in earnings the P/E drops to 11.8x, giving us an earnings yield of 8.5% (again another way of saying Berkshire is trading now at 11.8 times next year's earnings). On a hypothetical 10% share price drop coupled with an earnings gain of 10% the P/E becomes 10.6x with an earnings yield of 9.4%. It should be clear that as the stock gets cheaper the prospective returns grow larger, as long as profits and underlying value advance. That was the case during 2015. A short or intermediate-term drop in the share price should not be cause for alarm. An impairment of earning power and intrinsic worth should.

An Expectation of 8% to 10% Earnings Growth

Continuing to the right in the table, you can see a longer-term projection, showing what returns from holding Berkshire look like ten years out under scenarios of two compound growth rates in earnings and at a range of P/E multiples. In the more conservative case, you can see profits compounding at 8% for the next decade, taking earnings from today's $25 billion to $54 billion. In the second case, we assume profits compound at 10% annually, growing from $25 billion to $65 billion. Again, the range of 8-10% profit growth is our reasoned expectation for the coming ten years. We are starting today at 10%.

Our profit growth assumption is largely driven by Berkshire's sustainable return on equity. We delve deeply into understanding Berkshire's profitability in this report. As a base assumption, today's ROE is 10%. We expect the business to earn somewhere between 8-10% on its equity for many years. Because the company doesn't pay a dividend (for now), the retention of profits essentially becomes the growth rate of the business. Growth can trend higher if it comes organically, but much of the Berkshire empire is fairly mature.

Combining Earnings Growth with Margin Expansion

The table shows Berkshire's 2025 market cap at a range of four different P/E's from 13 times to 20 times, applied to both its $54 billion or $65 billion in 2025 earnings. In the table, below the market cap and correspondent P/E with earnings yield you can see what your cumulative return and annualized return will be at the four different P/E multiples.

It should make sense that since we are going into the ten-year stretch starting at today's 13 multiple, if we have no change in the P/E and the multiple ten years out remains 13, you will earn the rate of earnings growth. At 8% earnings growth you make 8% per year. At 10% earnings growth you make 10% per year. Changes in multiples and changes in profits are how you make money. Simple.

From there, as our hypothetical multiples expand to 15, 18 and 20 times earnings, your returns now *exceed* the rate of earnings growth thanks to multiple expansion. Be sure to reference the table here:

- At 15 times earnings, we will earn 149%, or 9.6% annually at 8% profit growth; and we will earn 200% (three times our money), or 11.6% at 10% growth in profits.
- Our appraisal of fair value for Berkshire is close to 18 times earnings. At that multiple our returns grow to 199%, or 11.6% per year at 8% earnings growth; and to 260%, or 13.7% per year at 10% earnings growth.
- We show a case of Berkshire at 20 times earnings. While that is above our current appraisal, the stock has indeed traded there in the past and may well again in the future. The S&P trades at least there now, depending on earnings, and is an inferior investment set than owning Berkshire (Would you rather own the S&P 500 at 20 or more times earnings or Berkshire at 13 times?). In any event, at 20 times earnings growth, we will have made 3.3 to 4.0 times our money, which is 12.8% and 14.9% per year at 8% and 10% profit growth, respectively.

That's a lot of math, but it should be intuitive - the cheaper Berkshire gets relative to its earnings, the greater our expected future return. Further, if Berkshire's multiple expands, our returns will outpace the company's growth in earnings.

Margin of Safety

What if the P/E multiple doesn't expand, but instead contracts over time? Or what if earnings don't grow at 8% or 10% but instead either grow slower or even contract? In the first case, let's consider at a contraction in the multiple (not in the table). If earnings compound at 8% annually to the aforementioned $54 billion ten years out, a collapse in the P/E to 7 times earnings, a level at which the S&P 500's multiple troughed in 1982, Berkshire's market cap would still expand from today's $325 billion to $378 billion, a remarkable gain given the near halving of the multiple but at only a meager 1.5% per year. At 10% earnings growth, the market cap would grow to $455 billion, which would give us a 3.4% compound annual rate of return – not sexy but higher than the return on a 30-year Treasury.

We can't control the price investors are willing to pay for shares of stock or for assets. We do think the likelihood of a multiple contraction across the broad stock market is likely. Multiples today are very high by historical standards, perhaps justifiably so due to the extremely low level of interest rates. Stock prices, however, should discount not at today's level of rates but at some level of future rates. Outside of high levels of inflation or hyperinflation taking hold, we can't really make a case for higher interest rates in a world drowning in debt and devoid of growth; but interest rates are only one variable driving multiples. Growth is really what drives multiples and returns over time, and we have made a case for a very long time that economic growth rates would be far lower than consensus estimates until we find a way to reduce societal debt levels. In a world of very low growth, or even no growth, we can easily make a case for low P/E multiples, call it a low terminal multiple. Berkshire would not be immune from low market multiples. If we do see a broad long-term contraction in the market multiple, Berkshire should be somewhat immune given its already low price. Additionally, Berkshire deserves a premium multiple to the market for a host of quality and sustainability reasons which we will discuss.

What of the case for either a slower rate of profit growth or even of a sustained decline in profits at Berkshire? Company profits did decline during the 2008 crisis, but only by a modest amount, and by far less than the declines seen across the stock market and broad global economy. Berkshire is an amalgamation of

largely unleveraged businesses generating lots of cash. It retains all of its profits and has not only an incredible history of earning more than adequate returns on old capital and on retained earnings, but also has a long runway of being able to deploy retained earnings profitably for a long time, certainly for the next decade. Berkshire doesn't have a history of accounting charges or poor reserve development for insurance losses. Berkshire has upside optionality given the overcapitalized nature of its insurance businesses, a surplus of cash and a lack of leverage employed in its manufacturing, service and retail businesses. Further, it's per-share results that matter. We have been talking about Berkshire in market cap and profit terms using dollars. The company has a history of issuing shares when they are expensive and repurchasing shares when they are undervalued. To the extent Berkshire issues shares in acquisitions or repurchases shares in the open market, we believe share use will be conducted at prices that improve per-share return on equity. Dollar based results would be even higher in that case.

The likelihood of Berkshire generating somewhere between $54 billion and $65 billion in profits (or more if shares are issued at attractive prices in making acquisitions) ten years from now is extremely high. The price, a key margin of safety, is already low. How much will Mr. Market be willing to pay for those profits? To answer that, we need to consider how value the business should be valued.

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VALUING BERKSHIRE

Valuation of conglomerates can be challenging. Berkshire Hathaway is a holding company with diversified insurance businesses spanning both primary insurance and reinsurance of property/casualty, life and health risks, as well as ownership of an extremely valuable diversified group of 79 non-insurance businesses. Given the diverse nature and the size and scope of its business operations, understanding and valuing Berkshire should be extremely cumbersome. Instead, Berkshire's management presents the company's financials and results in a logical shareholder and user-friendly format. Further, the company has taken great care over many decades to provide key figures to assist the analyst's assessment of the company.

We have followed Berkshire analytically for two decades and have been shareholders since February 2000. Over time we refined the approach to viewing and valuing the business. Berkshire's shares are attractively priced today and should yield at least a high single digit return for many years when compounded from today's price. Our ongoing work on the company approaches valuation a number of different ways, all of which we use to reconcile to each other:

1. Two-Pronged Approach
2. Sum of the Parts Basis
3. GAAP Adjusted Financials Approach
4. Simple Price to GAAP Book Value
5. Estimate of Prospective Annual Change in Book Value Per Share (Really the ROE Over Time – Plus or Minus Share Issuance or Repurchases at Favorable or Unfavorable Prices)

A number of conventional valuation approaches don't really work well when looking at Berkshire. A simple P/E or return on equity using GAAP reported earnings requires myriad sizable adjustments to both the income statement and balance sheet. Discounted cash flow analysis involves too many assumptions and a weighted average cost of capital at Berkshire is very different from most businesses. A dividend discount model using GAAP data doesn't work using published figures. Most users of dividend discount models simply measure growth in earnings as their growth estimate without determining how much growth comes from retained earnings and whether incremental returns on retained earnings are at satisfactory rates of return. Essentially the published GAAP figures for Berkshire serve to *materially* understate both profitability and the value of equity. We assign no conglomerate discount, nor do we think one is deserved. We assign no CEO or management premium, nor do we expect much diminution of value when current management no longer runs the business.

Each of the valuation approaches we use closely reconcile to each other. Fair value of Berkshire Hathaway today is around $470 billion, equating to $286,000 per A share and $191 per B share. At a year-end market cap of $325 billion and at prices of $197,800 and $132.04 per share, the stock is trading at 69% of fair value, giving the shares 45% upside to today's intrinsic value. Further, fair value should compound on average at 8% to 10% annually for the next ten years.

TWO-PRONGED APPROACH

Two-Pronged Basis

Capitalized Value of Per-Share Pre-Tax Earnings Plus Investments Per Share

	Per-Share Pre-Tax Earnings				Per-Share Investments	Per-Share Investments + everything else				Market Cap Intrinsic Value *(dollars)*		
		10x	12x	13.5x		Plus 10x	Plus 12x	Plus 13.5x	Shares out M	At 10x	At 12x	At 13.5x
2005	**2,441**	24,410	29,292	32,954	**74,129**	98,539	103,421	107,083	1.541	151,849	159,372	165,014
2006	**3,625**	36,250	43,500	48,938	**80,636**	116,886	124,136	129,574	1.543	180,355	191,542	199,932
2007	**4,093**	40,930	49,116	55,256	**90,343**	131,273	139,459	145,599	1.548	203,211	215,883	225,386
2008	**3,921**	39,210	47,052	52,934	**77,793**	117,003	124,845	130,727	1.549	181,238	193,385	202,495
2009	**2,250**	22,500	27,000	30,375	**90,885**	113,385	117,885	121,260	1.552	175,974	182,958	188,196
2010	**5,926**	59,260	71,112	80,002	**94,730**	153,990	165,842	174,732	1.648	253,776	273,308	287,958
2011	**6,990**	69,900	83,880	94,365	**98,366**	168,266	182,246	192,731	1.651	277,807	300,888	318,199
2012	**8,085**	80,850	97,020	109,148	**113,786**	194,636	210,806	222,934	1.643	319,787	346,354	366,280
2013	**9,116**	91,160	109,392	123,066	**129,253**	220,413	238,645	252,319	1.644	362,359	392,332	414,812
2014	**10,847**	108,470	130,164	146,435	**140,123**	248,593	270,287	286,558	1.643	408,438	444,082	470,814
*2015	**11,562**	115,620	138,744	156,087	**136,918**	252,538	275,662	293,005	1.643	414,920	452,913	481,407
*2016	**12,718**	127,182	152,618	171,696	**147,871**	275,053	300,490	319,567	1.643	451,913	493,705	525,049

*Per-share earnings for 2015 and 2016 are Semper Augustus estimates from our sum of the parts analysis ($19 billion for 2015) and higher than presented by Berkshire

*Per-share investments are also estimates by SAI for 2015 and 2016

Two-Pronged basis intrinsic value excludes capitalized value for ongoing insurance underwriting profitability, currently valued at $20 billion, or $12,169 per-share. Semper Augustus includes the capitalized underwriting amount in our appraisal.

Our research on Berkshire began in earnest in 1996 when the company created and issued 517,500 "B" shares in a public offering at $1,100 per share ($1,093 per share to Berkshire after underwriting discount and later adjusted to $21.84 via a subsequent 50:1 split). Two individuals, one being my father-in-law, an Omaha bank executive, the other being my now business partner, asked me to take a look at the offering. I was a twenty-something money manager running a mutual fund and separate accounts for a bank trust investment division. Both suggested getting into Berkshire might make some sense. I had never researched the business and my then boss scoffed at the company being nothing more than a mutual fund. Well, I *ran* a fund, as did he, so I took some umbrage at the quick dismissal. I called Berkshire and asked them to send me copies of the 1993 through 1995 annual reports (the bank, with hundreds of files on public companies, didn't maintain a file on Berkshire) and dug in when they arrived. I concluded the stock was too expensive to buy the new B shares in the offering, but recommended we add the company to our coverage universe at the bank. The bank voted no, but I started my own file, and went on to learn as much as I could about the business.

Berkshire included a table in the 1995 annual with two columns. The first showed marketable securities owned per-share at ten-year intervals. The second listed pre-tax per-share operating earnings for all Berkshire subsidiaries excluding dividends, interest and realized capital gains and losses from the marketable securities.

Year	Marketable Securities Per Share	Pre-tax Earnings Per Share Excluding All Income from Investments
1965	$ 4	$ 4.08
1975	159	(6.48)
1985	2,443	18.86
1995	22,088	258.20
Yearly Growth Rate: 1965-95....	33.4%	14.7%

In reading the three annual reports at the time, it was apparent that management went out of their way to help shareholders objectively understand the economics of the business and also how they viewed valuation. The inclusion of these two columns of data, highlighting marketable securities per-share and pre-tax earnings per-share, excluding all income from investments, provided a simple back of the envelope tool for valuing Berkshire. It also highlighted the degree to which investments in marketable securities had contributed to value creation over time. The two data points for investments and pre-tax earnings have been updated in most years since then.

In analyzing Berkshire in 1996 the stock appeared extremely overvalued. I then read the offering circular and found myself in disbelief. The front page of the 1996-offering prospectus contained the following extraordinary and candid language:

> *WARREN BUFFETT, AS BERKSHIRE'S CHAIRMAN, AND CHARLES MUNGER, AS BERKSHIRE'S VICE CHAIRMAN, WANT YOU TO KNOW THE FOLLOWING (AND URGE YOU TO IGNORE ANYONE TELLING YOU THAT THESE STATEMENTS ARE "BOILERPLATE" OR UNIMPORTANT):*
>
> *1. Mr. Buffett and Mr. Munger believe that Berkshire's Class A Common Stock is not undervalued at the market price stated above. Neither Mr. Buffett nor Mr. Munger would currently buy Berkshire shares at that price, nor would they recommend that their families or friends do so.*
>
> *2. Berkshire's historical rate of growth in per-share book value is NOT indicative of possible future growth. Because of the large size of Berkshire's capital base (approximately $17 billion at December 31, 1995), Berkshire's book value per share cannot increase in the future at a rate even close to its past rate.*
>
> *3. In recent years the market price of Berkshire shares has increased at a rate exceeding the growth in per-share intrinsic value. Market overperformance of that kind cannot persist indefinitely. Inevitably, there will also occur periods of underperformance, perhaps substantial in degree.*
>
> *4. Berkshire has attempted to assess the current demand for Class B shares and has tailored the size of this offering to fully satisfy that demand. Therefore, buyers hoping to capture quick profits are almost certain to be disappointed. Shares should be purchased only by investors who expect to remain holders for many years.*

Who writes this stuff in an offering to sell securities to the public? We have never seen anything else like it.

Berkshire offered the B shares as a new class of stock to the public to thwart an effort to sell unit trusts with sizable transactional and ongoing fees to the public containing only Berkshire shares but at a lower price per share. The notion that management was willing to convey their opinion that their own shares were overvalued at the time of an offering was genuinely honest and the motivation for the issuance of B shares made complete benevolent sense. It also didn't hurt in helping along further growth in book value per share by issuing shares not only above book value but also above management's assessment of fair value.

It was obvious through our research in 1996 and beyond that marketable securities drove the bus and that the stocks Berkshire publicly disclosed ownership of were fundamentally overvalued. Coca-Cola, for example, made up a third of the stock portfolio and had already tripled in price over the previous couple years.

It made and makes complete sense to present marketable securities per share separate from pre-tax earnings per share excluding gains and income from the marketable securities. Management at Berkshire was effectively telling its owners that these were simple yardsticks by which to value the business. Capitalizing pre-tax earnings at a reasonable multiple and then adding the value of the securities made and makes perfect sense.

However, we made two major adjustments to the two-column 1995 data points. First, we discounted the value of the securities to reflect the degree to which we felt the equities were overpriced. We noted the investments were almost all held in the insurance businesses. Two, it became apparent after some quick reconciliation that the pre-tax earnings included underlying results from the insurance businesses. On the latter, underwriting margins are extremely volatile from year-to-year, particularly for longer-tail lines like catastrophe reinsurance. Our assessment stripped out underwriting results and in the first years of valuing Berkshire we made the conservative assumption the insurance businesses would write at breakeven over time, a stance we have since modified. Our analytical pride swelled when Berkshire presented the pre-tax earnings per share figures *excluding* underwriting results in its 2005 annual report.

Our approach to using the two-pronged or two-column data points essentially concludes the value of the marketable securities represents the value of the insurance operation, plus or minus any premium or discount to adjust whether the equity portion of the securities portfolio is overvalued or undervalued. We also make an ongoing assumption that the insurance operations will over time underwrite at an average combined ratio of 95%, or an underwriting margin of 5% pre-tax. We capitalize that normalized value at 10 times pre-tax earnings. The combination of the market value of the marketable securities plus or minus those two adjustments gets you a value for Berkshire's insurance operations.

Now that Berkshire provides per-share earnings excluding income *and* insurance underwriting results, a capitalized value of pre-tax profits is fairly straightforward. However, getting to the proper capitalized value requires a good understanding of the economics driving the business. If Berkshire were just a mirror reflection of the S&P 500, it would be easy to say the correct long-term P/E multiple is 15x, and therefore the correct pre-tax multiple assuming a 35% tax rate is 10x. But Berkshire is far from the average business. We will examine the reasons Berkshire should command a premium valuation in the next section. For use in this two-pronged approach, we capitalize the pre-tax earnings at 13.5 times, and make upward or downward revisions to the Berkshire-supplied earnings number to reflect the extent current earnings are under or overstated due to cyclicality or economic conditions.

Here are the two per-share data points for 2014 as supplied by Berkshire:

Investments:	$140,123
Pre-tax non-insurance earnings excluding investments:	$10,847

We didn't make an adjustment to the investments value for 2014. Despite the aggregate market trading at a very expensive level, Berkshire's stock portfolio really hasn't performed very well for several years and is neither undervalued nor excessively overvalued. The equity portion of the portfolio was trading at 110% to 120% of fair value, which isn't enough of an extreme to adjust for precision. We did make material adjustments when the stocks traded for nearly 40 times earnings in 1998, and also when they fell almost 70% to an extremely undervalued level in late 2008 and early 2009.

We assume the insurance operations will earn about $2 billion in underwriting profits at today's run rate of premiums earned. At 10 times pre-tax underwriting profits we add $20 billion, or $12,179 per share, to the value of the investments.

We also made no material adjustments to the $10,847 non-insurance earnings number for 2014. Profits at most of the subsidiaries are operating at healthy levels. We made a sizable upward revision in 2009 and 2010 to reflect depressed profits in the wake of the recession but make no such adjustment today. We do think profits in the broad economy and in the S&P 500 are above normal levels, but Berkshire hasn't been aggressive with accounting or with policy that would inflate reported earnings. In fact, as we will discuss in the Sum of the Parts analysis, Berkshire's profits are substantially understated. At 13.5 times pre-tax earnings, the non-insurance businesses were valued at $146,435 per share, or $241 billion at year-end 2014.

Adding investments to capitalized underwriting to everything else yields fair value for 2014 of $298,737 per A share, $199 per B share, and a market cap of $491 billion.

