PREDICTING THE MARKETS

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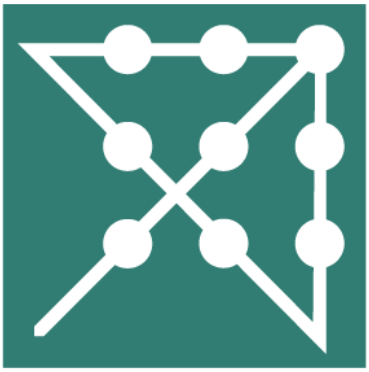

Stock Buybacks: The True Story

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Yardeni Research, Inc. May 20, 2019

ISBN: 978-1-948025-03-4

Published by YRI Books, a division of Yardeni Research, Inc.
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The True Story

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Introduction

Progressive politicians have pounced on corporate share buybacks lately. They see buybacks as a major source of income and wealth inequality, subpar capital spending, and lackluster productivity. In their opinion, buybacks have contributed greatly to the stagnation of the standards of living of most Americans in recent years. So they want to limit buybacks or even ban them.

Wall Street's stock market bears have been growling about buybacks as well. They've been arguing that buybacks have rigged the stock market in favor of the bulls. They claim that the buybacks have been mostly financed with debt. As a result, corporate balance sheets have become increasingly leveraged, which makes them vulnerable to a recession and likely would exacerbate any economic downturn. The bears therefore remain bearish and expect to be vindicated with a vengeance, eventually.

The facts don't support the narratives of either the Progressives in Washington or the bears on Wall Street. The true story is hiding in plain sight. The most common reason that S&P 500 companies buy back their shares is to offset the dilution in the number of shares outstanding that results when employee compensation takes the form of stock options and stock grants that vest over time, not just for top executives but for many employees. In effect, the ultimate source of funds for most stock buybacks is the employee compensation expense item on corporate income statements, not bond issuance as the bears contend.

To a large extent, the bull market in stocks has been boosting buybacks, rather than the other way around as widely believed. Rising stock prices increase the attractiveness of paying some of employees' compensation with stock grants. Buybacks then are necessary to offset the dilution of earnings per share.

Like previous bull markets, the latest one has been driven by rising earnings, but earnings have not been boosted artificially and significantly on a per-share basis by stock buybacks, as widely perceived. Nevertheless, buybacks might have provided a lift to stock prices, since the

buybacks occur in the open market, while the issuance of stock as compensation has no immediate market impact, especially if not yet vested or exercised.

As for the Progressives' narrative, there is no evidence that buybacks per se have worsened income inequality. Stock compensation clearly has boosted the incomes of plenty of corporate executives, but that stems from the bull market in stocks since 2009 more than from buybacks. More importantly, blaming buybacks for widespread income stagnation doesn't make any sense, since the data clearly show that standards of living have been rising in record-high territory for most Americans for several years, contrary to the Progressives' tale of widespread woe.

Government Is Here To Help

Journalist H.L. Mencken famously observed: "The whole aim of practical politics is to keep the populace alarmed (and hence clamorous to be led to safety) by menacing it with an endless series of hobgoblins, all of them imaginary." Ronald Reagan just as famously warned: "The nine most terrifying words in the English language are 'I'm from the government, and I'm here to help.'"

Rahm Emanuel summed it all up neatly when he said: "You never want a serious crisis to go to waste. And what I mean by that is an opportunity to do things that you think you could not do before." The corollary of Rahm's Law is that the government tends to create crises so that we will need more government to fix them. A case in point is stock buybacks. Consider the following:

(1) *Senators Schumer and Sanders want to limit buybacks.* Senators Chuck Schumer (D-NY) and Bernie Sanders (D-VT), who is running for president, long for the good old days. They believe that our nation's glory days can be restored by limiting corporate stock buybacks. They said so in a February 3, 2019 *New York Times* op-ed.[1] According to the two senators, the period from the 1950s through the 1970s was a golden age for workers because "American corporations shared a belief that they had a duty not only to their shareholders but to their workers, their communities and the country that created the economic conditions and legal protections for them to thrive."

However, in recent decades, corporate managements and their boards of directors have become greedy, focusing on maximizing "shareholders' earnings" at the expense of workers' earnings. The result has been the "worst level of income inequality in decades," they claim.

As proof, they offer the "explosion of stock buybacks." From 2008 through 2017, corporations have boosted their earnings per share and the value of their stocks by spending close to 100% of their profits on buybacks (53%) and dividends (40%)—which the senators characterize as corporate "self-indulgence." They bemoan that corporations haven't been investing enough to strengthen their businesses or boost the productivity of their workers. So,

[1] "Schumer and Sanders: Limit Corporate Stock Buybacks," *The New York Times*, February 3, 2019.

they say, stock-holding managements have gotten richer at the expense of workers who don't hold stock and haven't benefitted from rising stock prices—thus exacerbating both income and wealth inequality. Adding insult to injury, "the median wages of average workers have remained relatively stagnant." While the corporate fat cats are getting fatter on buybacks, workers "get handed a pink slip."

The two senators, who have never managed any business, intend to fix this problem. They are planning to introduce a bill that will prohibit any corporation from buying back its shares unless it first provides a minimum wage of $15 an hour and a basic package of employee benefits, which presumably the bill will spell out. The senators recognize that corporations would respond by paying out more in dividends if they can't buy back their shares. They promise more legislation to deal with that issue if necessary, maybe by amending the tax code.

(2) *Senator Baldwin wants to ban buybacks.* On March 26, Senator Tammy Baldwin (D-WI) released a report arguing that stock buybacks suppress wages and drive income inequality while increasing systemic risk to the economy. One of the alarming findings is that the "evidence also shows that Wall Street insiders and corporate executives have abused the American system of corporate governance, spending trillions on buybacks to benefit themselves at the expense of employees and other corporate stakeholders." Baldwin's report, *Reward Work Not Wealth*, is subtitled "A Plan to Reform Corporate Governance, Empower Workers and End the Looting of Public Companies to Create Shared Prosperity in America."[2]

To ban buybacks, Baldwin is reintroducing the Reward Work Act in the 116th Congress, which she had first introduced a year ago. In addition to prohibiting buybacks, her bill requires that one-third of the directors of each public company be elected by its employees. It would be a radical intrusion by the government into corporate finance and governance.

The report claims that "the buyback binge" has been financed by "risky" debt to buy back shares, and declares: "This dynamic has pushed corporate debt to record highs. The share-sellers reap short-term gains, yet they bear none of the risks of the other stakeholders, who are left to face the prospect of a default. Long-term retirement savers suffer the permanent loss of their investment if the company goes bankrupt. Workers face the loss of their job and pension cuts, possibly resulting in a delayed retirement. Taxpayers deal with further strain on public resources when they are used to assist workers who lose their jobs."

In a similar vein, Gluskin Sheff Chief Economist and Strategist David Rosenberg recently warned that the next recession will be exacerbated by the deterioration in corporate balance sheets caused by buybacks. In a May 5, 2019 CNBC interview, he said: "I don't think it's going to be a deep recession, and it's not about the consumers or housing or the banks. It's really about these bloated corporate balance sheets. There will be a price to pay for the unprecedented debt-for-equity swap we did this cycle, borrowing at low interest rates and buying back your stock. That is certainly something that is not sustainable."[3]

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[2] *Reward Work Not Wealth*, Office of Tammy Baldwin, U.S. Senator of Wisconsin.

[3] "Corporate buybacks will fuel the next recession and it could happen this year, says Wall Street bear," CNBC, May 5, 2019.

A Nagging Doubt

One of the main reasons I have been bullish during the current bull market is the proliferation of corporate stock buybacks. Early on in the bull market, the bears argued that stock prices were on a "sugar high" and "running on fumes." They claimed that the economy remained weak and vulnerable to another recession. Earnings, they contended, were boosted by cost-cutting without much help from revenues. I argued that the economy was recovering and so were revenues and earnings. The bears countered that the data showed that neither individual nor institutional investors were buying stocks, which meant that stock prices couldn't continue to rally.

I argued that the mounting pace of stock buybacks confirmed that corporations were the big buyers of their own shares. I attributed this development to rising profits and cash flow and a significant spread between the forward earnings yield of the S&P 500 and the after-tax cost of borrowing money in the corporate bond market (*Fig. 1*). In a sense, this spread revived the Fed's Stock Valuation Model, but as a corporate finance model rather than as a stocks-vs-bonds asset allocation model. I showed that there was a strong correlation between the S&P 500 stock price index and the sum of S&P 500 buybacks and dividends.

It was a simple analysis of what was driving the bull market, and it worked very well for me. However, along the way, I had one major nagging doubt about this model: There wasn't much difference between the growth rates of S&P 500 earnings on a per-share basis and in aggregate. Surely if corporations were buying back their shares to the tune of several hundred billion dollars per year, the former should grow measurably faster than the latter. That wasn't happening and didn't support the widespread view—which remains widespread—that the whole point of buybacks is to increase *earnings per share* to drive up stock prices. I knew that buybacks must be bullish, but that belief wasn't confirmed by the relatively narrow spread between the growth rates of per-share and aggregate earnings.

The *Financial Accounts of the United States*, compiled quarterly by the Fed, has data for nonfinancial corporations that seemed to corroborate my simple model and the now-widespread view that the activity of corporate repurchasers has driven the bull market, not the activity of investors.[4] Indeed, the data backed up the basic premise of a February 25, 2019 article in *The New York Times* by financial reporter Matt Phillips titled "This Stock Market Rally Has Everything, Except Investors."[5] Here is the introduction of the piece:

> Armchair investors have been selling stock. So have pension funds and mutual funds, as well as a whole other category of investors—nonprofit groups, endowments, private equity firms and personal trusts. The stock market is off to its best start since 1987, but these investors are expected to dump hundreds of billions of dollars of shares this year. So who is pushing prices higher? In part, the companies themselves. American corporations flush with cash from last

[4] *Financial Accounts of the United States*, Board of Governors of the Financial Reserve System, December 6, 2018.
[5] "This Stock Market Rally Has Everything, Except Investors," *The New York Times*, February 25, 2019.

> year's tax cuts and a growing economy are buying back their own shares at an extraordinary clip. They have good reason: Buybacks allow them to return cash to shareholders, burnish key measures of financial performance and goose their share prices. The surge in buybacks reflects a fundamental shift in how the market is operating, cementing the position of corporations as the single largest source of demand for American stocks.

That's exactly the story I've been telling during the bull market. It's now the consensus view, as evidenced by the article in *The New York Times*, which was based partly on flow-of-funds projections by Goldman Sachs. All the more reason to question the underlying premise of the now-consensus view of buybacks. The urgency of getting to the true story has been heightened by the sudden interest of politicians to regulate, if not ban, buybacks.

Original Sin and Redemption

Where shall I start to expose the weak foundations of the senators' arguments? I'll begin at the beginning:

(1) *SEC eases the rules on buybacks.* Not widely known is that for many years after the Great Crash of 1929, the Securities and Exchange Commission (SEC) viewed buybacks as bordering on criminal activity. That was the case up until the Reagan years, when the SEC began to ease the rules on buybacks under John Shad, chairman from 1981 to 1987. He believed that the deregulation of securities markets would be good for the economy. In 1982, the SEC adopted Rule 10b-18, which provided a "safe harbor" for companies to do buybacks.[6]

In a widely read September 2014 *Harvard Business Review* article titled "Profits Without Prosperity," William Lazonick, a professor of economics at the University of Massachusetts, argued that buybacks are effectively a form of stock price manipulation.[7] In a recent interview, he called them "a license to loot."[8] Lazonick's buybacks-are-bad spin has been a big hit with progressive politicians like Senator Elizabeth Warren (D-MA), who is running for president.

(2) *Bill Clinton inadvertently boosts stock compensation for top execs.* Granted, some corporate executives are paid too much and spend too much time boosting their stock prices—purportedly under the banner of "enhancing shareholder value." They claim that high compensation and rising stock prices incent them (since most of them are shareholders) to work hard to manage their companies very well.

Ironically, many executives became even bigger shareholders after President Bill Clinton changed the tax code in 1993, when he signed into law his first budget, creating Section 162(m) of the Internal Revenue Code. This provision placed a $1 million limit on the amount that corporations could treat as a tax-deductible expense for compensation paid to the top five

[6] For more, see "Rule 10b-18," Investopedia, April 15, 2019.
[7] William Lazonick, "Profits Without Prosperity," *Harvard Business Review*, September 2014.
[8] "Have Stock Buybacks Gone Too Far?" Knowledge @ Wharton, May 14, 2019.

executives (this was later changed by the SEC under President George W. Bush to the top four execs). It was hoped that would put an end to skyrocketing executive pay.

The law of unintended consequences trumped the new tax provision, which had a huge flaw—it exempted "performance-based" pay, such as stock options, from the $1 million cap. Businesses started paying executives more in stock options, and top executive pay continued to soar. Liberal critics, notably Senator Warren, concluded that the 1993 tax-code change had backfired badly and that soaring executive pay has exacerbated income inequality.

(3) *Buybacks don't boost earnings per share significantly.* The widely believed notion that buybacks boost earnings per share by reducing the share count isn't supported by the data Standard & Poor's provides for the S&P 500 companies. While S&P 500 companies repurchased a whopping $4.7 trillion of their shares from the first quarter of 2009 through the fourth quarter of 2018, the spread between the growth rates in S&P 500 earnings per share and aggregate S&P 500 earnings has been tiny since the start of the available data during the fourth quarter of 1994, as Joe and I show below.

The best explanation for this surprising development is that the S&P 500 companies, for the most part, repurchase their shares to offset the dilution in the number of shares outstanding that results from compensation paid in the form of stocks. It's not just top executives who are compensated in company stock but many other employees.

(4) *Buybacks are not designed "to return cash to shareholders,"* as widely believed. While dividends are paid directly to investors, most buybacks don't have any direct impact on investors if they result in equities getting purchased in the open market to offset stocks distributed to employees. Those shifts from unconstrained sellers to constrained buyers (who can't sell until their stock grants vest) arguably have a net bullish impact that indirectly benefits all investors.

(5) *Buybacks shouldn't be compared to profits.* The cost of buying back shares for the purpose of offsetting the obligations of employee stock grants is reflected for repurchasers in the compensation-related expense in calculating profits.

A February 2008 *BEA Briefing* titled "Employee Stock Options and the National Economic Accounts" reported: "In December 2004, the Financial Accounting Standards Board (FASB) issued a new standard—FAS-123R—for companies that requires them to value employee stock options … using a fair-value-based method at the time they are granted and to record this value on financial reports as a compensation expense over the period of vesting."[9]

A March 2011 *BEA Briefing* titled "Comparing NIPA Profits with S&P 500 Profits" observed: "NIPA [National Income & Product Accounts] accounting and tax accounting have always treated employee stock options as an expense only when (and if) options are exercised. It is an operating expense and therefore always a cost deduction in the NIPA profits calculation."[10] Before the FASB standard became effective for calendar-year companies on January 1, 2006,

[9] "Employee Stock Options and the National Economic Accounts," *BEA Briefing*, February 2008.
[10] "Comparing NIPA Profits With S&P 500 Profits," *BEA Briefing*, March 2011.

"GAAP option expense reporting was completely at a company's discretion and reported as a nonoperating expense or, often, not reported at all. Since 2006, options grant expense was mandated by GAAP. It was included in the Standard & Poor's reporting starting in 2006 as an operating profits deduction." (See *Appendix 1*: Excerpts from BEA Briefings on Expensing of Stock Options.)

So: It makes no sense to compare the amount that S&P 500 corporations spend on buybacks to their after-tax profits, as is often done! In the NIPA, money spent on buybacks (to cover employee stock plan obligations) doesn't come out of the after-tax profits pool as dividend payouts and capital outlays do. The contention that money used for buybacks would be better invested in growth of the business is faulty.

In the NIPA, dividend distributions, on the other hand, do come out of after-tax profits, leaving undistributed profits. These undistributed profits, along with cash flow from the depreciation allowance, can be spent on capital outlays. The cost of the buybacks that are turned around as stock compensation to employees is reflected in the income statement as an expense.

(6) *Buybacks aren't accorded an advantage over dividends by the tax code.* While buybacks may have a bullish impact on stock prices, there's certainly no guarantee that stock prices can't fall even for corporations that are buying back their shares. This discredits the notion that companies prefer buybacks because capital gains are taxed at a lower rate than dividend income. If my basic premise is correct, most companies don't view buybacks as a way to return cash to shareholders but, rather, as a way to offset all or most of the dilution caused by stock compensation. Dividends remain the way that most companies return cash to shareholders.

Deep Dive into the Data

Now let's put on our diving suits and take a deep dive into the pool of relevant data to see whether they support our analysis of buybacks:

(1) *Buybacks galore.* S&P 500 buybacks totaled $4.7 trillion from the start of the bull market during the first quarter of 2009 through the final quarter of 2018, while dividends totaled $3.2 trillion (*Fig. 2*). Over this same period, the market capitalization of all equity issues traded in the United States soared by $27 trillion.

Dividends are the best tangible confirmation of earnings. The percentage of S&P 500 companies paying dividends rose from 73% during 2009 to 82% during 2018 (*Fig. 3*). In a low-interest-rate environment, they attracted lots of yield-hungry investors, driving stock prices higher.

In our narrative, buybacks have more to do with paying employees with stock grants than returning cash to shareholders. Current-dollar labor compensation totaled $91.5 trillion from 2009 through 2018. From this perspective, $4.7 trillion in buybacks over this same period is a relatively small sum if its main purpose is to offset dilution from stock grants.

(2) *Dividend payout ratio remains around 35%.* Collectively, since the mid-1960s through the early 1990s, the S&P 500 dividend payout ratio (dividends divided by after-tax S&P 500 reported earnings) fluctuated around 50% (*Fig. 4*). It has tended to fluctuate around 35% since then. So historically, large corporations have tended to return cash to shareholders with a 35% to 50% dividend payout relative to after-tax profits.

The notion that buybacks have nearly doubled this measure of corporate largess to investors to close to 100% of profits makes no sense whatsoever, according to our analysis (*Fig. 5*). This means that the notion of the S&P 500 having a "buyback yield" comparable to the dividend yield makes no sense either (*Fig. 6*). In our narrative, it is a meaningless concept!

(3) *Keeping track of the share count.* We acknowledge that buybacks have returned cash to shareholders and boosted earnings per share, but not by much. That's clear when we see that three measures of shares outstanding have fallen only modestly since the start of the bull market. We are mostly focusing on the data since the first quarter of 2011 through the fourth quarter of 2018 because that's the period that saw the protracted drop in the share count. During 2009, there was a big spike in share issuance by banks scrambling to raise capital following the financial crisis of 2008.

The S&P 500 divisor is used to ensure that changes in the number of shares outstanding, capital actions, and the addition or deletion of stocks to the index do not change the level of the index. It is down 7.8%, or only 1.0% per year on average, from the first quarter of 2011 through the fourth quarter of 2018 (*Fig. 7*). That's a small contribution to earnings-per-share growth.

The divisor is highly correlated with two alternative measures that Joe and I have concocted. For one, we divide the Fed's series on the market value of all equities traded in the United States by the S&P 500 stock price index. It is down only 12.6% (or 1.5% per year on average) from the first quarter of 2011 through the fourth quarter of 2018.

Joe also constructed a series showing the total number of basic shares outstanding for current S&P 500 companies with data for all periods and adjusted for stock splits and stock dividends (*Fig. 8*). Not surprisingly, his series, which starts in 2007, is highly correlated with the S&P 500 divisor. According to Joe, the share count rose 7.2% from a low of 278 billion shares during the third quarter of 2008 to a peak of 297 billion shares during the first quarter of 2011. Since then, it has dropped 7.7% to 275 billion shares at the end of last year, a decline of 22 billion shares. That's an average annual decline of 1.1% since the start of 2011. That's certainly a boost to the annual growth rate of earnings per share, but a relatively small one. (See *Appendix 2* for a discussion of basic versus fully diluted shares.)

Needless to say, the same conclusion follows when we compare Standard & Poor's measures of S&P 500 per-share and aggregate earnings directly (*Fig. 9* and *Fig. 10*). From 2011 through 2018, the annual average spread between the two was only 1.3 percentage points. That certainly calls into question the credibility of the notion that the $4.7 trillion of buybacks from the first quarter of 2009 through the fourth quarter of 2018 was aimed largely at boosting earnings per share.

(4) *Average price per share.* Joe's share-count series allows us to calculate the average price per share of the S&P 500 companies. We do so by dividing the average market capitalization of the S&P 500 during each quarter by the number of shares outstanding at the end of each quarter (*Fig. 11*). The average price per share during each quarter has risen from a low of $25 at the end of the first quarter of 2009 to $76 at the end of 2018 (*Fig. 12*).

(5) *Number of shares repurchased and issued.* We now easily can convert the S&P 500 buybacks data into the number of shares repurchased every quarter, simply by dividing the buybacks (in billion dollars) by the average price per share during each quarter (*Fig. 13*). Since the first quarter of 2011, a total of 72 billion shares were repurchased. However, over that very same period, the number of outstanding shares declined by only 22 billion!

Now we can derive gross issuance, since it is equal to buybacks less net issuance (or net buybacks when the series is negative). The result is eye-opening. Since the first quarter of 2011 through the last quarter of 2018, S&P 500 companies repurchased 72 billion shares and issued 50 billion shares, resulting in net repurchases of 22 billion shares.

Net issuance (actually, net buybacks in this case) has fluctuated at around a third of gross buybacks from the first quarter of 2011 through the fourth quarter of 2018 (*Fig. 14*). That explains why the amount that gross buybacks have contributed to the growth of earnings per share has been relatively small.

(6) *Buybacks driven by compensation.* It's true that buybacks are driven by compensation, but not in the way that Progressive politicians believe. Buybacks do not significantly boost earnings per share to the benefit of corporations' fat-cat executives and directors or its other large, rich shareholders.

They simply reflect an accounting procedure necessary to avoid dilution when employees are paid in company shares. We can get a rough idea of how much compensation is paid via shares. To do so, we simply multiply gross issuance by the average price per share of the S&P 500 (*Fig. 15*).

Assuming that the value of all gross issuance of stock is for compensation (which must be somewhat of an exaggeration), this series' four-quarter sum has risen from $331 billion in 2011 to $532 billion in 2018. Annualizing this series and dividing it by the compensation of all employees (including wages, salaries, bonuses, and benefits—also at an annual rate) suggests that stock compensation has been accounting for an average of only 4% of total employee compensation since 2011 (*Fig. 16*).

The Fed's Accounts

All of the above brings me back full circle to *The New York Times* article linked above, which cited Goldman Sachs data showing that only corporations are buying equities. Actually, the data come from the Fed, and they show that nonfinancial corporations (NFC) have been huge buyers of stocks for the past 15 years, as retirements (i.e., resulting from buybacks and M&A

activity) well exceed gross issuance (including initial public offerings, seasoned equity offerings, and private equity). Not surprisingly, the Fed's series for net NFC equity issuance is highly correlated with the S&P 500 buybacks series, which the Fed uses to compile its series (*Fig. 17*, *Fig. 18*, *Fig. 19*, *Fig. 20*, and *Fig. 21*).

Strangely, the Fed's data don't cover employee stock plans. The Fed's website includes a note titled "Equity Issuance and Retirement by Nonfinancial Corporations."[11] It carefully explains how the data series on equity issuance is constructed. It states:

> The figure also indicates that equity retirements have been consistently greater than issuances over this period, resulting in the negative values for net equity issuance reported in the Financial Accounts of the United States. This reflects the continued importance of share repurchases as a means of distributing earnings to shareholders, due in part to the tax advantage to shareholders of repurchases when compared to dividend payouts. … In addition, firms also use repurchases to offset the dilution of existing shareholders that occurs through the granting of equity to employees and executives, a common incentive compensation device.

I disagree with all but the first and last sentences of this statement for reasons discussed above.

The Fed compiles quarterly data on the flow of funds in the *Financial Accounts of the United States*. Table F.223 tracks the supply and demand for corporate equities.[12] It shows net repurchases of $168 billion during 2018, which includes net issuance of $311 billion in shares of exchange-traded funds and $128 billion of stock issued by foreign corporations.

Excluding both of those shows net repurchases of $606 billion by U.S. corporations. Using Joe's data, we get net repurchases of $275 billion. We suspect that the Fed's accounts might not be accounting for the value of stocks issued by corporations to their employee stock compensation plans. We have reached out to the Fed and are awaiting guidance on this matter. Stay tuned.

Corporate Finance Nonsense

Supporting the thesis of Senator Baldwin's 33-page report, discussed above, are plenty of charts and footnotes. Not supporting it is an accurate understanding of the role of buybacks in corporate finance. On page 23 of the Baldwin report, you'll find a chart showing the strong correlation between the S&P 500 and the sum of S&P 500 buybacks and dividends. We've been using this chart to support our bullish stance almost since the start of the bull market (*Fig. 22*). In fact, we provided the data to the senator's staff for her report! Needless to say, the report manages to put a negative spin on our bullish chart as follows:

> The chart below shows buyback activity peaking and dipping in unison with the S&P 500 market index. By definition, if executives are buying high and selling

[11] "Equity Issuance and Retirement by Nonfinancial Corporations," *FEDS Notes*, June 16, 2017.
[12] *Financial Accounts of the United States*, Board of Governors of the Financial Reserve System, December 7, 2017.

> low, they are managing their company's cash poorly, which should disturb all of their stakeholders—not just shareholders, but bondholders, employees, and taxpayers—as the potential for insolvency rises.

With the benefit of hindsight and additional research, Joe and I are amending our interpretation of this chart. The bull market in stocks has been driven by solid earnings delivered by a global economy that continues to grow. The coincident relationship between the S&P 500 and buybacks reflects that compensation—with some percentage paid in stock—rises in a growing economy. If compensation rises, buybacks tend to. If the economy grows, bull markets thrive. So economic growth drives both buybacks and the stock market. That's why they move in sync. It's not that buybacks drive the stock market, as widely believed.

Apparently, the authors of the Baldwin study are convinced that corporate executives are dummies and need the government's help to manage the cash of their corporations.

The intellectual godfather of this rubbish is Professor William Lazonick. As noted above, he authored a very influential article in the September 2014 *Harvard Business Review* titled "Profits Without Prosperity."[13] It is footnoted in the Baldwin report, and he is quoted several times in the report as well as by other Progressives who want to put a lid on buybacks. The professor called for "an end to open-market buybacks."

In Lazonick's opinion, trillions of dollars have been spent to artificially boost earnings per share by lowering the share count. The money should have been used to invest in the capital and labor of corporations to make them more productive. He seems to be under the impression that buybacks and dividends have been absorbing nearly 100% of earnings, leaving nothing for capital spending.

