Oct 25, 2016

MORNINGSIDE HILL
CAPITAL MANAGEMENT

S&P 500: THE LOST DECADE

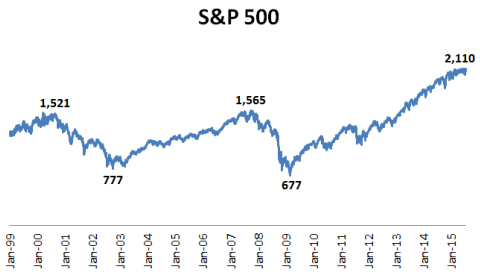
- Many investors struggle to reconcile subdued real economic growth with the remarkable performance of equity markets. The table below shows real US GDP growth in the current cycle averaged only 1.1% a year, about a third of its long-term average.

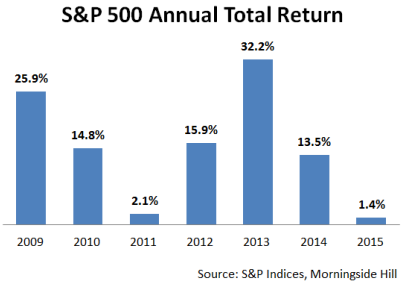
US: Real GDP Growth Rate Per Cycle (CAGR), Peak to Peak

Cycle (per NBER)	# years per cycle	Peak GDP Prevous Cycle ($bn)	Peak GDP New Cycle ($bn)	CAGR
2007 - 2016	9	14,963	16,525	**1.1%**
2001 - 2007	6	12,710	14,992	**2.8%**
1990 - 2001	11	8,984	12,710	**3.2%**
1981 - 1990	9	6,663	8,984	**3.4%**
1973 - 1980	7	5,462	6,663	**2.9%**
1969 - 1973	4	4,736	5,462	**3.6%**

Source: Fed of St. Louis, NBER, Morningside Hill

- The charts below display the strong returns of the S&P 500 index. We focus on the S&P 500 since it comprises 80% of the US and 50% of the world equity market capitalization.

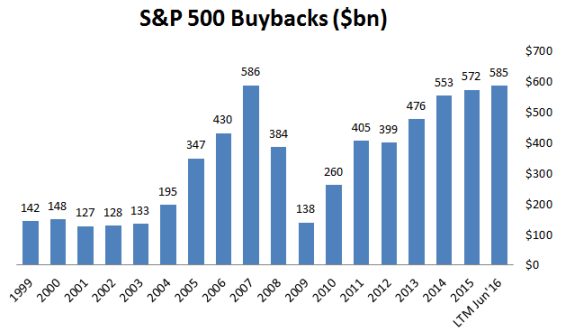




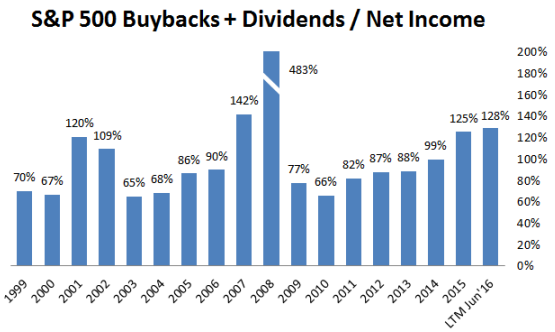
- Most economists and market analysts justify higher equity market valuations with the following thesis focusing on the progress of S&P 500 companies since the last recession:
  - Companies have significantly grown earnings and revenues;
  - Corporations are returning large amounts of cash to shareholders via increased dividends and stock buybacks;
  - The large number of stock repurchases have increased the value per share since the denominator has decreased;
  - Companies have substantially deleveraged since the financial crisis.
- The above arguments are both compelling and intuitive. Most would agree that businesses have made significant progress since the last crisis – by increasing profitability and shareholder value while reducing risk. Even those that would claim the market is expensive believe that this is partially offset by a significant increase in earnings and revenues. We wish to test these assumptions.