Moving on to 2015, here are our expected per-share data points, which will be released in the annual report at the end of February:

Investments:	$139,918
Pre-tax non-insurance earnings excluding investments:	$11,562

Thus, for 2015, fair value becomes:

Investments:	$139,918
+ Pre-tax non-insurance earnings excluding investments x 13.5:	$156,087
+ Capitalized underwriting:	$12,179
= Intrinsic Value Per-Share	$308,184

The intrinsic value of $308,184 for the A shares for 2015 equates to $205 per A share and a market cap of $506 billion. The two-pronged approach gets you only a 3% growth in intrinsic value from 2014 to 2015. The methodology takes the investment portfolio at face value and makes no adjustment for deviation in marketable security prices relative to their long-term profitability. Berkshire's stock prices declined in value last year. Stock prices in particular are volatile in the short and intermediate terms. That's why when prices deviate materially from our appraisals of fair value we will make upward and downward adjustments. We don't make short-term adjustments with any precision. We think it's important to know do what material degree prices reflect realistic values.

Berkshire leaves the investor to determine fair value using the two data points they supply in most years. Our valuation hinges on Berkshire earning an underwriting profit averaging 5% going forward, on Berkshire paying taxes at a cash rate far below the nominal corporate rate for many years, and on the consolidated business commanding a premium valuation due to utilization of little debt, ownership of high-quality assets, extraordinarily low cost of capital, and conservative accounting, among other intangibles.

An investor assuming only breakeven insurance underwriting results would strip out our $20 billion capitalized value. An investor assuming Berkshire will pay taxes at a rate closer to the 35% corporate rate should use a lower multiple to pre-tax profits. An investor believing Berkshire should be valued no differently than the aggregate of business over time would pay a lower multiple as well. Our assumptions give us latitude to buy the shares cheaply. We are more of a seller at prices approaching fair value, and Berkshire's management has proven willing to issue shares at and above our appraised valuation over the years.

While simply capitalizing a pre-tax earnings number and adding that value to the value of a portfolio of securities is easy and a great way to come up with a shorthand value for Berkshire, it isn't sufficiently thorough. Our preferred way to value Berkshire, and the only way to really understand the nuances of the business, is to use a sum of the parts approach.

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SUM OF THE PARTS BASIS

Sum of the Parts Basis - 2015 expected	
BH Energy	$35-40 B
BNSF	70-80
MSR Businesses	100-110
Finance Businesses	25-30
	230-260
Insurance Underwriting	20
	245-275
Investment Portfolio	225
Total	$470-500 B
Total per A share	$286,000 - $304,000
Total per B share	$191 - $203
Current Market Cap	$325 billion
Market Cap to Fair Value	69%

Berkshire's management currently presents its operations as four separate sectors with their own balance sheet and income statement summary data. The operation of and accounting for an insurance underwriter is so vastly different from the operations and accounting for a railroad, and a railroad from a pipeline, and a pipeline from a truss manufacturer, etc., that segregating its units as presented is just logical and we as investors are hugely appreciative of the way the reporting is undertaken.

Berkshire's four major sectors of operations are:

- Insurance
- Regulated, Capital-Intensive Businesses
- Manufacturing, Service and Retailing Operations
- Finance and Financial Products

We further break down the parts by separating insurance investments from insurance underwriting and by separating the BNSF railroad from the energy and utility businesses within the regulated, capital-intensive businesses. Using midpoint estimated values for each operating group in the table above, intrinsic value for Berkshire at year-end 2015 is a market cap of $485 billion, which is $295,134 per A share and $197 per B.

INSURANCE

Insurance Operations		Insurance Investments (September 30, 2015)	
Premiums Earned ($41 billion in 2014)	$40 B	Equity Securities (excluding Kraft Heinz equity)	$106 B
Statutory Surplus (Equity) 2014 value	$129 B	Fixed income Securities	$27 B
Book Value (GAAP Estimated) 2014 value	$150 B	Preferreds, Warrants, Kraft Heinz	$49 B
Float ($84 billion 2014)	$85 B	Cash	$43B
Losses Paid 2014	$22.7 B	Total Investment Assets 2014: $231 B	$225 B
Normalized underwriting margin: 5% pretax	$2 B	Investment Income and Earnings (to reconcile)	
Normalized underwriting net profit	$1.3 B	Dividends	$3.5 B (3.3% div yield)
Capitalized Value from Underwriting	$20 B	Retained Earnings of Common Stocks	$4.8 B
		Total Earnings of Common Stocks	$8.3 B (12.8 P/E; 7.8% ey)
		Interest and dividends on preferreds	$900 M
Insurance Estimated Value			
Total Investment Assets	**$225 B**	Kraft Heinz Preferred Dividend	$720 M
Capitalized Value from Underwriting	**$20 B**	Kraft Retained Earnings normalized	$260 M
Estimated Value	**$245 B**	Kraft Dividends @2.30 annual rate	$750 M
		Total Kraft Heinz earnings *	$1.73 B
		Total pre-tax earnings of investments	$10.9 B
		Optionality of cash > one year losses paid	$1.2 B
		Pre-tax earnings with optionality of surplus cash **	$12.1 B
		Paid and hypothetical taxes	$1.5 B
		Investment net income	$10.6 B

* Kraft Heinz will be accounted for under the equity method and may not be held as an insurance company asset

** Dividends assumed taxed at 10.5%; retained earnings presumed as dividends and taxed at 10.5%
Preferreds at 35%; Fixed-income at assumed blended rate of 25% based on issuer type

Berkshire's insurance operations are the heart of the company and account for just over half of the value of the consolidated business, although the balance of the non-insurance operations have been quickly gaining ground subsequent to the closing of the General Re acquisition in 1998, with retained earnings and capital being largely invested outside of insurance. Property and casualty insurers receive premiums upfront and pay claims (losses) later. The use of insurance float has provided the single greatest advantage enjoyed by Berkshire Hathaway for nearly 50 years.

Understanding Underwriting Profitability and Float

To understand how Berkshire works, you have to understand how property and casualty insurance companies work, and to understand insurance you need to understand how float is generated via the underwriting cycle and the underwriting cost of generating that float. Float is the invested use of premium dollars today that must eventually be paid to cover the expenses of running an insurance operation and to pay claims/losses. Berkshire's float is so large relative to premiums, and importantly relative to the amount paid to cover claims each year, both absolutely and relative to its insurance competitors, that Berkshire has been able to invest more of its invested assets in far higher earning investments for nearly five decades than any other insurer.

The cost of running an insurance operation involves running the business and paying claims. Operating costs and claims are each measured against premiums earned. Operating costs as a percentage of premiums earned is calculated as an expense ratio. Operating costs include overhead, marketing and commissions. Claims paid, both in the current year and estimates for what will be paid in the future from this year's premiums earned, measured as a percentage of premiums earned, is a loss ratio. The aggregate of insurers have expense ratios and loss ratios that combine at more than one year's premiums over time. How? Premiums are collected upfront and expenses and losses are paid later. If the invested assets of the insurance operation earn sufficient returns above the amount of underwriting losses, the business can subsist. Rare is the insurance company that underwrites profitably *over time*, meaning the loss ratio and the expense ratio combine at less than 100% over time. When this is the case, underwriting margins are positive (also said as the combined

ratio is less than 100%) and thus the cost of generating float is negative. This has been the case at Berkshire more often than at any other major insurer. Over nearly five decades Berkshire's insurance companies have underwritten profitably the vast majority of the time. Underwriting margins will have been positive at Berkshire for 13 consecutive years when Berkshire reports its 2015 results at the end of February. There will be years and cycles of underwriting loss for sure, but Berkshire's underwriting success is unparalleled.

"Over time" is emphasized because losses must be estimated, in some cases over many years or even decades. Estimating future losses is very subjective and many are the insurer who was too optimistic about how much they would eventually have to pay in claims. Reserves must be re-estimated as losses develop. Too many insurers are too optimistic upfront and it's the shareholders and policyholders that later pay the price, often years after the underwriting management is long gone. Review a history of Berkshire's reserve development. Development tables can be found in their 10-K each year. You will find that Berkshire is incredibly conservative in the estimates they make regarding future losses. The 2014 10-K shows ten consecutive years of redundancies (which can change), where many, if not most, competitors show deficiencies over time, certainly for short periods.

Berkshire is unique in its five-decade long history of investment success. Its assembly of insurers consistently underwrite profitably over the long haul, producing float at a negative cost. They are willing to walk away from business at times when they estimate premiums are inadequate to cover future losses and current expenses. Most importantly, Berkshire's float has proven durable and will likely continue to do so for decades to come. The benefit of conservatively profitable underwriting is a translation to a permanence of float that it brings to the insurer. As long as future losses don't greatly exceed upfront estimates, and as long as operational cost is kept low, the accounting treatment of float as a net liability becomes inaccurate. As long as float balances grow through ongoing profitable underwriting, or at least don't shrink rapidly, float can really be economically treated as an asset. From a balance sheet perspective, the net liability for losses is really equity, because the investment assets it supports will never technically be repaid. Berkshire refers to float as more of a revolving fund. Outside of Berkshire, most insurance companies don't emphasize to shareholders or policyholders how much float they have on hand, in part because their float doesn't support the same mix of invested assets. If underwriting margins are negative enough, or if losses develop negatively, float in most cases really is a liability.

For the accounting oriented, float represents components from the liability side of the balance sheet offset by smaller components from the asset side. Liabilities included in float are the total of loss reserves, loss adjustment reserves, life, annuity and unpaid health benefit liabilities, and unearned premiums. From the asset side, deferred prepaid acquisition costs, deferred commissions to brokers and agents, unearned premium reserves, and prepaid taxes offset the liabilities. For reinsurers it also includes reserves held under reinsurance assumed offset by charges against assumed reinsurance. Float is simply money held today that insurers have the use of that is going out the door tomorrow. The sum total of these items is a net balance sheet liability. In Berkshire's case, because we believe float is durable and comes at a long-term negative or free cost thanks to conservative underwriting, the fact that we realistically have permanent use of the invested assets, the value of Berkshire's insurance companies is really derived from gains and income from the investments, enhanced by the present value of the amount of underwriting profits we expect the insurers to earn over time.

Consolidated insurance operations earned premiums in 2014 of $41.2 billion, of which $22.7 billion went out the door to pay old claims (half for the current accident year and half for prior years). The insurers produced an underwriting gain of $1.7 billion. Investments in marketable securities were $231 billion. Book value totaled about $150 billion on a GAAP basis and $129 billion on a statutory surplus basis. The value of Berkshire's float totaled $84 billion.

The takeaway from these figures is Berkshire's insurance operation is massively overcapitalized. It has a huge insurance investment portfolio relative to annual premiums earned and importantly relative to

losses/claims paid. Investment assets were 5.6 times premiums earned and fully 10 times losses paid. GEICO's losses and loss adjustment expenses were about 70% of total losses paid, which would be typical in a year without major catastrophes. Its premiums earned total about half of all of Berkshire's insurance premiums at current run rates, and their proportion stands to increase as GEICO continues to take market share. The 30% or so of the remaining losses paid outside of GEICO pale in comparison to Berkshire's $231 billion investment portfolio. You won't find that kind of strength anywhere else in the insurance world. In years with big catastrophes (hurricanes, earthquakes, storms, urban terrorist attacks), losses in the reinsurance operations will be far larger relative to premium dollars, and at times can far exceed annual premiums. Over time, we expect the total of Berkshire's insurers to slowly grow premiums and to do so at a modest underwriting gain. As such, the float balance of the insurers should be fairly constant to slightly growing, allowing earnings on the investment portfolio to accrue for shareholders' benefit. Let's now break down Berkshire's major insurance operations.

BERKSHIRE'S FOUR MAJOR INSURANCE OPERATIONS

Berkshire's insurance businesses are varied across lines written. As a group they are the strongest and best assembly of insurance companies in the world, by a wide margin in our opinion. A huge advantage Berkshire enjoys is segregation of underwriting decision-making at the unit level from investment decision-making, which is done by Berkshire's CEO and by two recently hired investment professionals.

Berkshire's insurance businesses are:

- Berkshire Hathaway Reinsurance
- General Re
- GEICO
- Other Primary

Summary Insurance Operations – 2014 Figures
(dollars in millions)

2014	Premiums Earned	Shareholder Equity (GAAP)	Statutory Surplus	Float	Underwriting Profit (pre-tax)	Investment Assets
BHRG	10,116	111,000	94,000*	42,454	606	161,471
General Re	6,264	14,481	13,000*	19,280	277	29,950
GEICO	20,496	15,000*	13,300*	13,569	1,159	27,000*
Other Primary	4,400	9,500*	8,700*	8,618	626	17,000*
Total	41,253	150,000*	129,000	83,921	2,668	235,421

Figures from Berkshire SEC filings, statutory filings and insurers websites
*Semper Augustus estimates (Some are wild-ass guess)

BERKSHIRE HATHAWAY REINSURANCE

BH Reinsurance, which comprises the National Indemnity Company and a group of related insurers, has been *the key piece* of Berkshire Hathaway since its acquisition in 1967. The group of companies underwrites myriad coverages including excess-of-loss reinsurance and quota-share on property and casualty risks for insurers and reinsurers globally. They also write retroactive reinsurance, which provides indemnification of past losses up to policy limits in areas such as asbestos losses. BH Reinsurance also writes life reinsurance and annuity business. The companies write high-excess reinsurance catastrophe covers for losses from events like natural disasters and acts of terror. Much of BH Reinsurance underwriting is long-tail in nature, with losses incurred and developing over many years. Writing long-tail business profitably over long periods of time allows the use of premium dollars for investment purposes for long periods. The time lag from collecting premiums to paying claims can span years, and even decades. Think about suffering a permanent injury on the job and the potential duration of claims paid on a workman's compensation policy. When underwriting is profitable, the cost of generating invested reserves is negative, which acts as an interest-free or even a negative rate loan. The cost of float at National Indemnity and the affiliated group companies that today comprise BH Reinsurance had $42 billion of float at year-end 2014. The group earned premiums of $10.1 billion (including a one-time $3 billion premium on a retroactive policy with Liberty Mutual) and wrote at an underwriting profit of $606 million for the year.

With long-tail lines, annual premiums written and earned are small relative to ongoing losses paid both now and in the future. Years of major catastrophes will come along and tap into investment reserves. The most critical aspect of writing these long-tail coverages is to ensure today's premium is sufficient to cover future losses as they are incurred and develop. Pricing is cyclical, largely because years can pass until losses develop and what seems to be profitable underwriting can turn unprofitable if enough conservatism and skill wasn't employed upfront. There will be years when losses exceed premiums earned (loss ratio over 100%). National Indemnity and its group insurers have a decades-long history of shying away from business when they feel premiums are inadequate, when there is too much competition and increased capacity, and when underwriting standards soften. 2015 was such a time. Stripping out swings in the timing of retroactive run-offs and the writing of new quota-share contracts with other insurers, premium volumes are intentionally in decline due to too much industry capacity chasing business at inadequate prices. Those accepting business at today's inadequate prices will likely pay a price, perhaps severe, when, not if, losses eventually appear and develop.

The discipline to walk away from what may turn out to be unprofitable business, albeit without knowing that for years or even decades, is what makes the group of National Indemnity insurers so strong and so critical to the ongoing success of Berkshire Hathaway. With the advantage of discipline comes the huge float that allows for arguably the permanent use of investment capital that would otherwise go out the door at some point in the future (and often at the worst time). The group's float has been the leverage that allowed Berkshire to compound its book value and share price at nearly twice the rate of return on the S&P 500 for more than five decades.

GENERAL RE

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 Gen 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.

When the acquisition was announced in June 1998, Berkshire's stock price traded at three times book value, by far the richest valuation it had ever seen. At the same time, the stock portion of Berkshire's investment portfolio was also trading at its highest price ever, approaching 40 times normalized earnings. Instead of selling stocks and paying taxes at a 35% rate on gains, Berkshire instead used its own massively inflated shares to buy a very good global reinsurer with a big fixed-income portfolio, thus diversifying the combined portfolio away from stocks at no tax cost.

Berkshire paid $22 billion in stock for General Reinsurance, of which $14.5 billion was goodwill. Berkshire issued 272,200 shares of equivalent A shares at $80,882 per share, 2.9 times its book value at March 31, 1998. At the time of the merger, we appraised Berkshire's intrinsic worth just over half of that price per share, which meant in our opinion Berkshire had bought Gen Re for a little more than $11 billion, not the $22 billion purchase price.

Berkshire's use of its overvalued stock as currency to make an acquisition wasn't the only important aspect of the deal. By 1998 Berkshire's stock portfolio was extremely overvalued as well. As a percentage of Berkshire's $47.5 billion investment portfolio within the insurance businesses, stocks made up 75%, $36.2 billion at year-end 1997. Where stocks comprised 75% of the portfolio, they were fully 115% of Berkshire's entire book value! The large concentration in stocks rewarded returns for the duration of the bull market. In 1998 those market tailwinds were set to change direction, and the Gen Re deal helped Berkshire change course.

With the inclusion of Gen Re's investment portfolio, roughly 90% invested in fixed-income securities, Berkshire's stocks combined at only 67% of the overall portfolio at the end of 1998, with equities at $39.7 billion and fixed income at $31.2 billion, up from $10.3 billion the year before. More importantly, *stocks as a percentage of Berkshire's book value declined from 115% to only 69%.* The importance of this reduction can't be overstated based on subsequent stock market returns.

The stock portfolio within Berkshire has been mediocre at best since 1998. Their stocks were crushed from the peaking of the blue chips (the new nifty fifty) in 1998 through the market lows in 2002. Further, It took the past 17 years to work the P/E multiple on the stock portfolio down from over 40 times to its current level of 13.3 times earnings. That's a two-thirds multiple contraction. Yes, earnings have grown, but combining margin compression with earnings growth, the stock portfolio has only compounded at a mid-single digit annual return for 17 years. Contrast that with the 22 years leading up to 1998 and the General Re acquisition, when Berkshire's stocks advanced at closer to a 20% annual rate. We weren't yet shareholders in 1998, but this transaction cemented our appreciation for the investment prowess of Berkshire's management.

With General Re, Berkshire also tripled the size of its float balance at the time of the acquisition. General Re had roughly $14.9 billion in float at the end of 1998, compared to Berkshire's float of only $7.4 billion then. 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. Think about that. Berkshire paid $22 billion in stock which was worth only about half that, and picked up almost $15 billion in float which helped finance an additional $25 billion in investment assets.

In addition to the trebling of Berkshire's float, the merger increased the strength of General Re materially by allowing it to use Berkshire's capital strength to retain more of its reinsurance business. The business writes an equal amount 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. General Re's global footprint has expanded since the merger.

Some have observed that Berkshire overpaid for Gen Re given the lack of growth and particularly because Berkshire used its stock for the purchase and Berkshire's shares are now trading for almost 2 ½ times its price at the time of the acquisition. We couldn't disagree more. General Re was a terrific acquisition that required some cleanup in the early years as the company adopted Berkshire's underwriting discipline. Berkshire also ran off a sizable derivative book at great expense. Berkshire has hugely benefited as General Re's float swelled from $14.9 billion to $19.3 billion. Further, General Re has paid substantial dividends over the years up to the holding company for use elsewhere. In the past six years alone, dividends from the General Re subsidiary totaled $3.6 billion, an average of 4% of General Re's book value per year, or looked at differently, 25% of General Re's current book value. Our sense is the business is writing as much business as it can profitably. Underwriting margins 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.

Interestingly, General Re earns about the same volume of premium now as it did at the time of the 1998 merger, a little more than $6 billion annually. Shareholder equity is just under $15 billion today. General Re's premium's earned and investment assets both make up about 15% of the insurance total within Berkshire but fully 23% of its float.