That seems to be arithmetically correct (*Fig. 23*). But it is simply wrong. The problem is the claim's underlying assumption that the biggest source of corporate cash flow is profits; rather, it is depreciation allowances. This is the corporate income that is sheltered from taxation to reflect the expenses incurred in replacing depreciating assets. It's this cash that nonfinancial corporations mostly use for gross capital spending—which rose to a new record high during the third quarter of 2018 and continues to rise in record-high territory (*Fig. 24*). Recent net capital spending by NFCs is comparable to levels in previous business-cycle expansions, though making such comparisons may understate the technological enhancements in current spending (*Fig. 25*).

To repeat, buybacks that are offsetting stock compensation aren't financed with cash flow. The source of funds is the labor compensation item in corporate income statements, to the extent that they are related to such outlays. As we've demonstrated in this *Topical Study*, they have been used to a great extent for this purpose.

[13] "Profits Without Prosperity," *Harvard Business Review*, September 2014.

Rewarding Workers

Banning stock buybacks would be a totally unnecessary intrusion of the government in corporate finance. The real issue for Progressives isn't buybacks but compensation. They have no basis in fact by which to prove their assertion that stock compensation plans are limited to the top brass who benefit much more than their employees or even at the expense of their employees.

On the contrary, according to a post on the website of the National Center for Employee Ownership:[14]

> Data from the 2014 General Social Survey show that 22.9 million American workers own stock in their company through a 401(k) plan, ESOP, direct stock grant, or similar plan, while 8.5 million hold stock options (some employees have options and own stock through other plans, so these numbers are not additive). That means that 19.5% of the total workforce, but 34.9% of those who work for companies that have stock, own stock through some kind of benefit plan, while 7.2% of the workforce, but 13.1% of those in companies with stock, hold options.

Besides, the entire "problem" was manufactured by Progressives in 1993 when they passed a law that limited the tax deductibility as a business expense of any executive's pay above $1 million in cash, creating incentives for corporations to pay highly paid employees in stock. President Trump's Tax Cuts and Jobs Act (TCJA), passed in December 2017, once again changed the rules in ways likely to alter the structure of executive compensation—this time reducing stock buybacks.

Our take is that the new rules may mean fewer stock option awards in the future, which could also mean that fewer share repurchases will be needed to offset their dilutive effect. No further government meddling is required.

Now let's consider the plight of all those workers whom Senators Baldwin, Sanders, and Schumer want to help:

(1) *Record employment and quits.* Granted, it took longer than usual for payroll employment to recover from the previous recession, which was among the worst since World War II. However, by May 2014, payroll employment did regain what was lost during the severe downturn. It too has continued to move higher, and hit 151.1 million during April, surpassing the previous cyclical peak during January 2008 by 9.2%. The unemployment rate has been running below 4.0% since March 2018. Job openings is at a record high, exceeding the number of people unemployed since last March. The quit rate is around record highs, as workers have lots of alternative prospects for boosting their pay and their benefits.

(2) *Record income and consumption per household.* Perhaps one of the biggest myths of all about our economy is that real incomes have stagnated for most Americans over the past 15-20 years. Even Donald Trump often made this claim when he was running for president. This

[14] "Data Show Widespread Employee Ownership in U.S.," National Center for Employee Ownership website, www.nceo.org.

assertion is based on one widely followed and extremely flawed inflation-adjusted measure of median household income produced annually by the Census Bureau (*Fig. 26*). It is based on survey data, focuses just on money income, and is pre-tax.

From the first quarter of 2000 through the fourth quarter of 2017, real GDP per household rose 19.7%. Yet over this same period, the aforementioned income series, which is available only on an annual basis, rose just 2.2%. That's stagnation for sure, and implies significantly worsening inequality. However, numerous other inflation-adjusted measures of household income and wages are broader in scope, including nonmonetary government support programs like Medicaid, food stamps, and tax credits. They are up much more over the same period.

For example, real personal income per household rose 27.0% before taxes and 29.9% after taxes over those 18 years. Skeptics will pounce on the fact that these are means, not medians, and so might be upwardly biased by the enormous incomes of the ultra-rich. I doubt that, as evidenced by real personal consumption per household, up 28.1%. The rich don't eat much more than the rest of us. My basic assumption is that there aren't enough ultra-rich—often dubbed the "1%" for a reason—to bias the mean series I've constructed for personal income and consumption.[15]

(3) *Record real wages and compensation.* There can be no disputing the fact that real wages haven't been stagnating at all, notwithstanding the assertions of the three senators who want to help workers. From the start of 2000 through the end of 2017, real average hourly earnings rose 17.3% (*Fig. 27*). I am using the series that applies only to production and nonsupervisory workers, who tend to be rich only if they've won the lottery. They account for roughly 80% of all workers.

There's more: Total real compensation—which includes wages, salaries, and benefits, per worker (using the household measure of employment)—rose 19.5% from the start of 2000 through the end of 2017, and was at a record high last year, as were all the other measures mentioned above (*Fig. 28*).

American households are enjoying record standards of living. Income stagnation is a myth. Income inequality isn't a myth but an inherent characteristic of free-market capitalism, an economic system that awards the biggest prizes to those entrepreneurs who benefit the most consumers with their goods and services. Perversely, inequality tends to be greatest during periods of widespread prosperity. Rather than bemoaning that development, we should celebrate that so many households are prospering, even if a few are doing so more than the rest of us.

America's free-market capitalism continues to boost the prosperity of most Americans, in my opinion, without more help from the government.

[15] IRS data for tax-year 2016 show 150.3 million taxpayers filed personal tax returns. Only 1.3 million of them (i.e., 1%) had adjusted gross income exceeding $500,000.

The Crony Problem

Progressives like Senators Baldwin, Sanders, and Schumer want to reduce corporate cronyism. I wholeheartedly agree with them on that, and I have some ideas on how to do so, including limiting the number of boards on which an individual may serve and compiling a "crony scoreboard" to keep track. Corporate cronyism may become a bigger problem, in my opinion, because shareholders are losing their influence over corporate managers and boards as a result of the outflows from equity mutual funds into equity exchange-traded funds. Active managers exert more shareholder influence over corporate governance issues than do passively managed funds.

SEC Commissioner Robert J. Jackson, Jr., who was appointed by President Donald Trump, also has some good ideas on how to regulate some games played by corporate executives with buybacks. In a June 11, 2018 speech, he discussed "how to give corporate managers incentives to create sustainable long-term value."[16] When he joined the SEC in early 2018, he asked his staff to study 385 buybacks over the previous 15 months. Jackson was shocked to learn:

> In half of the buybacks we studied, at least one executive sold shares in the month following the buyback announcement. In fact, twice as many companies have insiders selling in the eight days after a buyback announcement as sell on an ordinary day. So right after the company tells the market that the stock is cheap, executives overwhelmingly decide to sell.

To fix this problem, Jackson favors adopting an SEC rule that would "encourage executives to keep their skin in the game for the long term." In his opinion, safe harbor should be denied to companies that choose to allow executives to cash out during a buyback.

There is certainly room for improvement in corporate governance. On the other hand, I see no need for limiting or banning buybacks. Most corporate managers have ample incentive to make their companies as successful as possible irrespective of buybacks, as evidenced by record earnings both on a per-share basis and in aggregate.

Technology and the Other Sectors

Our analysis of the role of share repurchases in the corporate financial activities of the S&P 500 suggests that Progressives are misguided in their obsession with limiting or even banning buybacks. That's not as clear cut when the spotlight is on the S&P 500 Information Technology sector.

This was the focus of an April 14, 2019 Bloomberg article titled "Big Tech's Big Tax Ruse: Industry Splurges on Buybacks."[17] The two authors berate the tech giants for pushing for Trump's tax cuts with promises to expand their capacity and payrolls.

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[16] Robert J. Jackson, Jr., "Stock Buybacks and Corporate Cashouts," June 11, 2018.
[17] "Big Tech's Big Tax Ruse: Industry Splurges on Buybacks," Bloomberg, April 14, 2019.

The authors find little evidence that Big Tech kept its end of the bargain in 2018. Instead, they observe that these companies spent most of their tax windfalls on buybacks:

> The top 10 U.S. tech companies spent more than $169 billion purchasing their shares in 2018, a 55 percent jump from the year before the tax changes, according to data compiled by Bloomberg. The industry as a whole authorized the greatest number of share buybacks ever recorded, totaling $387 billion, according to TrimTabs Investment Research. That's more than triple the amount in 2017.

I asked Joe to run our analysis of S&P 500 buybacks just for the S&P 500 Information Technology sector. Here are his major findings:

(1) *Share count.* From the first quarter of 2011 through the fourth quarter of 2018, the share count for the current tech companies in the S&P 500 has dropped 17.3%, or 2.2% per year on average, according to Joe's calculations (*Fig. 29*). (The sector's S&P divisor plunged during third-quarter 2018 as a result of the shifting of companies into the Communication Services and Consumer Discretionary sectors.)

Our data show that 2018 was an outlier: The share-count declines during previous years didn't add much to earnings per share. Last year, the decline boosted the sector's earnings per share by 14 percentage points (*Fig. 30*).

(2) *Net buybacks.* The "wrinkle" in our analysis of buybacks is that we can derive the average price per share of the stocks in the S&P 500 Tech sector by dividing the sector's market capitalization by Joe's share-count series for the sector (*Fig. 31*). That allows us to convert the sector's buybacks in dollars to the actual number of shares that have been repurchased (*Fig. 32*).

The question is what percentage of these gross buybacks are actually used to reduce the share count, as opposed to offsetting the impact of employee stock compensation plans and M&A activity? The answer is that it has been a volatile data series, fluctuating around 50% since 2011, which is above the roughly 33% figure we previously derived for the overall S&P 500 (*Fig. 33* and *Fig. 34*).

Finally, here are the percentage changes in the share counts of the 11 sectors of the S&P 500 from the first quarter of 2011 through the fourth quarter of 2018: Real Estate (38.6%), Utilities (20.3), Materials (10.8), Communication Services (6.6), Energy (0.4), S&P 500 (-7.7), Health Care (-9.4), Financials (-10.3), Consumer Staples (-10.7), Consumer Discretionary (-12.2), Industrials (-13.6), and Information Technology (-17.3) (*Fig. 35*).

Buffett on Buybacks

Warren Buffett is a big fan of buybacks. In his latest letter to the shareholders of Berkshire Hathaway, Buffett wrote:

> All of our major holdings enjoy excellent economics, and most use a portion of their retained earnings to repurchase their shares. We very much like that: If

> Charlie [Munger] and I think an investee's stock is underpriced, we rejoice when management employs some of its earnings to increase Berkshire's ownership percentage. Here's one example drawn from the table above: Berkshire's holdings of American Express have remained unchanged over the past eight years. Meanwhile, our ownership increased from 12.6% to 17.9% because of repurchases made by the company. Last year, Berkshire's portion of the $6.9 billion earned by American Express was $1.2 billion, about 96% of the $1.3 billion we paid for our stake in the company. When earnings increase and shares outstanding decrease, owners—over time—usually do well."

I asked Joe to calculate the share count for American Express. He reports that the company's share count has been reduced an average of 1.1% *per quarter* since the first quarter of 2011 through the fourth quarter of 2018, and is down 28.9% overall during this period (*Fig. 36*). He did the same analysis for each of the companies in the S&P 500. (See *Appendix 3a*: S&P 500 Firms' Percent Change in Number of Basic Shares Outstanding, Q1-2011 to Q4-2018, sorted by % change, and *Appendix 3b*, the same table with the companies sorted alphabetically.)

Among these companies, there certainly are plenty that have had aggressive buyback programs aimed not only at offsetting dilution from stock compensation but also at boosting earnings per share. However, as demonstrated in this *Topical Study*, the overall impact of buybacks on S&P 500 earnings per share has been relatively small.

Appendix 1

Excerpts from BEA Briefings on Expensing of Stock Options

Carol E. Moylan, "Employee Stock Options and the National Economic Accounts," *BEA Briefing*, February 2008	*Employee stock options provide employees with the right to purchase, within a specified time period (often 10 years), shares of their company's stock at a "strike" price set by the company. For publicly traded stock, the "strike" price (also called the grant or exercise price) is usually the market price of the stock at the time the option is granted. There is usually a minimum waiting period—referred to as the "vesting" period—during which the employee must remain employed by the company before the individual may exercise the option (that is, purchase the stock). The average vesting period is usually 3 years after the time of grant.* *Employee stock options are granted as part of an overall compensation package. In some cases, employees accept lower current-period wages and salaries with the expectation that the growth in the market value of the company stock will more than offset the reduction to their wages. For other employees, stock options are an additional benefit that makes working for a particular company more attractive. From the employer's perspective, options are often seen as a way to retain employees, as the options vest over several years. Additionally, for key executives, stock options are used as an incentive tool designed to link individual pay to the company's stock performance. The exercising of stock options has become a significant component of compensation for chief executive officers (chart 1* [find chart, titled "Average Executive Pay," on page 1 of linked report]*).* *In the United States, two major types of employee stock options have emerged: nonqualified stock options (NSOs) and incentive stock options (ISOs). The most prevalent stock option is the NSO. NSOs are often referred to as "compensatory" options because their use gives rise to compensation expenses on a company's tax returns. When NSOs are exercised, the difference between the current market price at the time of exercise and the strike price is reported as wages on the tax returns of the employer and the employee. The employee incurs an associated tax liability, and the company receives a tax deduction for the difference between the current market price and the strike price. Despite this tax treatment, until 2005, companies were not required to record any stock option expenses on financial statements.*
Andrew W. Hodge, "Comparing NIPA Profits with S&P 500 Profits," *BEA Briefing*, March 2011	*The respective treatments of employee stock options differ significantly. NIPA accounting and tax accounting have always treated employee stock options as an expense only when (and if) options are exercised. It is an operating expense and therefore always a cost deduction in the NIPA profits calculation. However, GAAP accounting now expenses options at grant or on a schedule beginning at grant. The valuation of the options is based on a formula that is in turn based on the right to eventual exercise, and considerable discretion is allowed. Until 2006, GAAP option expense reporting was completely at a company's discretion and reported as a nonoperating expense or, often, not reported at all. Since 2006, options grant expense was mandated by GAAP. It was included in S&P reporting starting in 2006 as an operating profits deduction.*

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Appendix 2

Basic Versus Fully Diluted Shares

Basic outstanding shares and fully diluted shares are two different methodologies for companies to report their per-share earnings. The Financial Accounting Standards Board in 1997 required companies to report both results under GAAP rules, which stipulate the following:

- The basic earnings-per-share (EPS) calculation takes the net income of common shares for a period of time and divides it by the average number of outstanding shares for the same period.

- Diluted EPS calculations include the additional shares assuming that all convertible securities of a company were all exercised. Convertible securities include convertible bonds, convertible preferred stock, stock options, rights, and warrants. Out-of-money options are not included in diluted EPS.

One of the mainstays of GAAP accounting is that financial statements should be as conservative as possible. Generally, fully diluted EPS is lower than basic EPS if the company made a profit; similarly, diluted EPS will show a lower loss than basic EPS in the situation of a loss. This is because the profits and losses must be divided among more shares.

For the S&P 500, Standard & Poor's reports earnings both ways. Yet Standard & Poor's calculations of both market capitalization and the divisor are based on the basic number of shares.

We only use the fully diluted EPS to match I/B/E/S fully diluted data. However, Joe notes that fully diluted shares are additional shares that may or may not be created in the future. They are "event-based contracts" that have not taken effect yet. By no means is fully diluted shares an ironclad number that will be achieved in the future. It's just a worse-case scenario.

That's why our analysis of buybacks in this *Topical Study* uses basic shares even though diluted is used for earnings reporting.

Buybacks should be compared to basic shares outstanding at any given time to reflect the repurchases of those actual shares.

Joe compared the basic versus diluted share count of the S&P 500 from the first quarter of 2011 through the fourth quarter of 2018. The former fell 7.7%, while the latter declined 8.2% (*Fig. 37*).

Since EPS is widely reported on a fully diluted basis, corporations have a big incentive to offset dilution resulting from stock compensation with buybacks. In other words, most buybacks are motivated by an attempt to offset the dilution of EPS rather than to boost EPS by reducing the basic share count.

Source: Yardeni Research, Inc.

Appendix 3a: S&P 500 Firms' Percent Change in Number of Basic Shares Outstanding, Q1-2011 to Q4-2018 (sorted by % change)

APTV	Aptiv PLC	-61.8	LLL	L3 Technologies	-27.4	COP	ConocoPhillips	-19.6	RSG	Republic Services	-15.2	LLY	Eli Lilly	-9.1
MSI	Motorola Solutions	-51.5	EBAY	eBay	-27.2	PH	Parker-Hannifin	-19.6	PRU	Prudential Financial	-14.9	NTRS	Northern Trust	-9.0
GLW	Corning	-49.4	FL	Foot Locker	-27.1	GWW	W W Grainger	-19.5	APH	Amphenol	-14.5	STZ	Constellation Brands	-8.8
CBS	CBS	-44.5	CTAS	Cintas	-26.7	IPG	Interpublic Group	-19.4	ALK	Alaska Air Group	-14.4	FBHS	Fortune Bnds Home & Sec'y	-8.8
KSS	Kohls	-44.1	AAPL	Apple	-26.7	GILD	Gilead Sciences	-19.2	KMB	Kimberly-Clark	-14.3	ANSS	ANSYS	-8.8
AMP	Ameriprise Financial	-43.8	QCOM	Qualcomm	-26.7	HIG	Hartford Financial Services	-19.2	MAS	Masco	-14.3	AAP	Advance Auto Parts	-8.7
ORLY	O'Reilly Automotive	-43.2	PHM	PulteGroup	-26.5	DAL	Delta Air Lines	-18.9	CAH	Cardinal Health	-14.2	VFC	VF	-8.7
AIG	American Int'l Group	-43.1	PSX	Phillips 66	-26.5	CSCO	Cisco Systems	-18.8	INTU	Intuit	-14.2	RHT	Red Hat	-8.7
NOC	Northrop Grumman	-41.1	ORCL	Oracle	-26.4	AFL	Aflac	-18.8	FLIR	FLIR Systems	-14.2	MSFT	Microsoft	-8.6
AZO	Autozone	-40.9	IBM	Int'/l Business Machines	-26.2	CMI	Cummins	-18.8	XOM	Exxon Mobil	-14.0	BAX	Baxter International	-8.5
LOW	Lowe's Companies	-39.7	MCD	McDonald's	-26.2	LMT	Lockheed Martin	-18.7	LB	L Brands	-13.9	A	Agilent Technologies	-8.4
DFS	Discover Financial Services	-39.1	IR	Ingersoll-Rand PLC	-26.2	EXPD	Expeditors International	-18.7	DVA	DaVita	-13.8	EL	Estee Lauder Companies	-8.1
TRV	Travelers Companies	-38.4	FITB	Fifth Third Bancorp	-25.9	SPGI	S&P Global	-18.5	CHD	Church & Dwight	-13.7	HAS	Hasbro	-8.0
AIZ	Assurant	-37.8	VLO	Valero Energy	-25.8	WAT	Waters	-18.4	MOS	Mosaic	-13.6	AOS	A. O. Smith	-8.0
TMK	Torchmark	-36.4	PPG	PPG Industries	-25.7	TXN	Texas Instruments	-18.4	PM	Philip Morris International	-13.3	UTX	United Technologies	-7.7
CF	CF Industries Holdings	-35.8	RE	Everest Re Group Ltd	-25.6	MMM	3M	-18.4	HES	Hess	-13.2	HSY	Hershey	-7.5
ALL	Allstate	-35.6	UNP	Union Pacific	-25.5	HUM	Humana	-18.4	TXT	Textron	-13.1	MET	MetLife	-7.4
GPS	Gap	-35.0	FFIV	F5 Networks	-25.5	AVY	Avery Dennison	-18.3	WYNN	Wynn Resorts Ltd	-13.0	CMA	Comerica	-7.4
JNPR	Juniper Networks	-34.9	LUV	Southwest Airlines	-25.4	CMCSA	Comcast	-18.1	AKAM	Akamai Technologies	-12.8	TROW	T. Rowe Price Group	-7.4
ATVI	Activision Blizzard	-34.8	CSX	CSX	-25.1	GE	General Electric	-18.0	UPS	United Parcel Service	-12.7	OXY	Occidental Petroleum	-7.2
STX	Seagate Technology PLC	-34.8	CELG	Celgene	-25.0	ROK	Rockwell Automation	-17.8	BFb	Brown-Forman	-12.2	GPC	Genuine Parts	-7.1
KR	Kroger	-34.4	TGT	Target	-24.9	RF	Regions Financial	-17.7	ADP	Automatic Data Processing	-12.2	KO	Coca-Cola	-7.0
ITW	Illinois Tool Works	-33.8	IDXX	IDEXX Laboratories	-24.8	CVS	CVS Health	-17.6	CL	Colgate-Palmolive	-12.2	PKG	Packaging of America	-7.0
YUM	Yum! Brands	-33.8	JWN	Nordstrom	-24.7	UAL	United Continental Holdings	-17.4	HII	Huntington Ingalls Industries	-12.1	MMC	Marsh & McLennan Cos	-7.0
V	Visa	-33.5	DE	Deere	-24.3	CPRT	Copart	-17.3	PFG	Principal Financial Group	-12.1	MAR	Marriott International	-6.8
XRX	Xerox	-32.9	L	Loews	-24.2	C	Citigroup	-17.3	PNC	PNC Financial Svcs Group	-12.0	MXIM	Maxim Integrated Products	-6.8
MSCI	MSCI	-32.9	MCK	McKesson	-23.9	BIIB	Biogen	-17.3	ADM	Archer Daniels Midland	-11.9	RMD	Resmed	-6.7
LNC	Lincoln National	-32.9	NSC	Norfolk Southern	-23.8	SBUX	Starbucks	-17.2	SHW	Sherwin-Williams	-11.8	FMC	FMC	-6.7
HRB	H & R Block	-32.7	STT	State Street	-23.6	WMT	Walmart	-17.2	SWK	Stanley Black & Decker	-11.7	NDAQ	Nasdaq	-6.6
LYB	LyondellBasell Industries NV	-32.6	DG	Dollar General	-23.5	BLK	BlackRock	-17.2	WFC	Wells Fargo	-11.6	HON	Honeywell International	-6.6
VIAB	Viacom	-32.2	BEN	Franklin Resources	-23.3	EMR	Emerson Electric	-17.0	CCL	Carnival	-11.4	IP	International Paper	-6.5
NTAP	NetApp	-32.1	BA	Boeing	-23.2	MDLZ	Mondelez International	-16.9	UNH	UnitedHealth Group	-11.3	BKNG	Booking Holdings	-6.5
FISV	Fiserv	-32.0	MTD	Mettler-Toledo Int'l	-23.1	FDX	FedEx	-16.8	SYY	Sysco	-11.3	HBI	HanesBrands	-6.4
AMGN	Amgen	-31.7	VAR	Varian Medical Systems	-22.9	NKE	Nike	-16.8	PEP	PepsiCo	-11.0	BR	Broadridge Fin'l Solutions	-6.4
WU	Western Union	-31.6	TEL	TE Connectivity Ltd	-22.8	RHI	Robert Half International	-16.8	PG	Procter & Gamble	-10.8	BWA	BorgWarner	-6.3
ANTM	Anthem	-30.9	ABC	AmerisourceBergen	-22.7	INTC	Intel	-16.6	CMG	Chipotle Mexican Grill	-10.7	ABBV	AbbVie	-6.3
HOG	Harley-Davidson	-30.7	KMX	Carmax	-22.7	CHRW	C.H. Robinson Worldwide	-16.6	PGR	Progressive	-10.6	IT	Gartner	-6.3
UNM	Unum Group	-30.6	HCA	HCA Healthcare	-22.6	SYMC	Symantec	-16.5	WM	Waste Management	-10.6	CPB	Campbell Soup	-6.2
BBY	Best Buy	-30.4	CPRI	Capri Holdings Ltd	-21.8	MCO	Moody's	-16.4	JKHY	Jack Henry & Associates	-10.4	GIS	General Mills	-6.2
HD	Home Depot	-30.2	DOV	Dover	-21.8	WHR	Whirlpool	-16.3	LEG	Leggett & Platt	-10.2	CLX	Clorox Co	-6.1
PWR	Quanta Services	-30.2	FLS	Flowserve	-21.6	HSIC	Henry Schein	-16.3	STI	SunTrust Banks	-10.1	GM	General Motors	-6.0
GS	Goldman Sachs	-29.8	DIS	Walt Disney	-21.5	RL	Ralph Lauren	-16.3	MO	Altria Group	-10.0	HRS	Harris	-5.8
VRSN	Verisign	-29.1	GD	General Dynamics	-21.3	JPM	JPMorgan Chase	-16.2	NOV	National Oilwell Varco	-10.0	TSS	Total System Services	-5.7
AXP	American Express	-28.9	TJX	TJX	-20.9	TSCO	Tractor Supply	-16.0	JBHT	J B Hunt Transport Services	-9.9	UHS	Universal Health Services	-5.3
AON	Aon PLC	-28.6	OMC	Omnicom Group	-20.7	USB	U.S. Bancorp	-15.9	CAT	Caterpillar	-9.6	CTSH	Cognizant Tech Solutions	-5.3
CTXS	Citrix Systems	-28.6	MA	Mastercard	-20.6	CE	Celanese	-15.9	EW	Edwards Lifesciences	-9.4	CVX	Chevron	-5.0
HPQ	HP	-27.6	ROST	Ross Stores	-20.4	DGX	Quest Diagnostics	-15.8	BSX	Boston Scientific	-9.3	TIF	Tiffany	-4.6
AMAT	Applied Materials	-27.5	RTN	Raytheon	-20.4	AES	AES	-15.5	EA	Electronic Arts	-9.3	HAL	Halliburton	-4.6
M	Macy's	-27.5	FLR	Fluor	-20.3	IVZ	Invesco Ltd	-15.5	KLAC	KLA-Tencor	-9.2	PCAR	Paccar	-4.5
PFE	Pfizer	-27.5	BK	Bank of New York Mellon	-20.2	MRK	Merck	-15.2	DRI	Darden Restaurants	-9.2	K	Kellogg	-4.4

Appendix 3a: S&P 500 Firms' Percent Change in Number of Basic Shares Outstanding, Q1-2011 to Q4-2018 (sorted by % change), Cont'd

