US INDUSTRY CONCENTRATION AND CORPORATE PROFITABILITY

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The steady increase in industry concentration is having a transformational impact on the US economy, the most obvious of which is a dramatic increase in profitability ratios. Increased concentration means increased market power, which allows companies to extract higher profit margins and earn higher returns on invested capital. An analysis of industry data clearly indicates that profitability ratios have steadily increased over the past 25 years coincident with an increase in industry concentration.

Summary and Major Conclusions:

- One of the most powerful but least discussed structural change affecting the US economy is the ongoing concentration of US industries wherein a small number of firms have significantly increased their market shares in key product markets.
- *The Economist* conducted a rigorous study of 900 US industries and found widespread evidence of increasing industry concentration and consolidation over the past 25 years. Concentration is statistically defined as the combined market share of the four largest firms in an industry.
- More than two-thirds of industries in the US economy have become increasingly concentrated since 1995. Weighted-average concentration ratios across all industries rose from 26% in 1995 to 32% in 2012. This ratio is projected to rise to more than 35% in 2020.
- The share of revenues for the Fortune 500 generated by the larger sub-component Fortune 100 increased from 57% in 1995 to 63% in 2013, and to an estimated 65% today. The number of listed companies on US stock exchanges has declined by 50%, from nearly 7,000 in 1995 to less than 3,500 in 2015.
- Concentration levels rose more dramatically in select industries. In more than one-third of US industries, combined market shares of the top four firms rose by 40% since 1995. Roughly 10% of industries are highly concentrated with market shares in excess of 67% for the top four firms combined.
- The critical implication for investors is the strong correlation between industry concentration ratios and profitability ratios. Both profit margins and after-tax return on capital have steadily increased along with rising concentration levels of the past 25 years.
- For the companies in the S&P 500 Index, after-tax profit margins increased from an average of 4% in the early 1990s to 7% in the late 1990s to an average of 9% over the past five years. Similarly, return on capital increased from 8% in 1990 to 12% in 2012 to 16% in 2018.

- A combination of increased company earnings and reduced capital expenditures implies higher levels of free cash flow and a rising corporate savings rate, which has increased from only 1% of GDP in 1995 to 5%.

- The other side of the coin of increased market power for businesses is reduced negotiating power for workers. Real wages have failed to keep pace with total national income, resulting in steadily increasing returns to capital over the past decade, at the expense of labor.

- A combination of a higher corporate savings rate and less capital investment implies a reduced demand for credit in the corporate sector. This shift in the supply of and demand for capital has contributed to the steadily declining trend in bond yields.

- Faster growth and greater stability in earnings, more rapid growth in corporate free cash flow, a tendency toward longer economic expansion cycles, and a lower level of interest rates all enhance the relative attractiveness of common stocks for long-term investors.

- Rising free cash flow increases the capacity for companies to distribute cash to shareholders in the form of dividends and share repurchase. There is a positive correlation between faster growth in free cash flow and equity valuations.

- There is also a tight inverse correlation between price-to-earnings (P/E) and market interest rates. In theory, a permanently lower level of real interest rates would justify a permanently higher level of equity valuations.

The American economy has undergone numerous powerful structural changes over the past two decades, and each have had a significant impact on financial markets. *One of the most powerful but least discussed secular change is the ongoing concentration of US industries: Over the past two decades, a small number of firms have significantly increased their market shares in key product markets*. This week's *Economic Perspective* provides an in-depth analysis of the transformation of the structure of US industry structure and the implications for the US economy and financial markets.

Industry Consolidation: An analysis of changes in US industry structure over the past two decades reveals an interesting fact: The big are getting bigger, and in the process, becoming increasingly profitable. This conclusion is based upon several landmark research studies during the past several years:

- *The Economist* conducted a massive research of 900 industries within the US economy in 2016 to assess trends in industry dominance and market shares

- Economics professors Gustavo Grullon, Yelena Larkin, and Roni Michaely published a research paper in 2017 entitled Are US Industries Becoming More Concentrated?