General Re is better capitalized today than at the time of the 1998 acquisition. The company had a history of underwriting integrity and discipline dating back to 1921 in North America and 1846 in Europe. Under Berkshire, General Re's reputation for integrity and discipline are only stronger. The quality of their written and retained business is superior to what it was as a stand-alone insurer. It is a far better company today as part of Berkshire, a consistent theme among organizations brought under the Berkshire umbrella.

GEICO

GEICO primarily writes private passenger automobile insurance in the United States, marketing directly to drivers who apply via the Internet or by phone. It is the lowest cost private passenger auto insurer, a huge competitive advantage. Instead of paying agents and brokers commissions, GEICO advertises. In 2013 the company spent $1.2 billion on advertising, 6.4% of premiums earned. The advertising dollars are huge, but they are far less as a percentage of premiums than auto insurers pay in commissions using agency and brokerage models. GEICO's low cost position leads to consistent and sustainable profitable underwriting. Profitable underwriting translates into the production of float at a negative cost, akin to borrowing money at a negative interest rate. Everyone knows the Gekko and the Caveman.

GEICO is on track to write close to $23 billion in annual premiums at September 30 run rates. Their number seven market share in private passenger auto totaled 2.5% in 1995 when Berkshire bought the remaining half of the business it didn't already own. It is now the second largest by market share in private passenger auto to State Farm and has by our estimation about 11.5% of the $200 billion industry. State Farm, still the industry market leader, has declined to around 18%.

GEICO has a fairly long runway to continue profitably taking market share. Auto insurers write on an admitted basis, whereby premium rates are regulated. Insurers file rate applications that are approved by insurance commissioners in each state. Insurers are generally allowed to earn a reasonable return on statutory surplus (insurance book value). Some states are more insurer-friendly than others. While GEICO writes in all 50 states and Washington D.C., it has far larger market shares in certain states and is much smaller in others. We think the company has done a good job focusing on business in states where the climate is more hospitable to insurers. GEICO has in part shunned states where business is tougher, having market share in Massachusetts of 6.8%, for example. That said, Berkshire's reputation for low pricing and terrific service has

benefitted its relationship with those approving rate applications in all of its territories. Market share will grow in all 50 states over the next decade.

The cost advantage GEICO enjoys as a direct underwriter allows its advertising dollars to be more cost effective relative to those firms employing variants of the broker and agency models. It can beat its competition on price and accordingly can tolerate a higher level of losses as a percent of premiums earned. Its administrative and selling overhead are so much lower than most of its competitors that despite higher loss ratios, it consistently underwrites more profitably than the private passenger auto industry. GEICO's direct loss to earned premium ratio, the percent of premiums going to pay claims, averages around 70-75%. The industry loss ratio averages closer to 65-70% and when operating costs and expenses are considered, the industry produced underwriting losses of at least 1.8% in every year since 2006. GEICO's expense ratio averages around 15% versus closer to 25% for the industry. GEICO earned an underwriting profit in every year since 1988. Being the cost leader is a huge, huge advantage.

GEICO's operations in the private passenger auto industry are a completely different animal than Berkshire's other insurance lines of business. Auto insurance is very short-tail and far less capital intensive. What that means is that once losses are incurred, they develop quickly and are paid out more quickly. When you, or your teenage daughter, wreck your car, collision damages are paid very quickly. Some are litigated and can take longer but most are paid within a few days or weeks of an accident. Medical losses develop and are paid over a longer period of time. But in total, you can tell that when losses total two-thirds or more of premiums earned, the claims cycle is pretty short. As such, less capital reserve is required of auto insurers. Auto insurers are allowed to write up to $3 in premiums for every dollar of statutory equity in the business. Some write far less (Mercury General at 1.8 times) but three to one is the max. So in GEICO's case, as it is writing at a current run rate of $23 billion for 2015, required equity would be $7.7 billion. We estimate GEICO's policy surplus to be $13.3 billion (by adding totals for each subsidiary as found on GEICO's website and in their statutory filings - my estimate could be off), so on $23 billion in premiums, it is writing at about 1.7 times its equity. GEICO's float was $13.5 billion at year-end 2014 and will probably be about $14.5 billion here at year-end 2015. Like the rest of Berkshire's insurers, GEICO is overcapitalized, but because of the short-tail nature of auto insurance, produces far less float for Berkshire relative to annual premiums than with Berkshire's other lines. That it will continue to grow profitably, and it will, means its float balances will continue to feed Berkshire's overall investment portfolio and will undoubtedly offset slower growth or even slow runoff elsewhere.

BERKSHIRE HATHAWAY PRIMARY GROUP

In addition to Berkshire's three core insurance units, they also have a smaller group of independently managed insurers writing a number of diverse lines, primarily liability and workers' compensation coverage. Other Primary is a catch all for these businesses. Though smaller than the core three, this group consistently earns underwriting profits, contributing $8.6 billion in float to Berkshire at year-end 2014. Using September 30 figures, the group is on track to write $5.5 billion in premiums at an underwriting profit of more than $700 million for 2015. Float will likely move past $9 billion. With Berkshire's capital strength, retentions are higher than at peer insurers.

Within this group, claim experience has been extremely favorable and pricing allows for profitable underwriting. The lines are largely long-tail and could develop unfavorably. However, since we have been following Berkshire, this eclectic mix of insurers has grown nicely and has enjoyed twenty years of underwriting success. No doubt they benefit by reputation from operating under the Berkshire umbrella.

INSURANCE VALUATION

Following Berkshire's insurance operations is an ongoing analytical work-in-process. We have a reasonably good idea of what each unit is worth and how each contributes to Berkshire independently; we concluded many years ago, however, that the best way to value the insurance operation is collectively. Each unit and even many of the subsidiaries within each unit possesses certain strengths and advantages, and are all collectively better off as part of Berkshire.

The valuation of the insurance businesses is simple and conforms to the way Berkshire management views valuation. Valuation of the insurance operations combines an estimate of how profitable underwriting will be over time with how much return can be generated by the invested assets of the insurance companies. At times we will adjust the value of the investment assets to reflect material over or under-valuation in the stock portfolio. As long as the investment operations aren't in runoff or shrink rapidly, estimating value is that straightforward.

At September 30 the marketable securities in the insurance companies were valued at $225 billion. We assume the insurers will sustainably underwrite at an underwriting margin of 5% pre-tax, or a combined ratio of 5%, and we capitalize underwriting profits at 13.3 times after-tax earnings. On a current 2015 run rate of $40 billion in earned premiums, the underwriting portion of insurance operations are worth a little over $20 billion. Added to the estimated fair value of the securities of $225 billion, Berkshire's insurance businesses are worth about $245 billion. We make no adjustment today to reflect overvaluation in the stock portfolio, despite the broad market being overvalued. Berkshire's equities trade for a reasonable 13 times normalized earnings.

Pulling from the table at the beginning of the insurance section, we show investment assets on September 30:

Equity Securities (excluding Kraft Heinz equity)	$106 B
Fixed income Securities	$27 B
Preferreds, Warrants, Kraft Heinz	$49 B
Cash	$43B
Total Investment Assets	$225 B

You could stop there and take the $225 billion in investments, add a premium to the valuation to the extent you think underwriting will remain profitable, and call that the value of the insurers. We take the approach one step further and look to the income and earnings those assets produce:

Investment Income and Earnings (to reconcile)	
Dividends	$3.5 B (3.3% div yield)
Retained Earnings of Common Stocks	$4.8 B
Total Earnings of Common Stocks	$8.3 B (12.8 P/E; 7.8% ey)
Interest and Dividends on Preferreds	$900 M
Kraft Heinz Preferred Dividend	$720 M
Kraft Retained Earnings (normalized)	$260 M
Kraft Dividends @2.30 annual rate	$750 M
Total Kraft Heinz Earnings *	$1.73 B
Total Pre-Tax Earnings of Investments	$10.9 B
Optionality of Cash > One-Year Losses Paid	$1.2 B
Pre-tax Earnings with Optionality of Surplus Cash **	$12.1 B
Paid and Hypothetical Taxes	$1.5 B
Investment Net Income	$10.6 B

* Kraft Heinz will be accounted for under the equity method and may not be held as an insurance company asset
** Dividends assumed taxed at 10.5%; retained earnings presumed as dividends and taxed at 10.5%; Preferreds at 35%; Fixed-income at assumed blended rate of 25% based on issuer type

You can see we break out dividends, retained earnings of common stocks, interest and dividends on preferred securities and earnings and dividends on Berkshire's now large investment in Kraft Heinz. To each of these earnings streams we add a hypothetical $1.2 billion in pre-tax income for optionality upside on the investment portfolio. That reflects the assumption that Berkshire doesn't allow cash to build up to excessive levels for long periods. The company has said it likes to keep $20 billion on hand at all times. We presume that dollar figure correlates to one year's worth of typical claims, which last year totaled $22 billion. Surplus cash will soon be invested in higher yielding investments, either in securities or more likely by purchasing entire businesses. The growing investment in Kraft Heinz and recent purchase of Precision Castparts are examples. We'll cover more on this in the section on adjustments to GAAP financials. The exercise of working through the investment earnings is to reconcile the returns generated back to the value of the investments. It may be a superfluous analysis but we think it's useful to help determine normalized profitability across the aggregate of Berkshire.

Berkshire's returns on invested capital and its growth in profitability have been bolstered in a huge way, by not only the float of the insurance operation, but by the investments made with the float and with dividends distributed by the insurers up to Berkshire for investment in wholly-owned operating companies. Berkshire is credited for investment genius, but the outsized results enjoyed by Berkshire's shareholders haven't come because the investments made were home runs. Rather, the genius of the operation was the recognition of the equity nature of float when coupled with profitable and disciplined underwriting.

The long-term allocation of insurance investment assets to common stocks, as opposed to more traditional bonds and cash, which is what the vast majority of insurers are required to do, has been a decades-long benefit to Berkshire. Berkshire's insurance companies have maintained a far higher allocation to common stocks than any other insurer. Its insurers are overcapitalized and can withstand more short and intermediate-term volatility on their investments than others. Further, Berkshire's insurers are less collectively regulated than some. Where private passenger auto at GEICO and a number of other lines are written on an admitted basis in each state, the longer-tail catastrophe and many of the reinsurance and specialty lines are not. Insurance commissioners limit the amount of stocks and other types of investments insurers can own. Berkshire effectively gets a hall pass and can allocate investment capital with far more latitude.

Berkshire's common stock grew 4 ½- fold through the end of 2015 from February 2000 (when we initiated our position) compounding at 10% per year, more than double the rate of growth of the S&P 500. But Berkshire's stock price didn't grow at 10% because its underlying insurance stock portfolio compounded at 10%. The stock portfolio more closely matched the modest gain in the stock market. Berkshire's profits and intrinsic value compounded at a higher rate, partly due to the leverage it gets from the somewhat permanent use of insurance float, and partly due to growing operations and profitability outside of insurance. Berkshire has more than $84 billion of float financing Berkshire's $225 billion in investments on insurance GAAP book value of $150 billion and only $129 billion of statutory surplus book value.

Book value grew at a slightly slower rate than the 10% gain in the stock price since February 2000, but only because the premium to book value slightly expanded from the 108% premium we originally paid. Intrinsic value at Berkshire grew at roughly the same rate as the growth in book value per share.

Said another way, Berkshire is too big now to expect or to earn outsized gains on its stock portfolio versus the S&P 500. As long as two conditions are met, one that float doesn't shrink rapidly or permanently (due to extraordinary cat losses or running off large lines of insurance); and two, as long as underwriting profitability persists, or even breaks even, then shareholders collectively will earn whatever the investment portfolio produces plus whatever underwriting gains the insurance operations can produce. Our own experience in the stock hinges on the price we pay for our shares relative to fair or intrinsic value.

The insurance operation at Berkshire is worth the total of the market value of the marketable securities plus the capitalized value of a realistic appraisal of ongoing underlying profitability. We further subtract or add an adjustment at times to reflect material over or under-valuation in the stock portfolio.

Most of Berkshire was built thanks to the heavy lifting of its successful insurance operations and the ability to effectively leverage its investments in equities and other investments. Following a brutal underwriting period in the mid 1970's, insurance float allowed Berkshire to invest *more than 100%* of its total shareholder's equity, not insurance company equity, but all of Berkshire's book value, in common stocks for the preponderance of the long bull cycle in stocks spanning 1975 to 1998 (the bull market in Berkshire's stock portfolio really began at the 1975 trough thanks to deft stock picking, not in 1982). Berkshire's value expanded as it operated with a range of 150% to 220% assets to equity, with the stock portfolio alone totaling more than 100% of equity for many years. But only a fraction of Berkshire's leverage came from interest bearing debt. Most of its leverage came from float, which generally came to Berkshire at a negative cost. Save for a mildly negative stretch of underwriting profitability from 1982 to 1987, when combined ratios ran nominally above 100%, in most years Berkshire earned underwriting profits that augmented its mid to high teens stock market returns.

Berkshire's stocks clipping along between 100% of book value and 130% of book value right up to the point where the stock portfolio traded at 40 times earnings in 1998. Then along came the General Re deal and the stock portfolio was reallocated from nearly 120% of book value to just over 60%. From that deal forward, Berkshire's asset mix has been increasingly focused on assets other than common stocks. While a large fixed-income allocation was added to the insurance company's mix of invested assets at the time of the merger (wonderful during a stretch of falling interest rates and mediocre to negative stock market returns), the tilt of assets is increasingly shifting away from financial assets (and insurance) and into a growing portfolio of "everything else". For the first time since 1967, the insurance operations are now worth less than the non-insurance operations.

EVERYTHING ELSE NON-INSURANCE RELATED

We established the value of the insurance operations as the value of the insurance invested assets plus some value for underwriting profitably on a sustained basis. From there the remainder of Berkshire's value is the sum-total of everything else. This group is far from insignificant.

Prior to the National Indemnity acquisition in 1967, Berkshire was exclusively focused on running its textile operation. Textiles proved lousy and the business was eventually closed in 1985. Insurance contributed the vast majority of value to Berkshire from 1967 to 1998, and it created the profits to diversify into a growing number of operating businesses beginning with See's Candies in 1971. Up to the General Re deal in 1998, Berkshire made about 20 acquisitions of operating companies, but the sum-total of these businesses contributed only a fraction of the returns earned by Berkshire's insurance operations and the investment portfolio of the insurers. Bringing Gen Re into the Berkshire fold dramatically reduced Berkshire's reliance on and exposure to the stock market; and that shift has continued since. Berkshire's asset intensity and earnings power are increasingly dependent on Berkshire's operations outside of insurance. Depending on the valuation methodology employed, Berkshire's non-insurance operations eclipsed the value of the insurance operations sometime within the past year. Nobody rang a bell but it's a big deal. Unless Berkshire makes another large insurance acquisition, which we don't expect and which would only likely be done near a time of a seriously undervalued stock market, the future of Berkshire will be driven by "everything else". Berkshire's concentration in their regulated, capital-intensive railroad and energy businesses are large and will be a much, much bigger piece of the pie going forward.

REGULATED, CAPITAL-INTENSIVE BUSINESSES

Berkshire has two major operations in this group, BNSF and Berkshire Hathaway Energy. Management lumps them together for analytical purposes because they are both extremely capital-intensive businesses that are similarly regulated as to pricing as well as allowed returns on capital invested. Both employ debt to finance portions of their long-lived fixed assets. Berkshire does not guarantee the debt in these subsidiaries. We prefer to look at them and to value them separately on the basis of a duck not being a chicken. Yes, they are both birds; and yes, they are both good eatin', but they are both uniquely different animals. A railroad is neither a pipeline nor an electric utility. If the duck is the Burlington Northern, then it's a big duck, and it should be reported and analyzed independently. Both are terrific case studies on the economic benefit of accelerated depreciation and regulated returns on what can be huge capital outlays in the capital-intensive railroad and utility industries.

BURLINGTON NORTHERN SANTA FE – BNSF

BNSF (2015 estimated)	
Revenues	$22.5 B
EBIT	$7.5 B
Pre-tax income	$6.6 B
Net Income (as reported)	$4.2 B
Net income (adjusted for cash taxes)	$5.1 B
Equity (estimated from STB and GAAP filings)	$38 B
ROE (includes $14.8 billion goodwill)	13.4%
ROE (per STB annual R-1)*	10.8%
Estimated Value	**$70-80 B**
Implied P/E (on net adjusted for cash taxes)	14

* Excludes goodwill and most debt; also uses as reported income

Berkshire acquired the 77.5% of BNSF that it didn't already own in February 2010 for $26.5 billion, $15.9 billion of which was cash and the balance from issuing $10.6 billion in Berkshire shares (which at $111,679 per A share were trading at a sizable discount to our appraisal of fair value – this was not the General Re deal…). The 22.5% that Berkshire already owned was purchased between mid-2006 and early 2009 for $6.6 billion. Berkshire thus paid $33.2 billion but had to write up and recognize a $1.3 billion gain on the original position to reflect the price at the time of the merger. Berkshire thus has an original capital basis of $34.5 billion on its position, which we view as closer to $37 billion given the degree to which Berkshire spent undervalued shares.

We were critical of the price paid at the time of the merger. Prior to the acquisition and the great recession, BNSF had earned 11% on invested capital in its best year, 2007. Berkshire paid somewhere between a 75% to a 90% premium to capital depending on the degree to which Berkshire's shares were either fairly valued or undervalued. Berkshire thus bought a business at such a large premium to capital that at the outset gave it an adjusted return on capital of around 6%. We also reasoned the large underfunded defined benefit plans at BNSF employed a far too optimistic long-term rate of return assumption, which would ultimately require funding at a higher level than projected. We thus concluded that Berkshire bought a business that had earned 11% in its best year for nearly twice that amount, meaning Berkshire was getting a rough 5.5% best case returner with upside.

We agreed entirely with the many advantages Berkshire pointed out in buying the railroad. Moving freight by rail is three times more fuel-efficient than via trucking, making rail both more cost efficient and environmentally efficient. BNSF had 23,000 miles of track, since expanded to 32,500 route miles in 28 western states and three Canadian provinces. Its location in the west is an advantage as the population shifts westward and trade with Asia expands faster over time than with Europe. Importantly, the capital-intensive nature of rail comes with a regulated return. My good friend, Daniel West, in reading through the minutes of a Surface Transportation Board meeting several years ago (he's a great investor, which makes him a great geek), noted that the STB changed allowable return on invested capital to a capital asset pricing model formula (CAPM) for Class 1 rails. Bill Gates figured this out early on. The takeaway from Daniel's observation was that allowed returns were going to go up, and indeed in the ensuing years they have.

We since modified our criticism of the BNSF purchase price and now believe it was an exceptional acquisition. Like so many Berkshire deals over the years, we invariably get to an "aha" moment. The light went on about two years ago in thinking about Berkshire's evolving income tax footnote and reconciling it to the financial statements. Berkshire noted in its 2010 annual report that, "owning the rail will increase Berkshire's "normal" earning power by nearly 40% pre-tax and by well over 30% after tax." It was apparent from that statement that the tax rate at BNSF was higher than the tax rate at consolidated Berkshire. Nothing seemed special so we let it go at that at the time.

Berkshire immediately followed on by noting the degree to which the railroad would need to invest to grow. They then quantified their capital spending across all of their businesses at $6 billion for 2010 and projected capex at $8 billion for 2011. Rails had a history of spending vast sums on capex but only earning mediocre returns on capital. A logical conclusion then was that Berkshire would be spending substantial growth capex in excess of depreciation at the railroad, just as they had been in their MidAmerican Energy business since 1999. We assumed that excess growth capex would earn somewhere approaching regulatory allowed rates of return between the high single digits and perhaps as much as 12%, thus making the acquisition trend toward mediocre to acceptable over time, despite starting at 5.5%.