AME	Ametek	-4.2	EIX	Edison International	0.0	FIS	Fidelity Natl Info Svcs	7.8	SO	Southern Co	21.7	PPL	PPL	48.8
GT	Goodyear Tire & Rubber	-4.1	HRL	Hormel Foods	0.0	DVN	Devon Energy	8.0	BDX	Becton Dickinson	21.8	FE	FirstEnergy	50.0
CI	Cigna	-4.1	SNPS	Synopsys	0.6	GOOG	Alphabet	8.1	HBAN	Huntington Bancshares	22.1	NFX	Newfield Exploration	50.4
BMY	Bristol-Myers Squibb	-4.1	COST	Costco Wholesale	0.6	GOOGL	Alphabet	8.1	ALXN	Alexion Pharmaceuticals	22.9	LIN	Linde PLC	50.7
SYK	Stryker	-4.0	AEE	Ameren	1.6	NEM	Newmont Mining	8.1	ADI	Analog Devices	22.9	FCX	Freeport-McMoRan	53.2
XLNX	Xilinx	-4.0	SLB	Schlumberger NV	1.8	MAC	Macerich	8.1	T	AT&T	23.3	NWL	Newell Brands	53.5
SNA	Snap-On	-4.0	AMG	Affiliated Managers Group	1.9	ROP	Roper Technologies	8.2	CBOE	Cboe Global Markets	23.4	ICE	Intercontinental Exchange	55.0
ZTS	Zoetis	-3.9	NVDA	NVIDIA	2.2	MGM	MGM Resorts Int'l	8.2	NCLH	Norwegian Cruise Line	23.6	XRAY	Dentsply Sirona	57.1
ADSK	Autodesk	-3.8	VMC	Vulcan Materials	2.3	EXPE	Expedia Group	8.4	ECL	Ecolab	24.1	NKTR	Nektar Therapeutics	59.5
SWKS	Skyworks Solutions	-3.7	ETR	Entergy	2.4	AMZN	Amazon.com	8.6	WDC	Western Digital	25.0	DUK	Duke Energy	59.7
MPC	Marathon Petroleum	-3.7	HP	Helmerich and Payne	2.5	BXP	Boston Properties	8.7	SIVB	SVB Financial Group	25.1	AVB	AvalonBay Communities	60.0
RCL	Royal Caribbean Cruises	-3.5	AEP	American Electric Power	2.5	LKQ	LKQ	9.0	MCHP	Microchip Technology	25.3	TWTR	Twitter	60.2
ADBE	Adobe	-3.2	AWK	American Water Works	2.7	HST	Host Hotels & Resorts	9.3	LRCX	Lam Research	25.3	HFC	HollyFrontier	61.7
KSU	Kansas City Southern	-3.0	PSA	Public Storage	2.8	FLT	Fleetcor Technologies	9.6	MDT	Medtronic PLC	25.6	AVGO	Broadcom	63.7
FAST	Fastenal	-3.0	APD	Air Products and Chemicals	2.9	ETFC	E*TRADE Financial	9.6	EQR	Equity Residential	25.8	AJG	Arthur J Gallagher	68.0
TSN	Tyson Foods	-2.9	MNST	Monster Beverage	3.1	XEC	Cimarex Energy	9.7	VRTX	Vertex Pharmaceuticals	26.0	EQIX	Equinix	68.1
DLTR	Dollar Tree	-2.9	PNW	Pinnacle West Capital	3.1	BBT	BB&T	10.0	ETN	Eatonoration PLC	26.4	INCY	Incyte	72.5
PKI	PerkinElmer	-2.9	KIM	Kimco Realty	3.2	AMT	American Tower	10.8	HCP	HCP	27.0	QRVO	Qorvo	74.3
VRSK	Verisk Analytics	-2.8	WBA	Walgreens Boots Alliance	3.2	JEC	Jacobs Engineering Group	11.1	DISCA	Discovery	27.6	PNR	Pentair PLC	76.2
GRMN	Garmin Ltd	-2.6	TRIP	TripAdvisor	3.2	SCHW	Charles Schwab	11.8	DISCK	Discovery	27.6	LEN	Lennar	76.9
XYL	Xylem	-2.6	COG	Cabot Oil & Gas	3.4	IPGP	IPG Photonics	12.6	FRC	First Republic Bank	27.9	DXC	DXC Technology	78.1
ULTA	Ulta Beauty	-2.5	TMO	Thermo Fisher Scientific	3.4	CMS	CMS Energy	13.0	AIV	Apartment Investm't & Mgt	30.2	ES	Eversource Energy	79.1
ISRG	Intuitive Surgical	-2.3	VNO	Vornado Realty Trust	3.5	EOG	EOG Resources	13.1	PCG	PG&E	31.3	OKE	ONEOK	92.4
BAC	Bank of America	-2.2	COF	Capital One Financial	3.5	PVH	PVH	13.2	IRM	Iron Mountain	32.1	ARE	Alexandria R.E.Equities	93.0
SEE	Sealed Air	-2.2	HOLX	Hologic	3.7	FTNT	Fortinet	13.3	NI	NiSource	32.3	CXO	Concho Resources	94.5
JNJ	Johnson & Johnson	-2.2	ALGN	Align Technology	4.0	ABT	Abbott Laboratories	13.5	URI	United Rentals	32.4	WLTW	Willis Towers Watson PLC	98.3
NUE	Nucor	-2.2	ZION	Zions Bancorporation NA	4.1	D	Dominion Energy	13.8	FB	Facebook	34.5	WMB	Williams Companies	103.4
CAG	Conagra Brands	-2.0	CDNS	Cadence Design Systems	4.7	SRE	Sempra Energy	14.3	JEF	Jefferies Financial	34.8	REG	Regency Centers	103.8
SJM	J M Smucker	-1.9	CME	CME Group	5.0	MU	Micron Technology	14.7	WEC	WEC Energy	35.0	CNC	Centene	106.6
CERN	Cerner	-1.9	F	Ford Motor	5.2	NEE	Nextera Energy	14.9	NBL	Noble Energy	36.4	ESS	Essex Property Trust	109.8
EFX	Equifax	-1.7	SLG	SL Green Realty	5.3	MS	Morgan Stanley	15.0	CB	Chubb	36.6	JCI	Johnson Controls	114.1
TPR	Tapestry	-1.7	TDG	TransDigm Group	5.5	KEY	KeyCorp	15.5	MLM	Martin Marietta Materials	37.5	UA	Under Armour	116.7
ROL	Rollins	-1.4	DISH	DISH Network	5.5	ALB	Albemarle	15.7	ARNC	Arconic	37.7	UAA	Under Armour	116.7
BRKb	Berkshire Hathaway	-1.2	SPG	Simon Property Group	5.5	TAP	Molson Coors Brewing	15.7	AAL	American Airlines Group	38.3	CHTR	Charter Communications	121.7
EMN	Eastman Chemical	-1.2	ADS	Alliance Data Systems	5.6	ILMN	Illumina	16.2	TTWO	Take-Two Interactive Sftwr	38.4	VTR	Ventas	122.1
ACN	Accenture PLC	-1.1	BHGE	Baker Hughes A GE Co	5.7	MRO	Marathon Oil	16.5	IFF	Int'l Flavors & Fragrances	38.5	DLR	Digital Realty Trust	125.7
APA	Apache	-1.0	ZBH	Zimmer Biomet Holdings	6.0	NRG	NRG Energy	17.0	AMD	Advanced Micro Devices	38.9	EVRG	Evergy	130.0
MAT	Mattel	-1.0	COO	Cooper Companies	6.0	MTB	M&T Bank	17.2	WY	Weyerhaeuser	39.4	WELL	Welltower	144.2
MKC	McCormick & Company	-0.8	DHR	Danaher	6.1	WCG	WellCare Health Plans	17.3	DRE	Duke Realty	42.1	PLD	Prologis	146.9
SBAC	SBA Communications	-0.8	XEL	Xcel Energy	6.3	DHI	D.R. Horton	17.5	CRM	Salesforce.Com	43.5	O	Realtyome	150.1
PAYX	Paychex	-0.7	LNT	Alliant Energy	6.6	MYL	Mylan NV	17.8	EXR	Extra Space Storage	43.6	AGN	Allergan plc	171.0
GPN	Global Payments	-0.6	DTE	DTE Energy	7.1	RJF	Raymond James Financial	17.8	CCI	Crown Castle Int'l	43.9	KMI	Kinder Morgan	218.1
APC	Anadarko Petroleum	-0.4	PBCT	People's United Financial	7.1	CNP	CenterPoint Energy	17.9	EXC	Exelon	45.9	MAA	Mid-America Apt Commun	218.4
PEG	Public Svc Enterprise Group	-0.4	NLSN	Nielsen Holdings PLC	7.2	NFLX	Netflix	18.2	VZ	Verizon Communications	46.2	WRK	Westrock Co	229.2
BLL	Ball	-0.2	CBRE	CBRE Group	7.3	FRT	Fed'l Realty Investm't Trust	20.1	PXD	Pioneer Natural Resources	47.6	FANG	Diamondback Energy	249.4
LH	Laboratoryoration of Amer.	-0.1	MHK	Mohawk Industries	7.5	ABMD	Abiomed	21.0	PRGO	Perrigo Company PLC	47.8	CTL	CenturyLink	250.8
CINF	Cincinnati Financial	0.0	ED	Consolidated Edison	7.7	REGN	Regeneron Pharma.	21.3	UDR	UDR	48.0	—	—	—

Note: Data not available over the period for the following S&P 500 companies: Allegion PLC, Arista Networks, Brighthouse Financial, Citizens Financial Group, Coty, DowDuPont, Fortive, Hewlett Packard Enterprise, Hilton Worldwide Holdings, IHS Markit Ltd, IQVIA Holdings, Keysight Technologies, Kraft Heinz, Lamb Weston Holdings, News, PayPal Holdings, Synchrony Financial, TechnipFMC PLC, and Twenty-First Century Fox.
Source: Standard & Poor's.

Appendix 3b: Percent Change in Number of Basic Shares Outstanding for S&P 500 Companies, Q1-2011 to Q4-2018 (sorted A-Z)

MMM	3M	-18.4	APTV	Aptiv PLC	-61.8	CF	CF Industries Holdings	-35.8	DLTR	Dollar Tree	-2.9	FBHS	Fortune Brands Home	-8.8
AOS	A. O. Smith	-8.0	ADM	Archer Daniels Midland	-11.9	SCHW	Charles Schwab	11.8	D	Dominion Energy	13.8	BEN	Franklin Resources	-23.3
ABT	Abbott Laboratories	13.5	ARNC	Arconic	37.7	CHTR	Charter Communications	121.7	DOV	Dover	-21.8	FCX	Freeport-McMoRan	53.2
ABBV	AbbVie	-6.3	AJG	Arthur J Gallagher	68.0	CVX	Chevron	-5.0	DTE	DTE Energy	7.1	GPS	Gap	-35.0
ABMD	Abiomed	21.0	AIZ	Assurant	-37.8	CMG	Chipotle Mexican Grill	-10.7	DUK	Duke Energy	59.7	GRMN	Garmin Ltd	-2.6
ACN	Accenture PLC	-1.1	T	AT&T	23.3	CB	Chubb	36.6	DRE	Duke Realty	42.1	IT	Gartner	-6.3
ATVI	Activision Blizzard	-34.8	ADSK	Autodesk	-3.8	CHD	Church & Dwight	-13.7	DXC	DXC Technology	78.1	GD	General Dynamics	-21.3
ADBE	Adobe	-3.2	ADP	Auto. Data Processing	-12.2	CI	Cigna	-4.1	ETFC	E*TRADE Financial	9.6	GE	General Electric	-18.0
AAP	Advance Auto Parts	-8.7	AZO	Autozone	-40.9	XEC	Cimarex Energy	9.7	EMN	Eastman Chemical	-1.2	GIS	General Mills	-6.2
AMD	Advanced Micro Devices	38.9	AVB	AvalonBay Communities	60.0	CINF	Cincinnati Financial	0.0	ETN	Eatonoration PLC	26.4	GM	General Motors	-6.0
AES	AES	-15.5	AVY	Avery Dennison	-18.3	CTAS	Cintas	-26.7	EBAY	eBay	-27.2	GPC	Genuine Parts	-7.1
AMG	Affiliated Managers Group	1.9	BHGE	Baker Hughes A GE Co	5.7	CSCO	Cisco Systems	-18.8	ECL	Ecolab	24.1	GILD	Gilead Sciences	-19.2
AFL	Aflac	-18.8	BLL	Ball	-0.2	C	Citigroup	-17.3	EIX	Edison Int'l	0.0	GPN	Global Payments	-0.6
A	Agilent Technologies	-8.4	BAC	Bank of America	-2.2	CTXS	Citrix Systems	-28.6	EW	Edwards Lifesciences	-9.4	GS	Goldman Sachs	-29.8
APD	Air Products and Chemicals	2.9	BK	Bank of New York Mellon	-20.2	CLX	Clorox Co	-6.1	EA	Electronic Arts	-9.3	GT	Goodyear Tire & Rub.	-4.1
AKAM	Akamai Technologies	-12.8	BAX	Baxter Int'l	-8.5	CME	CME Group	5.0	LLY	Eli Lilly	-9.1	HRB	H & R Block	-32.7
ALK	Alaska Air Group	-14.4	BBT	BB&T	10.0	CMS	CMS Energy	13.0	EMR	Emerson Electric	-17.0	HAL	Halliburton	-4.6
ALB	Albemarle	15.7	BDX	Becton Dickinson	21.8	KO	Coca-Cola	-7.0	ETR	Entergy	2.4	HBI	HanesBrands	-6.4
ARE	Alexandria R.E. Equities	93.0	BRKb	Berkshire Hathaway	-1.2	CTSH	Cognizant Tech. Solutions	-5.3	EOG	EOG Resources	13.1	HOG	Harley-Davidson	-30.7
ALXN	Alexion Pharmaceuticals	22.9	BBY	Best Buy	-30.4	CL	Colgate-Palmolive	-12.2	EFX	Equifax	-1.7	HRS	Harris	-5.8
ALGN	Align Technology	4.0	BIIB	Biogen	-17.3	CMCSA	Comcast	-18.1	EQIX	Equinix	68.1	HIG	Hartford Fin'l Services	-19.2
AGN	Allergan plc	171.0	BLK	BlackRock	-17.2	CMA	Comerica	-7.4	EQR	Equity Residential	25.8	HAS	Hasbro	-8.0
ADS	Alliance Data Systems	5.6	BA	Boeing	-23.2	CAG	Conagra Brands	-2.0	ESS	Essex Property Trust	109.8	HCA	HCA Healthcare	-22.6
LNT	Alliant Energy	6.6	BKNG	Booking Holdings	-6.5	CXO	Concho Resources	94.5	EL	Estee Lauder Cos	-8.1	HCP	HCP	27.0
ALL	Allstate	-35.6	BWA	BorgWarner	-6.3	COP	ConocoPhillips	-19.6	RE	Everest Re Group Ltd	-25.6	HP	Helmerich and Payne	2.5
GOOG	Alphabet	8.1	BXP	Boston Properties	8.7	ED	Consolidated Edison	7.7	EVRG	Evergy	130.0	HSIC	Henry Schein	-16.3
GOOGL	Alphabet	8.1	BSX	Boston Scientific	-9.3	STZ	Constellation Brands	-8.8	ES	Eversource Energy	79.1	HSY	Hershey	-7.5
MO	Altria Group	-10.0	BMY	Bristol-Myers Squibb	-4.1	COO	Cooper Companies	6.0	EXC	Exelon	45.9	HES	Hess	-13.2
AMZN	Amazon.com	8.6	AVGO	Broadcom	63.7	CPRT	Copart	-17.3	EXPE	Expedia Group	8.4	HFC	HollyFrontier	61.7
AEE	Ameren	1.6	BR	Broadridge Fin'l Solutions	-6.4	GLW	Corning	-49.4	EXPD	Expeditors Int'l	-18.7	HOLX	Hologic	3.7
AAL	American Airlines Group	38.3	BFb	Brown-Forman	-12.2	COST	Costco Wholesale	0.6	EXR	Extra Space Storage	43.6	HD	Home Depot	-30.2
AEP	American Electric Power	2.5	CHRW	C.H. Robinson Worldwide	-16.6	CCI	Crown Castle Int'l	43.9	XOM	Exxon Mobil	-14.0	HON	Honeywell Int'l	-6.6
AXP	American Express	-28.9	COG	Cabot Oil & Gas	3.4	CSX	CSX	-25.1	FFIV	F5 Networks	-25.5	HRL	Hormel Foods	0.0
AIG	American Int'l Group	-43.1	CDNS	Cadence Design Systems	4.7	CMI	Cummins	-18.8	FB	Facebook	34.5	HST	Host Hotels & Resorts	9.3
AMT	American Tower	10.8	CPB	Campbell Soup	-6.2	CVS	CVS Health	-17.6	FAST	Fastenal	-3.0	HPQ	HP	-27.6
AWK	American Water Works	2.7	COF	Capital One Financial	3.5	DHI	D.R. Horton	17.5	FRT	Fed'l Realty Inv't Trust	20.1	HUM	Humana	-18.4
AMP	Ameriprise Financial	-43.8	CPRI	Capri Holdings Ltd	-21.8	DHR	Danaher	6.1	FDX	FedEx	-16.8	HBAN	Huntington Bancshrs	22.1
ABC	AmerisourceBergen	-22.7	CAH	Cardinal Health	-14.2	DRI	Darden Restaurants	-9.2	FIS	Fidelity Natl Info. Svcs	7.8	HII	Huntington Ingalls Ind.	-12.1
AME	Ametek	-4.2	KMX	Carmax	-22.7	DVA	DaVita	-13.8	FITB	Fifth Third Bancorp	-25.9	IDXX	IDEXX Laboratories	-24.8
AMGN	Amgen	-31.7	CCL	Carnival	-11.4	DE	Deere	-24.3	FRC	First Republic Bank	27.9	ITW	Illinois Tool Works	-33.8
APH	Amphenol	-14.5	CAT	Caterpillar	-9.6	DAL	Delta Air Lines	-18.9	FE	FirstEnergy	50.0	ILMN	Illumina	16.2
APC	Anadarko Petroleum	-0.4	CBOE	Cboe Global Markets	23.4	XRAY	Dentsply Sirona	57.1	FISV	Fiserv	-32.0	INCY	Incyte	72.5
ADI	Analog Devices	22.9	CBRE	CBRE Group	7.3	DVN	Devon Energy	8.0	FLT	Fleetcor Technologies	9.6	IR	Ingersoll-Rand PLC	-26.2
ANSS	ANSYS	-8.8	CBS	CBS	-44.5	FANG	Diamondback Energy	249.4	FLIR	FLIR Systems	-14.2	INTC	Intel	-16.6
ANTM	Anthem	-30.9	CE	Celanese	-15.9	DLR	Digital Realty Trust	125.7	FLS	Flowserve	-21.6	ICE	Intercontinental Exch.	55.0
AON	Aon PLC	-28.6	CELG	Celgene	-25.0	DFS	Discover Financial Svcs	-39.1	FLR	Fluor	-20.3	IBM	Int'l Bus. Machines	-26.2
APA	Apache	-1.0	CNC	Centene	106.6	DISCA	Discovery	27.6	FMC	FMC	-6.7	IFF	Int'l Flavors & Frag's	38.5
AIV	Apartment Investment & Mgt	30.2	CNP	CenterPoint Energy	17.9	DISCK	Discovery	27.6	FL	Foot Locker	-27.1	IP	Int'l Paper	-6.5
AAPL	Apple	-26.7	CTL	CenturyLink	250.8	DISH	DISH Network	5.5	F	Ford Motor	5.2	IPG	Interpublic Group	-19.4
AMAT	Applied Materials	-27.5	CERN	Cerner	-1.9	DG	Dollar General	-23.5	FTNT	Fortinet	13.3	INTU	Intuit	-14.2

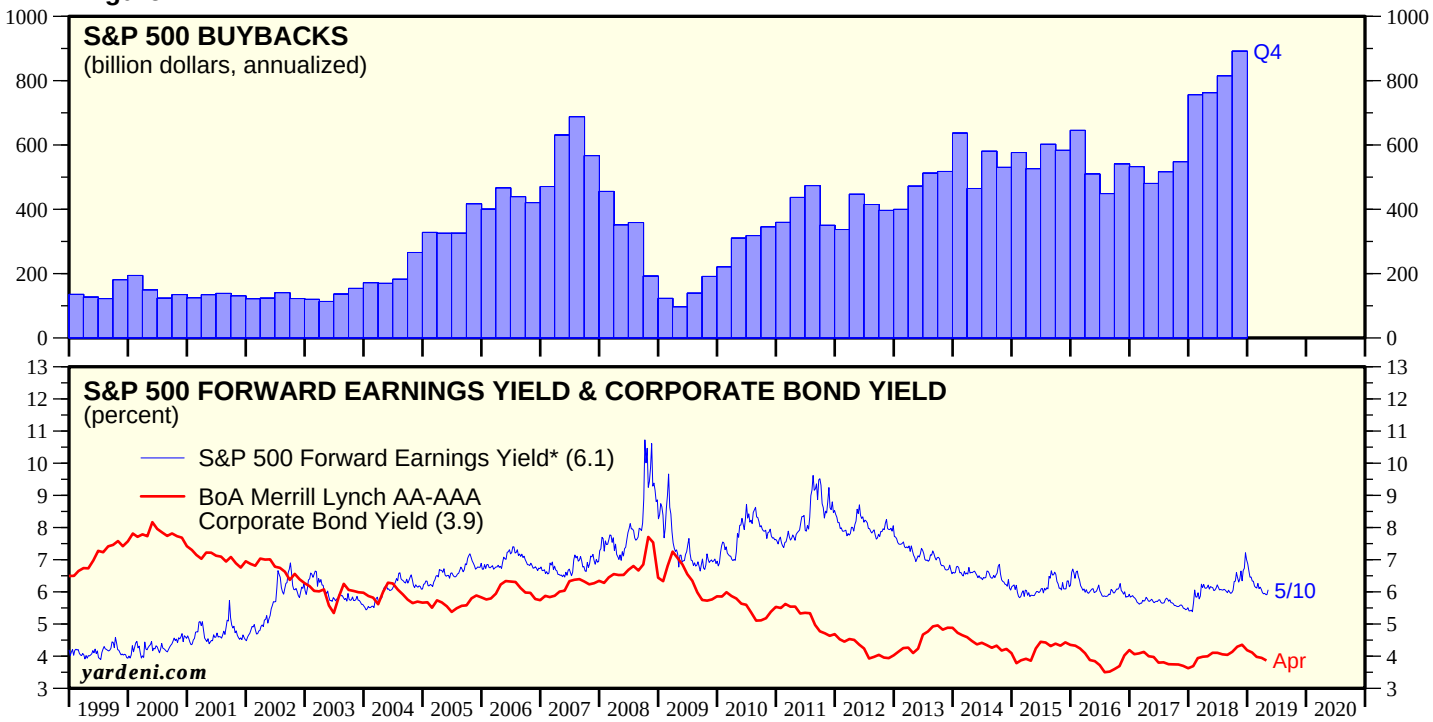
Appendix 3b: Percent Change in Number of Basic Shares Outstanding for S&P 500 Companies, Q1-2011 to Q4-2018 (sorted A-Z), Cont'd