Stock repurchases and their effect

- As a first step let's consider changes in stock repurchases over the last 15 years.[1]



Total buybacks this cycle (2010-2016):	$2,958
Total buybacks previous cycle (2003-2009):	$2,213

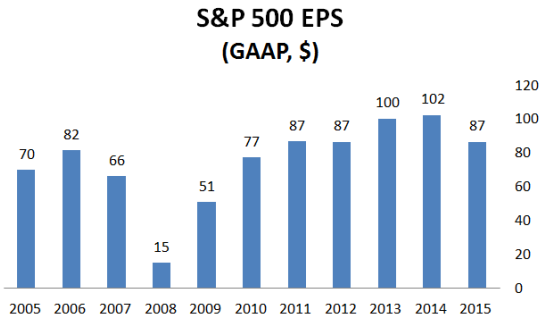


Source: Standard and Poor's, Morningside Hill

- The first chart represents annual spending on buybacks. At a combined spend of $5+ trillion, the last two cycles stand out with levels of repurchases that are unprecedented in scope and magnitude. Since 2010 S&P companies have spent $3 trillion on buybacks, about 30% more than during the previous cycle which ended with the financial crisis. The chart to the right shows total return to shareholders as a percentage of net income. It demonstrates that companies tend to overextend during periods of decelerating or declining growth.

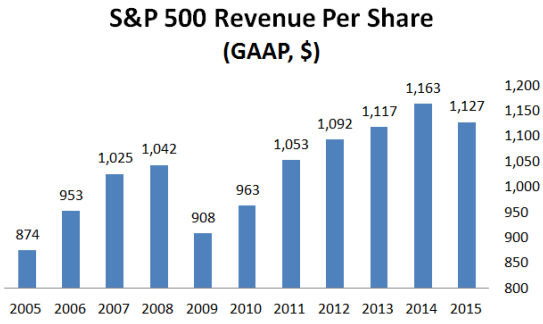
- Technically, all of these stock buybacks should have shrunk the total share count. Logically, this should increase the growth in all per-share metrics like earnings per share (EPS) or revenues per share relative to aggregate metrics as in total earnings and revenues. Many market commentators have recently asserted that growth in per-share metrics has strongly outpaced the actual business growth.

- The following charts show GAAP earnings per share and revenues per share. We have computed the CAGRs below the charts. A discussion on why we prefer to use GAAP metrics instead of adjusted metrics can be found here.[1]



Compound Annual Growth Rates (CAGR):

• peak (2006) to peak (2014)	2.9%
• last peak (2006) to 2015	0.7%
• 3-year avg previous peak to 3 year avg last 3 years	3.6%



Compound Annual Growth Rates (CAGR):

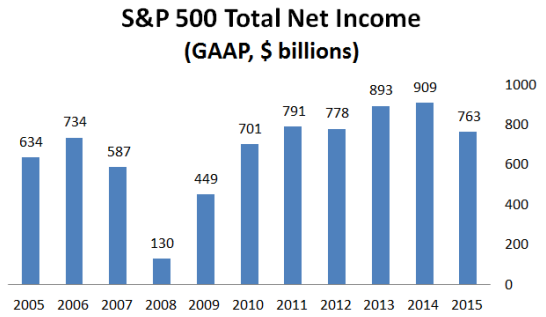
• peak (2008) to peak (2014)	1.8%
• last peak (2008) to 2015	1.1%
• 3-year avg previous peak to 3 year avg last 3 years	1.5%

Source: S&P Indices, Morningside Hill

- For the sake of objectivity we chose to measure growth using several points of reference. Peak to peak EPS growth (2006 to 2014) was 2.9% per year. From the last peak in 2006 to 2015 growth was only 0.7% per year as EPS declined during the ongoing earnings recession. Finally, instead of taking single years as the start and end points we take the average EPS of the last 3 years before the last recession (2005-2007) and compare them to the average from the last 3 years in the current cycle (2013-2015). EPS growth measured in this manner averaged 3.6% per year.

[1] All information downloaded directly from S&P Indices under "Additional Info" at: http://us.spindices.com/indices/equity/sp-500

- As a second step we compare this data to the aggregate data, or total revenues and total earnings. [2]



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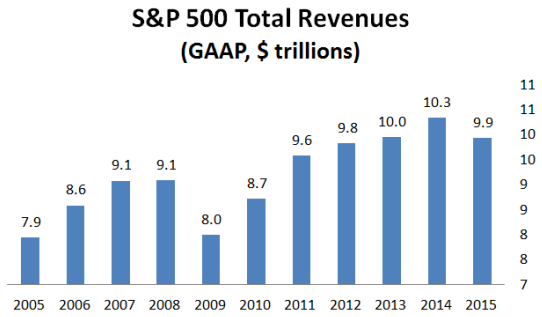