But here's where the light went on. We never realized the degree to which growth capex would materially affect taxes at Berkshire. Accelerated depreciation for tax purposes is extremely important to the returns on growth capex at both the railroad and the regulated energy businesses. Berkshire's tax footnote breaks out the amount of current taxes in each year that are actually paid from the amount that is deferred. We had always operated under the assumption that the accumulated deferred tax liability on the balance sheet was mostly attributed to the unrealized gains on the investment portfolio in the insurance businesses. Indeed, before Berkshire acquired MidAmerican Energy, and subsequently BNSF, that is exactly where the liability resided. But when Berkshire started spending growth capital in earnest, the nature of the aggregate deferred tax liability changed, and so did its location on the balance sheet.

At year-end 2005, Berkshire's deferred tax liability, "principally deferred" on the balance sheet, was $12.3 billion. The company included a pro forma column on the balance sheet that year to incorporate MidAmerican Energy's anticipated early 2006 conversion from a preferred to common (and thus consolidated prospectively). Broken out in a new segment called "Utilities and Energy" were listed assets of $20.2 billion and liabilities of $14.1 billion. The interesting thing about that pro forma column, the deferred income tax liability within "Insurance and Other" jumped up from the aforementioned $12.3 billion to $13.7 billion, an increase of $1.4 billion. The income tax footnote included $1.2 billion of a deferred tax liability which must have been nearly all attributed to MidAmerican. We overlooked the significance of that at the time.

We didn't make the connection then, but once the railroad was onboard, and as the deferred tax liability for property, plant and equipment grew over the past decade, we eventually realized that growth capex above depreciation charges works to increase the deferred tax liability, lowering the amount of *cash* taxes payable

in that year. As the deferred liability grew each year in tandem with capex outstripping depreciation, we concluded the deferred tax liability wasn't going to shrink but would only grow larger. The liability has a similar durable characteristic to investment float.

The difference between reported tax rates and actual cash outlays is now huge, particularly at BNSF. The railroad has a reported tax rate each year (derived from figures reported in Berkshire's annual) between 36-37%. It is really paying at a cash tax rate well below 20% currently, and the difference is all free cash flow. Since Berkshire added MidAmerican and its host of additional utility and energy assets, and also BNSF, the capex at those two businesses swelled the deferred tax liability related to property, plant and equipment to $34.6 billion.

In the five years 2010 to 2014 since Berkshire bought BNSF, the rail spent $17.9 billion in capex against only $7.8 billion in depreciation charges, a difference of $10.1 billion. That difference is new capital investment in the railroad above Berkshire's purchase price of $34.5 billion.

To help clarify the degree to which growth capex impacts current taxes, reviewing BNSF's annual report R-1 filed with its regulator, the STB, helps shed light. The 2014 R-1 balance sheet shows:

Current Assets	$3.5 billion
Road and Equipment Net of $10.1 Accum. Depreciation	48.9
Other Assets	10.2
Total Assets	62.7
Current Liabilities	3.3
Accumulated Deferred Income Tax Credits	15.7
Other Non-Current Liabilities	4.2
Total Liabilities	23.2 *
Additional Capital	24.6
Retained Earnings	14.9
Net Shareholders Equity	39.5
Total Liabilities and SEQ	62.7

*Most of BNSF's $19.2 billion debt does not appear in the R-1 balance sheet

Fully $15.7 billion of the total liabilities are the deferred income tax liability. As long as BNSF continues to invest in qualifying fixed assets, the deferred tax liability will functionally never be paid. Future depreciation charges on aging assets will be lower in later years, but as long as the railroad deploys increasing amounts of growth capex, higher depreciation charges on new and improved assets makes the liability a growing constant.

Berkshire presents BNSF's key income statement items for 2014 showing $23.2 billion in revenues and operating income of $7.0 billion. Interest is $833 million and taxes are shown as $2.3 billion. Net income is listed as $3.9 billion. The taxes and net income are a GAAP calculation.

Berkshire's STB R-1 shows $908 million as a provision for deferred income taxes. As this amount is deferred, is not cash, and is unlikely to be actually paid as cash, free cash at BNSF was closer to $4.8 billion, not the $3.9 billion reported as net income. Return on equity per the R-1 for 2014 thus comes in at 11.9% on net shareholder's equity. Goodwill related to Berkshire's acquisition of the rail does not appear on the STB balance sheet, which does lower Berkshire's actual ROE, but the return is far higher than we originally presumed at the time of the purchase.

We consider the deferred tax liability largely as equity, and add any increase in that liability each year as free cash, not dissimilar to the way float should be viewed within the insurance operation. They are both hugely important to understanding Berkshire.

The railroad will undoubtedly struggle somewhat in 2016. BNSF is the nation's largest mover of coal as well as oil via tank car. Both the coal and oil industries are suffering falling demand and oversupply. The industrial economy is also broadly weak, and we think the likelihood of a recession is high. China and its regional trading partners have materially slowed. In fact, both the U.S. and the global economy may already be in a recession. Car loadings are down substantially. Combined, the impact on earnings at BNSF in the short-term may be significant. But the nature of the business is to earn an allowed return on capital over time. The ownership of the railroad within Berkshire gives the company a great vehicle for investing capital and it comes with a huge and under-recognized tax benefit.

THE COMBINED ADVANTAGE OF ACCELERATED DEPRECIATION AND GROWTH CAPEX AT BERKSHIRE CONSOLIDATED

Railroads, utilities and pipelines operate in part for public purpose. In 1954, Congress provided for the use of accelerated depreciation as opposed to straight-line depreciation. In doing so, deferral of taxes allows for a faster recovery on capital investments due to a lower tax burden (look at it as a an interest-free loan from the U.S. Treasury), but with an increased tax burden in later years. As long as investments in PP&E outstrip depreciation, the overall tax burden will benefit from newer capital assets being more quickly depreciated for tax purposes and the deferred tax liability will expand.

The tax benefit of creating deferred tax liabilities as a result of capex on property, plant and equipment is significant. Berkshire's actual taxes paid in cash are far lower than reported. Accelerated depreciation equates to lower cash taxes paid and more free cash left in the business. Since 2004 Berkshire spent $74.7 billion in capex against $38.1 billion in depreciation, a difference of $36.6 billion ($30.6 billion of which was at the rail and energy businesses). The deferred tax liability for PP&E has grown from $1.2 billion to $34.6 billion.

Berkshire's cumulative, pre-tax GAAP earnings since 2005 total to $182.4 billion. Income tax expense sums to $54.4 billion, which to the casual observer equates to a tax rate of 29.8%. But of the tax expense totals seen in the income statement, $16.7 billion was deferred and added to the balance sheet as a liability. Actual cash paid for taxes was only $37.7 billion, which makes the actual cash tax rate only 20.7% over the past ten years. It's even better more recently.

The free cash and tax situation gets better as the capex at the railroad and in the energy businesses grows. Berkshire spent $15.2 billion in capex in 2014, $9 billion above its $6.2 billion in depreciation charges. The deferred income tax liability for PP&E grew by $2.2 billion. On Berkshire's $28.1 billion in pre-tax income, the tax expense on the income statement shows $7.9 billion. But Berkshire was able to defer fully $4.6 billion of that amount, which means actual cash paid for taxes in 2014 was only 11.8%, not the 28.3% as reported. For 2013 the cash tax rate was 17.8%. This means free cash is far higher than reported earnings. It pays to understand tax footnotes.

The beauty of Berkshire's growth capex is where it's being deployed. By investing in regulated industries where reasonable returns are allowed to recover investments benefitting society, you know roughly what you will earn for a very long time. That the investment helps on the tax front, and hence on the free cash generation front, makes ownership of the railroad and the energy businesses far more attractive than you will see in the reported financials.

BERKSHRIE HATHAWAY ENERGY

Berkshire Hathaway Energy 89.9% owned (2015 estimated)	
Revenues	$18.6 B
EBIT	$3.5 B
Pre-tax income	$3.0 B
Net income (reported)	$2.3B
Net income (adjusted for cash taxes)	$2.7 B
Earnings applicable to Berkshire	$2.4 B
Equity (estimated)	$54 B
ROE (includes $9.6 billion goodwill)	4.9%
ROE (excluding goodwill)	6.1%
Estimated Value	**$35-40 B**
Implied P/E	15

Berkshire purchased 75% of MidAmerican Energy in 1999. It subsequently increased its ownership to 89.9% and changed the name to better reflect a growing portfolio of utilities, pipelines and energy distribution assets. The domestic regulated utility operations, NV Energy, MidAmerican Energy, and PacifiCorp operate in 11 Western and Midwestern states. A United Kingdom subsidiary, Northern Powergrid, operates two regulated electricity distribution businesses. The company also has a small hydro operation in the Philippines. BH Energy owns the Kern River Pipeline (acquired at an unbelievable price as part of a bailout of Williams) and the Northern Natural Pipeline. It purchased regulated electricity transmission assets in Canada in 2014. An oddity within the group is a rapidly growing collection of residential real estate brokerages now labeled Berkshire Hathaway Real Estate (we expect this business to be moved to the Manufacturing, Service and Retail group at some point since it has none of the characteristics of the regulated capital-intensive businesses).

Ownership by Berkshire is a huge competitive advantage for the BH Energy businesses. Nearly all competitors have large dividend expectations or obligations. Some distribute more than they earn! Berkshire does not pull dividends from this group. Rather, earnings are retained and invested in new capacity and improvements to assets. Debt financing additionally augments growth capex. While Berkshire does not guarantee the debt at these businesses, certainly Berkshire's ownership implicitly favors the cost of debt.

The electric utility subsidiaries have made huge investments in alternative energy production – wind, solar and hydro - and in expansion of the electric transmission grid. As with BNSF, their operations are largely focused west of the Mississippi. The West should enjoy faster population growth than the rest of the country for decades. The collection of businesses earns consistently high marks from customers and regulators, which helps with the rate setting process.

Nearly 90% of BH Energy's operating income is earned by their investment-grade rate-regulated businesses. The group should report about $16 billion in revenues for 2015, with $3.5 billion in earnings before interest and taxes. Reported net income will total roughly $2.5 billion.

Like BNSF, Berkshire has been spending far more capex than underlying depreciation. The previous discussion on the tax and free cash benefits at the railroad takes some of the wind out of the sails in discussing BHE. In 2014 capex totaled $6.6 billion while depreciation was only $2.2 billion. For the years 2006 through 2014, BHE spent $32.8 billion in capex while depreciation only totaled $12.3 billion. The new growth capex enjoyed the same accelerated depreciation treatment, and serves to produce more free cash flow than reported earnings. Getting to the exact amount is difficult because of the number of subsidiaries and assets in the group. We assume that most of the incremental increase of deferred tax liabilities for PP&E above that amount calculable for BNSF is related to BHE. A smaller portion relates to capex in excess of depreciation throughout Berkshire's many other businesses (about $6 billion from 2003 through 2014 and a little over $1 billion in 2014 alone).

With so many diverse operating subsidiaries operating in this BHE group of businesses, we have all but given up on trying to break out returns on equity for each subsidiary. Rather, because Berkshire aggregates balance sheet data, combining the BHE businesses with the railroad, and because we can calculate a fairly accurate return on equity for BNSF, we can simply approximate the difference as applied to the energy businesses. It's not clean but it puts us in the right zip code.

Using the GAAP balance sheet and income statement, the Regulated Capital-Intensive group earned $8.9 billion pre-tax and $6 billion after tax on $87.6 billion of stated book value. Thus these businesses earned a 10.1% pre-tax and 6.8% after-tax return on equity. When considering cash tax rates stemming from the growing deferred tax liability for PP&E, however, the after-tax return on equity jumps to 9.1%. Our calculation when incorporating the increase in the deferred tax liability has the BNSF earning 12.1% on equity and BHE earning 6.5%, in both cases including goodwill.

The ratemaking process at the states' Public Utility Commissions excludes goodwill from the allowed ROE calculation. Berkshire's economic returns must include the goodwill representing the premium over net asset value paid by Berkshire for each acquisition. Ignoring goodwill raises BHE's return on equity closer to 8.3%. As the regulated subsidiaries retain earnings, the goodwill asset will become relatively smaller. Thus, over time, reported and economic profitability will drift upward toward the returns being earned by the collective energy subsidiaries.

It's worth noting that allowed ROE's across the electric utility industry have been in decline since the 1980's. Allowed ROE's for electric and gas utilities were over 12-13% in the late 1980's and have fallen to below 10% since 2012 because interest rates have fallen. While the Surface Transportation Board only more recently adopted a CAPM and WACC approach to rate setting for Class I rails, electric utility regulators used this methodology for far longer. The approach incorporates a blended equity and debt cost of capital, and as interest rates were in decline since 1981 so have allowed returns.

When goodwill is excluded and actual cash tax rates are factored in, it's reasonable to assume the businesses comprising BHE are earning about 8.3% on equity, far below returns at the railroad but attractive nonetheless. With a pre-tax debt cost of capital at just under 5.0%, reinvestment of BHE profits as well as new allocations by Berkshire for both growth capex and also in new utility and regulated assets is a *great* use of capital. We would be surprised if Berkshire isn't a much larger presence in this area over the coming decades.

MANUFACTURING, SERVICE AND RETAILING OPERATIONS

MSR Businesses (2015 estimated)	
Revenues	$107 B
Pre-tax income	$7 B
Net Income	$5 B
Profit margin	5.7%
Working capital ($6 billion cash)	$16 B
Total Debt	$5.5 B
Equity	$58 billion
ROE (including estimated goodwill of $31.5 billion)	8.6%
ROE (excluding goodwill)	18.9%
Estimated Value	**$100-110 B**
Implied P/E	20

Over the years Berkshire acquired and assembled what is now a massive portfolio of non-insurance businesses diversified across a wide range of industries. We already discussed the regulated capital-intensive rail and energy businesses. We will get to a smaller group of finance and leasing businesses shortly. Everything else non-insurance related is included in a "catch-all" group Berkshire has called Manufacturing, Service and Retailing Operations (MSR) since 2003.

For the sake of space, we won't delve into the details of the individual MSR businesses. Collectively they are a terrific group of unleveraged, free-cash producing, independently run companies that, thanks to ownership inside of Berkshire, don't partake in many of the capital destroying activities so commonly practiced elsewhere. To the extent some of the subsidiaries retain earnings for growth and bolt-on acquisitions, Berkshire's management assigns a capital charge and blesses larger deals to ensure they are generally done with proper return assumptions going in. Management teams are independent and run their own operations. They are not centralized for functions such as purchasing and human resources, and each management is responsible for compensation structure at that firm. Each CEO does have an individualized compensation structure negotiated individually with Berkshire's CEO.

Some of the key manufacturing businesses are:

- Lubrizol, a specialty chemical manufacturer with $7 billion in sales;
- Forest River, a manufacturer of RV's, pontoon boats, cargo trailers and buses with sales of $3.8 billion in 2014;
- Marmon, a group of 140 separate businesses with manufacturing revenues of $6 billion (Marmon's leasing and transportation businesses were moved to the financial products group in 2014);
- IMC International Metalworking, a global leader in metal cutting tools;
- CTB, a manufacturer of equipment for the livestock and agriculture industries;
- Several building products businesses including Acme Building Brands, Benjamin Moore, Johns Manville, Shaw and MiTek (headquartered here in St. Louis – huge thanks to Gene Toombs for speaking at our Tulipomania Roundtable last year and for the MiTek book!);
- Several apparel businesses, including Fruit of the Loom, Russell Athletic and Vanity Fair Brands women's intimate apparel.

Companies in the Service group include:

- NetJets, the largest general aviation fractional leasing company in the world;
- FlightSafety, a manufacturer and operator of flight simulators for pilot training;
- TTI, an electronics distributor;
- Business Wire, a distributor of corporate news and regulatory filings;
- Dairy Queen, a franchisor;
- Buffalo News and the BH Media Group, a collection of 29 newspapers and other publications;
- WPLG, a Miami television station.

The Retailing Group includes:

- Four home furnishing businesses – Nebraska Furniture Mart, R.C. Willey, Star Furniture and Jordan's;
- Three jewelry businesses – Borsheims, Helzberg and Ben Bridge;
- See's Candies;
- Pampered Chef, a direct seller of kitchen tools;
- Oriental Trading Company, a direct retailer of party supplies, school supplies and toys.

For the year 2015, we expect the MSR group to generate revenues approaching $107 billion combined, up from $98 billion in 2014. Pre-tax earnings will likely be $7 billion for 2015, with a 6.5% pre-tax margin, after-tax profits of close to $5 billion, and a 5.7% profit margin.

The businesses comprising the MSR group earned an *unlevered* 8.6% return on equity in 2014, which includes goodwill. They earned 18.7% on tangible net equity, which is ROE excluding goodwill. But Berkshire must earn its returns on the prices it paid for businesses, which means with goodwill included. That said, Berkshire's 8.6% return is a terrific considering the amalgamation of these businesses employs *no net debt*. Debt totaled $5.5 billion at year-end 2014 but cash balances were higher, at $5.8 billion. Working capital is strong with current assets of $25.3 billion against only $10.7 billion in current liabilities.

A fundamental truth regarding business or asset valuation, one to be taken to the grave, is that an unlevered income stream is worth more than a levered one, all else being equal. We value the MSR businesses at 13 times trailing pre-tax earnings and 20 times trailing after-tax earnings. With net profits expected at $5 billion for 2015, a reasonable valuation for this group is $100 billion, or just below one times sales. We assign no material growth premium to these businesses. However, in addition to a premium for operating debt-free, we further assign a valuation premium to the MSR businesses because they, like the other businesses within Berkshire, have no dividend requirement and because management doesn't have a knack for wasting shareholder capital. There are no shares being repurchased here for insane premiums to fair value. There is no history of serially writing down assets. Asset value is reliable and durable. In fact, there are many businesses in this group bought years ago with carrying value far below modern earning power.

Results of the MSR group are heavily skewed by the revenues of the McLane Company, a wholesale distributor of food and non-food products to retailers, convenience stores and restaurants. McLane was purchased for $1.5 billion from Wal-Mart in 2003, which owned the business for the previous 13 years. As a wholesaler, the business operates on huge volumes and high inventory turns, coupled with tiny profit margins. For 2015 McLane will do almost $49 billion in revenues but only operate at a pre-tax margin of 1%. If the business required a dollar in capital for each dollar in sales, it would be a terrible business. Fortunately that's not the case. The company probably does around 15 dollars in sales for each dollar of capital. Berkshire acquired McLane for about 6.5 times pre-tax income in 2003, giving it an initial pre-tax return on capital of 15.3% and an after-tax return of 10%. Since the acquisition, it made a number of bolt-on acquisitions, entered alcoholic beverage distribution, and made major investments in warehouse space and

technological infrastructure. Sales and profits in the twelve years under Berkshire ownership grew from $23 billion to $49 billion. We can't tell from Berkshire's SEC filings the extent to which profits were retained within McLane, but we suspect it's been the majority and that a doubling of sales probably required a doubling of capital. In any event, because sales volumes are so much larger than profits, McLane's sales are just under half of the entire MSR group. However, given the razor-thin margin structure, profits at McLane are but a fraction, about 5%, of the group's total. We expect that over time McLane will become a smaller component of the MSR group as Berkshire continues to make acquisitions. As is relatively shrinks, the margin structure of the group will necessarily advance, but will not likely change the returns on equity of the group by much because McLane earns roughly the group average.