ISRG	Intuitive Surgical	-2.3	MKC	McCormick & Company	-0.8	ORLY	O'Reilly Automotive	-43.2	RCL	Royal Caribbean Cruises	-3.5	UNP	Union Pacific	-25.5
IVZ	Invesco Ltd	-15.5	MCD	McDonald's	-26.2	PCAR	Paccar	-4.5	SPGI	S&P Global	-18.5	UAL	United Continental Holdings	-17.4
IPGP	IPG Photonics	12.6	MCK	McKesson	-23.9	PKG	Packaging of America	-7.0	CRM	Salesforce.Com	43.5	UPS	United Parcel Service	-12.7
IRM	Iron Mountain	32.1	MDT	Medtronic PLC	25.6	PH	Parker-Hannifin	-19.6	SBAC	SBA Communications	-0.8	URI	United Rentals	32.4
JBHT	J B Hunt Transport Services	-9.9	MRK	Merck	-15.2	PAYX	Paychex	-0.7	SLB	Schlumberger NV	1.8	UTX	United Technologies	-7.7
SJM	J M Smucker	-1.9	MET	MetLife	-7.4	PNR	Pentair PLC	76.2	STX	Seagate Technology PLC	-34.8	UNH	UnitedHealth Group	-11.3
JKHY	Jack Henry & Associates	-10.4	MTD	Mettler-Toledo International	-23.1	PBCT	People's United Financial	7.1	SEE	Sealed Air	-2.2	UHS	Universal Health Services	-5.3
JEC	Jacobs Engineering Group	11.1	MGM	MGM Resorts International	8.2	PEP	PepsiCo	-11.0	SRE	Sempra Energy	14.3	UNM	Unum Group	-30.6
JEF	Jefferies Financial	34.8	MCHP	Microchip Technology	25.3	PKI	PerkinElmer	-2.9	SHW	Sherwin-Williams	-11.8	VLO	Valero Energy	-25.8
JNJ	Johnson & Johnson	-2.2	MU	Micron Technology	14.7	PRGO	Perrigo Company PLC	47.8	SPG	Simon Property Group	5.5	VAR	Varian Medical Systems	-22.9
JCI	Johnson Controls	114.1	MSFT	Microsoft	-8.6	PFE	Pfizer	-27.5	SWKS	Skyworks Solutions	-3.7	VTR	Ventas	122.1
JPM	JPMorgan Chase	-16.2	MAA	Mid-America Apt Commun's	218.4	PCG	PG&E	31.3	SLG	SL Green Realty	5.3	VRSN	Verisign	-29.1
JNPR	Juniper Networks	-34.9	MHK	Mohawk Industries	7.5	PM	Philip Morris International	-13.3	SNA	Snap-On	-4.0	VRSK	Verisk Analytics	-2.8
KSU	Kansas City Southern	-3.0	TAP	Molson Coors Brewing	15.7	PSX	Phillips 66	-26.5	SO	Southern Co	21.7	VZ	Verizon Communications	46.2
K	Kellogg	-4.4	MDLZ	Mondelez International	-16.9	PNW	Pinnacle West Capital	3.1	LUV	Southwest Airlines	-25.4	VRTX	Vertex Pharmaceuticals	26.0
KEY	KeyCorp	15.5	MNST	Monster Beverage	3.1	PXD	Pioneer Natural Resources	47.6	SWK	Stanley Black & Decker	-11.7	VFC	VF	-8.7
KMB	Kimberly-Clark	-14.3	MCO	Moody's	-16.4	PNC	PNC Financial Srvs Group	-12.0	SBUX	Starbucks	-17.2	VIAB	Viacom	-32.2
KIM	Kimco Realty	3.2	MS	Morgan Stanley	15.0	PPG	PPG Industries	-25.7	STT	State Street	-23.6	V	Visa	-33.5
KMI	Kinder Morgan	218.1	MOS	Mosaic	-13.6	PPL	PPL	48.8	SYK	Stryker	-4.0	VNO	Vornado Realty Trust	3.5
KLAC	KLA-Tencor	-9.2	MSI	Motorola Solutions	-51.5	PFG	Principal Financial Group	-12.1	STI	SunTrust Banks	-10.1	VMC	Vulcan Materials	2.3
KSS	Kohls	-44.1	MSCI	MSCI	-32.9	PG	Procter & Gamble	-10.8	SIVB	SVB Financial Group	25.1	GWW	W W Grainger	-19.5
KR	Kroger	-34.4	MYL	Mylan NV	17.8	PGR	Progressive	-10.6	SYMC	Symantec	-16.5	WBA	Walgreens Boots Alliance	3.2
LB	L Brands	-13.9	NDAQ	Nasdaq	-6.6	PLD	Prologis	146.9	SNPS	Synopsys	0.6	WMT	Walmart	-17.2
LLL	L3 Technologies	-27.4	NOV	National Oilwell Varco	-10.0	PRU	Prudential Financial	-14.9	SYY	Sysco	-11.3	DIS	Walt Disney	-21.5
LH	Laboratoryoration of America	-0.1	NKTR	Nektar Therapeutics	59.5	PEG	Public Service Ent. Group	-0.4	TROW	T. Rowe Price Group	-7.4	WM	Waste Management	-10.6
LRCX	Lam Research	25.3	NTAP	NetApp	-32.1	PSA	Public Storage	2.8	TTWO	Take-Two Interactive Softw.	38.4	WAT	Waters	-18.4
LEG	Leggett & Platt	-10.2	NFLX	Netflix	18.2	PHM	PulteGroup	-26.5	TPR	Tapestry	-1.7	WEC	WEC Energy	35.0
LEN	Lennar	76.9	NWL	Newell Brands	53.5	PVH	PVH	13.2	TGT	Target	-24.9	WCG	WellCare Health Plans	17.3
LNC	Lincoln National	-32.9	NFX	Newfield Exploration	50.4	QRVO	Qorvo	74.3	TEL	TE Connectivity Ltd	-22.8	WFC	Wells Fargo	-11.6
LIN	Linde PLC	50.7	NEM	Newmont Mining	8.1	QCOM	Qualcomm	-26.7	TXN	Texas Instruments	-18.4	WELL	Welltower	144.2
LKQ	LKQ	9.0	NEE	Nextera Energy	14.9	PWR	Quanta Services	-30.2	TXT	Textron	-13.1	WDC	Western Digital	25.0
LMT	Lockheed Martin	-18.7	NLSN	Nielsen Holdings PLC	7.2	DGX	Quest Diagnostics	-15.8	TMO	Thermo Fisher Scientific	3.4	WU	Western Union	-31.6
L	Loews	-24.2	NKE	Nike	-16.8	RL	Ralph Lauren	-16.3	TIF	Tiffany	-4.6	WRK	Westrock Co	229.2
LOW	Lowe's Companies	-39.7	NI	NiSource	32.3	RJF	Raymond James Fin'l	17.8	TJX	TJX	-20.9	WY	Weyerhaeuser	39.4
LYB	LyondellBasell Inds NV	-32.6	NBL	Noble Energy	36.4	RTN	Raytheon	-20.4	TMK	Torchmark	-36.4	WHR	Whirlpool	-16.3
MTB	M&T Bank	17.2	JWN	Nordstrom	-24.7	O	Realtyome	150.1	TSS	Total System Services	-5.7	WMB	Williams Companies	103.4
MAC	Macerich	8.1	NSC	Norfolk Southern	-23.8	RHT	Red Hat	-8.7	TSCO	Tractor Supply	-16.0	WLTW	Willis Towers Watson	98.3
M	Macy's	-27.5	NTRS	Northern Trust	-9.0	REG	Regency Centers	103.8	TDG	TransDigm Group	5.5	WYNN	Wynn Resorts Ltd	-13.0
MRO	Marathon Oil	16.5	NOC	Northrop Grumman	-41.1	REGN	Regeneron Pharmaceuticals	21.3	TRV	Travelers Companies	-38.4	XEL	Xcel Energy	6.3
MPC	Marathon Petroleum	-3.7	NCLH	Norwegian Cruise Line	23.6	RF	Regions Financial	-17.7	TRIP	TripAdvisor	3.2	XRX	Xerox	-32.9
MAR	Marriott International	-6.8	NRG	NRG Energy	17.0	RSG	Republic Services	-15.2	TWTR	Twitter	60.2	XLNX	Xilinx	-4.0
MMC	Marsh & McLennan Cos	-7.0	NUE	Nucor	-2.2	RMD	Resmed	-6.7	TSN	Tyson Foods	-2.9	XYL	Xylem	-2.6
MLM	Martin Marietta Materials	37.5	NVDA	NVIDIA	2.2	RHI	Robert Half International	-16.8	USB	U.S. Bancorp	-15.9	YUM	Yum! Brands	-33.8
MAS	Masco	-14.3	OXY	Occidental Petroleum	-7.2	ROK	Rockwell Automation	-17.8	UDR	UDR	48.0	ZBH	Zimmer Biomet Hldgs	6.0
MA	Mastercard	-20.6	OMC	Omnicom Group	-20.7	ROL	Rollins	-1.4	ULTA	Ulta Beauty	-2.5	ZION	Zions Bancorp NA	4.1
MAT	Mattel	-1.0	OKE	ONEOK	92.4	ROP	Roper Technologies	8.2	UA	Under Armour	116.7	ZTS	Zoetis	-3.9
MXIM	Maxim Integrated Products	-6.8	ORCL	Oracle	-26.4	ROST	Ross Stores	-20.4	UAA	Under Armour	116.7	—	—	—

Note: Data not available over the period over the period for the following S&P 500 companies: Allegion PLC, Arista Networks, Brighthouse Financial, Citizens Financial Group, Coty, DowDuPont, Fortive, Hewlett Packard Enterprise, Hilton Worldwide Holdings, IHS Markit Ltd, IQVIA Holdings, Keysight Technologies, Kraft Heinz, Lamb Weston Holdings, News, PayPal Holdings, Synchrony Financial, Tech-nipFMC PLC, and Twenty-First Century Fox.
Source: Standard & Poor's.

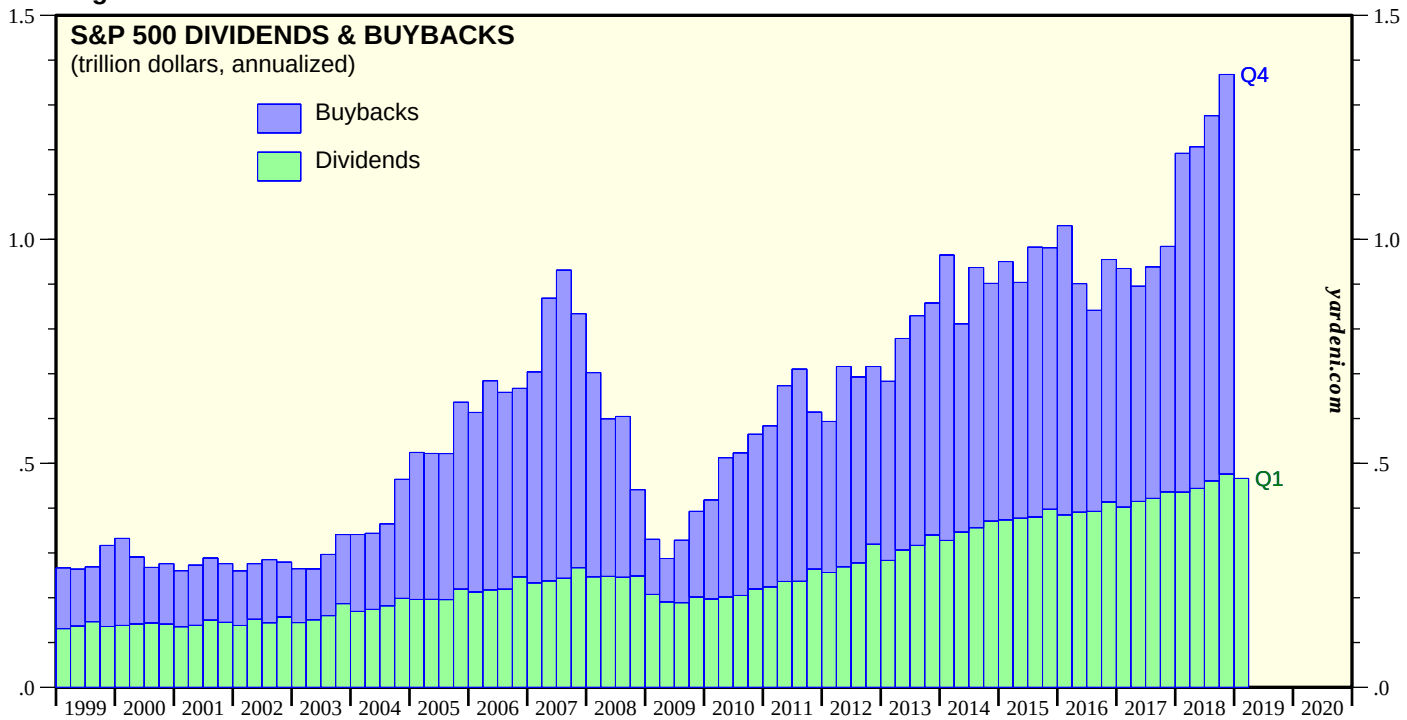
Topical Study #84

Figure 1.



* Forward earnings (time-weighted average of consensus operating earnings estimates for current and next year) divided by S&P 500 stock price index.
Source: Thomson Reuters I/B/E/S, Standard & Poor's and Bank of America Merrill Lynch.

Figure 2.



Source: Standard & Poor's.

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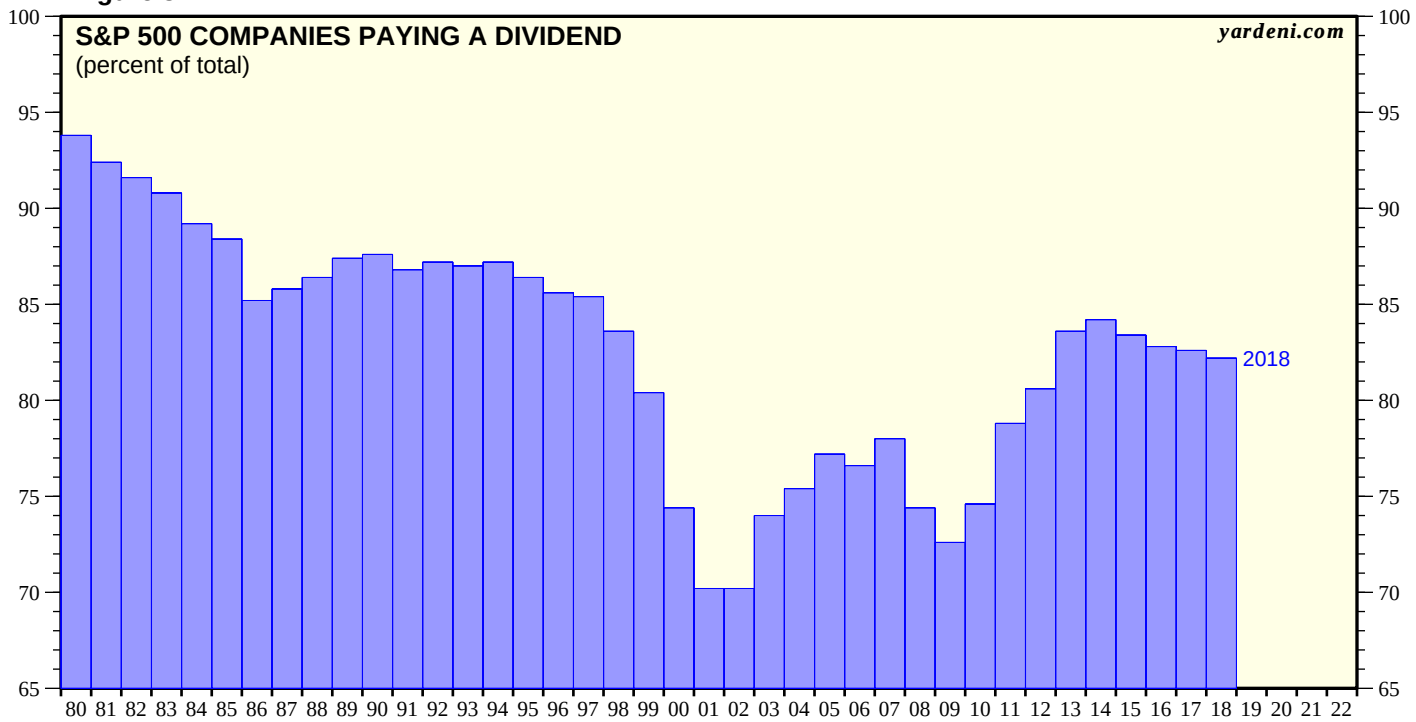
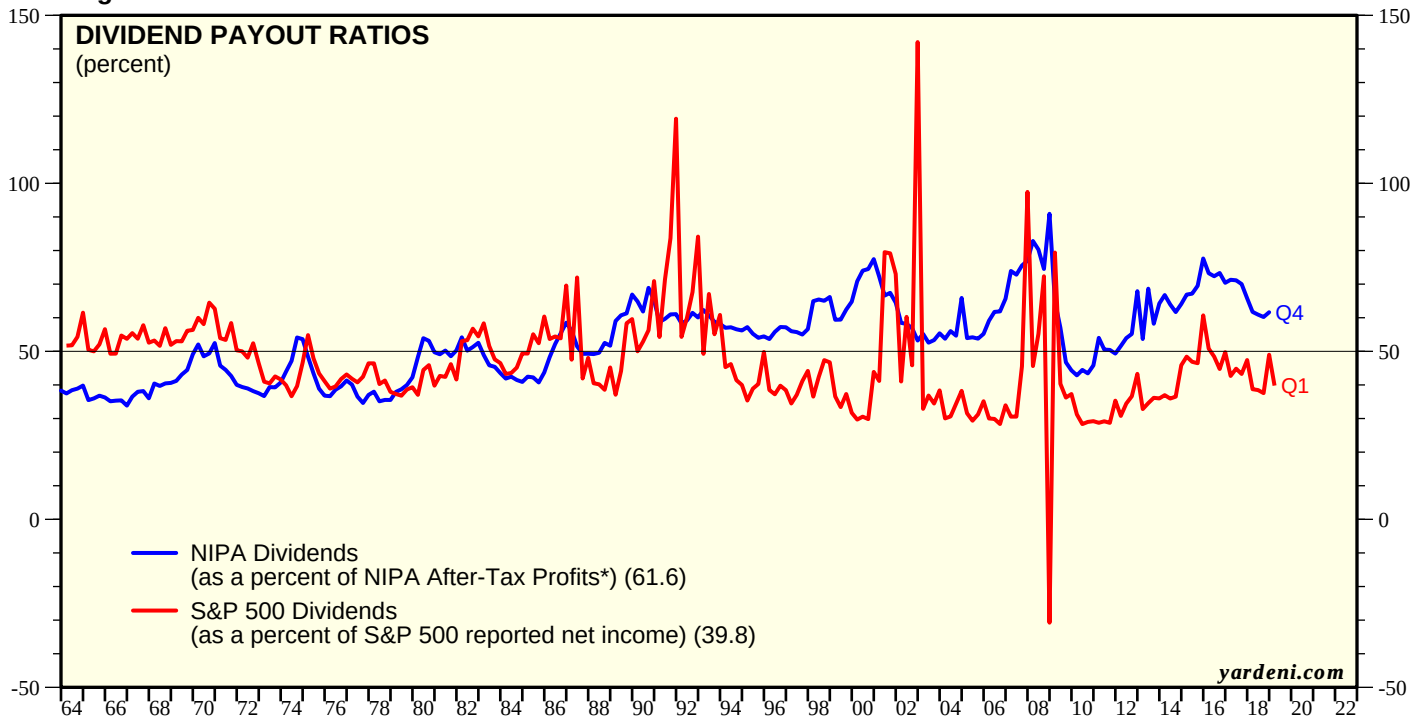
Figure 3.



Source: Standard & Poor's.

Figure 4.



* From Current Production. Including IVA & CCadj. These two adjustments restate the historical cost basis used in profits tax accounting for inventory withdrawals and depreciation to the current cost measures used in GDP.
Source: Federal Reserve Board, Financial Accounts of the United States, Standard & Poor's and Bureau of Economic Analysis.

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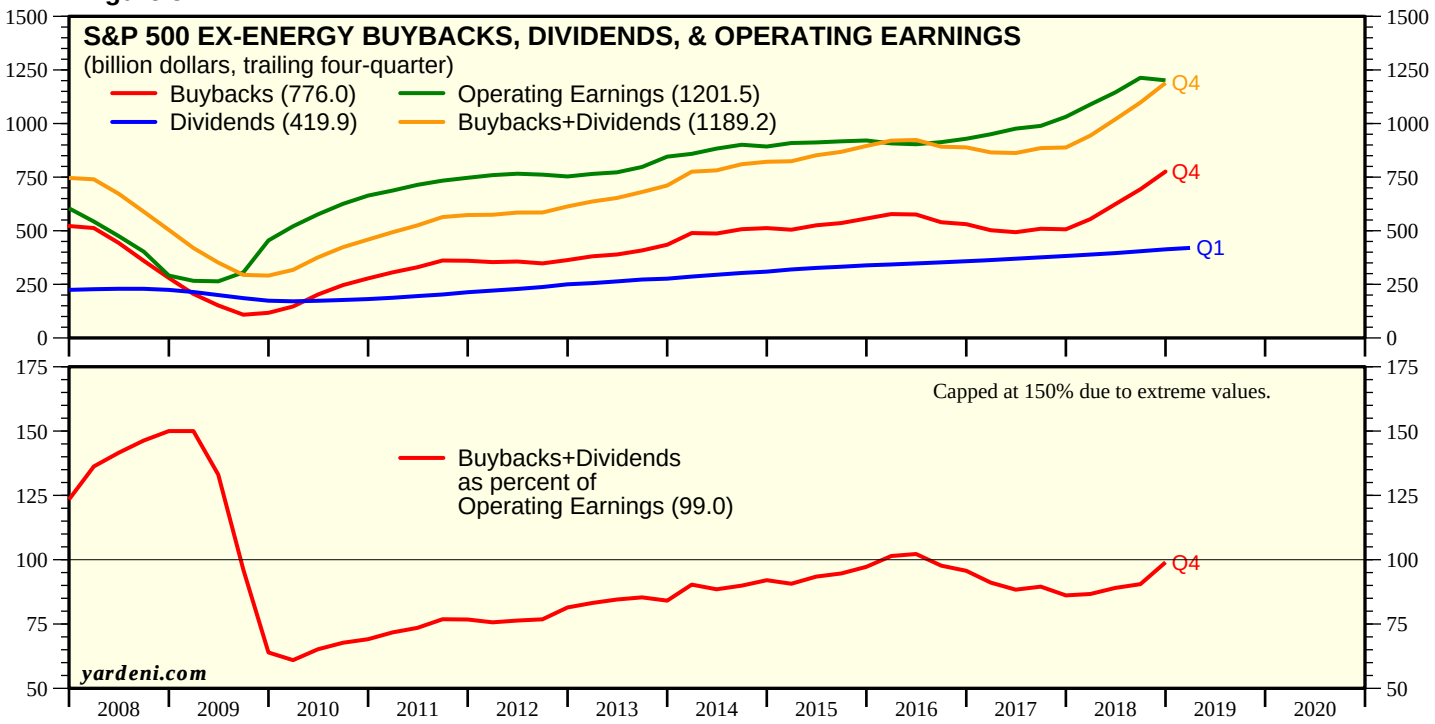
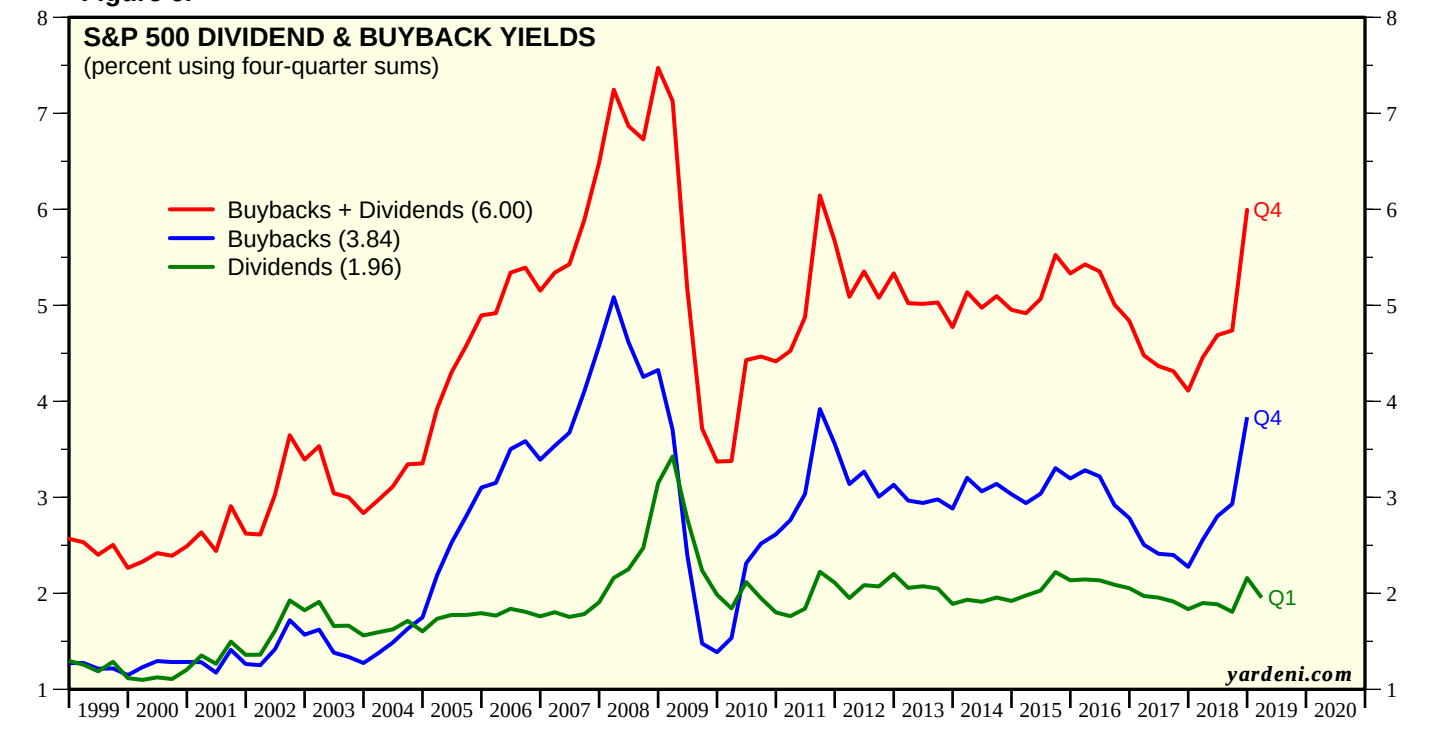
Figure 5.



Source: Standard & Poor's.

Figure 6.



Source: Standard & Poor's.