- National Bureau of Economic Research (NBER) economist Jan De Loecker published a report in August 2017 entitle The Rise of Market Power and the Macroeconomic Implications.

The conclusions from each of these studies are unambiguous: There is definitive statistical evidence indicating that a large portion of the US economy is becoming progressively more concentrated, and therefore, less competitive, as incumbent industry leaders accumulate increasing market power.

TRENDS IN INDUSTRY STRUCTURE

The Economist study of 900 US industries found widespread evidence of increasing industry concentration and consolidation over the past 25 years. *Concentration is statistically defined as the combined market share of the four largest firms in an industry*.

- More than two-thirds of industries in the US economy have become increasingly concentrated since 1995.

- The weighted-average increase in concentration ratios between 1995 and 2012 rose from 26% in 1995 to 32% in 2012. This ratio is projected to rise to more than 35% in 2020. This means that the cumulative market share of the top four firms for all industries within the US currently averages 35%.

- Concentration levels rose more dramatically in select industries. In more than one-third of US industries, combined market shares of the top four firms rose by 40%.

- The share of revenues of the Fortune 500 generated by its top 100 constituents (the Fortune 100) increased from **57%** in 1995 to **63%** in 2013, and to an estimated **65%** in 2018.

- The number of listed companies on US stock exchanges has declined by 50% — from nearly 7,000 in 1995 to less than 3,500. At the same time, sales of the median listed public company *rose by a factor of three* over this same timeframe, after adjustment for inflation.

Fragmented, Concentrated, Oligopolistic: *The Economist* divided all 900 industries into three categories, based upon concentration ratios:

1. **Fragmented**: Fragmented industries are those in which the top four firms control less than one-third of the market. Cumulative revenues in these fragmented industries ***declined*** from 72% of the entire US economy in 1995 to 58% in 2012.

2. **Concentrated**: Concentrated industries are defined as those in which the top four firms comprise between one-third to two-third of industry sales. Cumulative revenues in these industries ***rose*** from 24% to a 33% share of the US economy.

3. **Oligopolistic**: Industries characterized as oligopolies comprise 10% of the US economy, up from only 6% in 1995. *These industries contain niche companies with dominant competitive positions*, wherein the top four firms control greater than 67% of their markets. Specific industries included in these categories and include airlines, commercial aerospace, credit cards, batteries, coffins, media, jet engines, telecoms, dog food, pharmacies, and railroads.

Airlines: The airline industry provides an excellent case study of an evolving oligopoly. Notoriously fragmented for decades, the airline industry is currently dominated by four firms. Following a massive wave of mergers and consolidation over the past decade, these four firms in combination control more than 80% of airline traffic. For the first time in the history of the airline industry, carriers are able to raise selling prices, initiate new fees, and control the growth in their capacity.

- **Surging Profits**: The results are evident in profitability ratios: Compared with after-tax returns on capital in the vicinity of 5% for most of their history, airlines are earning returns on capital of **20%**. *Operating earnings for the industry have increased at an annual rate in excess of **25%** over the past five years ending 2018*. Most firms are generating significant free cash flow that has fueled faster growth in dividend pay-outs and share repurchases.

TRANSLATING INDUSTRY CONCENTRATION INTO PROFITS

The steady increase in industry concentration is having a transformational impact on the American economy. The most obvious consequence of steadily rising industry concentration ratios is a dramatic increase in profitability ratios. Increased concentration means increased ***market power***, which allows companies to extract higher profit margins. An analysis of company and industry financial data clearly indicates that profitability ratios have steadily increased over the past 25 years concurrent with an increase in industry concentration:

Chart 1: Steadily Rising Trend in Corporate Profit Margins
Pretax Operating Profits, S&P 500 Companies
Operating Profits as a Percent of Revenues
Source: Bloomberg