Precision Castparts

Beginning this January, the MSR group will also include Berkshire's newest large investment in Precision Castparts. You should recognize the name as one of Semper Augustus' investments last year. Precision primarily manufactures forged metal components and products for jet engine manufacturers and the aerospace industry, and for a number of other manufacturing clients. Their products are also used in industrial gas turbine engines, airframes, armaments, medical prostheses, and unmanned aerial vehicles. They manufacture forged components from titanium and nickel-based alloys for aerospace, as well as the oil and gas industry, and in chemical processing and pollution control applications. Additional products include fasteners, fluid fittings, aerostructures and precision components for aerospace customers.

We took advantage of weakness in Precision's oil and gas business, which drove the stock down from over $270 per share in 2014, and initiated a 1% position at $205 per share with a hope to make the holding larger at lower price points. We were close to doubling the position size at $195 per share when none other than Berkshire offered to purchase the entire business for cash at $235 per share in August. Our estimate of fair value was closer to $260 per share. Berkshire already owned a smaller position at higher prices. After the merger was announced, banking on a very likely chance of the merger being completed, we increased the position to 5% with cash on hand to simply long-arbitrage a $6 per-share discount to the purchase price. We booked that gain when the deal closed last week. We would have rather owned a large position in Precision Castparts on a stand-alone basis. Even though it is the largest acquisition Berkshire has made to date, it's not so big relative to the enormity of Berkshire. Precision will increase the earnings at Berkshire by about 8%.

The $32 billion acquisition ($37 billion including net debt) will add $10 billion in revenues and free cash approaching $2 billion under Berkshire's umbrella. The company can grow internally and will benefit from opportunities to deploy growth capex. Precision's capital as a Berkshire subsidiary will be better utilized and produce higher returns. Precision's aerospace customers should enjoy a fairly long growth runway as commercial airliners expand their fleets globally and upgrade equipment. Fuel efficiency is driving an upgrade cycle and Precision supplies the forged parts to meet growing demand.

With an expected $107 billion in revenues for 2015, Berkshire's MSR group alone would rank as the 50th largest company in the *world* by sales, public or private (and some on the list are government owned: Sinopec, China National Petroleum, Saudi Aramco, State Grid, Kuwait Petroleum, China Railway, Japan Post, Petrobras, Industrial and Commercial Bank of China, PDVSA (Venezuela oil and gas), and China Construction Engineering). That Berkshire's "little" group comprises only 20% of the combined intrinsic value of Berkshire gives you an idea of the scale of Berkshire. Berkshire consolidated makes the list at number 17. We spotted only one business like the MSR group on the list that employs no net debt in its capital structure, even when capitalizing operating leases – Costco. Berkshire will add materially to the MSR group over the years. Expect it to climb the list as well.

FINANCE AND FINANCIAL PRODUCTS

Finance and Financial Products	
Equity	$21 B
EBT w/ $400M derivative amortization	$2.4 B
Net income w/ derivate amortization	$1.7 B
Normal average ROE	8.5%
Estimated Value	**$25-30 B**
Implied P/E	15

Businesses in this smaller but important group of businesses are largely made up of equipment leasing, manufactured housing and financial service businesses, including:

- Clayton Homes – the largest manufactured housing and finance business in the U.S.;
- XTRA (St. Louis based) – transportation and equipment manufacturing and leasing of over-the-road trailers;
- UTLX (a Marmon business) – manufacturer, owner and lessor of railcars and intermodal tank cars; also owns and leases containers and cranes;
- Berkadia – a 50% joint venture with Leucadia providing commercial mortgage servicing and commercial mortgage banking;
- CORT – furniture rental.

GAAP book value of the group was $20.7 billion at September 30, 2015, up from $14.6 billion at year-end 2014. Total liabilities of $18.9 billion finance $39.6 billion in assets. The group enjoyed rising returns on average equity in the past two years, running at about 8.5% after-tax presently (excluding gains and losses on investments and derivatives). The next paragraph briefly discusses two types of derivatives Berkshire carries within the Finance and Financial Products group. When adjusting for a liability we think is realistically closer to zero, the group return on equity is closer to 10% (calculated by amortizing the liability balances to zero over the next ten years).

Within the group are a number of derivative contracts. Berkshire wrote a series of put options between 2004 and 2008 on four major European and U.S. stock indices that will require Berkshire to meet a liability if the indices are below a strike level only at various expiration dates between June 2018 and January 2026. The European-style options (can't be assigned early) were purchased by life insurers guaranteeing a portion of equity index returns as part of annuity contracts. The likelihood of Berkshire actually incurring losses on these contracts is extremely remote as the strike prices are far below market prices when written (and now). While the contracts were absolutely written at a time that stock markets were very expensive, the time to expiration is so long that retained earnings alone over many years at the businesses comprising each index contribute to compounding net asset values. The liability on the group's books was $4.2 billion at September 30. We think that number will wind up closer to zero. Offsetting the potential for loss is the continued use of the option premiums that were paid to Berkshire when the contracts were written. Because Berkshire received the premiums upfront, they have zero counterparty risk on these contracts. Berkshire also has one small credit default contract written in 2008 insuring a widely diversified basket of municipal bond issues. The liability on the books is $242 million and the likelihood of actual loss here is equally remote.

In the next section, we're going to address changes we make to GAAP accounting to better understand economic profitability. Here in the leasing operations, Berkshire noted in their 2014 annual report that their

Marmon tank car leasing division carries a $5 billion rail fleet at manufactured cost but is worth far more (by the amount of what would otherwise be a "retail" price). Depreciation charges are thus lower over the 30-year life of each car. We never would have quantified the materiality of that. It's like found money. It's amazing how accounting rules can miss hundreds of millions in asset value.

The industrial economy is slowing and 2016 may be a challenging year for equipment lessors, particularly those related to the railroad industry. At times, having a rail equipment manufacturer, a rail equipment lessor and a railroad all under one roof can be a competitive advantage. We'll see how an economic slowdown affects the aggregate operation. Ultimately, over time this is a great collection of businesses. Clayton is by far the best-run manufactured housing business in the industry. For one, unlike most of their competitors, they never failed! Having their financing arm within Berkshire is a huge plus. The other leasing companies are extremely well run and capitalized. Accounting conventions have proven conservative over economic cycles. Leverage in the group can approach 2:1. With returns on equity ranging from 7.5% to 10%, returns on assets employed are among the sustainably highest in the financial industry.

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GAAP ADJUSTED FINANCIALS APPROACH

	Net Income Basis - 2015 expected #		
	Pre-tax	After-tax	
BH Energy	$3.0B	$2.4 B	
BNSF	6.6	5.1	
MSR Businesses	7.0	5.5	
Finance Businesses	2.4	1.7	
	19.0	14.7	
Capitalized underwriting	2.0	1.3	
	21.0	16.0	
Investment Income	12.1	10.6	**
	$33.1B	$26.6 B	*

Investment Portfolio value derived through investment income

P/E:	Multiple to pre-tax		Multiple to after-tax	
	10x	$331 B	13x	$346B
	11.5x	381	15x	399
	14x	463	18x	478
	16x	530	20x	532

* Implies an aggregate cash tax rate of 19.6%, not 35%

Earnings are GAAP adjusted by Semper Augustus

** Included optionality premium on cash > $24 billion

and all earnings on Kraft Heinz assumed for all of 2015

In the analysis of any business, GAAP financial statements can only be a starting place. If the purpose of financial analysis is to estimate the amount of free cash profits a business is earning and will earn over time and to determine realistic values for a company's balance sheet components, published financials often don't get you to the right answers. Berkshire is very much a case in point. Both its ongoing economic profitability and its economic book value are both understated. When a financier tells you the financials don't paint the right picture, they are usually trying to put lipstick on a pig. We love Berkshire pork, but Berkshire Hathaway is no swine.

Our Sum of the Parts analysis delves into most of the ways Berkshire's financials as presented require adjustment to arrive at economic earnings and net asset value. Here we will list and briefly summarize the adjustments we make with the income statement and the balance sheet.

INCOME STATEMENT (expected adjustments for 2015)

1. Remove realized investment gains and losses, including mark to market changes in derivative liabilities. Amount varies by year.
2. Include reinvested earnings of equity investees taxed at 10.5% (taxed as though paid as dividends – corporations pay taxes on dividends received at 30% of their statutory rate). $4.8 billion pre-tax and $4.3 billion after-tax estimated for 2015.
3. Include as income the change in the deferred tax liability for income taxes for Property Plant & Equipment to reflect current taxes being paid from those deferred indefinitely. $2.2 billion for 2014 and $2.5 billion for 2015, allocated to BNSF, BH Energy and a smaller portion to the equipment leasing businesses and the MSR businesses specifically by identification in regulatory filings or by proration based on capex spending minus depreciation.
4. Add back 80% of the amortization charge for intangibles. $600 million after-tax for each year 2010 through 2015 and estimated at that rate through 2020.
5. Add an optionality premium to reflect higher investment earnings for near-term and intermediate-term investments to be made with cash balances north of one year's worth of insurance losses (Precision Castparts and the increased investment in Kraft Heinz are examples). Assume a typical $20 billion cash surplus above $24 billion in insurance losses paid, earmarked for investments at 16.7 times earnings, a 6% after-tax and a 9% pretax earnings yield. $30 billion x .09 = $1.8 billion pretax, $1.2 billion after tax. If you disagree with this point, think about how much of Berkshire's insurance and other investable capital will permanently be invested in cash. Acquisitions like Precision Castparts, or the myriad and huge outlays made during the financial crisis should change your thinking on that. Berkshire's future investments will yield more than zero. The question is when will those investments be made and on what scale. That's the beauty of discounting.
6. Reduce net income to reflect higher normalized pension expense. Assumes investment returns of 4%, not 6.7%, on $13.3 billion in plan assets and that the $2.5 billion underfunding to PBO at year-end 2014 will be funded over 10 years. $600 million per year after-tax.

Totaling income statement adjustments #2 through #6, Berkshire has $8 billion normalized earning power *above* GAAP earnings after deducting realized investment and derivative gains and losses. Most Berkshire watchers only get to an estimate for #2, the addition of "look-through earnings" for the marketable security investees of $4.8 billion pre-tax and $4.3 billion after-tax. Most miss adjustments #3 through #6, which combined provides an additional "hidden" $3.7 billion in normalized net earning power above GAAP net income.

An interesting sidebar, when Berkshire reports their yearly results at the end of February, GAAP net income may be reported fairly close to our adjusted number. That will only be a huge coincidence. Through September 30 investment and derivative gains totaled $9 billion, far more than in past years. Stripping out those gains fairly closely offsets the unseen profits we include as economically real.

Incidentally, when Berkshire's management updates its two-pronged intrinsic valuation update each year, the component for pre-tax earnings was about $900 million *higher* for 2014 than you get by simply adding up the pre-tax income for each of the non-insurance segments as presented. Berkshire implicitly understands free cash profitability exceeds reported earnings. Also, Berkshire presents its two-pronged earnings measure as pre-tax. The analyst must consider how much Berkshire is really paying in taxes, both currently and prospectively to arrive at a proper multiple to apply to after-tax net income.

BALANCE SHEET (adjustments to 2014 balance sheet)

1. The majority of Berkshire's float can be economically viewed as equity, not necessarily as a liability. Float was $84 billion at year-end 2014. The company says it will always maintain $20 billion in cash on hand. This can be viewed as a probable maximum liability from a large series of catastrophes above a typical year's losses. Consider $64 billion as equity.
2. The majority of the deferred tax liability for capital gains can be treated as equity to reflect the small amount of gains actually expected to be taken over time and to discount for when they are actually taken. We use 80% as equity. $21.3 billion for 2014.
3. The majority of the deferred tax liability for property, plant and equipment can be viewed as equity to reflect ongoing growth in growth capital expenditures relative to depreciation. We use 70% (tax rates using accelerated depreciation will increase in later years, in addition, growth capex plans can change). $24.2 billion for 2014.
4. The derivative liability for equity index puts can be viewed as equity to reflect the remote probability of being actually paid. $4.6 billion at 2014.
5. The derivative liability for the remaining credit default contract can be treated as equity to reflect the remote probability of being paid. $250 million at 2014.
6. Increase goodwill, intangible assets and equity to reflect non-economic amortization of goodwill before 1992 and ongoing non-economic amortization of intangibles. We add a rough estimate of $5 billion to each side of the balance sheet, which incorporates cumulative goodwill amortization through 2001, and non-economic amortization of acquisition related intangibles.

All balance sheet adjustments #1 through #6 serve to increase economic equity by eliminating liabilities that will likely never be paid or by increasing asset values. It would be a sin to suggest a GAAP liability isn't really a liability, and our chief compliance officer is a no-gray area former public accountant. This is a reconciling exercise to more properly estimate the economic return on assets and equity for the business. Increasing net income to more closely reflect economic returns gets you to the earning power of the business. We make balance sheet adjustments to gauge how profitable the business is on a more economically relevant net asset value basis. We're not saying loss reserves and deferred taxes aren't liabilities. They absolutely are. The question is when will they be paid and at what cost. Our adjustments serve to strip out liabilities bearing little real cost to better reflect a more conservative return on equity.

The adjustments roughly total $120 billion for 2014, which added to our book value estimate of $255 billion for 2015 makes adjusted economic book value $375 billion.

Lowering estimated liabilities, not writing up assets, drives most of the adjustments to equity. Berkshire has several older businesses purchased years ago that are worth far more than their balance sheet carrying value. We make no attempt to adjust for these asset values. Instead, we recognize Berkshire's balance sheet contains liabilities that effectively will never be paid, or that will be paid but be offset by ongoing growth in new "non-liability" liabilities.

The exercise of adjusting balance sheet values serves to help assess returns on Berkshire's assets. Using the higher net worth number, $375 billion as opposed to GAAP book value of $255 billion, we get a sense of a more economic return on equity. Using our estimated $25 billion in earnings the return on equity must be lower than on reported book value. Return on equity using the higher non-GAAP book value becomes 6.7% using our $25 billion in adjusted earnings against our adjusted $375 billion economic book value.

Of course our return as shareholders on this marked-up GAAP adjusted book value is higher because the current market cap is lower than the adjusted book value. With a market cap at year-end 2015 of $325 billion, the market cap is at a 13% DISCOUNT to adjusted book value of $375 billion, making a 6.7% ROE really 7.7%.

This analysis is not here to confuse. Berkshire's GAAP book value is still an appropriate yardstick to measure profitability against. We won't steer away from the fact that the business earns $25 billion on $255 billion in equity. This exercise demonstrates how profitable the business is on more of an asset basis. More of Berkshire's return on assets inures for shareholder benefit because many of its liabilities come at little or no cost, even negative cost.

RETAINED EARNINGS HELD BY BERKSHIRE'S PUBLICLY TRADED INVESTEES

The largest adjustment to GAAP earnings required to understand how much profit Berkshire really earns, one that is necessary to understand the business, is to normalize the profits earned in Berkshire's stock portfolio. Dividends paid to Berkshire by its portfolio investees are included in Berkshire's financials. Berkshire already identifies realized capital gains and losses from selling common stocks and calls those non-operating. The timing and size of realized gains and losses are truly immaterial and irrelevant to assessing core profitability. But what goes unrecognized in GAAP profits are earnings retained by Berkshire's common stock portfolio investees that aren't paid as dividends. These retained earnings, when coupled with dividends received, are the true total return that Berkshire, and all stockholders of businesses, earns on its money. Understanding this is critical to understanding Berkshire (and many other companies, certainly insurers). The adjustment required adds back the retained profits of Berkshire's portfolio holdings of common stocks, nearly all of which are held as investment assets in the insurance subsidiaries. The retained earnings of the portfolio holding companies are nearly $5 billion pretax (but after corporate taxes are paid at each business – e.g. after Wells Fargo, Coca-Cola and the rest are taxed on their undistributed profits).

Earnings = Dividends Paid + Retained Earnings

What we seek to do by stripping out realized capital gains and by then including all retained earnings is to properly include in our assessment of profitability what Berkshire actually earns for its benefit. It really doesn't matter when Berkshire chooses to convert unrealized gains to realized gains. What matters is including the amount of profits its investees earn on our behalf. Some we get as dividends and the balance is retained by the businesses.

To illustrate, Berkshire had a common stock portfolio of over $115 billion at year-end 2014. It's stocks declined in price last year on the order of 8%. With $3.1 billion in net portfolio activity during the year (through 9/30), the stock portfolio probably finished 2015 at about $110 billion, without including purchases or sales during the fourth quarter (their 13-F filing is due out around February 15 and the annual report will be released at the end of February). The equity portfolio produces dividends of roughly $3.5 billion, which works out to a dividend yield of 3.2% (beats the S&P 500's at year-end prices of 2.1%). The dividends paid to Berkshire's insurance subsidiaries are reported in GAAP earnings and are taxed at only 30% of Berkshire's corporate tax rate. At an assumed 35% corporate rate Berkshire only pays tax on its dividends received of 10.5%; at one point the company noted it paid taxes on its dividends at a 14% rate, which probably includes taxes on dividends paid to states and abroad. We use 10.5% for the sake of introducing one fewer moving part. Heaven only knows there are plenty.

But dividends received are only a fraction of Berkshire's interest in its portfolio companies. In addition to dividends received, Berkshire's interest in the underlying retained profits of the businesses comprising its common stock holdings must also be included when assessing profits. These are substantial and are not included in GAAP earnings. Using trailing GAAP earnings of its portfolio companies, the retained portion of those profits total more than $4.8 billion, which is a retained earnings yield of 4.4% on its $110 billion portfolio. The combined pre-tax GAAP earnings of its stock holdings total over $8.3 billion, which is an earnings yield of over 7.6%. Berkshire's stock portfolio thus has a trailing P/E of 13.3 times. To summarize the math, Berkshire collects $3.5 billion in dividends, on which taxes are paid at about 10.5%, and are

included in GAAP earnings. GAAP earnings won't include the approximately $4.8 billion in profits retained by its portfolio investees. If they were paid as dividends and taxed at 10.5%, Berkshire's GAAP net earnings would be $4.3 billion higher for 2015.

If the concept doesn't make sense, think about our ownership of Berkshire. We never received a dividend from the company, and our shares appreciated from our initial purchase of $43,700 in February 2000 to $197,800 at year-end, giving us an unrealized capital gain on our first purchase of $154,100 per share. Despite having never received a dividend, we have obviously made money. We have made 4 ½ times our money on our original purchase or a gain of 10.0% per year versus less than half that per year for the S&P 500. When we bought the stock, Berkshire had a book value of $40,442 per share, so we paid an 8.1% premium over book. Of Shareholders' equity of $61.7 billion (there were 1.526 million shares outstanding at year-end 1999), retained earnings represented $18.649 billion, or 30.2% of book value. Today, book value is roughly $255 billion, or $155,175 per share (1.643 million shares outstanding). Retained earnings are about $186 billion, which is now 73% of book value, up from 30.2% at the end of 2000. The growth in shareholders' equity is thus a whopping $193 billion, of which the retained earnings piece has grown by $167.4 billion. So book value has grown by 3.8x and retained earnings have grown by 10x. The market capitalization of Berkshire has grown from $66.7 billion at our purchase price to $325 billion, a gain of $258 billion. It is clear that each retained dollar of earnings has translated at least into a dollar of stock market value.

Retained earnings were a smaller piece of Berkshire's shareholder's equity when we first bought the stock in early 2000 due to the 1998 General Reinsurance acquisition, which was done in stock, not for cash, and at a sizable premium to book value – meaning the capital in excess of par was huge.