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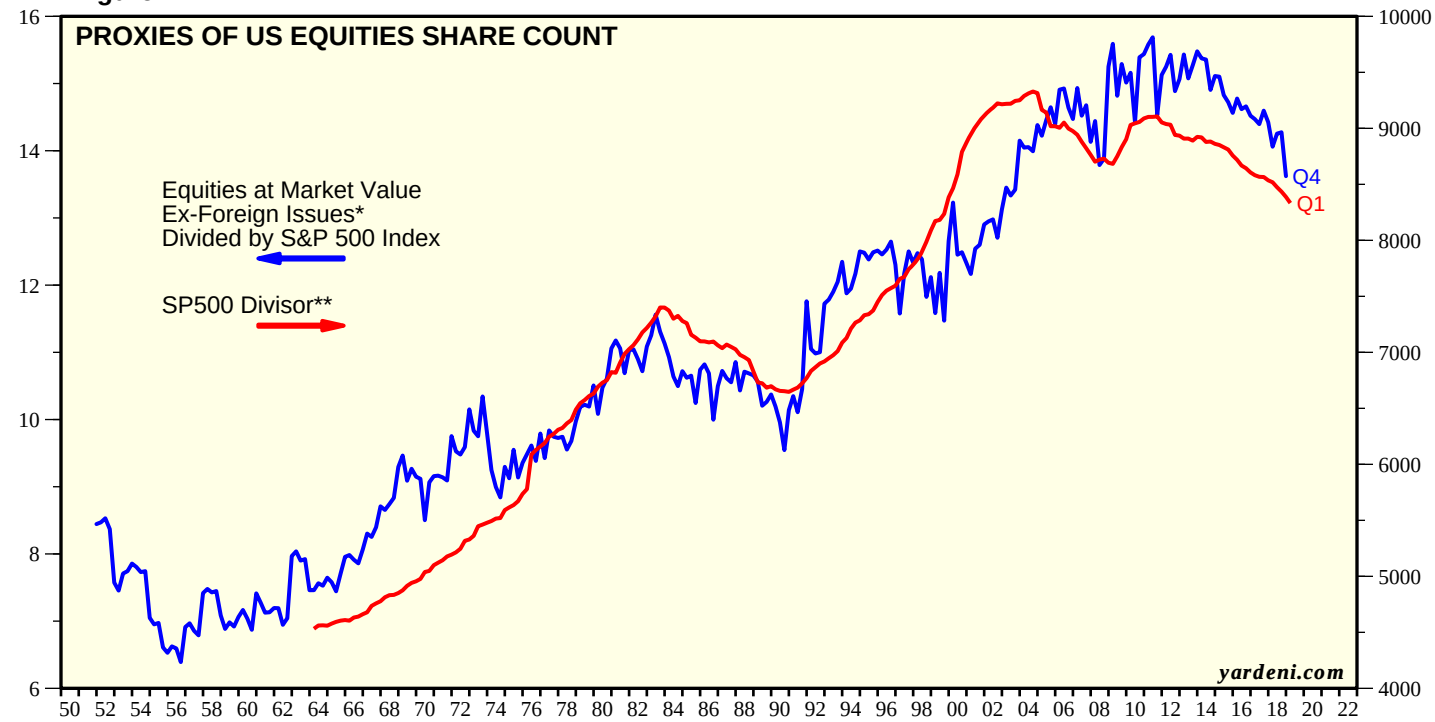
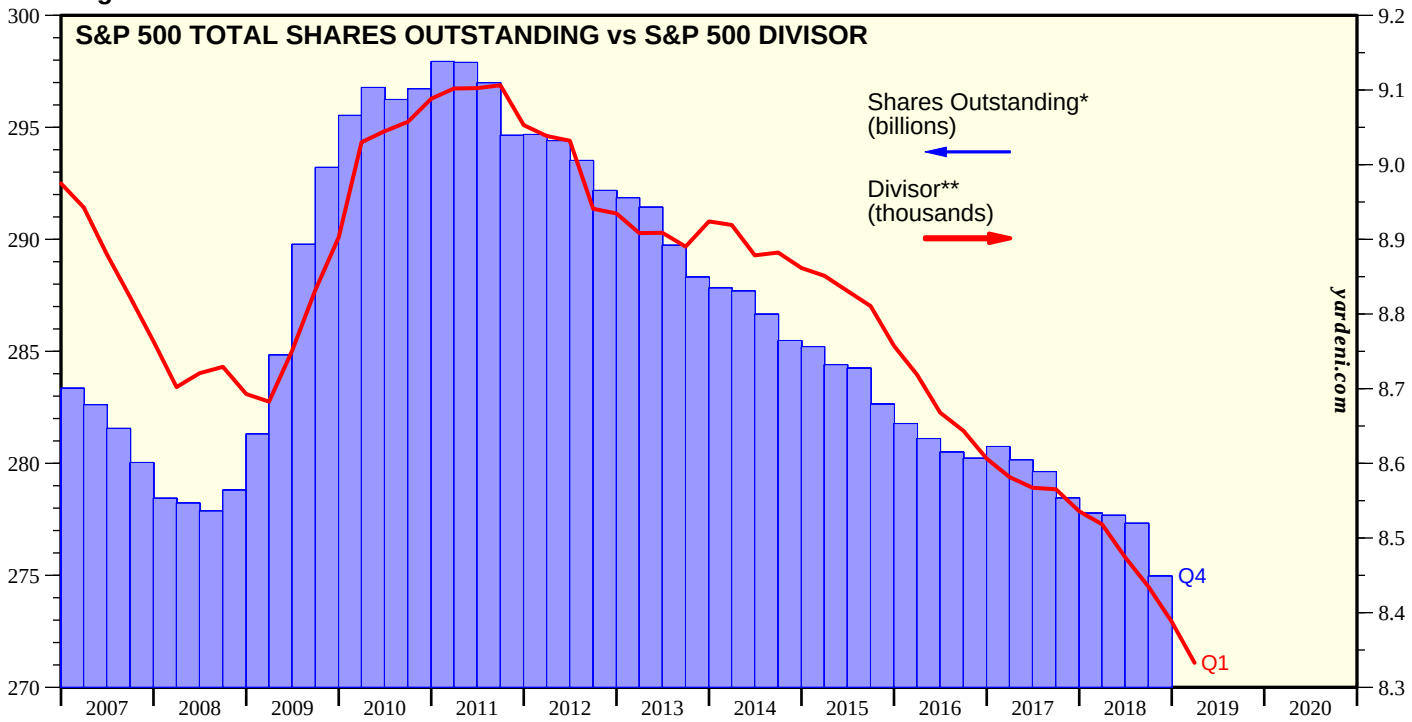
Figure 7.



* Excludes holdings by US residents of foreign corporate equities, investment fund shares, and ADRs.
** Divisor is used to ensure that changes in shares outstanding, capital actions, and the addition or deletion of stocks to the index do not change the level of the index.
Source: Federal Reserve Board and Standard & Poor's.

Figure 8.



* Total basic shares outstanding (billions) for current S&P 500 companies with data for all periods and adjusted for stock splits and stock dividends.
** Divisor is used to ensure that changes in shares outstanding, capital actions, and the addition or deletion of stocks to the index do not change the level of the index.
Source: Yardeni Research, I/B/E/S data by Refinitiv, and Standard & Poor's.

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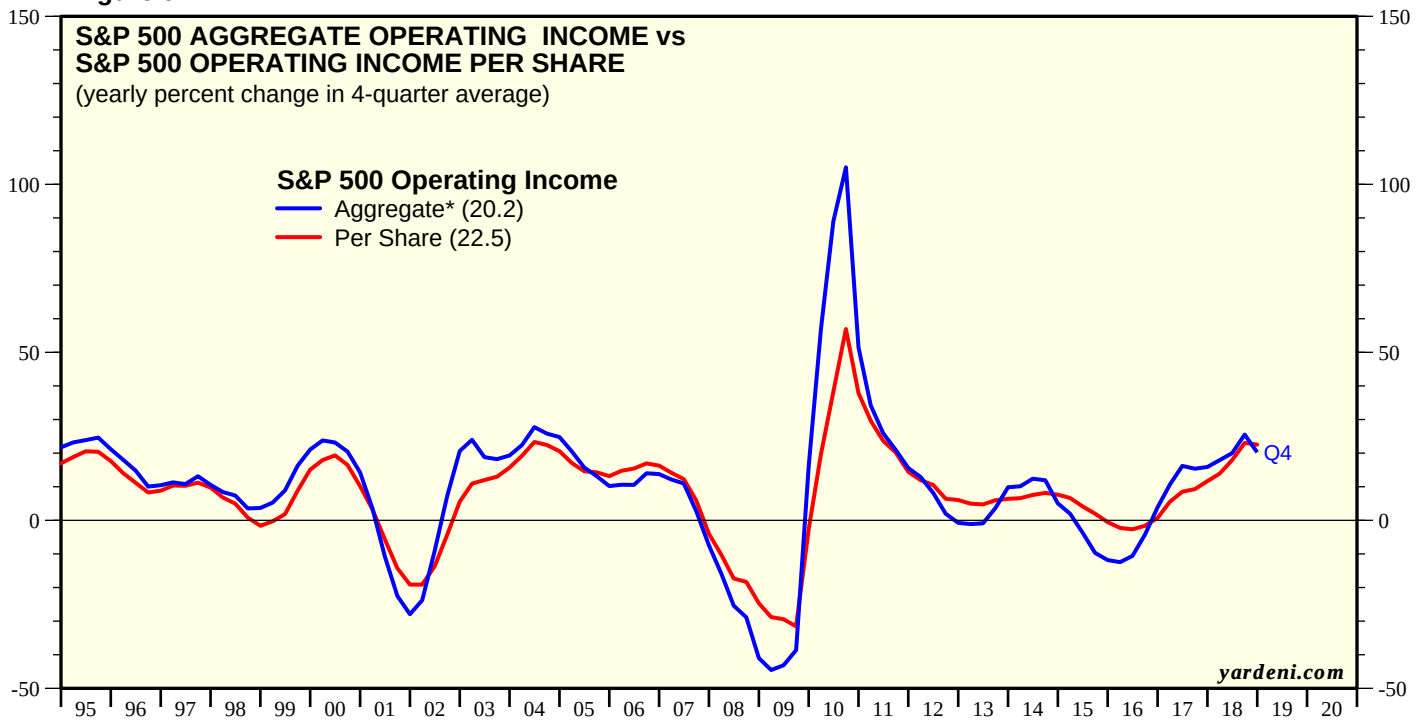
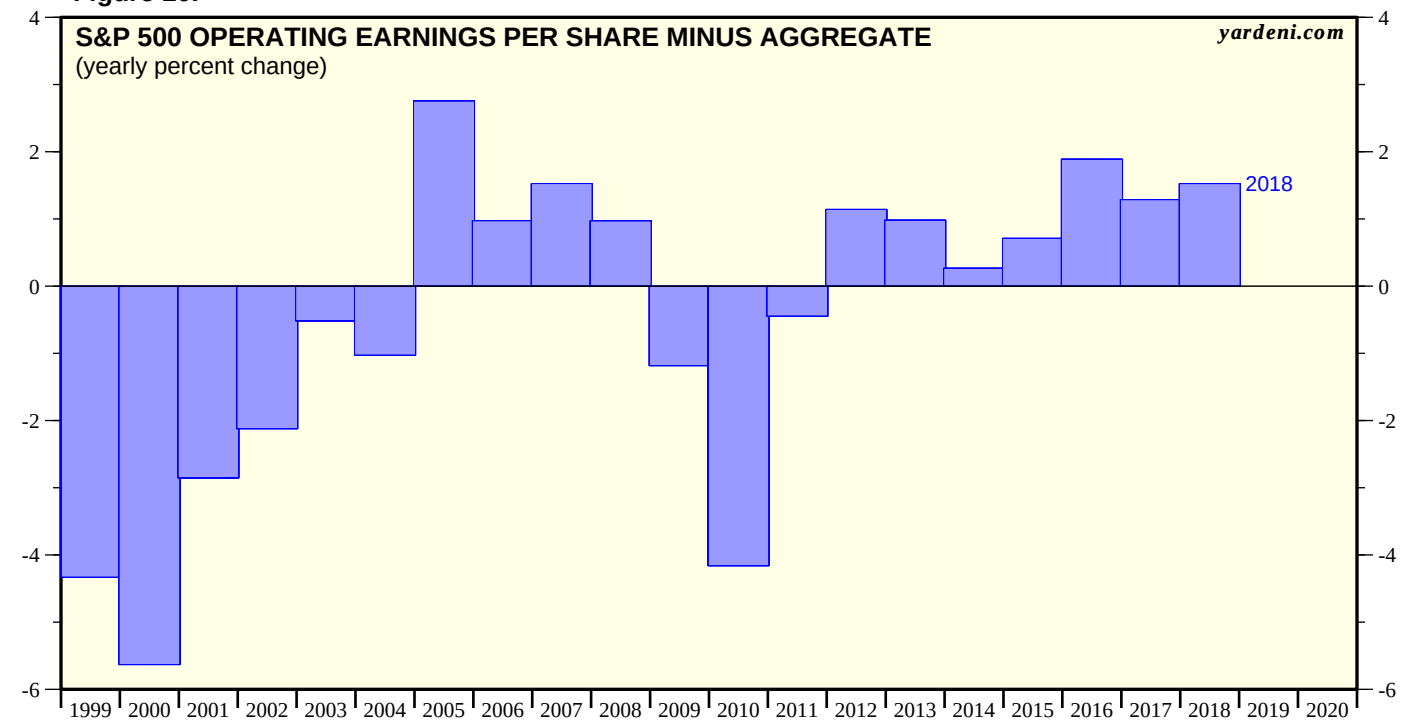
Figure 9.



* Aggregate earnings is derived by multiplying S&P 500 earnings per share by the S&P 500 divisor for each quarter.
Source: I/B/E/S data by Refinitiv and Standard & Poor's.

Figure 10.



Source: I/B/E/S data by Refinitiv and Standard & Poor's.

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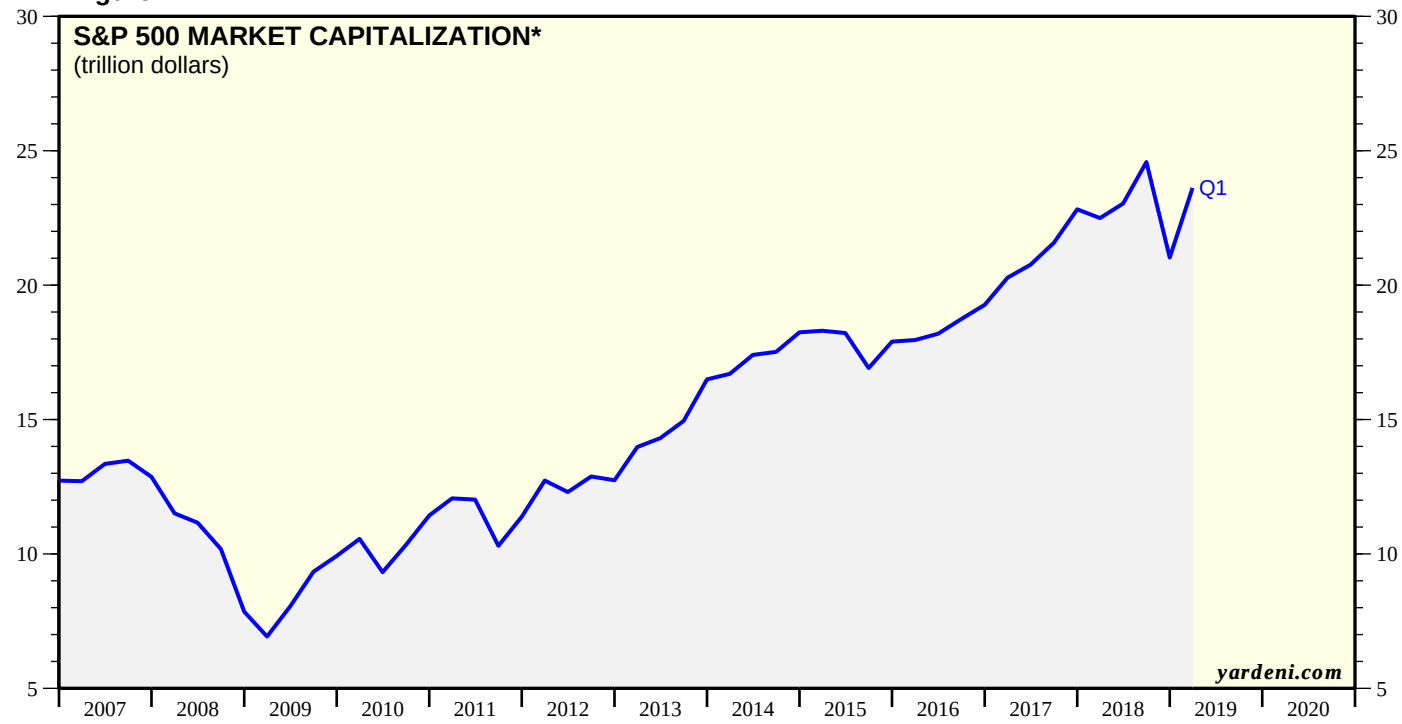
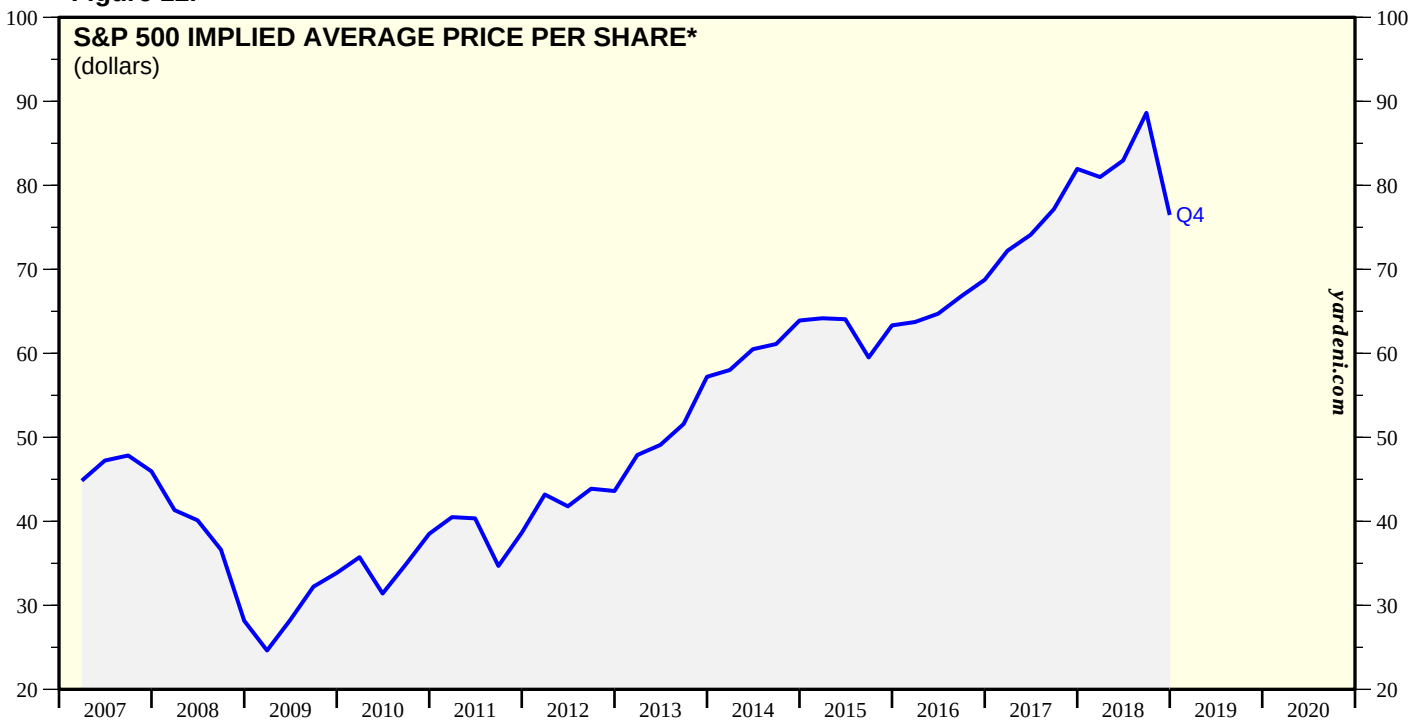
Figure 11.



* Data shown are daily averages for each quarter.
Source: Standard & Poor's and Haver Analytics.

Figure 12.



* Derived using daily averages for each quarter of market capitalization for S&P 500 divided by basic shares outstanding for all S&P 500 companies at the end of each quarter.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

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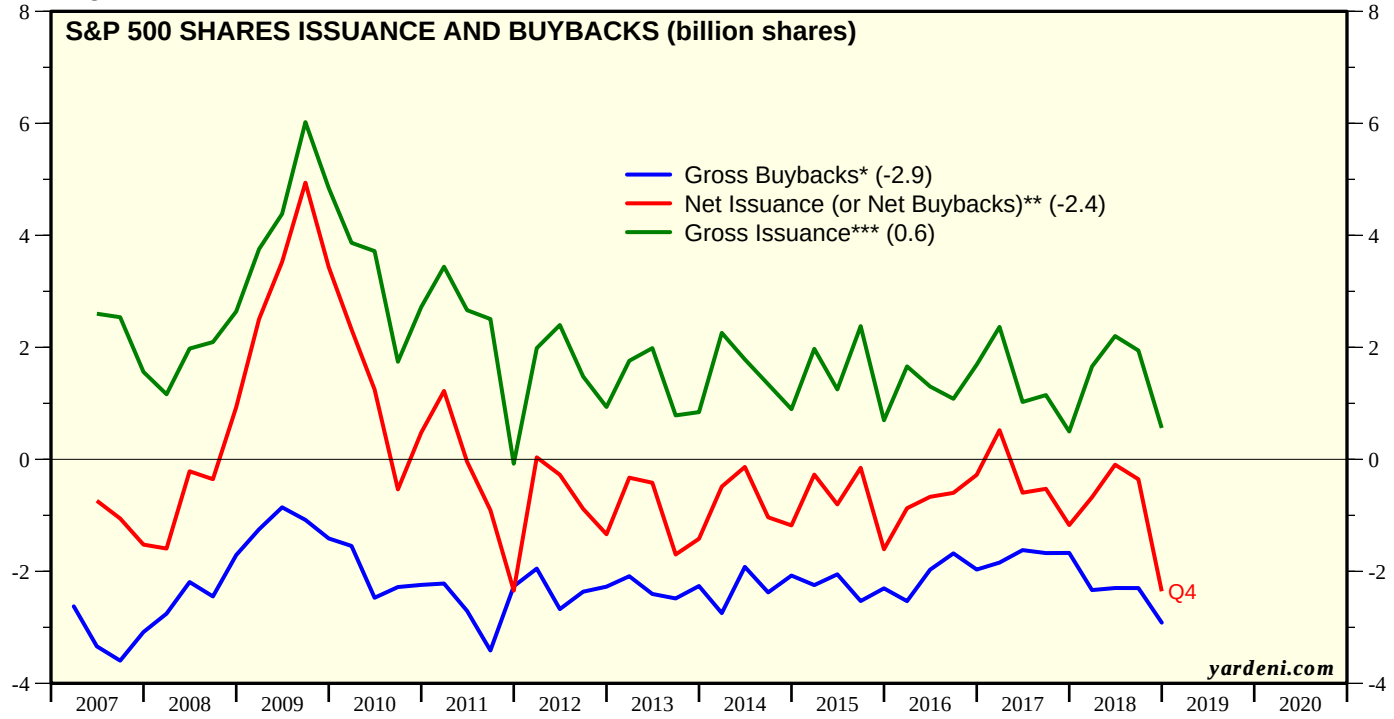
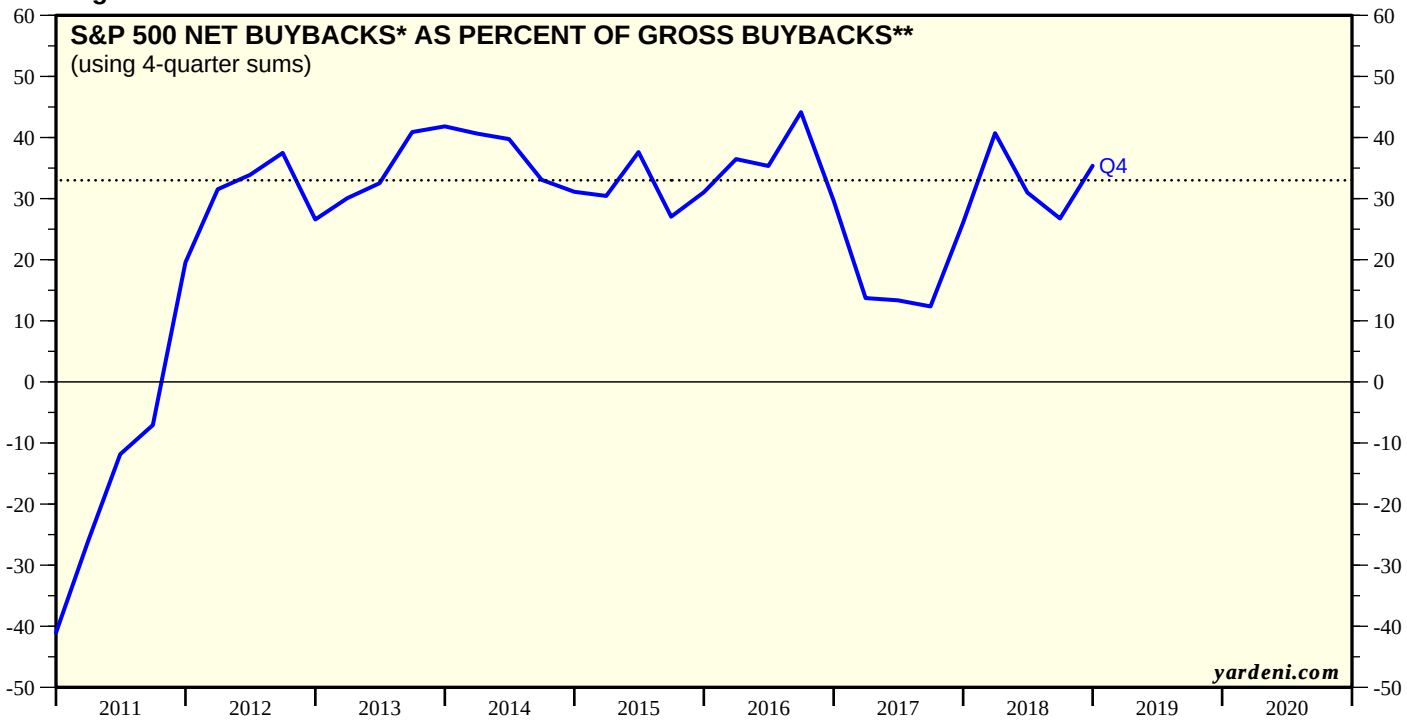
Figure 13.



* Series compiled using S&P's total buybacks and YRI's basic shares outstanding for all S&P 500 companies at the end of each quarter.
** Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 companies at the end of each quarter.
*** Series derived by YRI as Net Issuance + Gross Buybacks.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

Figure 14.



* Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 companies at the end of each quarter.
** Series compiled by S&P.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

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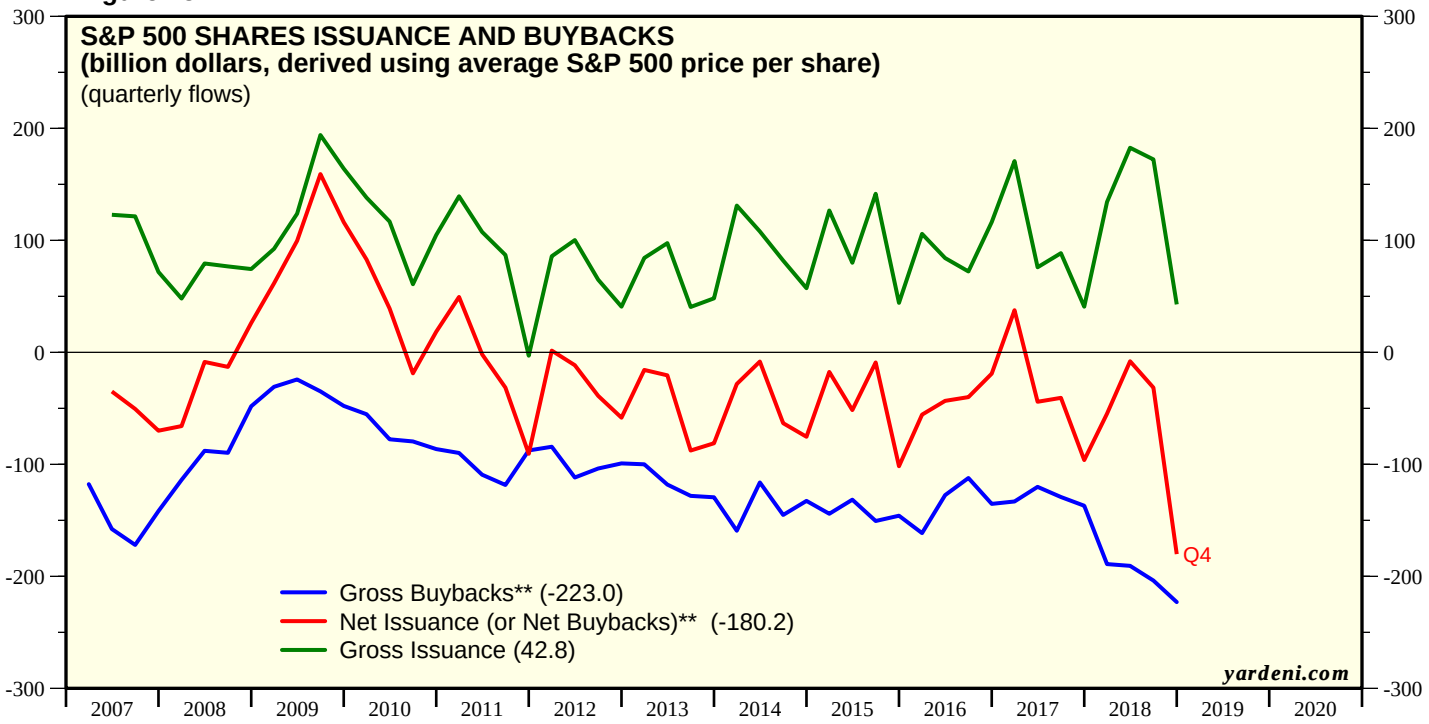
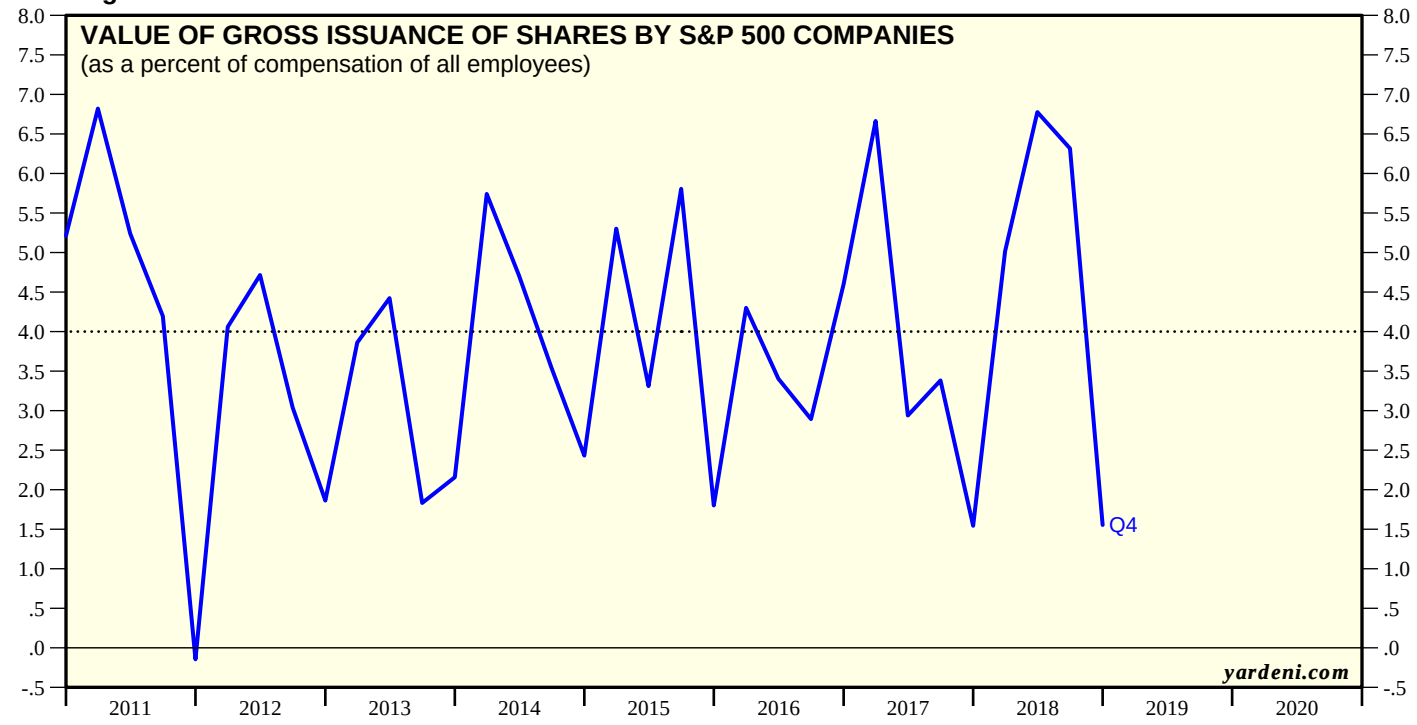
Figure 15.



* Series compiled using S&P's total buybacks and YRI's basic shares outstanding for all S&P 500 companies at the end of each quarter.
** Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 companies at the end of each quarter.
*** Series derived by YRI as Net Issuance + Gross Buybacks.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

Figure 16.



Source: Bureau of Labor Statistics and Federal Reserve Board Financial Accounts of the United States.

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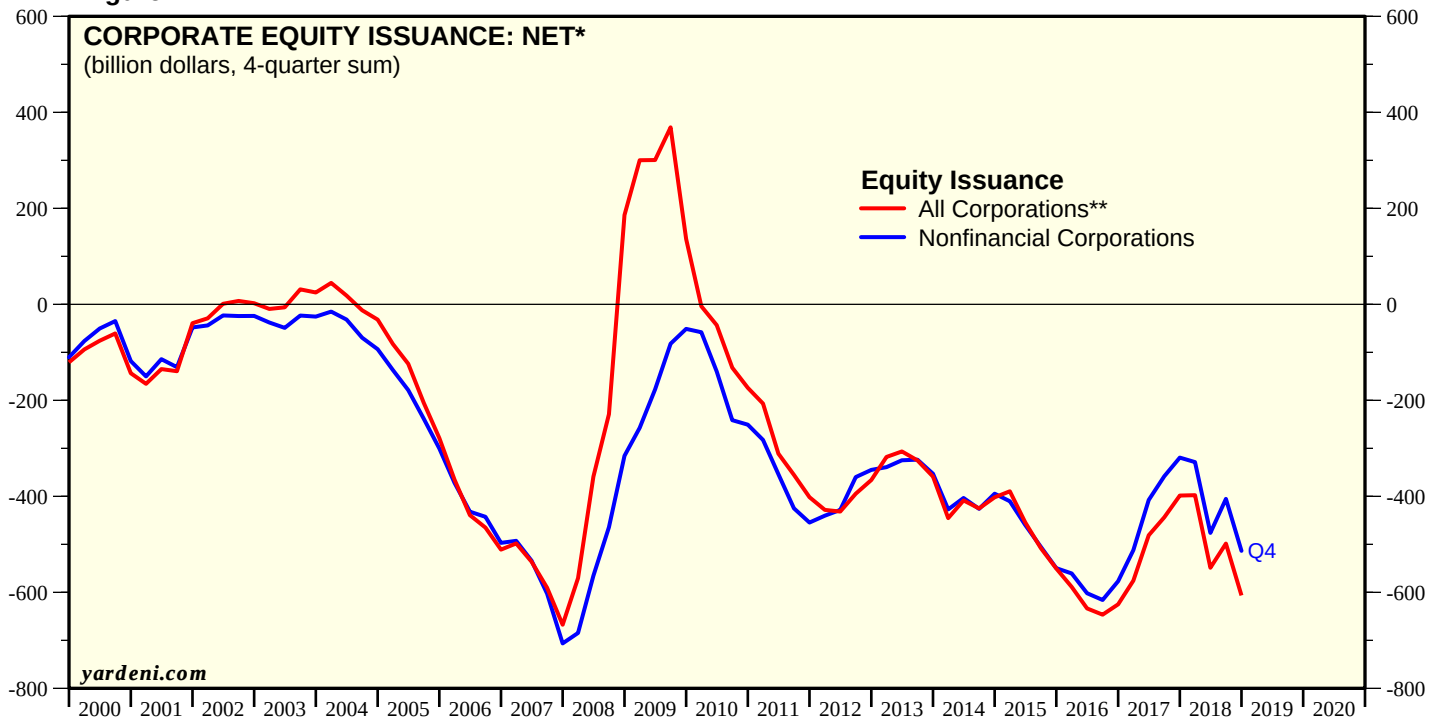
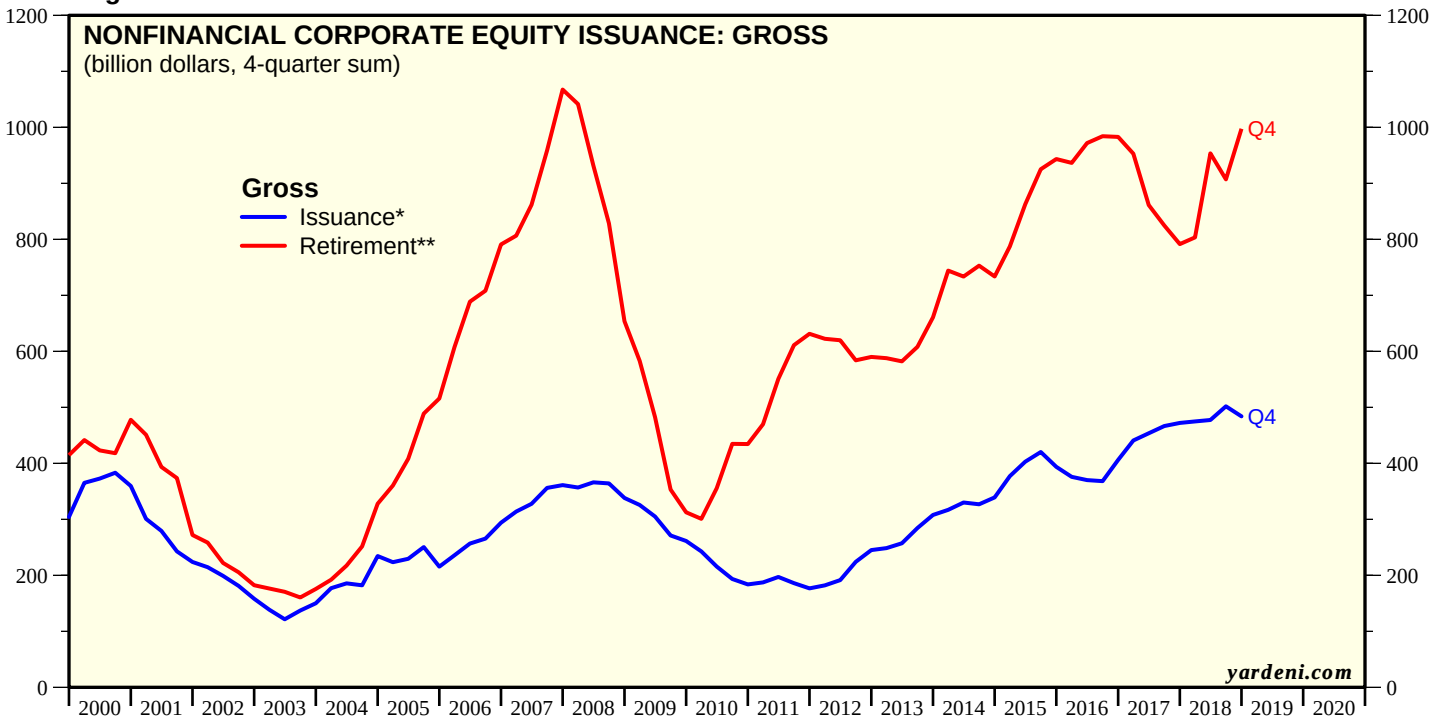
Figure 17.



* Gross issuance (including initial public offerings, seasoned equity offerings, and private equity) minus retirements (including buybacks and M&A activity). Does not include employee stock plans.
** Net issues excluding exchange-traded funds and rest of the world.
Source: Federal Reserve Board, Financial Accounts of the United States.

Figure 18.



* Issuance includes initial public offerings, seasoned equity offerings, and private equity. Retirements includes buybacks and M&A activity. Does not include employee stock plans.
** Repurchases plus M&A.
Source: Federal Reserve Board Financial Accounts of the United States.

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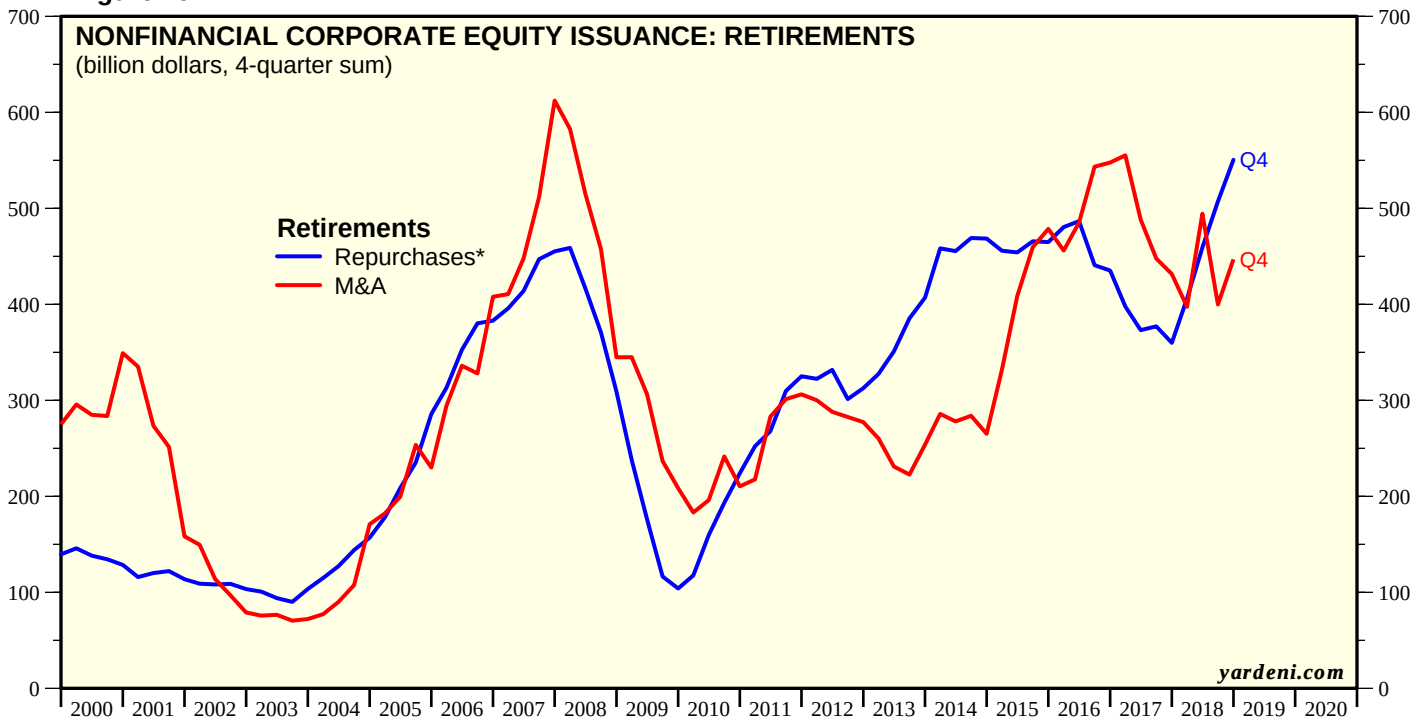
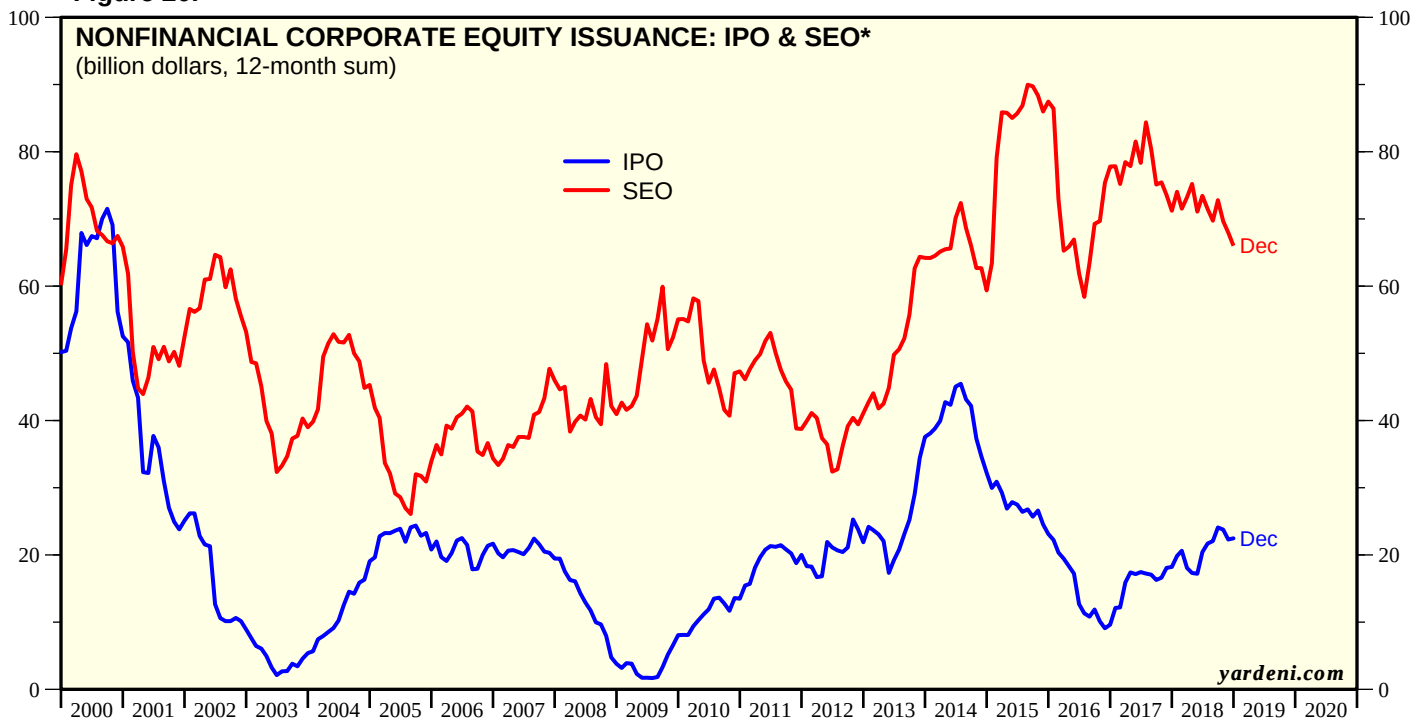
Figure 19.



* Mostly attributable to S&P 500 buybacks by nonfinancial corporations.
Source: Federal Reserve Board Financial Accounts of the United States.

Figure 20.



* IPO = initial public offereings. SEO = seasoned equity offerings.
Source: Federal Reserve Board Financial Accounts of the United States.

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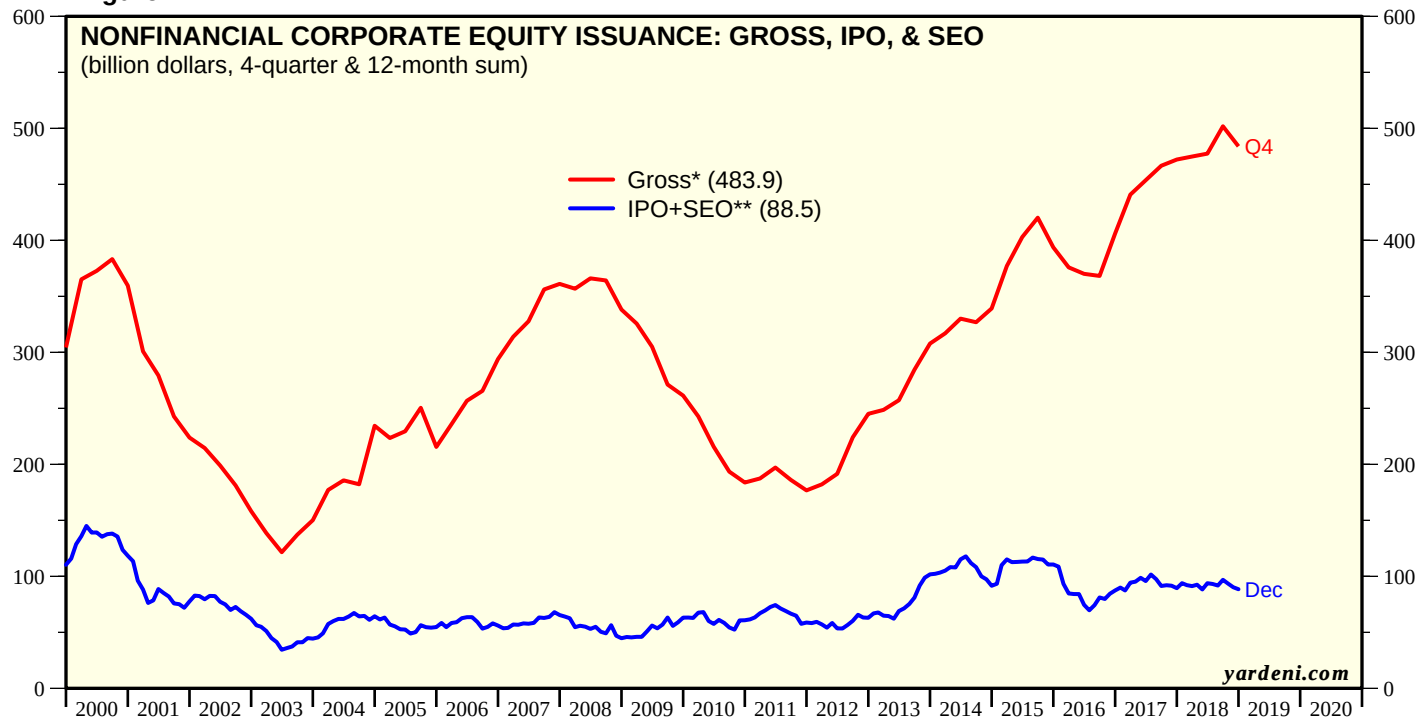
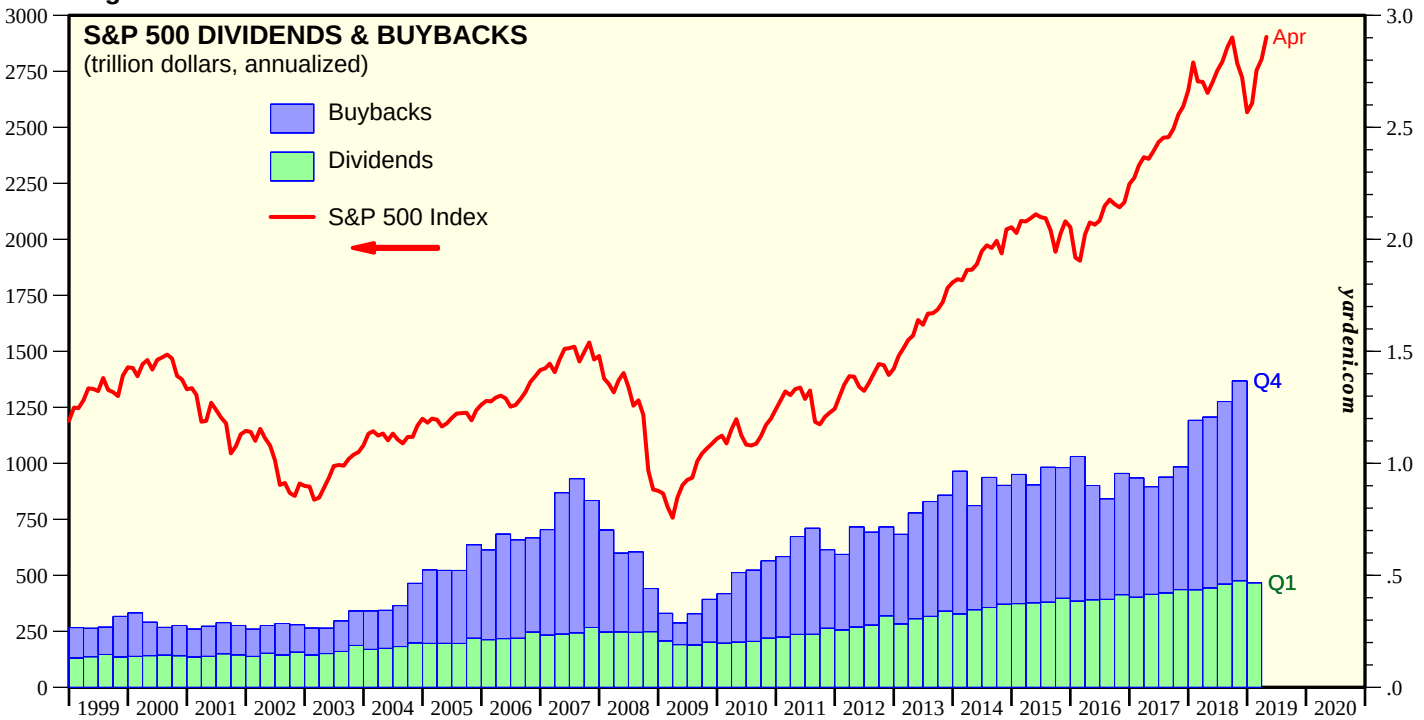
Figure 21.



* Issuance includes initial public offerings, seasoned equity offerings, and private equity. Retirements includes buybacks and M&A activity. Does not include employee stock plans.
** IPO = initial public offerings. SEO = seasoned equity offerings.
Source: Federal Reserve Board Financial Accounts of the United States.