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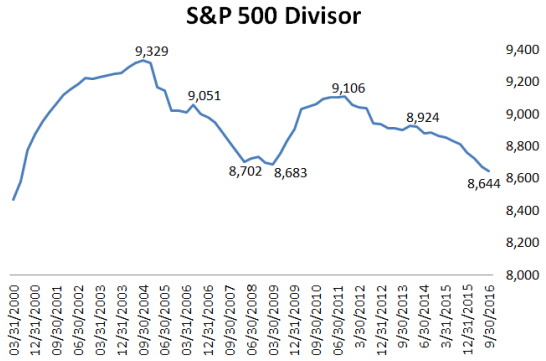
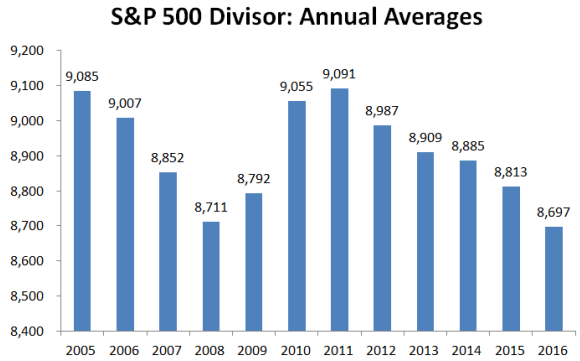
Source: S&P Indices, Morningside Hill

- The results are quite surprising. **Despite spending $3 trillion on buybacks it turns out earnings per share and revenues per share growth is nearly identical to the growth in total earnings and revenues**. Indeed, the peak to peak growth in EPS is 2.9% per year, while in total earnings it is 2.7%. The difference in total revenue growth versus per-share revenue growth is even smaller, with all 3 CAGRs basically identical. It seems buybacks had a negligible effect.

- You are probably asking "how is this possible?" Mathematically it doesn't make sense – once you reduce the number of shares, earnings per share should grow faster than total earnings.

- To resolve this we need to answer the following question: did S&P companies really reduce the number of shares outstanding during the cycle? Let's begin by taking a careful look at the index divisor. The divisor accounts for changes to index constituents and adjusts for changes in the number of shares of its companies. If a company issues new shares the divisor increases and conversely if a company buys back shares it decreases. The charts below describe the divisor as well as its annual averages.[2]





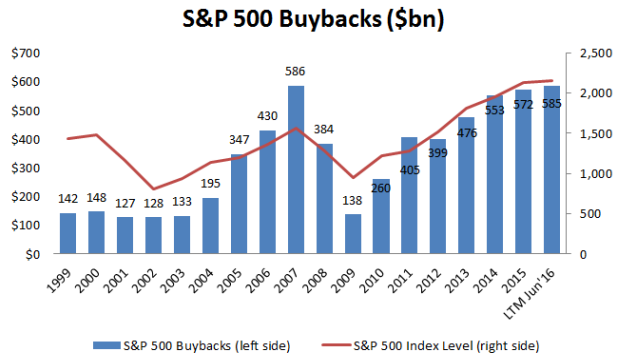
Source: Standard and Poor's, Morningside Hill

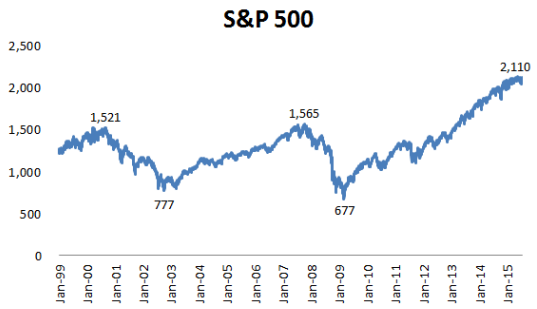
- The generous buybacks in 2006-2008 decreased the divisor from 9,329 in 2004 to 8,600 in 2008. It is important to note and easy to forget, that in the aftermath of the crisis (from 2009 to 2011) numerous companies from a wide range of industries issued large amounts of shares. We can all recall the sheer number of companies that were in acute distress – auto manufacturers, insurance companies, banks, industrials, media, retail, real estate, etc. Companies in virtually all sectors save technology aggressively sought capital. As a result of the large amounts of shares issued after the crisis, the divisor peaked again in 2011 at 9,106. It has been coming down ever since and recently reached a low of 8,644.

[2] All information acquired directly from S&P Indices under "Additional Info" at: http://us.spindices.com/indices/equity/sp-500
Aggregate values computed by multiplying per-share data by the divisor

- This explains why the growth in EPS since 2007 is not much higher than the growth in total earnings. The divisor has barely moved – it is pretty much where it was right before the financial crisis.