Berkshire has another small source of look-through earnings that we don't include in our total but will almost certainly appear. Berkshire owns warrants to purchase 700 million shares of Bank of America at a little over $7.14 per share. Assuming exercise, this position is earning more than an additional $700 million pre-tax for Berkshire's benefit that doesn't appear in GAAP profits. Berkshire will not earn dividends until the warrants are converted. The bank is only paying a modest dividend so most capital retained increases the likelihood in our opinion that the warrants will be exercised. The stock at $16.84 is currently more than double the strike on the warrants, making exercise highly likely. The warrant value is on the balance sheet, but Berkshire should be credited with growth at the bank due to its retained profits.

Berkshire also has an evolving investment in Kraft Heinz. Berkshire now owns 26.8% of the business and also has a preferred stock interest carried at $7.71 billion. Kraft Heinz has a right to call the preferred as early as June of this year. With a dividend rate of 9%, they will most likely do so. The call is at $8 billion, which will represent a pre-tax gain of $290 million. The investment in Kraft Heinz will be accounted for under the equity method going forward, despite its shares trading publicly.

ELABORATING ON THE AMORTIZATION OF INTANGIBLES

Amortization of intangibles is another area where an adjustment is required to the GAAP financials to arrive at free cash core profitability. Fortunately for the analyst, Berkshire makes this easy. The 2014 annual report notes that of the $1.15 billion in amortization charges, only about 20% of those are "real". Thus about $920 million in pre-tax expense ($600 million net) isn't reflective of economic loss and should be added back to GAAP profits (as well as back to the right side of the balance sheet). GAAP requires writing down the carrying value of patents, trademarks and customer relationships. Patents expire but in many cases can be extended or retain residual ongoing value post expiration. Writing down the value of trademarks and customer lists/relationships often makes little economic sense. When evaluating all businesses, these are things to consider. These amortization charges will shrink over time, but as Berkshire makes ongoing

acquisitions, which increase non-goodwill intangibles, we assume Berkshire's net profits are an additional $600 million to the good annually.

It's worth mentioning that prior to 2002 GAAP accounting required goodwill to be amortized over periods not exceeding an arbitrary 40 years, the assumption being goodwill (and other intangibles) is a wasting asset, whose value declines over time. For businesses that don't or didn't see any diminution in value, the amortization charges made no economic sense. Berkshire, like many old businesses, had written down goodwill from acquisitions for many years, lowering both the asset value as well as corresponding equity value. FAS 142 "fixed" the accounting issue and now requires an annual impairment test. An entire letter could be devoted to this subject, but know that book value in many cases, Berkshire included, is understated by at least the amount of pre-2002 goodwill amortization charges. Now, book value in many cases (excluding Berkshire) is further distorted at huge numbers of firms due to write-offs and write-downs in excess of economic reality. Companies like to show a lower equity balance, which in turn allows them to show higher returns on equity. We could get into share repurchases at prices in excess of book value also lowering the equity account but that is another paper. Know that in Berkshire's case, GAAP profits understate economic earnings and GAAP book value understates economic intrinsic value by a huge margin. The opposite is true for lots and lots of firms.

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SIMPLE PRICE TO GAAP BOOK VALUE

Simple Per-Share Price to Book Value Basis- "A" Share

	BVPS	Avg. BVPS	1x BVPS	1.2x BVPS *	1.75x BVPS	2x BVPS	High	Low	Range	Avg. BVPS
1994	11,875		11,875	14,250	20,781	23,750	20,800	15,150		
1995	14,025	12,950	14,025	16,830	24,544	28,050	30,600	20,250	236%	156%
1996	19,011	16,518	19,011	22,813	33,269	38,022	38,000	31,000	230%	188%
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	134,973	124,594	134,973	161,968	236,203	269,946	178,900	136,850	144%	110%
2014	146,186	140,580	146,186	175,423	255,826	292,372	229,374	163,039	163%	116%
2015(e)	155,160	150,673	155,160	186,192	271,530	310,320	225,820	192,200	150%	128%
2016(e)	170,676	162,918	170,676	204,811	298,683	341,352	?	?	?	?

* Berkshire authorizes share repurchases below 1.2 times BVPS
1.643 million shares outstanding at 2015; $271,530 per share equals market cap of $446 billion at 1.75x BVPS at 2015

Berkshire Hathaway's stock price generally traded within and around a range of one times reported book value to two times book value since 1965, when Berkshire's current management took over. There were moments and periods where the range was broached, both higher and lower, but those are extremes and will be discussed.

Using a simple price to book value approach to valuing Berkshire is our least favorite methodology. Book value does not capture the sustainable earning power of the net assets of the firm, and thus materially understates Berkshire's intrinsic value. However, it does serve as a reasonable proxy for valuation purposes. Book value understates intrinsic value for reasons discussed in the "GAAP Adjusted Financials" section of this report. Importantly, Berkshire's management has long said so. And they have also said that intrinsic value would grow at approximately the same rate as book value. Ergo, book value is a good, albeit understated, proxy for intrinsic value. They should grow at roughly the same rate over time.

It is important to know why Berkshire's book value is a good proxy for valuation purposes when it is a lousy proxy at so many other companies. Berkshire's book value isn't understated for the reasons so many other companies book values are. First, Berkshire doesn't have a history of repurchasing shares at prices above fair value. Instead, when the company repurchased shares it has done so at prices below fair value, mostly at discounts to book value. Conventional wisdom in boardrooms across the planet believes repurchasing shares are good for shareholders and are a return to shareholders. It depends on the price. Buying shares "for shareholders" at crazy prices is a destruction of wealth. Second, Berkshire doesn't have a history of using undervalued stock to make acquisitions. Rather, with a few exceptions, they have a history of using shares in deals when the stock is high relative to intrinsic worth and book value and cash when it is cheap. Third, Berkshire doesn't have a history of write-downs and write-offs. This is incredibly important. The degree to which other publicly traded companies take charges over time is staggering. Book values should be far, far higher, but aren't because most companies fail to earn their cost of capital over time. Of course, at many firms intellectual property and other assets don't appear on balance sheets but certainly produce earning power and indeed have value. That said, Berkshire's book value is solid, albeit solidly understated.

History of Berkshire's Price to Book Value – and Some History

Parsing Berkshire's annual reports and Chairman's letters over the years provides some fun color about the history of the firm. We tried to convey some of that around Berkshire's price to book value.

1839 to 1970

An owner of several New England textile mills named Oliver Chase acquired and reorganized the Valley Falls Company in 1839. Valley Falls merged with the Berkshire Cotton Manufacturing Company in 1889 (the name changed to Berkshire Fine Spinning Associates) and the Hathaway Manufacturing Company in 1955, creating Berkshire Hathaway. The company was exclusively always a New England textile operation. Warren Buffett began buying shares in Berkshire Hathaway in 1962 for investment partnerships he managed. His purchases were made at steep discounts to both book value and working capital, generally at times when the company would close an unprofitable mill and subsequently repurchase shares. The textile business was in decline for many years. Mr. Buffett acquired control of the company in 1964 and fired their CEO, Seabury Stanton, taking the reins himself. The textile operation failed to generate adequate returns on capital despite great effort to make it work and was ultimately closed in 1985. For Berkshire history buffs, Oliver Chase's great-great-grandson, Malcolm Chase, Jr. was the Chairman of Berkshire when Mr. Buffett acquired control of the company in May 1965. He refused to sell his shares and remained Chairman. Malcolm Chase Jr.'s son, Malcolm Greene Chase III (Oliver Chase's great-great-great-grandson), was a director of Berkshire from 1992 through 2007.

In reviewing the 1965 annual report (the year Mr. Buffett had taken control of the firm, which he had purchased at a sizable discount to book value), book value was $19.46 per share at year-end 1964. Mr. Buffett's cost was below $11 per share, with some shares acquired as low as $7.50 per share. Berkshire bought back 120,231 shares of stock for the company at $13.63 per share in the early months of 1965 during a tender offer initiated the prior year with the proceeds from two mill closings. That repurchase took place before Mr. Buffett took control of the firm in May 1965. By year-end 1965, the share repurchases below book value, coupled with modest net income, pushed book value up 23.8% to $24.10 per share. Subsequent repurchases by the company, now initiated by Mr. Buffett, took place in 1967 at a huge discount to book and in 1970 at a slight discount to book value. The entire stretch of 1965 to 1970 saw the stock trading at or below book value. Berkshire paid its first and only dividend since 1962 in 1967, ten cents per share!

It's interesting that when Mr. Buffett took control of Berkshire during 1965, shares outstanding were 1,017,547. The company had repurchased 566,133 shares over the prior year via the tender offer. Today, shares outstanding total 1,643,316, an increase of only 44% over fifty years, but nearly identical to the share

count in early 1964 when he company began tendering for its shares. Over the years with Mr. Buffett in charge, Berkshire repurchased shares during nine years and has issued shares fifteen times – once in 1996 to issue the B shares, once in 1992 as convertible debentures, and to finance all or portions of 13 acquisitions.

Knowing the business was mediocre at best, the company fortunately diversified in 1967 by acquiring National Indemnity and National Fire & Marine, thus beginning a hugely successful foray into insurance, and with it the float it produces and the leveraged returns derived from successful investing coupled with successful underwriting.

1971-1975

Berkshire's shares traded at or below book value through the end of 1973. Until 1978 insurance companies carried their equity securities at the lower of cost or market value. As Berkshire's stock portfolio rose through 1972, book value lagged behind Berkshire's stock price (and its stocks).

The 1974-1975 bear market took the stock market down by half, and Berkshire down with it. However, book value improved slightly due to nominal profits in the textile business and because the stock portfolio, while down, didn't negatively impact book value because gains were eroding and didn't breach much below cost (book was understated when unrealized capital gains were carried at their lower cost basis). But underwriting results were also terrible from 1973 to 1975, and the stock traded at half of book value in 1975, its largest discount since Mr. Buffett purchased his initial interest in the company in 1962 and 1963. Berkshire neither repurchased nor issued shares during this five-year stretch.

1976-1980

Berkshire's stock rose more than eight-fold from its 1975 low through 1980 while book value rose four-fold, eliminating the discount to book value. The S&P recovered more than its losses from the 1973-4 bear market, slightly more than doubling. Underwriting results were solidly positive. Berkshire bought back shares in both 1976 and in 1978, both times at sizable discounts to book value. Remember book value was lagging during years when stocks rose because they were carried at the lower of cost or market. By 1980 the stock traded at book value. With the exception of the market decline in 1982, which pulled Berkshire's shares lower along with their by then marked to market stock portfolio, Berkshire would never again trade below book. 1982 marked the culminating decline in the secular bear market that began in 1966-1968.

1981-1998

This was the glory period for Berkshire Hathaway shareholders; really the glory period began in 1975 following the washout in stocks by 1974. From the end of 1975, Berkshire's stock rose 240-fold to its 1998 peak, doubling in value eight times! Book value rose in line, but not by as much, doubling only five times and by 36-fold in value. The stock grew from half of book value in 1975 to more than three times book value immediately before the General Re acquisition in 1998.

It took a perfect storm of a 50% stock market decline, coupled with two years of horrific underwriting, to create a situation in 1975 with Berkshire's shares down 50% and trading at half of book value. By 1998, it was Pollyanna, the exact opposite of conditions in 1975.

But the 1980's and 1990's belonged to the bulls. The S&P 500 compounded at 17% per year from 1982 to 1998, and Berkshire's stocks outperformed the market. The use of float leveraged results even higher. Underwriting had been solidly profitable from 1993 to 1998 (following 11 years of underwriting losses made possible industry-wide due to sky-high and falling interest rates, which helped the bond portfolios of insurers).

Berkshire bought back shares exactly one time during this 18-year stretch. When? You guessed it - following the stock market crash in 1987 at a very slight premium to book value. In fact, at about the exact premium to book we paid with our first purchase in February 2000, thank you very much. In the fall of 1987 your author was a college freshman, more concerned with chasing quarterbacks, co-eds and Coors Light than with matters of high finance.

The years 1993 to 1998 saw Berkshire's shares trade in a range around two times book value. The company wasn't in the business of buying back shares at that price. Instead, they used shares to acquire Dexter Shoe, Helzberg Diamonds, R.C. Willey Home Furnishings, Flight Safety, Dairy Queen, Executive Jet, and of course, General Re. Four of those deals were done for more than twice book value. For those that bought the B shares at issue, failing to heed the warnings from management about the shares not being cheap, that occurred in 1996 - at nearly twice book.

1999-today

The past 17 years have been far more somber on so many fronts. Berkshire's shares traded rich relative to book at the outset and are inexpensive today. Unlike the late 1990's, when the stock traded consistently at and above twice book value, shrinkage in the multiple since then afforded Berkshire fewer opportunities to use its stock as currency in acquisitions. It bought US Liability at about 50% above book value in 2000, made a great purchase of Shaw Industries at close to twice book in 2002, and made the huge purchase of BNSF, only partly in stock, but at a modest premium to book and below the intrinsic value of the stock. Small repurchases were made in 2012 and 2013 at close to today's pre-announced threshold of only buying shares at 120% of book value or below. If the stock here in 2016 continues the decline that began in 2015, we may see some repurchases this year.

During the stretch since 1999, book value clipped along at just under 10% per year, a far cry from growth at more than twice that rate since 1975 and well shy of the cumulative annual gain of 19.4% since 1965. The gain in book value per year is still about double the gain for the S&P 500 over this stretch. The S&P saw its value cut by half on two separate occasions, and a slashing of its P/E multiple from nosebleed levels. Berkshire's stock lagged its growth in book value as prices beginning at and above twice book value trended down to today's 27% premium to book (at year-end 2015). Berkshire's stocks were really expensive in 1998, and that was reflected in the stock price then. Berkshire itself was expensive as well, trading during 1998 at more than double our appraisal of intrinsic value.

Like the market, Berkshire's shares twice fell by half, giving us the opportunity to become shareholders and to invest new capital and cash flows at prices not far above book value. Our experience as shareholders has been rewarding because we purchased our shares extremely well. We even sold some shares at more healthy premiums to book value. But gone are the days of heady growth and heady returns.

Berkshire benefited from the leveraging of the global economy from 1981 through 2000 and beyond. Beyond 2000 an excess of systemic debt has crippled growth. We have to make do and select assets and the prices we pay for those assets carefully. Berkshire won't be a home run for us, but we think from today's price we will generate more than reasonable returns for many years.

If you have a sense about the kind of returns Berkshire earns on its capital deployed, then you should be able to buy and possibly sell the stock opportunistically. As we illustrated earlier, a purchase at book will yield you whatever the business earns on equity. Your return can be superior if you are rewarded with an expansion in the multiple to book. If you pay a significant premium to book, any contraction in the multiple to book will eat into your return. Berkshire has a marvelous history issuing and repurchasing shares opportunistically for its shareholders. A range of book value to twice book value has proven a reliable yardstick for valuation across cycles and decades. We see no reason for that range to prove unreliable going forward. A price of 175% of book value reconciles to our other valuation methodologies for fair value.

ESTIMATING THE PROSPECTIVE ANNUAL CHANGE IN BOOK VALUE PER SHARE

It's Really the ROE Over Time (Plus or Minus Share Issuance at Favorable or Unfavorable Prices)

Estimating the prospective annual change in GAAP book value per share is nearly the same as estimating what the ongoing return on equity of the business will be. The two are highly correlated and interrelated. This exercise isn't directly used to determine Berkshire's intrinsic value. What it really does is help in determining sustainable return on equity and its growth rate.

The premise of this approach rests on Berkshire's ability in the foreseeable future to:

- Continue investing in regulated businesses with allowed returns of at least 8-10% per year;
- Allocate insurance capital in the stocks of businesses with sustainable normalized earnings yields of at least 6% and organic growth rates at least as great as nominal GDP;
- Acquire entire businesses of size at prices yielding at least the same 6% with organic growth rates at least as fast (slow) as GDP;
- Intelligently issue and repurchase common stock.

At the point where Berkshire lacks the opportunity set to meet the above criteria, then management and the Board should have the sense to distribute profits directly to shareholders. Growth in book value per share will then become less of a focus.

What if Berkshire Distributed all of its Net Income as Dividends?

Following on to the last statement, the question of how fast would Berkshire grow if it paid *all* of its net income out to shareholders? The answer to this question is not very fast. The rail and regulated utilities earn allowed returns on current capital. In the absence of investment in new assets and improvements, growth would probably correlate to inflation. The insurance operations, likewise, require a certain amount of capital to write new business. The insurers are currently overcapitalized and could certainly write new business, but that would diminish the degree of overcapitalization that Berkshire is evidently comfortable with. Similarly, the leasing businesses are really spread businesses, operating with a degree of leverage. Absent new capital investment they are stuck at zero. Berkshire would grow by the reinvestment of earnings by its stock market investees in the insurance companies, but even there, given a halt in writing new business, the allocation to stocks would have to shrink over time as the insurers would effectively be in run-off (which would reduce float probably by a mid-single digit rate per year).

In the absence of retained earnings, left are three sources potential of growth. First, the MSR businesses do have an organic growth component to them. Some of the businesses have pricing power above the inflation rate and some still enjoy growth curves in being to expand unit sales in the absence of new capital. But the

results here wouldn't amount to a home run. Off the cuff we'd guess the group enjoys organic growth of 2% above the inflation rate, or call it 4%. That leaves two major source of potential growth. Berkshire operates with modest financial leverage and can take on substantial debt. Of course they would butt up against the credit rating agencies and the cost of capital would increase by a huge factor (replacing float at negative cost with interest bearing debt at escalating interest rates). With enough leverage Berkshire's ability to accept insurance business diminishes as well, and regulators in the rail and utility industries limit leverage. The pipelines can use the playbooks of Kinder Morgan and their ilk, using massive leverage to expand operations. Berkshire would operate at a higher ROE with a more leveraged balance sheet, but the fortress quality of the business would be greatly diminished. Finally, Berkshire could issue shares, both to make acquisitions and to raise capital. The company has a history of using shares at generally opportune times, when they are on the expensive side. A need for capital may lower that discipline.

Growth in Book Value Averaging About 10%

Let's move on from the hypothetical and look at Berkshire's profitability not over a 50-year history of the firm under current management but over the past 5, 10 and 15 years, where the macroeconomic climate and stock market have been less hospitable. The results are telling and may be surprising to some. The profitable growth of the insurance subsidiaries, coupled with a massive push into regulated, capital-intensive businesses, have been instrumental to Berkshire's posting respectable growth in book value since the turn of the century.

Average Annual Growth in Book Value Per-Share through 12/31/14

50-year average:	19.4%	(not gonna happen)
15-year average:	9.75%	
10-year average:	10.45%	
5-year average:	11.6%	(influenced by strong bull market in stocks)

Measuring Berkshire's growth in book value per share over time is an excellent approximation of how profitable the company is over time. *The annual change over a period of years really should approximate Berkshire's return on equity.* This is a very basic assumption and is a simple way to measure how well or poorly Berkshire is performing over time. The reason "over time" is important is because short-term changes in the value of Berkshire's investment portfolio in marketable securities is marked to market and fluctuates with more volatility (and with the stock market) over shorter periods. Over very long periods stock prices become more efficient, more closely tracking the underlying value of the underlying businesses.