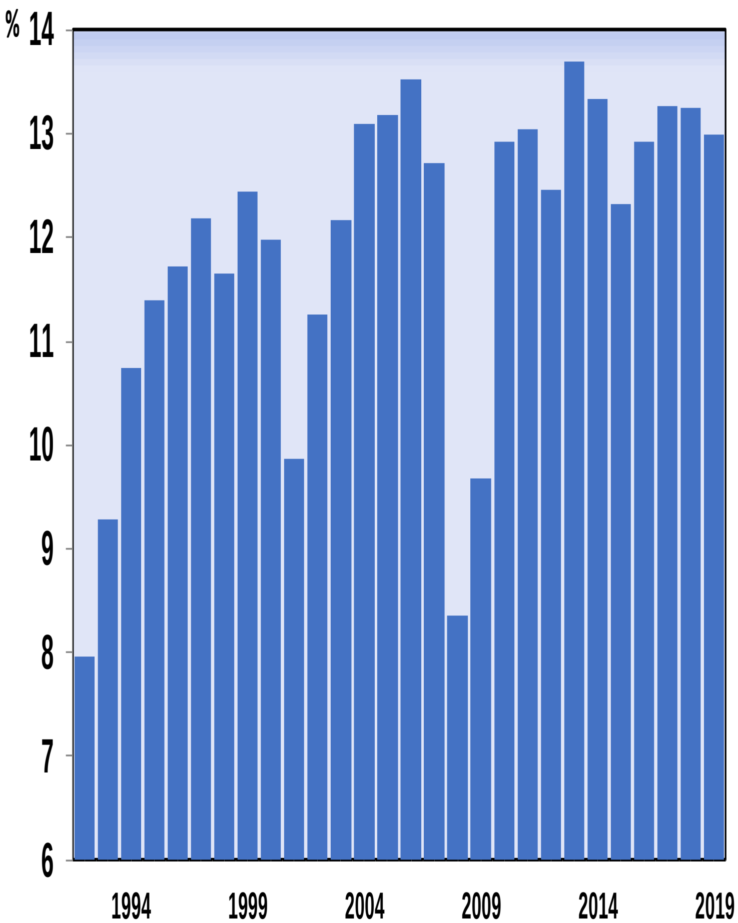
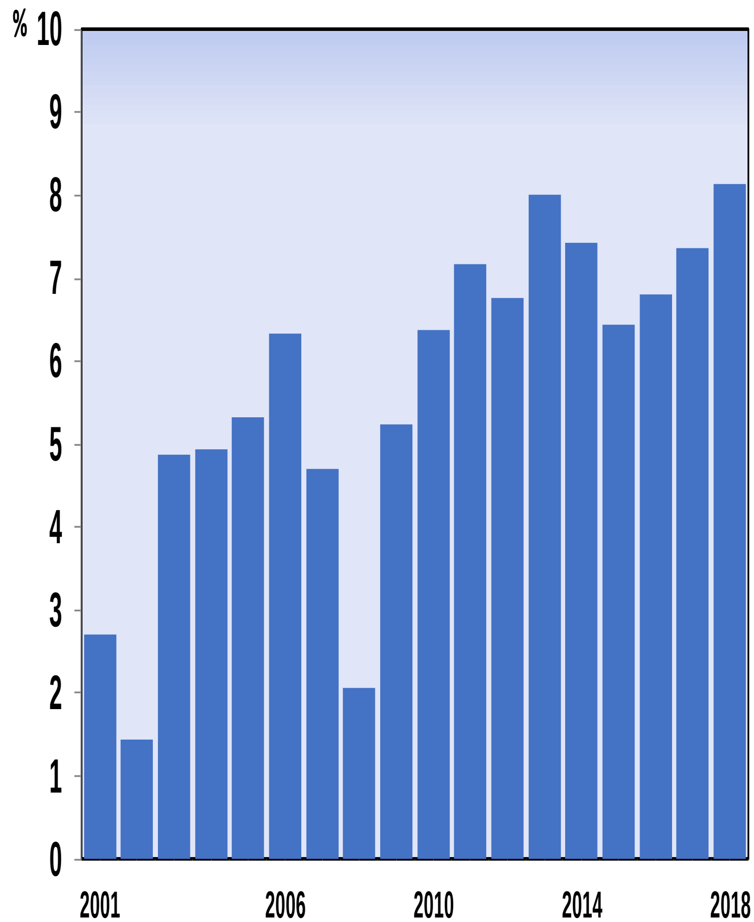