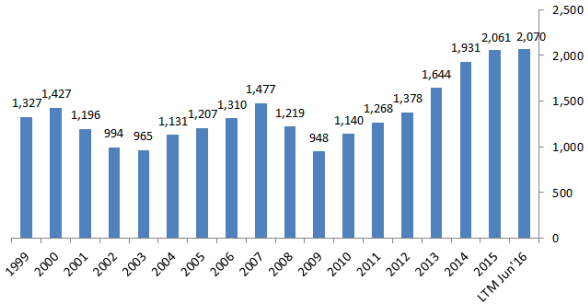
- However, earlier we mentioned that S&P companies have spent nearly $1 trillion more on buybacks in the current cycle (or close to 30% more than in the previous one). Shouldn't this decrease have pushed the divisor lower than its level in 2008? Let's observe the buyback chart we used earlier and superimpose the level of the S&P index.

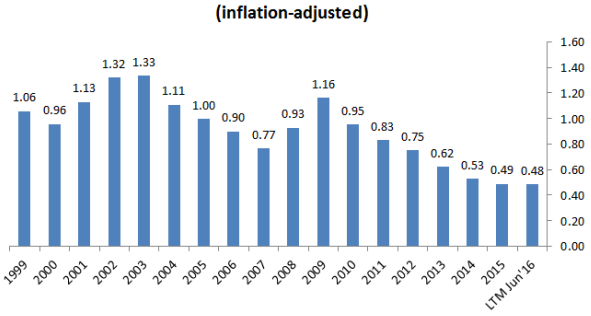




Source: Standard and Poor's, Morningside Hill

- Unsurprisingly share buybacks at higher prices are less effective. However, could we quantify this effect? Below to the left we have the simple annual average of the index. We have then utilized these annual averages to construct the chart to the right which is a proxy for buyback effectiveness. Assuming that the price of 1 index share equals the value of the index (if the index is at 2,070 then 1 share costs $2,070), we can calculate how many shares $1,000 inflation-adjusted dollars buy. We use headline CPI inflation for the adjustment.[3]





Source: Standard and Poor's, Morningside Hill

- The chart above to the right contains the answer to our question on buyback effectiveness – in 2006 $1,000 bought about 0.90 of an S&P share, while in 2016 the same amount of money bought 0.48 shares. The reason for this is twofold – first, shares are more expensive and second, inflation erodes purchasing power. Therefore, in the 2010-2016 period, $1 of buybacks was about 30% less effective than it was in the 2003-2009 period.

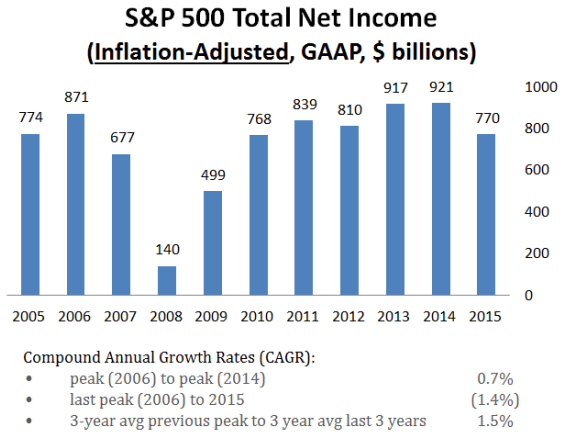
- Now mathematically everything makes sense – **in the current cycle S&P companies spent nearly $1 trillion more to buy the same number of shares they purchased in the previous cycle, ultimately pushing the S&P divisor back to where it was in 2007**.

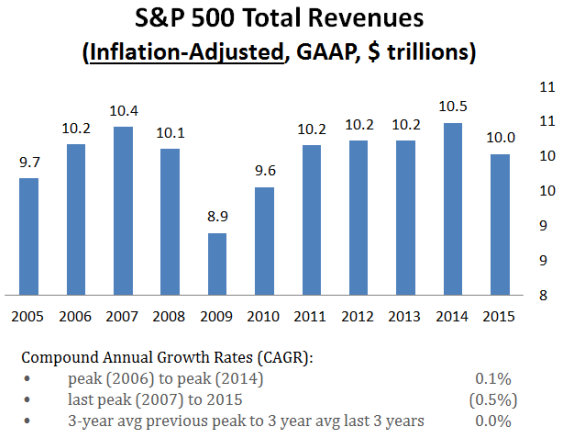
[3] For the inflation adjustment CPI index was used available at https://fred.stlouisfed.org/series/CPIAUCSL

- The fact that corporations have a terrible timing when buying back stock is well-documented. A growing body of research presents abundant empirical data on the companies' tendency to sell low and buy high their own shares. The main reason for this phenomenon is also well-documented – corporate short-termism. CEOs prefer to buy back shares when there is plenty of cash and credit available, which usually coincides with the top of the cycle. Since management compensation is tied to earnings per share, the practice is all the more alluring.