Here is Berkshire's compound annual change in book value per share in five-year intervals for the past 20 years through the end of 2014:

Compound change in Book Value Per-Share

2010 to 2014	11.6%	(influenced by strong bull market in stocks)
2005 to 2009	9.1%	(includes 2008 bear market in stocks)
2000 to 2004	8.0%	(includes 2000-2002 bear market in stocks)
1995 to 1999	30.4%	(raging bull market and more of BV in stocks)

In the past five years, book grew by 11.6% per year. In the prior five, book value grew at 9.1% annually, and from 2000 to 2004 it grew by 8.0% per year. The five years 1995 to 1999 saw the S&P 500 rise by 28.6% per year, with Berkshire's stocks participating in the advance. [Incidentally, for the five years through February 2014 the S&P averaged 23% per year, noteworthy because all episodes in the past 100 years when stocks logged gains of more than 20% per year for five years straight, all marked either cyclical or secular peaks in stock prices. Buyer beware…]

Continuing with the explanation, Berkshire is currently earning about 10% on $255 billion of GAAP book value. The company pays no dividend and thus retains all of its earnings every year. The book value of the company will therefore roughly grow by the amount of profits it retains. If Berkshire maintains its ROE on current equity as well as on all future retained equity, then the company's book value should compound at roughly the rate of its ROE, presently about 10%.

The shareholder's experience will differ from Berkshire's return on equity depending on the price paid relative to book value. At todays' price, because the market cap of $325 billion is greater than book value, our earnings yield as shareholders is lower than Berkshire's return on equity. The stock is trading at 127% of book value, thus our "shareholder" ROE is 7.9%. Of course, shares purchased in years past now have a cost basis below current book value because book value has compounded. For shares purchased at what is now half of today's book value, those are earning double Berkshire's current return on equity.

When we talk about Berkshire (or any business) in terms of dollars and market cap, we should highlight that per share measures are generally more important. In Berkshire's case, the outstanding share count has been so remarkably consistent over more than 50 years that we are comfortable dealing in dollars absent an expectation the company will issue or repurchase shares in the near term or down the road. The assumption we will earn our earnings yield hinges on the company maintaining a constant share base. Should Berkshire issue shares at prices far below its intrinsic value, which is higher than book value, then the share count could rise and profits on equity could be negatively impacted. However, should Berkshire retire shares, which it will do at prices at or below book value, then those purchases will be accretive to equity and returns. Repurchases below 120% of book value are accretive to intrinsic value, because intrinsic value is far above 120% of book value. It's closer to 175% of book value. However, Berkshire has plenty of more attractive uses for cash at prices between 120% of book and intrinsic value than to repurchase stock.

Berkshire watchers debate why the company imposed a ceiling price above which Berkshire wouldn't buy back stock. The reason to us seems apparent. At prices exceeding than 120% of book value, Berkshire has better uses of its capital. Here's the math. If we assume a normalized 10% ROE on GAAP equity, then a purchase at 120% above 10% yields 8.3%, which is after corporate tax. We think Berkshire believes it can earn more than 8.3% through acquisitions of operating businesses, growth capex, or through the investment capital of the insurance and leasing businesses. Huge capex dollars in excess of economic depreciation are being invested in the rail and energy businesses at largely regulated rates. Those allowed rates in our analysis net down to no less than 8.3% after tax, especially over time. Coincidence? We don't think so. Further, several operating subsidiaries are making bolt-on acquisitions at rates of return we believe to be well in excess of 8.3% annual returns.

If you calculate Berkshire's return on equity using the GAAP statement of income, you will find that Berkshire's GAAP based ROE comes nowhere close to 10% in most years. Here are the reported ROE's and the ROE's adjusted by eliminating realized gains and losses and derivative gains and losses for the past ten years using GAAP earnings and GAAP book value. This is another look at the degree to which simple use of GAAP reported earnings yields inaccurate economic results:

The Flaws in Using Simple GAAP Net Income and Net Income After Realized Gain When Calculating ROE – Profits are Still Understated

(dollars in millions)

	Share-holder Equity	Net Profit (GAAP Reported)*	Return on Equity	After tax Realized Net Gains #	Net Profit After Realized Net Gain	Return on Equity After Realized Gain	Annual Change in BVPS
1998	$57,403	$2,941	5.1%	$1,533	$1,388	2.4%	48.3%
1999	57,761	2,033	3.5	886	1,147	2.0	0.5
2000	61,724	3,876	6.3	2,392	1,484	2.4	6.5
2001	57,950	1,431	2.5	842	589	1.0	-6.2
2002	64,037	4,286	6.7	383	3,903	6.1	10.0
2003	77,596	8,151	10.5	2,729	5,422	7.0	21.0
2004	85,900	7,308	8.5	2,259	5,049	5.9	10.5
2005	91,484	8,528	9.3	3,530	4,998	5.5	6.4
2006	108,419	11,015	10.2	1,709	9,306	8.6	18.4
2007	120,733	13,213	10.9	3,579	9,634	8.0	11.0
2008	109,267	4,994	4.6	-4,650	9,644	8.8	-9.6
2009	131,102	8,055	6.1	486	7,569	5.8	19.8
2010	157,318	12,967	8.2	1,870	11,097	7.1	13.0
2011	164,850	10,254	6.2	-521	10,775	6.5	4.6
2012	187,647	14,824	7.9	2,200	12,624	6.7	14.4
2013	224,485	19,476	8.7	4,300	15,176	6.8	18.2
2014	243,027	19,872	8.2	3,300	16,572	6.8	8.3
2015 (est)	255,000						
2016 (est)	280,500						

* Net Profit through year-end 2001 adjusted to include goodwill amortization after tax
# After Tax Realized Net Gains also includes derivative gains and losses after 2007

This table is here to show the flaws in calculating return on equity using GAAP net profit. Actual ROE is far higher – see section on GAAP adjustments.

You can see in the table that Berkshire only earned 10% or more on equity in three years (we only ran this table back to 1998). The three years 2003, 2006 and 2007 all were years where Berkshire's largest stock holdings were moving swiftly upward. Net profit includes net changes in the stock portfolio, which is marked to market, as well as realized capital gains and losses on the investment portfolio. We mentioned earlier that it is proper to strip out periodic realized gains as they are not predictive of future gains and don't measure the underlying profitability of the investment portfolio. To show this we included a column with

after tax realized gains and losses and then net profit after excluding those realized net gains. You now see in the second column from the right Berkshire's return on equity after stripping out realized net gains. In doing so you see Berkshire's return on equity ranged from a low of 1.0% in 2001 to a high of 8.8% in 2008. In no cases has Berkshire earned 10% on equity on this basis.

A fair question is then, how do you come up with Berkshire earning 10% on equity? Berkshire's GAAP earnings severely understate true net income. Analyzing Berkshire requires numerous adjustments to the financials to arrive at free cash or core profitability. The funny thing about that is the vast, vast majority of publicly companies *overstate* their core free cash profitability over time. In Berkshire's case it's the other way around.

The net profit numbers in the table are Berkshire's reported GAAP profits, and the net profits excluding realized net gains is simply a stripping out of the after tax effect of periodic and in no way regular or predictable realized capital gains.

From earlier sections, we estimate Berkshire will have earned $25 billion in economic net income for 2015. We estimate GAAP shareholder's equity at year-end of $255 billion. Berkshire is thus earning a 9.8% return on equity at present.

We earlier pointed out that when Berkshire reports their yearly results at the end of February, net income might be reported fairly close to our estimate. That will only be a fluke. Through September 30 investment and derivative gains totaled $9 billion, far more than in past years. Stripping out those gains fairly closely offsets the unseen profits we include as economically real. That said, reported ROE this year may well be accurate, but only by happenstance.

Let's expand briefly on why Berkshire's per-share change in book value per share is really a proxy for Berkshire's ROE, particularly over time. In any given year Berkshire's equity grows essentially through the retention of all of its net income. It's retained earnings total $182.2 billion at September 30, 2015. That represents 72.5% of total book value of $251.3 billion. The difference represents $35.6 billion of common and capital in excess of par (stock issued in purchases like BNSF and General Re), $32.2 billion of accumulated other comprehensive income, -$1.8 billion for shares repurchased and $3.0 billion in non-controlling interests.

For book value purposes, price changes in Berkshire's stock portfolio growth are offset by a liability for capital gains taxes due. At a capital gains tax rate of 35%, gains and losses are muted by about one-third. The offsetting expansion and contraction in this liability reduces by a third the year-to-year changes in the stock portfolio's impact on book value. The changes in the portfolio are marked-to-market for GAAP book value purposes. Over the short to intermediate terms, stock prices are generally far more volatile than earnings. If one assumes, however, that stock prices are efficient over VERY LONG periods of time, then the annual changes impacting book value will ultimately reflect the underlying dividends and undistributed retained earnings from the portfolio holdings. At September 30, Berkshire's equity portfolio had a cost basis and market value of $63 billion and $110 billion respectively. Net unrealized gains of $47 billion are offset by a deferred liability for taxes of about $16.5 billion. Berkshire has a history of holding many positions indefinitely and the likelihood of incurring large capital gains taxes is remote, thus it is reasonable for determining the value of Berkshire to significantly discount that liability.

Two considerations merit consideration as to why Berkshire isn't likely to incur big capital gains taxes, despite the existence of a large deferred tax liability on its books. First, Berkshire has a reputation of holding things forever. That may largely be the case with its operating businesses. When it comes to selling equity positions, however, Berkshire is keen to avoid the punitive corporate capital gains tax rate, but it is willing to part with overvalued or fundamentally challenged low-basis positions. Berkshire adeptly swapped several low-basis common stock positions for company subsidiaries on a tax-free basis. In 2008 Berkshire

exchanged their 16.3% ownership position in White Mountains Insurance for two runoff insurance subsidiaries and $751 million cash. The White Mountains deal was but a warm-up. In February 2014 Berkshire swapped its 1973 vintage 23.4% position in Graham Holdings (Washington Post) for a Miami ABC TV affiliate plus more than $450 million in Berkshire shares (technically a repurchase over 120% of book value!) plus $328 million cash. In February 2014 Berkshire swapped its $1.35 billion stake in Phillips 66 for a subsidiary business that manufactures lubricants for transporting oil through pipelines. Most recently Berkshire completed a swap of a low-basis $4.7 billion position in Proctor & Gamble for outright ownership of P&G's Duracell battery business. P&G injected $1.7 billion in cash into Duracell as part of the deal. With the transaction Berkshire was able to avoid a tax on the P&G stake and winds up with a slow or no growing but huge cash generating mature business at a very low price.

Secondly, if Berkshire were to sell positions and incur large gains, then a likely time to have done so would have been around 1998, when many blue chip stocks traded at obscenely high prices (Coca-Cola at more than 40 times earnings). Instead of selling stocks and paying taxes at 35%, Berkshire instead diversified the stock portfolio in the insurance companies by purchasing General Reinsurance, which integrated Gen Re's huge fixed-income heavy, equity light portfolio with Berkshire's equity heavy portfolio. Using Berkshire's overvalued shares to largely effect the transaction really cemented the genius of the capital allocation process at Berkshire.

True, Berkshire has owned many of its biggest common stock holdings for decades, buying Coca-Cola after the market crash in early 1988, Wells Fargo in 1990, and American Express in 1994 (originally way back in the early 1960's in the Buffett partnerships). While Berkshire has owned its original Coca-Cola and American Express positions forever, it has opportunistically and materially added to the Wells Fargo position in the wake of banking crises. But tax favored exchanges and the Gen Re merger indicate a willingness to part with or reduce appreciated positions, only to do so tax beneficially.

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SUMMARIZING THE VALUATION APPROACHES

Each of the first four valuation approaches yields similar results. You can argue we have been selective in choosing multiples and you would be partly correct. Business valuation is anything but a science. At the end of the day you are trying to determine how much free cash profitability a firm will likely produce over time and discount future earnings back to present dollars at a rate that reflects time and the cost of money – both dollar cost and opportunity cost. The quality of the free cash is important, as is the degree of leverage employed and the cost of that leverage. In our "sum of the parts" analysis, each operating group is capitalized at a different rate. For example, each dollar of profit produced by the MSR group is worth more than a dollar produced by an electric utility. The degree of leverage employed accounts for some of the difference. The bottom line is: We strive to be realistic, reasonable and conservative when we value businesses. To be fanciful and aggressive reduces the margin of safety. Our mandate involves a dual margin of safety: business quality and price.

Here is a summary of our intrinsic value calculations using estimated figures for year-end 2015 for each approach:

	Market Capitalization	Price Per A Share	Price Per B Share
Two-Pronged Approach	$501.4 billion	$305,119	$203
Sum of the Parts Basis	485.0	295,134	197
GAAP Adjusted Financials	478.0	290,875	194
Simple Price to GAAP Book Value	446.2	271,530	181

Our estimated annual change in book value per share analysis is not used to produce an intrinsic value, but instead supports an estimate for Berkshire's ongoing return on equity and growth rate of between 8% and 10% per year.

Our preferred analysis is the "sum of the parts" method. This results in a market cap of $485 billion and intrinsic value of $295,134 for the A shares and $197 for the B shares. We use the midpoint values for our range estimates for the operating subsidiaries, plus the value of the marketable securities portfolio, plus a nominal capitalized value to reflect our estimate of normalized 5% underwriting profits over time. Each method is useful and we incorporate all of them regularly to ensure that the moving parts reconcile to each other. At times, when Berkshire's stock portfolio is materially overvalued or materially undervalued, the "GAAP adjusted financials" approach is superior. With it we break out the major earnings streams from the marketable securities and add a factor for upside optionality to the extent Berkshire has surplus cash that will likely be redeployed at higher yields.

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RISKS TO BERKSHIRE

Berkshire's diversity of profitable income streams and its balance sheet strength combine to minimize risk. Remember, we define risk as a permanent loss of capital, not as volatility. A permanent loss of capital can happen suddenly, or it can creep up over time. Berkshire's diversification across its operating businesses and investments greatly serves to keep risk low. Its insurance operations are also overcapitalized by a wide margin. Further, each subsidiary is run in such a way to individually to minimize the likelihood of permanent loss. That said, Berkshire is not immune. For years, the company operated with a huge reliance on the performance of its marketable investments. Since 1998, that reliance is far lower as Berkshire has gradually diversified away from a reliance on longer-tail reinsurance and its investments in common stocks. But, in addition to the ongoing, albeit declining risk of a sizable and sustained decline in the stock market, these are the things we worry about regarding Berkshire. Berkshire remains a major insurer with substantial long-tail liabilities. We are confident the business recognizes the risks described and works to minimize their potential impact on the durability of the franchise.

Killing Me Quickly

Whether by a thousand cuts or by a guillotine, death is death. With all of Berkshire's moving parts, the business is faced with both quick and creeping risks. We worry about both. These are of the more sudden, or quick variety:

- **Huge catastrophe or multiple catastrophes over one or more years in close time proximity that cause a widespread loss of float, particularly if at a time of depressed equity prices**. Policy limits work to minimize risk here, but inevitably the business will write some huge checks at inopportune times. Berkshire quantifies worst-case scenarios and manages risks of loss by using policy limits. At a time of massive reinsurance industry losses Berkshire runs a far better chance of survival than any of its competitors. The reliance on long-tail exposures declines proportionally over time as well, thus mitigating some of this risk somewhat prospectively, because reinvested earnings are being invested largely outside of the insurance operations.
- **Stock market risk**. A material permanent loss of value in one or more of Berkshire's largest equity holdings in its insurance portfolios is a risk. Berkshire's five largest positions (American Express, Coca-Cola, IBM, Kraft Heinz and Wells Fargo) make up about two-thirds of its publicly traded equity portfolio. Two of the businesses have major leveraged lending operations. We think the risk of failure of any of Berkshire's banking investments is remote, but they operate with substantial financial leverage. Even without the failure of a large holding, stock market risk exists within Berkshire. We saw this during the crisis in late 2008 and early 2009, when Berkshire's stocks dropped by nearly 70%. A sufficient decline in the statutory surplus of the insurance operation would limit the ability to write new insurance business, and that could affect the ability to underwrite profitably, or to underwrite at all.
- **Recession risk**. Berkshire is not immune to the economic cycle. Numerous of its businesses were impacted during the 2008/09 recession. Berkshire's stock portfolio fell in concert with the market and many of its manufacturing businesses in particular weakened. BNSF wasn't yet on board. In fact, it was the recession and the weakness in the rails that allowed Berkshire to purchase BNSF. With its numerous profit streams, Berkshire still produced healthy operating profits in 2008. A deeper and longer lasting downturn may not be so kind.

Stress-Testing the Killing Me Quickly Risk Factors

Let's paint an ugly perfect storm by combining the three "Killing Me Quickly" risks. Suppose we face a recession this year that takes industrial production down by a third. Global trade falls off a cliff and global stock markets plummet by half or more. Let's say the S&P 500 falls to 900 or lower and stays at that level

for two years. Unemployment spikes to 9% and housing prices fall by 20%. Our central bank responds with a new iteration of quantitative easing and sets policy short-term rates at zero or below. So far we've described 2008. Then suppose California is rocked with a series of earthquakes that impact Los Angeles and San Francisco, closing the ports of Los Angeles, Long Beach and Oakland for several weeks. Miami and a swath of south Florida are swept by a massive hurricane.

How would Berkshire fare? For starters, most of the property and casualty industry would be on the mat. The life insurers might be dead. Berkshire noted in last year's annual report that, "…if the insurance industry should experience a $250 billion loss from some mega-catastrophe – a loss about triple anything it has ever experienced – Berkshire as a whole would likely record a significant profit for the year because of its many streams of earnings. We would also remain awash in cash and be looking for large opportunities in a market that might well have gone into shock. Meanwhile, other major insurers and reinsurers would be far in the red, if not facing insolvency."

Berkshire didn't assume they would earn a large profit across the business *if* the economy were also on the mat. The real question is: would the insurance operation and Berkshire itself withstand several major catastrophes, a deep recession in the economy and a collapse in stocks at the same time? In years with the largest natural catastrophes, Katrina, Rita and Wilma in 2005, Andrew in 1992 and Northridge in 1994, Berkshire sustained large catastrophe losses but had healthy underwriting profits elsewhere across the insurance operation, wholly benefiting thanks to rising stock prices in those years. The 9/11 terrorist attacks was the third largest and most expensive catastrophe to face the industry and it occurred during a period of weak stock prices. The S&P 500 fell 11.8% that year, on the heels of a 9% decline the year before. Berkshire suffered a 13% underwriting loss, book value fell by 6.2%, and its reinsurance businesses suffered a pre-tax underwriting loss of $2.4 billion, which was less than 10% of statutory surplus at the time.

Berkshire stared into the abyss in early 2009. Book value fell 9.6% the year before. The decline would have been greater save for the deferred tax liability for capital gains muting the fall in the stock portfolio. The stock portfolio entered 2008 at $84 billion. By the end of that year it fell to $49 billion, but it still had a $12 billion gain relative to cost basis. By the time the market bottomed in February, the gain on cost was gone. From that point forward further declines in the investment portfolio would have taken statutory surplus down dollar for dollar. Berkshire was closer to an inability to write the next dollar of premium than it had ever been. Most insurers were near death and technically bankrupt.

Let's say our earthquakes and hurricane combine to cost the industry $250 billion. Katrina, the most expensive modern catastrophe on record cost $41 billion ($50 billion in today's dollars). With a $250 billion mega-catastrophe, Berkshire would likely have to absorb 10% of the total on a pre-tax and pre-time basis. The losses would develop and be paid fairly quickly, costing Berkshire more than $16 billion after-tax. GEICO would also incur at least $4 billion in extraordinary losses and could see pre-tax underwriting losses of 10% or more. All of Berkshire's insurance operations would be affected. We assume losses for the year would approach 100% of premiums, with an underwriting loss of 25%, thus creating pre-tax underwriting losses $10 billion. Further, Berkshire and other insurers would be on the hook for some of the losses of insurers that had failed, particularly on their admitted lines.