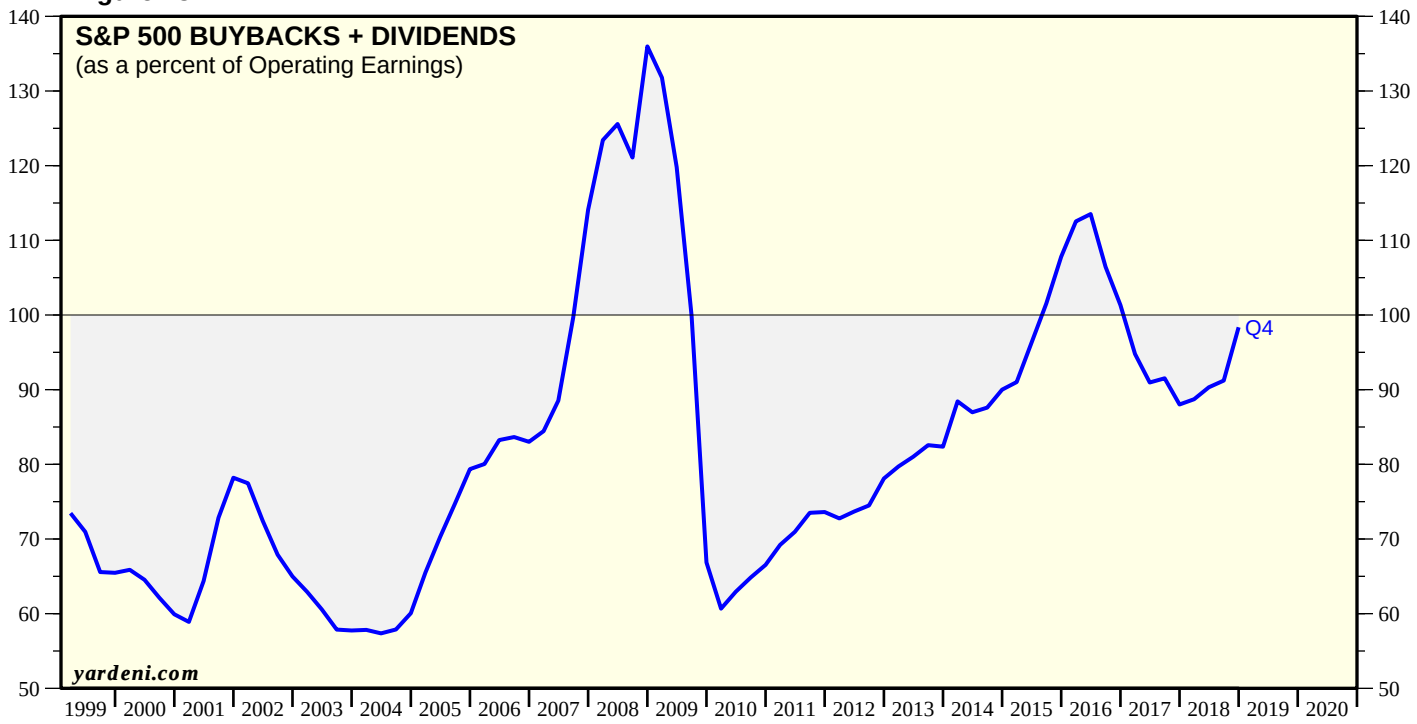
Figure 22.



Source: Standard & Poor's.

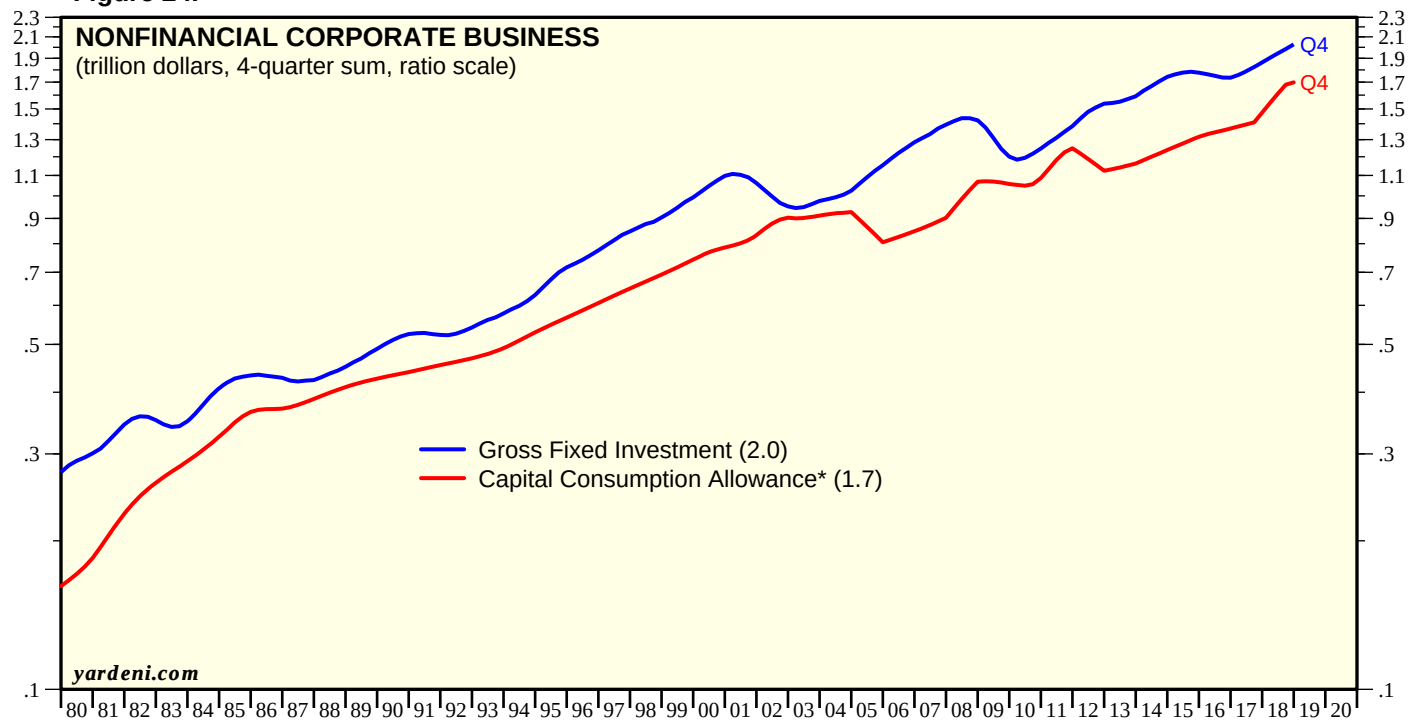
Topical Study #84

Figure 23.



Source: Standard & Poor's.

Figure 24.



* Consumption of fixed capital plus the capital consumption adjustment.
Source: Federal Reserve Board, Financial Accounts of the United States.

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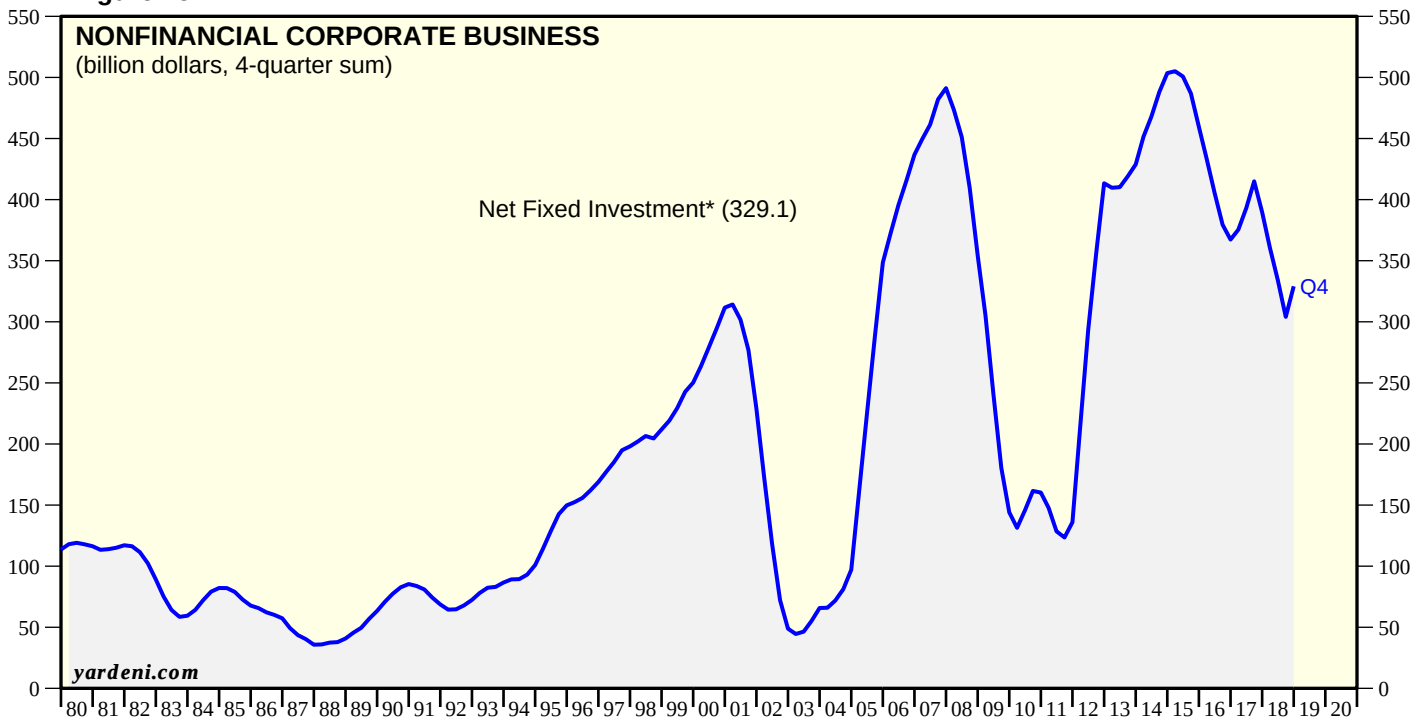
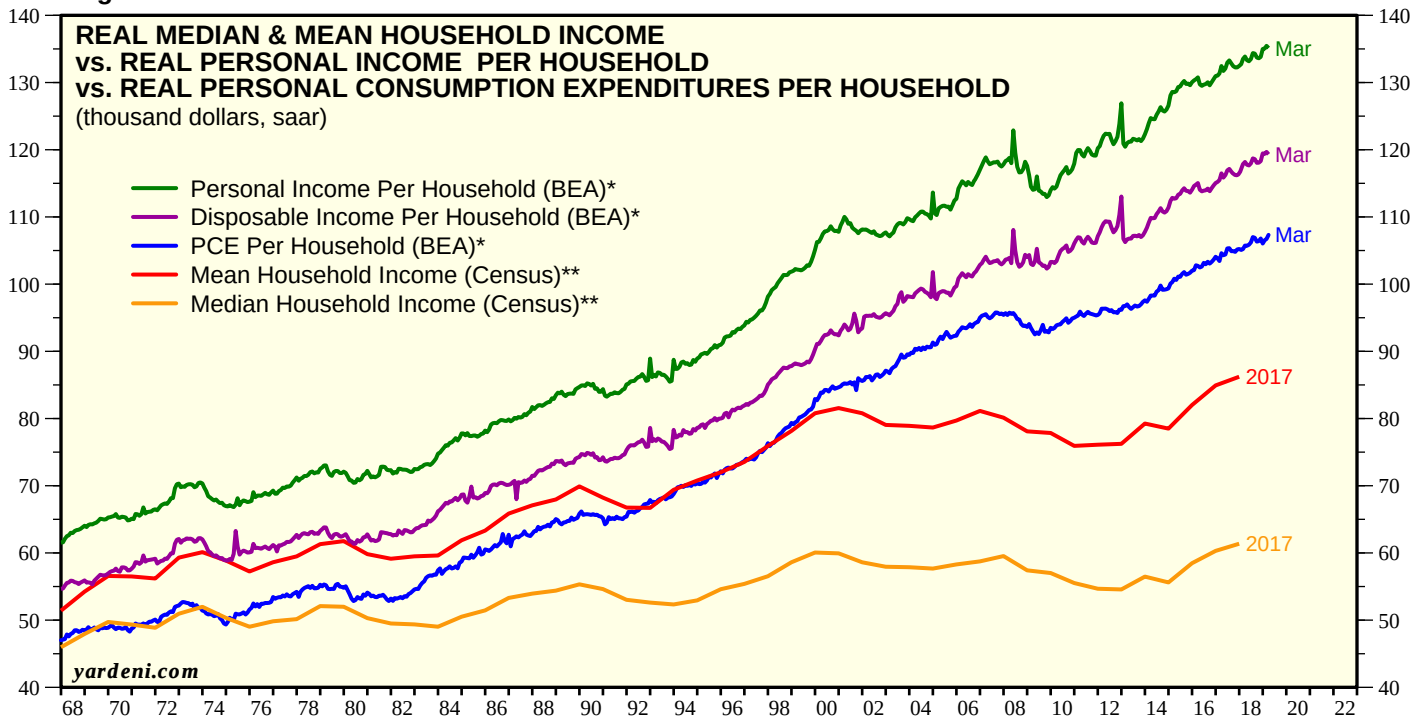
Figure 25.



* Gross fixed investment less consumption of fixed capital plus the capital consumption adjustment.
Source: Federal Reserve Board, Financial Accounts of the United States.

Figure 26.



* 2009 dollars using PCED. **2015 dollars using CPI.
Source: Bureau of Economic Analysis, Census Bureau and Current Population Reports.

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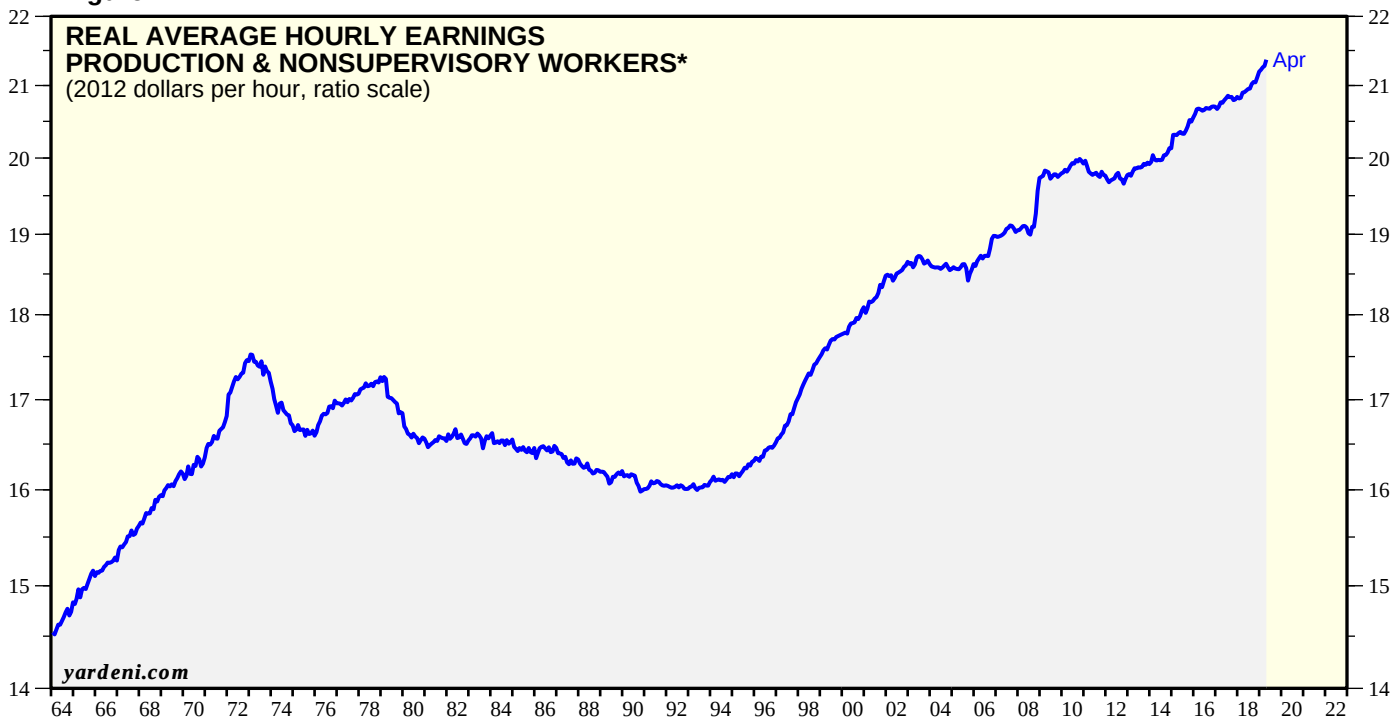
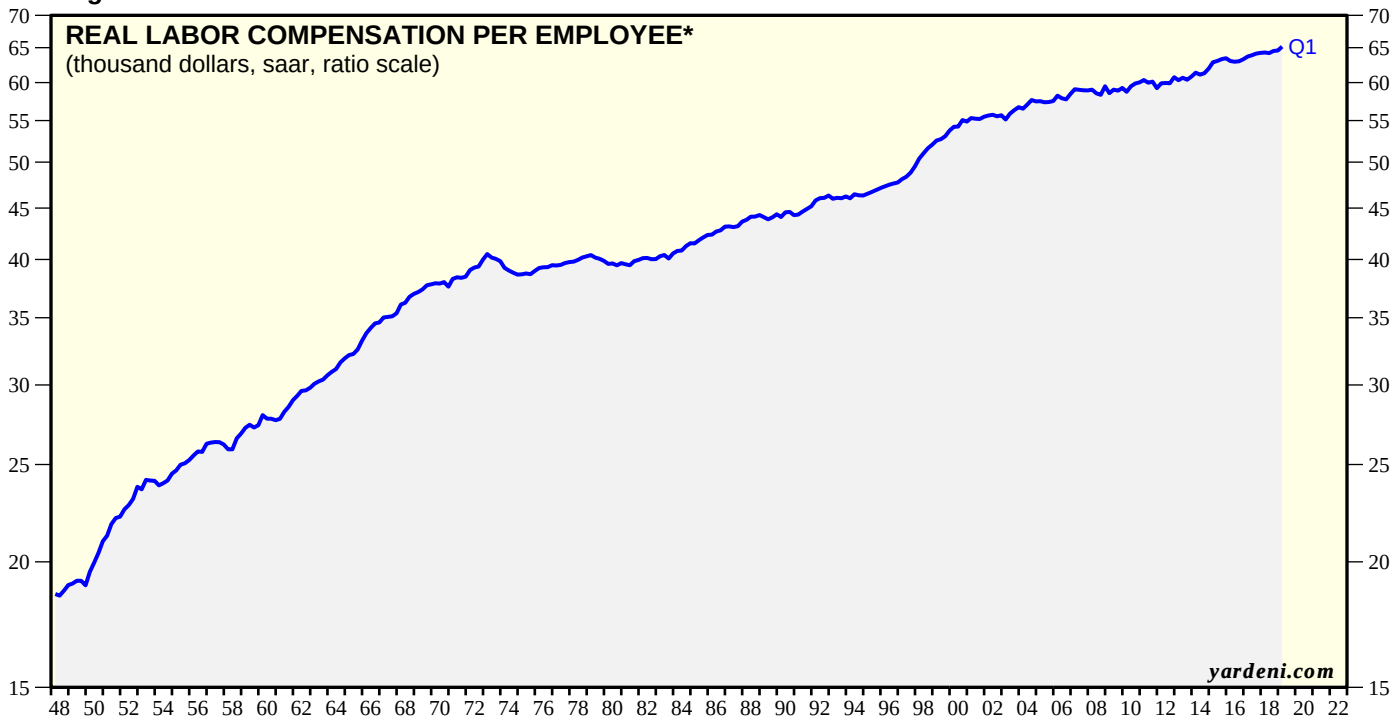
Figure 27.



* Average hourly earnings deflated by personal consumption expenditures deflator.
Source: Bureau of Labor Statistics, Bureau of Economic Analysis, and Haver Analytics.

Figure 28.



* Total inflation-adjusted wages, salaries, and benefits (using PCE deflator) divided by the household measure of employment.
Source: Bureau of Economic Analysis.

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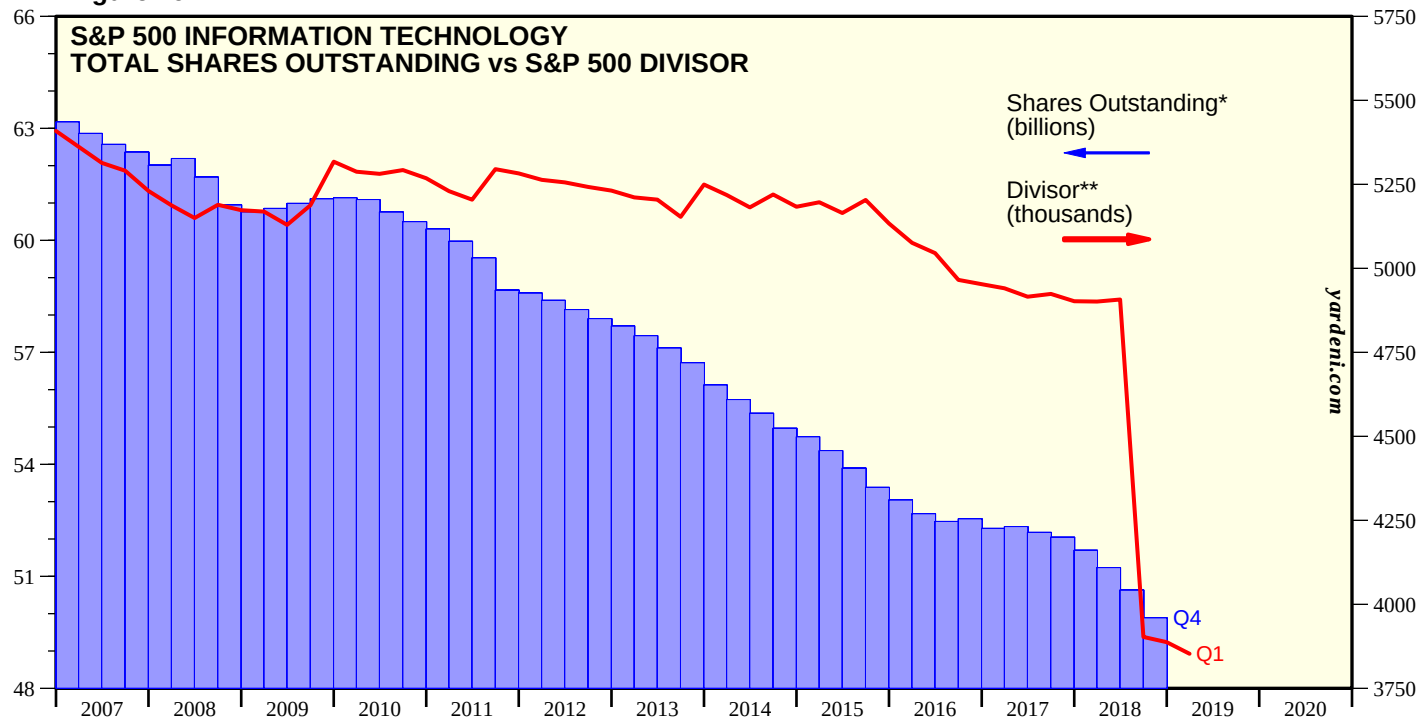
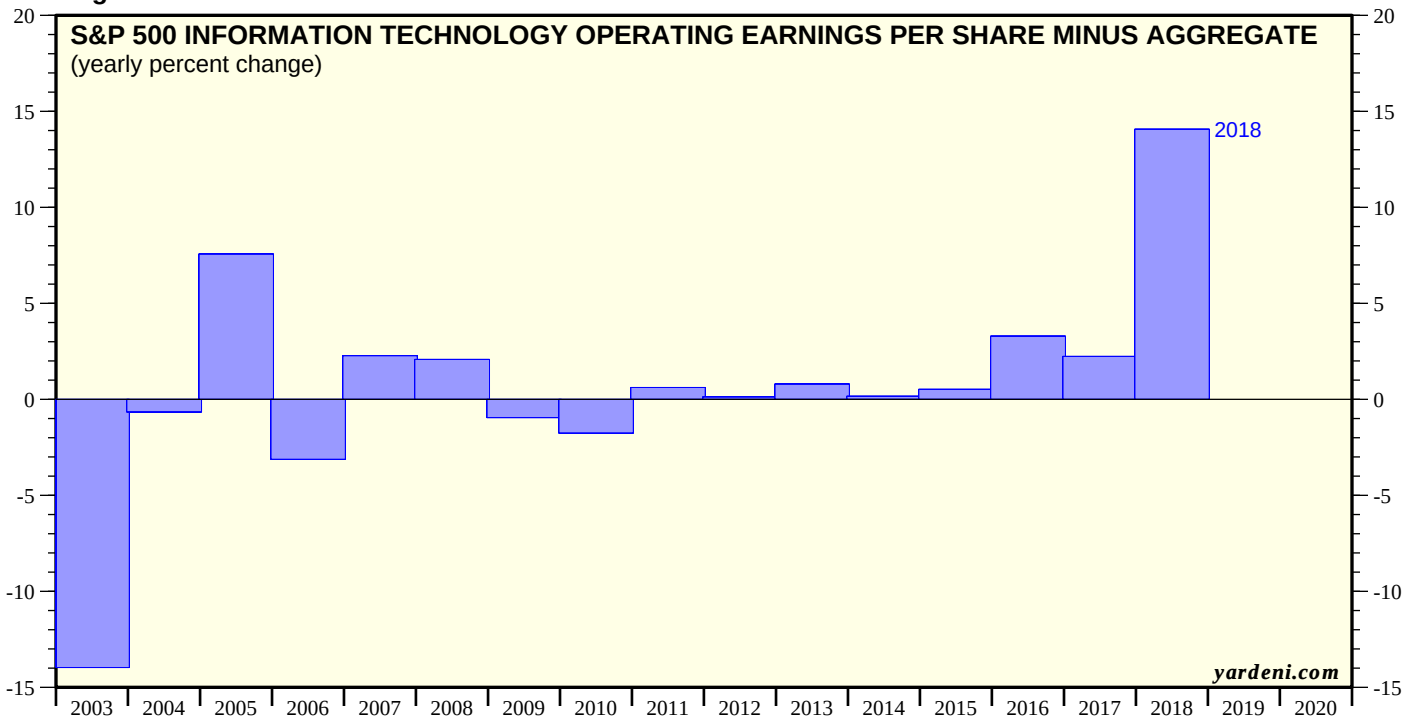
Figure 29.



* Total basic shares outstanding (billions) for current S&P 500 companies with data for all periods and adjusted for stock splits and stock dividends.
** Divisor is used to ensure that changes in shares outstanding, capital actions, and the addition or deletion of stocks to the index do not change the level of the index.
Source: Yardeni Research, I/B/E/S data by Refinitiv, and Standard & Poor's.

Figure 30.



Source: Standard & Poor's.