Adjusting for inflation

- Finally, in order to perform cross-cycle comparisons in earnings and revenues we need to account for inflation. We are using headline CPI inflation rather than core inflation (which excludes food and energy and is significantly higher).[4]





Source: S&P Indices, Morningside Hill

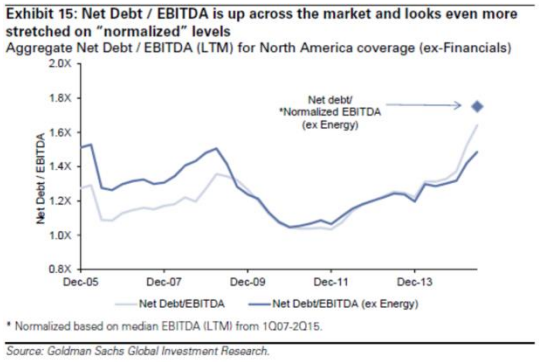
- Once we account for inflation, total net income and revenue growth come down considerably. Peak to peak real earnings grew at a mere 0.7% per year. From 2006 to 2015 earnings grew at a negative (1.4%) per year and the 3-year average (2005-2007) to 3-year average (2013-2015) earnings grew at 1.5% per year.

- **Inflation adjusted revenues were practically flat and grew at a meager 0.1% peak to peak. On a 3-year average basis, revenues were completely flat with a growth rate of 0.0%**.

- With 0% growth in revenues, whatever meager growth occurred in net earnings is explained by extraordinarily lax monetary conditions. For 8 years negative real rates in the US have pushed corporate borrowing costs to the lowest level in history, which marginally boosted profits.

Corporate debt levels

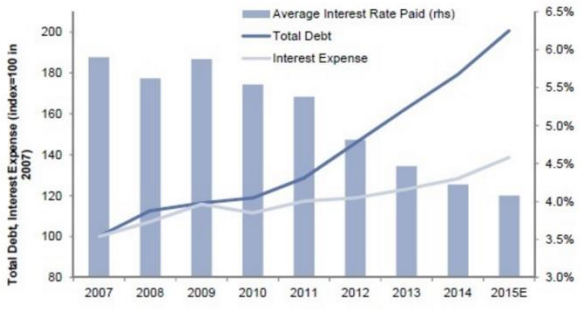
- The following charts from Goldman Sachs provide a glimpse of the US corporate leverage.[5]



[4] For the inflation adjustment CPI index was used available at https://fred.stlouisfed.org/series/CPIAUCSL

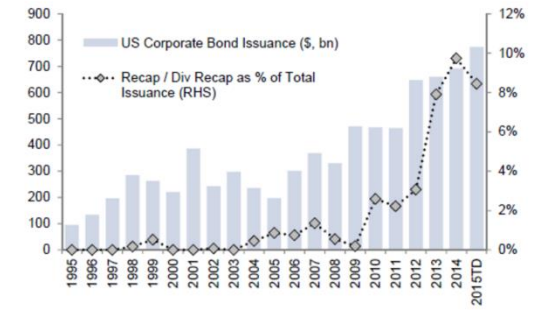
[5] http://www.bloomberg.com/news/articles/2015-11-10/goldman-sachs-says-corporate-america-has-quietly-re-levered

Exhibit 13: Debt Levels have more than doubled vs. pre-crisis levels
Aggregate for North America coverage (ex-Financials)



Source: Goldman Sachs Global Investment Research.

Exhibit 25: US Corporate Debt Issuance has already had a record year with increasing amounts being used to fund dividends and buybacks
US Corporate DCM Volumes by year ($, billions)



Source: Dealogic, Goldman Sachs Global Investment Research.

- The first chart on the previous page shows that Net Debt to EBITDA is at 1.65x while in 2007 it was at 1.35x. The same chart shows that Net Debt to Normalized EBITDA (the median EBITDA for the cycle), represented by the blue dot on the graph, is incredibly high at 1.8x.
- The chart above to the left shows that debt levels have more than doubled since 2007. The chart above to the right depicts US corporate bond issuance which reached an all-time high in 2015.
- Not only have companies failed to delever since the last crisis, but lured by low interest rates, they have actually increased their leverage.

In lieu of a conclusion

- To recap, for the past 10 years S&P companies have not grown real revenues and have barely increased earnings. However, they sold a lot of shares at cheap prices in the aftermath of the crisis and then spent $3 trillion buying them back at considerably higher prices. How did companies finance these unproductive endeavors? With debt. Contrary to popular belief, in this cycle US firms have become more indebted than ever.
- Thus, justifying higher equity market valuations with the arguments put forth in the beginning of this paper seems dubious and misleading.