Statutory surplus was $129 billion at the end of 2014, and it's probably about the same right now. If we assume Berkshire's $106 billion stock portfolio is cut in half, statutory surplus could fall to $84 billion when combined with the $10 billion pre-tax underwriting loss. (Remember, the deferred tax liability for unrealized gains mutes stock price declines until prices fall to cost.) The portfolio had a $50 billion unrealized gain at September 30, 2015. The insurance operation wouldn't be crippled, unlike most of its competitors, but would still suffer a painful 35% drop in the insurance operation's book value. Berkshire could still underwrite its entire current year premium but would be doing so with far less overcapitalization.

In our perfect storm scenario, BNSF would be hit hard. Car loadings plummet as both trade and consumption slow. Intermodal traffic is diverted to the ports of Seattle, Tacoma and Portland, and to the east coast and Gulf of Mexico. Revenues and profits at the Class I rails fell more than 20% during the financial crisis in 2008-09. In a scenario like the one presented here, BNSF could see revenues fall by a third to $15 billion. Profits fell in line with sales during the previous recession; during this more extreme case the rail could see profits drop from $5 billion to $2 billion. We don't see an environment where the railroad would lose money, particularly not for a sustained period of time. Rail will move freight even during the darkest of economic times.

BH Energy enjoys somewhat of a protected economic position. Even if energy use falls by several percentage points, the businesses in this group earn a regulated return on usage. Diminished short-term capacity utilization would translate to only modestly lower profits, and a worst case here would be profitability of at least $2 billion.

The MSR and the Financial Products businesses are all sensitive to economic conditions, but balance sheet strength gives them durability during hard times. Equipment leasing and manufacturing are very sensitive. Even the retailers and service businesses don't fare well when times get really bad. MSR revenues could fall 15% from $107 billion to $90 billion and take profits down by 40% to $3 billion. Call profits at the MSR businesses $2.5 billion and let's say the leasing businesses just breakeven and earn nothing. Salvage values on equipment will be weak for sure. The projection paints a far worse picture than transpired in 2008. Margins did decline that year but the businesses as a group remained solidly profitable.

Retained earnings by Berkshire's stock market investees would also be impacted, which affects investment income as we define it. We assume that in a deep recession the profits of Berkshire's stock market investees would drop by half, reducing the retained earnings portion of profits. We cut dividends by 20%. We also assume no upside optionality of surplus cash, despite Berkshire's proven ability to deploy large amounts profitably during times of crisis.

Here are the hypothetical net profits earned (or lost) by the key moving parts assuming the perfect storm of multiple catastrophes, a recession and a stock market decline:

Net Income Effect from Perfect Storm

2015 Base vs. Perfect Storm

	2015 expected	Perfect Storm
BH Energy	$2.4 B	$2.0 B
BNSF	5.1	2.0
MSR Businesses	5.5	3.0
Finance Businesses	1.7	0.0
Underwriting	1.3	(6.5)
Investment Income	10.6	6.7
Net income	$26.6 B	$7.2 B

The likelihood of the perfect storm scenario is highly unlikely, but it is not out of the question. We have a huge investment in Berkshire and need to be certain we won't wake up tomorrow and find the business in

peril. The illustration above can only be taken with a grain of salt. In it we show net income dropping by nearly three-fourths, to $7.2 billion, if a number of awful scenarios play out at the same time. In an episode like this, Berkshire would win the game of "Last One Standing." It will be bloodied, but even in a nightmare, would still produce nominal profits and a return on assets of more than 1%.

We try to think through various scenarios where the business can be harmed. Berkshire needs to be able to survive the combination of a severe economic and stock market downturn, coupled with a massive series of catastrophes impacting not only reinsurance but also the remainder of lines. Given the lack of leverage within the business, should capital be impaired enough to inhibit underwriting the amount of business desired, Berkshire has an untapped ability to utilize debt capital to enhance capacity. Capital strength is so strong today that the quick risks really aren't entirely relevant. Berkshire lives to fight when all else have died. The risks that bother us deeply are the creeping variety.

Killing Me Softly

Henry Singleton built Teledyne over more than two decades (1960-1986) into arguably the only great conglomerate until Berkshire came along. The business managed its capital exceedingly well, decentralized its subsidiary operations, practiced conservative accounting and owned a terrific set of businesses. What Mr. Singleton failed to do, however, was to build durability into the businesses. Succession planning simply wasn't even an afterthought. When he retired in 1986 the company went into a slow decay. The managers of many of the operating subsidiaries were not exemplary, and too many of the businesses cut so many corners for short-term profitability that they eroded. The company was ultimately over-invested in defense businesses that were harmed by defense cuts in the early 1990's. The business was sold in 1997 for a fraction of its value at the time of Singleton's retirement; and it was ultimately broken up over ensuing years.

The risk of Berkshire following Teledyne's path, while remote, is something to worry about. We believe Berkshire has committed the necessary resources and energy to build a durable and sustainable franchise, and they have a succession plan for both operations and investing. Will Berkshire's future managements prove outstanding or even competent over time? Will they know when broad swaths of the economy are at an inflection point? Will milestone deals like General Re still be on the table? If the regulatory climate in the railroad or the utility industries slowly worsens, will management know early enough to make appropriate changes? How will the business navigate financial crisis? Will Berkshire continue to be offered deals on attractive terms or will management be competent enough to know great terms from lousy terms? Teledyne didn't fail the day Henry Singleton walked away from the business, but it was all but dead ten years later.

Risks that can harm Berkshire over time are:

- **Insurance float runs-off quickly**. The likelihood of continued rapid float growth at Berkshire is remote. It's more likely that at some point float plateaus or even declines. Berkshire's insurance operations have grown far more quickly than the industries they operate in for many years, but the opportunity for profitably taking market share diminishes as the business gets larger. If it becomes evident that taking the next dollar of premium compromises profitability, the decision to stop growing comes into play. If this decision is made only after compromising underwriting profitability, then absent an opportunity to raise rates the business may have to shrink more quickly. If the business were to quickly lose float, then increasing amounts of invested assets will be required to satisfy losses. The equity-like characteristic of float reverts back to its true liability character. At that point the leverage enjoyed from decades of utilizing float is gone. The investment portfolios of the insurance operations would necessarily need to assume a more duration-matched character to the loss reserves as they are paid. The point may come where the underwriting climate is so poor and unprofitable that some business segments voluntarily run-off. The possibility also exists whereby Berkshire or any of its insurance operations are downgraded by ratings agencies or restricted by regulators, whereby they are prohibited or become incapable of writing business.

We believe, however, that the likelihood of float quickly running off is remote. Despite some large retrocessional policies written at National Indemnity that run-off over time, much of the insurance franchise can profitably grow for at least the next decade. GEICO still has plenty of room to grow profitably. Know, however, that GEICO is closing in on private passenger auto leader State Farm. State Farm lacks the same profitability requirement as GEICO. At a point in the future does GEICO compete excessively more on price than it does today for market share? Berkshire also launched a commercial insurance operation, which has already made a dent in the industry and will grow to be a large player over the next decade. Berkshire also has a huge ramp to expand its insurance operations globally. The degree to which Berkshire's insurance operations are overcapitalized is a significant advantage. The risk of float being quickly run-off is extremely remote.

- **Hyperinflation.** Unfortunately, the tails of the monetary instability probability distribution curve have gotten fatter. Hyperinflation destroys the purchasing power of cash and of bonds, precisely the investment vehicles that most property/casualty insurers invest primarily in. Berkshire's investments in fixed-income securities and cash are very low today and shrinking. How well positioned is the business to withstand the kind of shock that comes from hyperinflation? Are long-tail liabilities and assets mismatched if inflation grows out of control? Much of Berkshire's invested capital over the past decade has been in assets that possess durability regardless of the inflationary climate. Its primary regulators will allow returns on invested capital that adjust for erosion in purchasing power due to inflation on assets carried at historical cost. On the other hand, history is full of examples where governments nationalize industries that exist for the public good during and in the wake of hyperinflations. We remain truly concerned about societal debt levels and the intrusion of central banking policy into the capital markets. Our investment in Berkshire should protect us far better than in many alternatives.

- **Deflation** – Playing Now at a Theatre Near You…Declining prices result from too much debt, a risk that is proximate for the global economy. Deflation compresses interest rates, which reduces income from cash and bonds. Life insurers and annuity writers suffer during periods of deflation. Berkshire has exposure here but not materially. Deflation further pressures consumption and output. Debt is a burden that becomes harder to service when output declines. Fortunately, Berkshire's reliance on leverage is minimal. The MSR businesses as a group may find it difficult to grow revenues, but running these businesses net debt free increases Berkshire's competitive position. Deflation and slower economic activity, particularly overlaid with low oil prices and shrinking reliance on coal, will pressure the railroad's profitability. The railroad and the utility businesses do employ substantial debt in their operations. The aggregate of Berkshire's businesses offer services and manufacture products that customers require, regardless of the price level. Deflation kills leveraged enterprises. Berkshire operates with such a pristine capital structure that deflation will harm others far more.

- **Mature businesses**. Many of Berkshire's operating businesses and investees operate in mature industries. Without retained earnings, organic growth rates across the Berkshire franchise are very low. The vast majority of Berkshire's future growth will come from reinvestment of its retained earnings. To date, its ability to invest retained earnings has been profitable. Numerous of the MSR businesses have pricing power but the remainder of the businesses do not. With the railroad, the utilities and the regulated insurance businesses, the tradeoff for earning allowed returns on capital is that you can only earn allowed returns on capital. Upside is muted. Berkshire's ability to reinvest retained earnings profitably is therefore the most critical element to its investment success. We believe the business can earn a minimum of 8% for the foreseeable future, which is a very attractive return in today's low-growth investment environment.

- **Business obsolescence**. This is true for any business, but especially so for several Berkshire businesses. Take the newest subsidiary, Precision Castparts as an example. Suppose several

customers take some of Precision's manufacturing processes in house. Even more disconcerting, as technologies like 3-D printing evolve, suppose the need for Precision's forged metal and alloy components disappears altogether. Another example is self-driving cars, which may displace my soon to be driving teenager daughter behind the wheel (OMG). We doubt the likelihood of this technology being rolled out anytime soon, or ever, but should it, the damage to private passenger auto insurers would be deep. Fortunately, Berkshire has so many disparate earnings streams that its own diversification protects it greatly from declining industries and obsolescence. Its current management had the savvy to recognize its mistake in buying into textiles. It recognized a secular stock market peak and transitioned the business away from as much reliance on common stocks. Identification of the risk is part of what Berkshire management has done so well. Who knows how well successive managements identify and react to change…

- **Regulation**. We touched on this already, but it's a major risk factor. Berkshire's railroad, energy and utility, and many of its insurance businesses operate in a regulatory environment with allowed rates of return. The risk of disallowing economic returns exists, especially during periods of high inflation. The electric utility industry dealt with stranded and unrecoverable costs for many years, particularly with nuclear investments. Recoveries on coal investments are on the table right now. The ratemaking environment is generally more hospitable today across Berkshire's regulated businesses. The use of weighted average cost of capital and the capital asset pricing model should allow for decent returns in an inflationary environment. Berkshire has made huge investments in alternative energy, particularly in wind, solar and hydro. Congress passed a bill in December extending production tax credits and investment tax credits that benefits Berkshire's ongoing solar and wind energy investments. But those credits were at risk of expiring. What is now a favorable regulatory climate in this area can change adversely as governments change. Berkshire also has earned goodwill among its regulators for providing outstanding service. But regulators are governments with changing motivations. This problem is not unique to Berkshire: all businesses are faced with a growing regulatory burden. It is an expensive problem.

- **Dependence on the rating agencies.** Berkshire and its regulated capital-intensive businesses utilize the debt markets for financing. Further, Berkshire's insurance operations rely on credit ratings when writing policies. Lowered ratings could adversely impact Berkshire. Debt costs could increase. In some cases, Berkshire is required to post collateral in derivative contracts if its ratings drop below specific thresholds. Importantly, Berkshire's investment operations are rated highly because they are *over*capitalized. Berkshire also enjoys the latitude not only by regulators, but also by rating agencies, in allocating insurance reserves in far higher concentrations to "risky" investments like stocks. This has been a huge benefit over time, but if Berkshire were required, either by regulators or via suggestion by ratings agencies, to lower concentrations in higher yielding assets, it could lose a substantial competitive advantage. The rating agencies may not conclude the current CEO's successors are deserving of the latitude to invest large percentages on invested assets in stocks.

- **Decline in managerial talent at operating subsidiaries**. This is a huge risk. Many of the managers of Berkshire's operating subsidiaries are founders or have been in place for years or decades. The relationship dynamic between the subsidiary CEO's and Berkshire's own CEO is unique and has been a sustained competitive advantage. It will certainly change over time. The risk of a rogue employee damaging the business (Barings Bank, London Whale, etc.) has always been there, particularly with headcount approaching 400,000. Ensuring operating managers continue the business principles and disciplines in place today is not guaranteed, so it must be watched closely.

- **Decline in investment talent**. We project Berkshire's return on equity at 8-10% per year, leaving a low margin for error, particularly because the business reinvests all of its earnings. Fortunately, in Berkshire's case, the cost of capital is extremely low. On the investment front, Berkshire is offered

opportunities in times of crisis. It can assess deals quickly and because of its capital strength has a long track record of taking advantage of volatility.

The same opportunities may not be available as Berkshire's management evolves. Further, we don't believe the business will be able to react as quickly or as successfully. Further, we are not overly excited about a number of the portfolio investments among the invested assets of the insurance companies. Too many employ leverage we wouldn't take on ourselves. Given the already enormous size of Berkshire's capital, the opportunity for intelligent investing is limited. A handful of allocations to leveraged businesses with poor economics can tilt the balance from earning good returns on capital deployed to destroying capital. Mistakes here will only be evident over time. We must have canaries ready.

- **Risk of break-up**. Standard Oil. Teledyne. There are exactly zero conglomerates worldwide that have withstood the test of centuries. We spent a lot of time in this write-up digging into our "sum of the parts" analysis of Berkshire, and we concluded that the business is undervalued by about 30%. On the surface, if the discount exists into the future, the possibility exists that future boards of directors, or regulators, compel a beak-up of the company. On paper, value exists. But throughout our write-up, we identified several operating business that are better off inside of Berkshire than on a stand-alone basis. Spinning-off or selling businesses may add some short-term gain, but many of Berkshire's companies could never enjoy the same economics and operational latitude as stand-alone entities. This is a real risk as Berkshire grows and management and boards change.

- **Risk of change in the executive suite**. We did not intend to list a new CEO as a risk. We don't assign a CEO premium to our valuation, just like we don't assign a conglomerate discount. But in writing about the risks facing Berkshire, you must conclude that the current CEO thrived so well, and added so much value to Berkshire, because he is an extraordinary manager of risk. We are confident in the Berkshire succession plan. We are confident in the durability of the franchise, in its competitive advantage, in its operational excellence, and in its morality. The one area in which we have no idea is how well future CEO's will view and manage risk. That we strive to know what we don't know becomes of great importance going forward.

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SUMMARY

An investment in Berkshire Hathaway today will not provide us returns mimic those of the past 51 years, or from the 1974 bear market low. Gone is the ability to compound capital at 20% a year. But there are other things you don't get as well. You don't get a business facing obsolescence and declining growth prospects. You don't get a company with aggressive accounting practices that is focused on short-term results. You won't find material write-downs or write-offs or spin-offs of underperforming subsidiaries. They simply aren't there. You don't get a business that abuses its shareholders by overcompensating its officers and directors, or that dilutes shareholder value by issuing vast numbers of options and restricted shares, or that repurchases shares at exorbitant prices that harm shareholders in the name of returning money to them.

What you do get with Berkshire is a seriously overcapitalized business with several profitable earnings streams across a wide array of industries. Many of Berkshire's subsidiary businesses are far better off operating under Berkshire's umbrella than they would be as stand-alone businesses. Without a doubt, much of the operation is mature, but you get a business with $255 billion of equity earning at least $25 billion, a 10% return on equity. For conservatism's sake, the return can drop to 8% over time, but a range of 8% to 10% over many years, if not decades, is very attractive. You get a business where much of the right side of the balance sheet finances much of the left side at negative cost. In fact, even with term debt in the rail and energy operations paying pre-tax interest rates of 5%, the total cost of leverage on all liabilities is arguably close to zero. You get $550 billion in assets, many of which are understated, earning almost 6% before tax. Offsetting those assets are $295 billion in liabilities, many of which will never come due, with an aggregate economic cost of close to nothing. With Berkshire you get a business that uses its capital opportunistically, its yield-generating activity during the financial crisis as an example. At times they have purchased assets from others during desperate times for a song.

We have never known another business with a better appreciation for understanding value and value creation. Just consider the landmark milestones. It realized almost immediately that its sole business, textiles, was lousy. It figured out insurance early on, and better than anyone else. It diverted capital from its money consuming original textile operation and used the leverage afforded by profitable long-term underwriting to earn returns far in excess of the stock market during one of the greatest bull markets in history. Then, when the value proposition from the stock market was about to change for the secular worse, the business transformed itself. It diversified away from stocks by half, using its own inflated currency to do so. It then pursued a path whereby it would generate regulated returns on lots of capital at rates that would double the return on common stocks for at least 20 to 30 years. It recognized that systemic debt levels would change the global economic landscape and it began building and buying assets that can withstand the vagaries of both deflation and inflation. The business knows when its own shares are cheap and when they are dear. It has a proven track record of issuing and repurchasing shares for the benefit of its owners. Even when it issued shares at prices beyond what it believed to be fair value, it warned prospective shareholders of the high price. Berkshire is a business that has thought more deeply than any other about succession, and has in place a structure to retain its core operating principles and disciplines for many, many years. You just can't find this kind of behavior anywhere else.

Our Berkshire shares trade at 70% of fair value, giving us 45% upside to fair value. The stock is worth approximately $295,000 per A share and $197 per B share. As a base return expectation we should at least earn today's earnings yield of 7.7% for many years. With a little multiple expansion from 13 times normalized earnings, our expected returns become even greater. Like Berkshire, we will reduce our position size as the share price approaches fair value and above, and we will add to the position when we have liquidity at prices far below. Every purchase we have made over the years in Berkshire's shares, beginning in February 2000, was at a price sufficiently below fair value to allow us good returns over time. Berkshire stands ready, with surplus liquidity of its own, to repurchase shares below 120% of book value, a token 6% below the 2015 year-end price.

Investors are hard pressed to find a better, more durable, more honestly and intelligently run business. If you find one let us know. That Berkshire's shares can be purchased inexpensively at times is a gift. Oh, if it were only 1965 or 1975 again…

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Well, that turned out to be far more than intended! The investment climate we live in will likely never again be as favorable as it was from the end of World War II through the late 1990's - at least in our lifetimes. Excessive debt is and remains a scourge. The breakdown of stock market internals is concerning, yet everybody is partying like its 1999. Fortunately we own a portfolio of stocks with durable businesses, like Berkshire, trading at very favorable prices. Our prospective advantage versus the market is perhaps as great as at the 2000 bubble peak. Our portfolio is well positioned to generate decent returns for many years, and the risk we take is very low. We welcome any comments or feedback. We also appreciate the confidence and trust you place in Semper Augustus.

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