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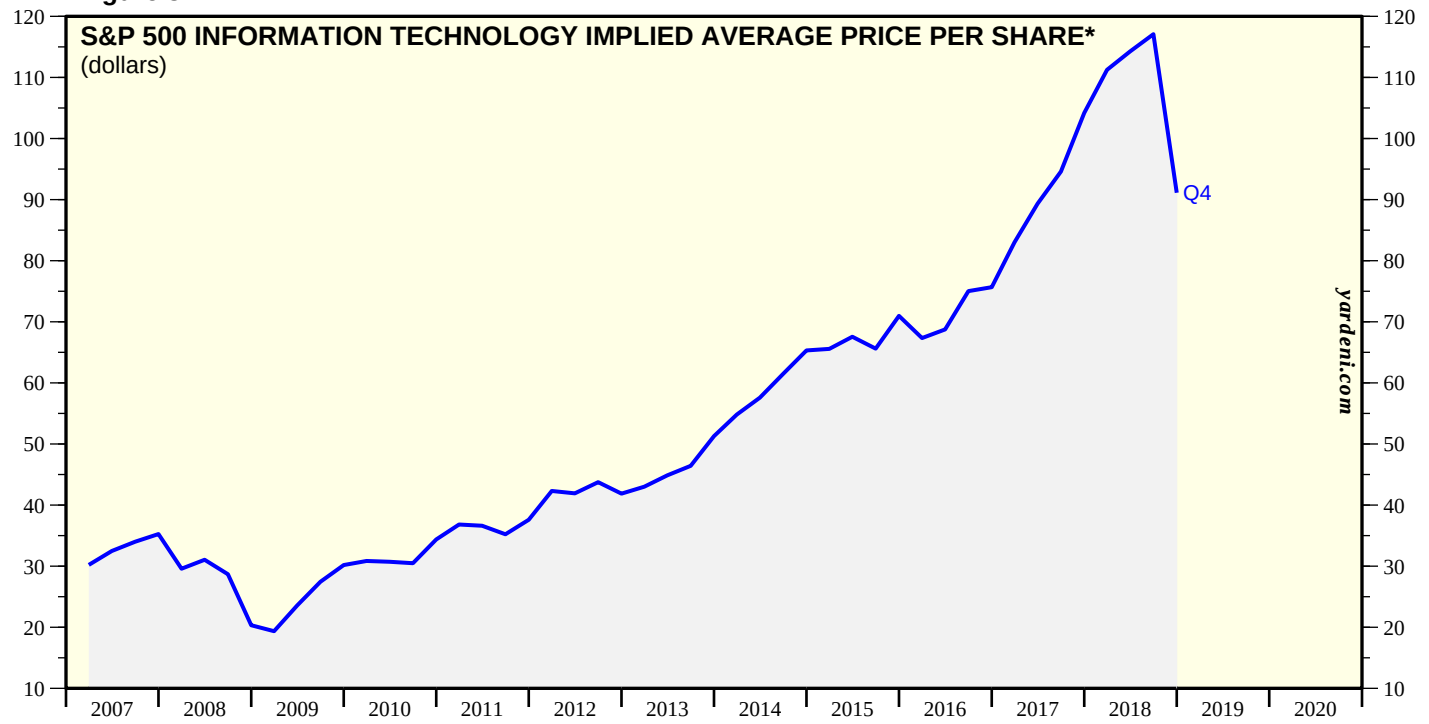
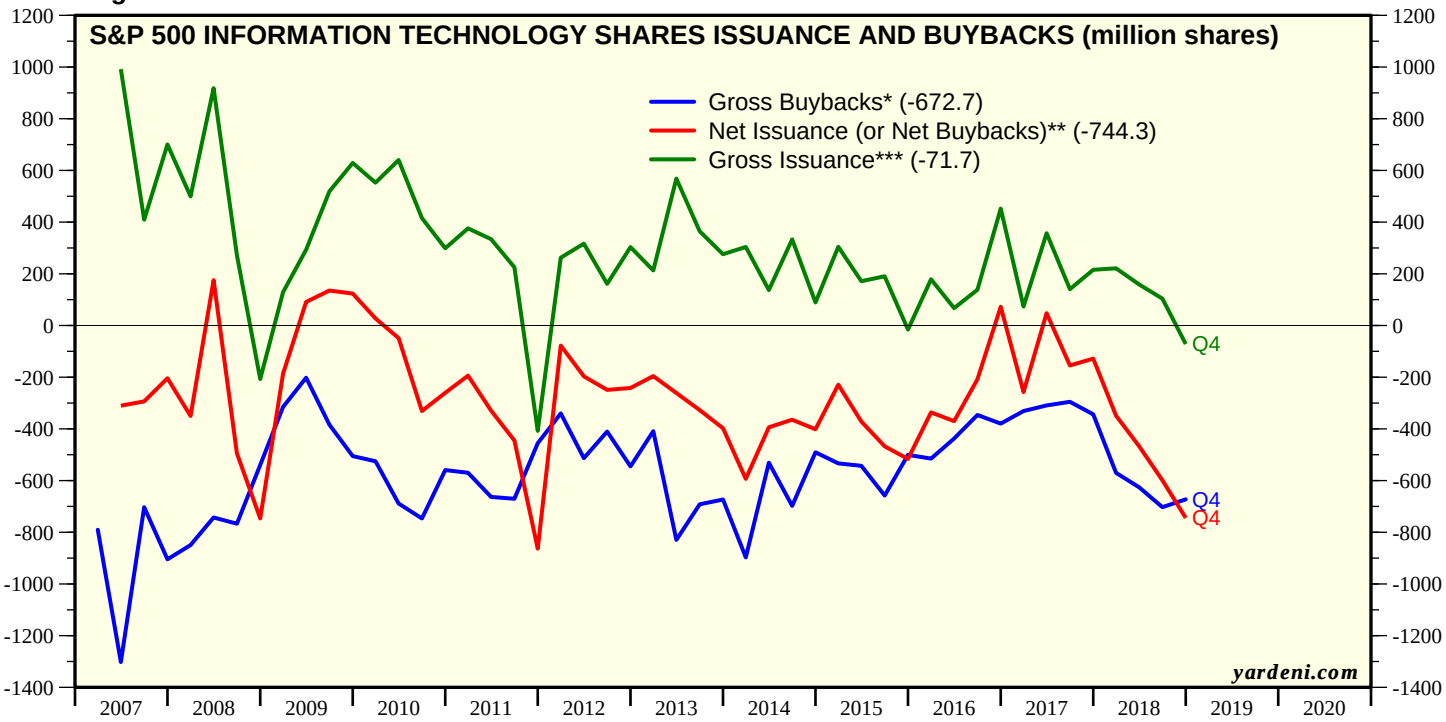
Figure 31.



* Derived using daily averages for each quarter of market capitalization for S&P 500 divided by basic shares outstanding for all S&P 500 companies at the end of each quarter.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

Figure 32.



* Series compiled using S&P's total buybacks and YRI's basic shares outstanding for all S&P 500 Tech companies at the end of each quarter.
** Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 Tech companies at the end of each quarter.
*** Series derived by YRI as Net Issuance + Gross Buybacks.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

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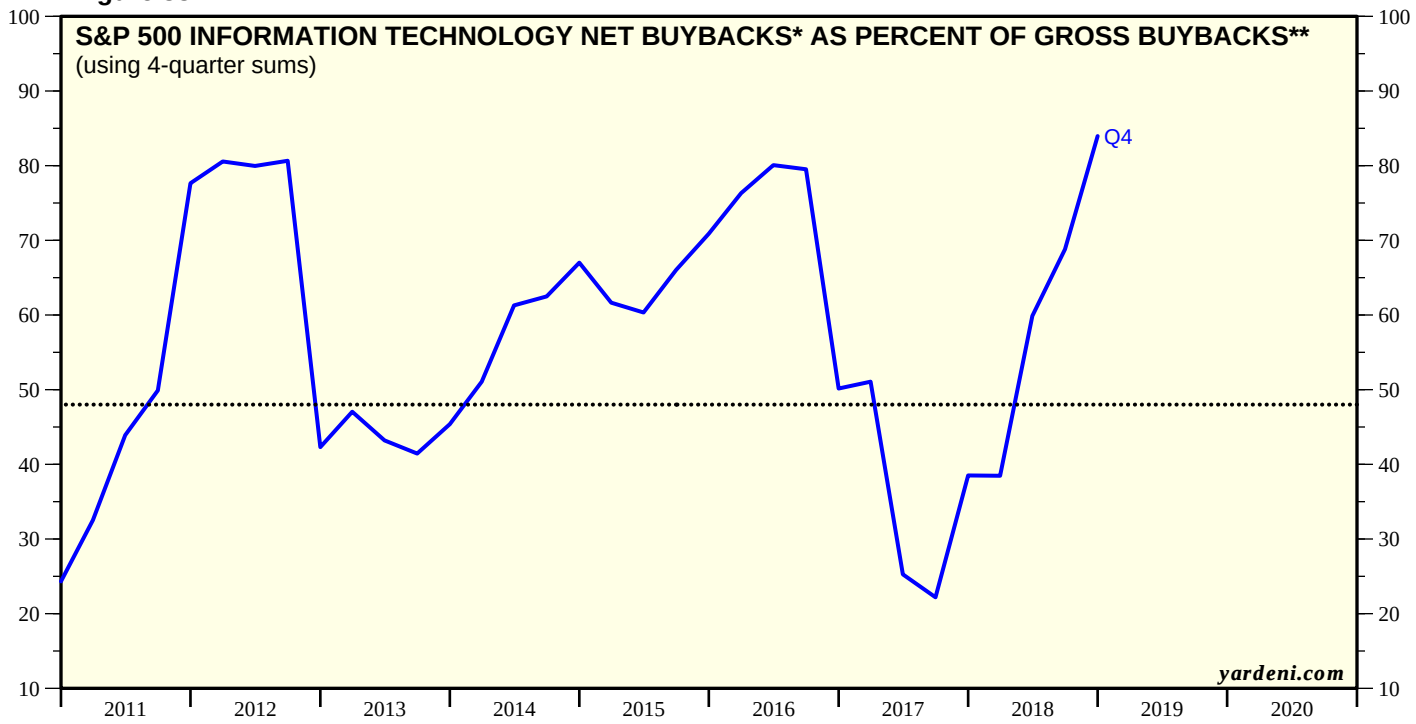
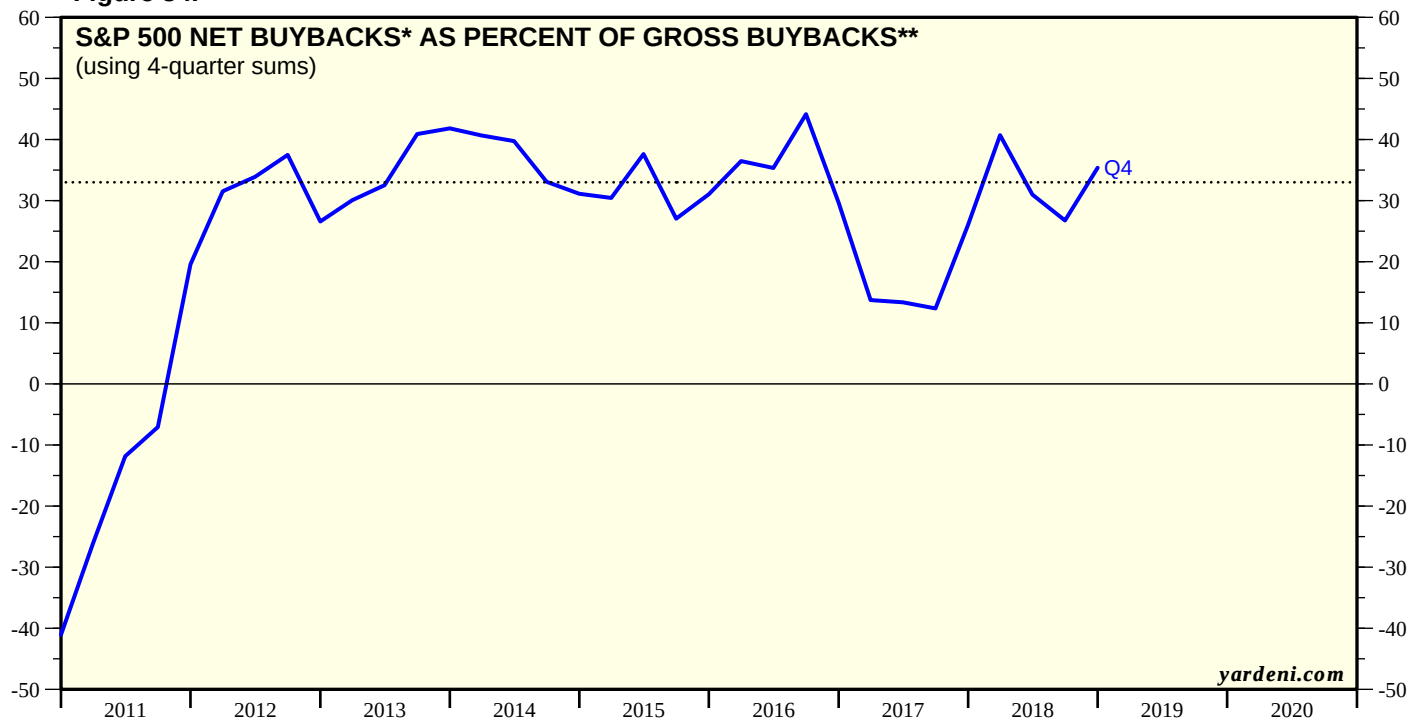
Figure 33.



* Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 Tech companies at the end of each quarter.
** Series compiled by S&P.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

Figure 34.



* Series derived by YRI using quarterly changes in basic shares outstanding for all S&P 500 companies at the end of each quarter.
** Series compiled by S&P.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

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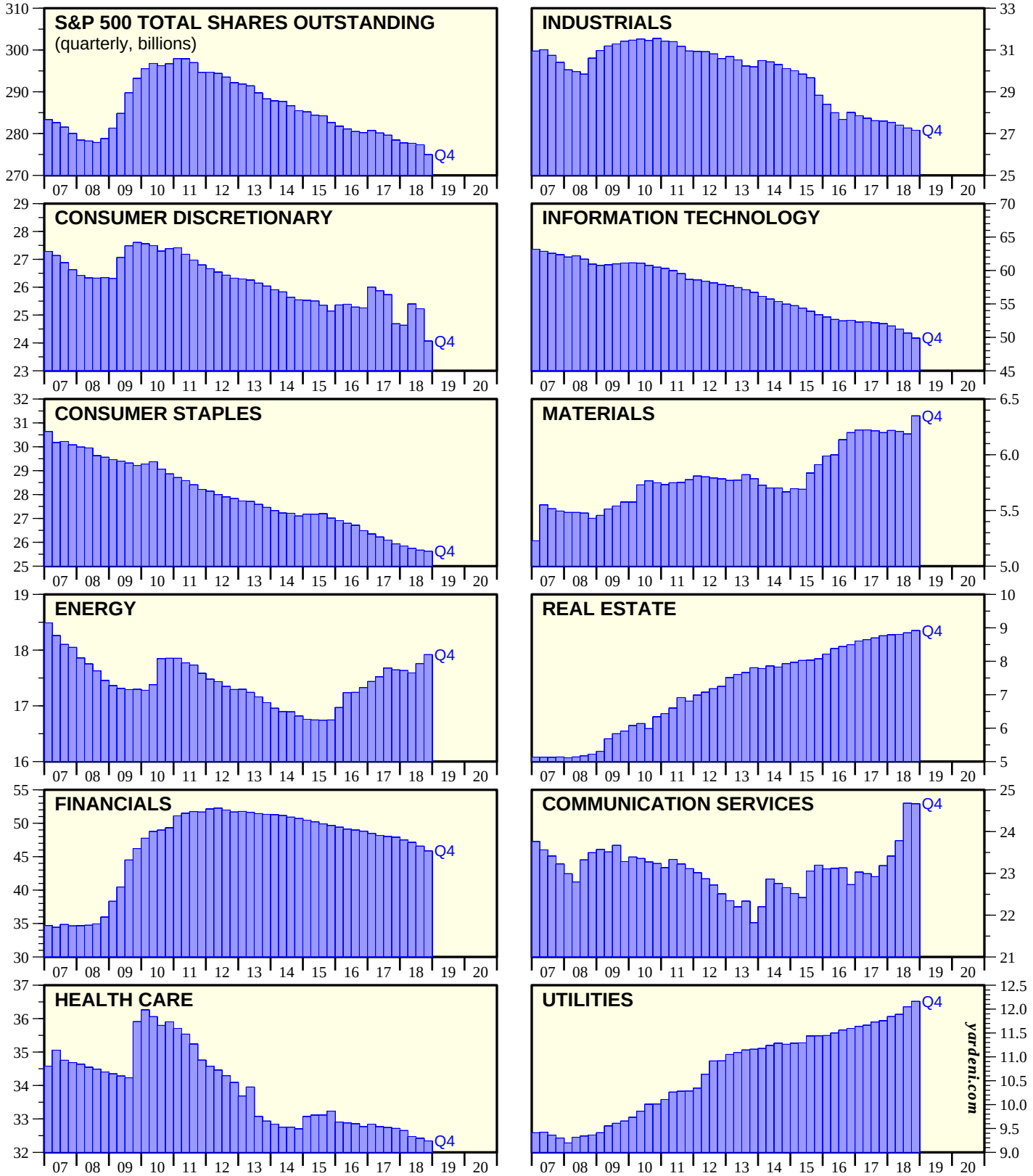
Figure 35.



* Total basic shares outstanding for current S&P 500 companies with data for all periods and adjusted for stock splits and stock dividends.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

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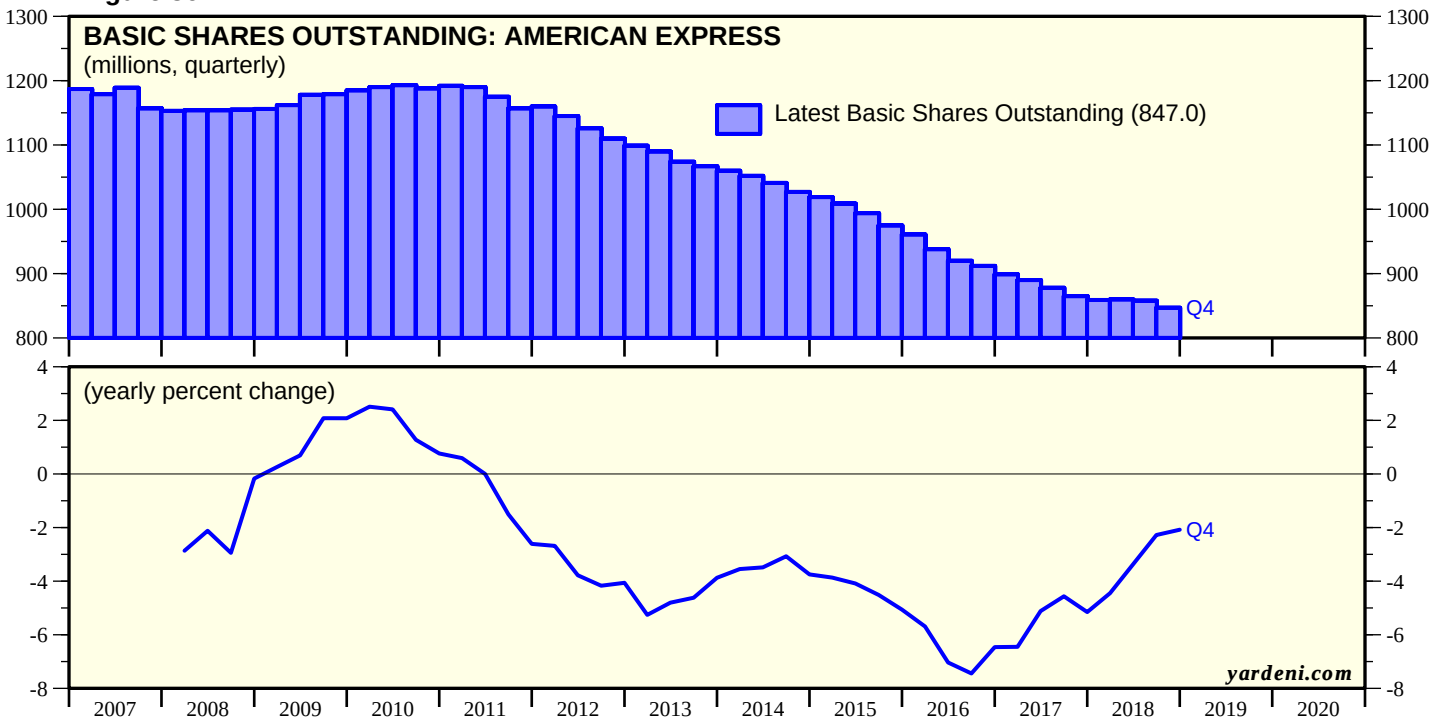
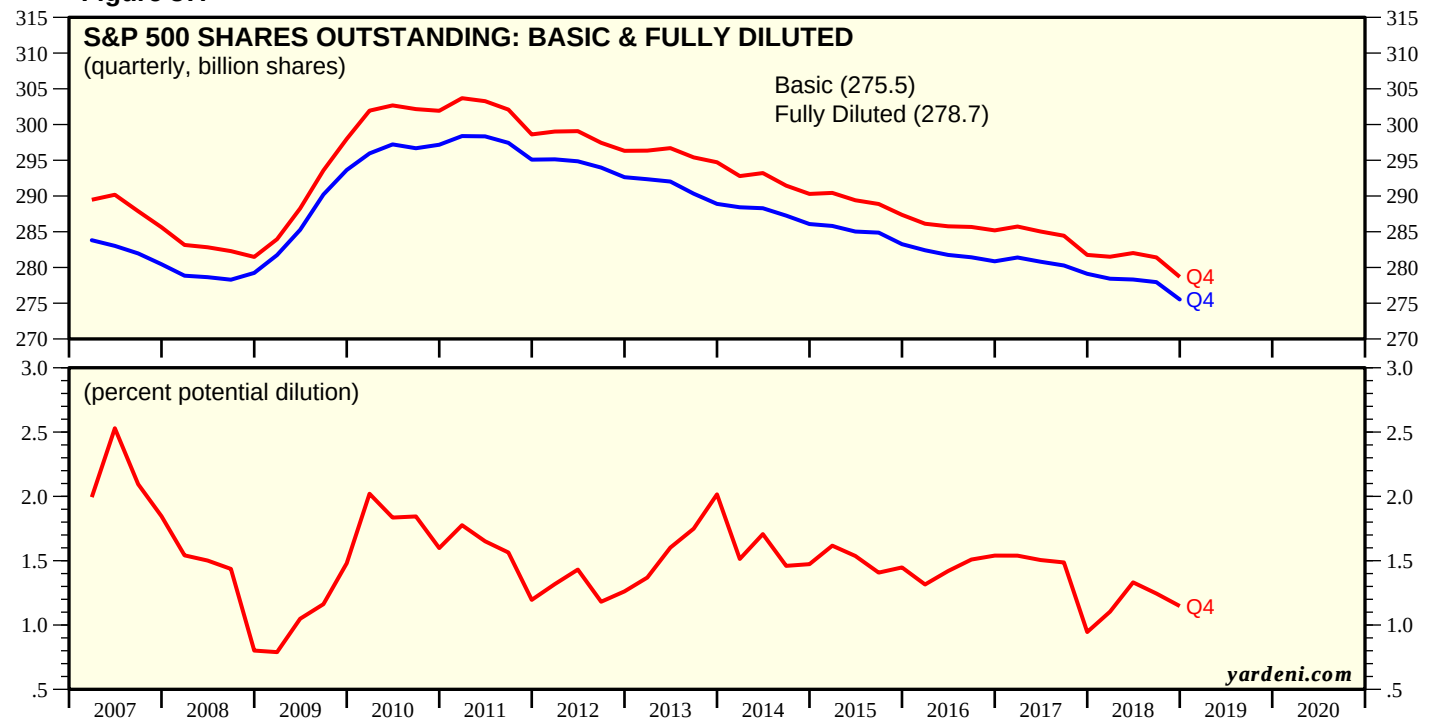
Figure 36.



Source: I/B/E/S data by Refinitiv.

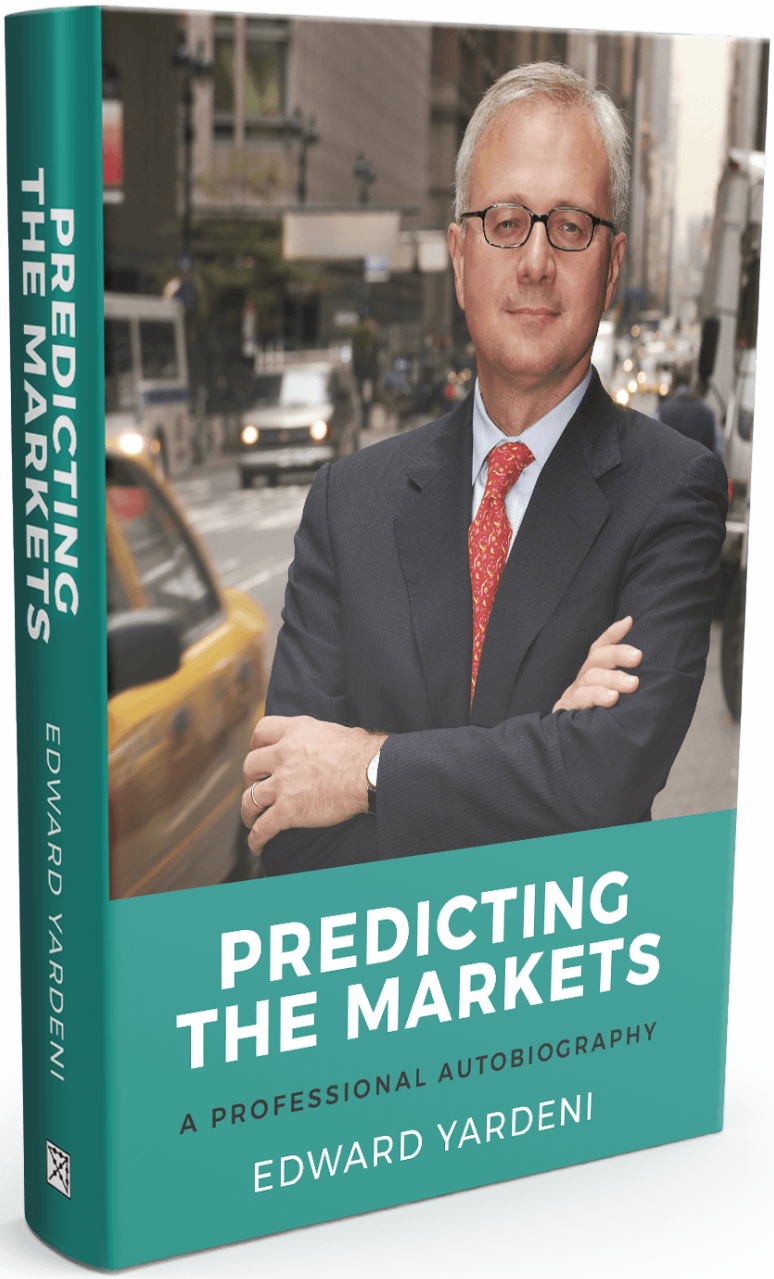
Figure 37.



* Total shares outstanding for current S&P 500 companies with data for all periods and adjusted for stock splits and stock dividends.
Source: Yardeni Research and I/B/E/S data by Refinitiv.

PREDICTING THE MARKETS

LESSONS LEARNED OVER 40 YEARS ON WALL STREET



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