Chart 2: Steadily Rising Return on Invested Capital
After-Tax Profits as a Percent of Capital
S&P 500 Companies
Source: Bloomberg



- **Profit Margins**: For the companies in the S&P 500 Index, after-tax profit margins increased from an average of 4% in the early 1990s to 7% in the late 1990s to 9% in the 2014 to 2019 period (see chart 1).

- **Return on Capital**: Return on capital (excluding goodwill) increased from 8% in 1990 to 12% in 2012 to 16% in 2018 (see chart 2).

- **Free Cash Flow**: As a share of GDP, corporate after-tax free cash flow increased from 1% in 1995 to 5% in 2018. For the companies in the S&P 500, free cash flow has increased by a factor of 7.5 from 1995 to 2018 — from only $27 billion to more than $150 billion (see chart 3).

- **Share Buybacks**: The surge in free cash flow has resulted in a steep rise in corporate share buybacks over the past decade. According to Federal Reserve data, corporations have purchased a cumulative $3.8 trillion of their own stock since 2010 (see chart 4).

Chart 3: Surge in Free Cash Flow for Large US Companies
Gross Cash Flow Less Dividend Payments and Capital Expenditures
S&P 500 Companies, $ Billions
Source: Bloomberg

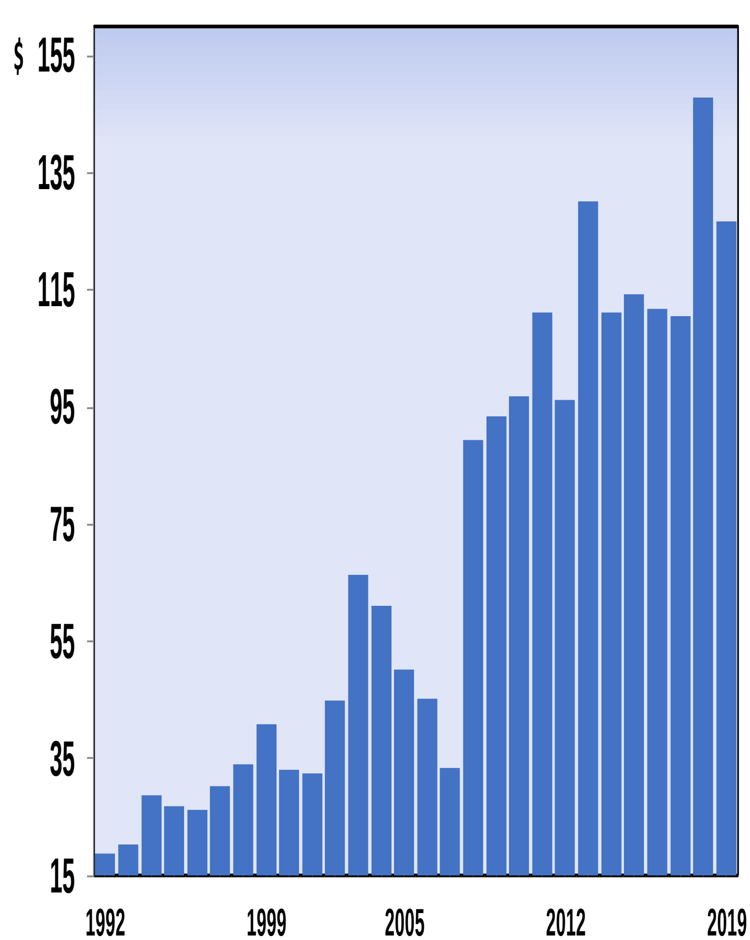
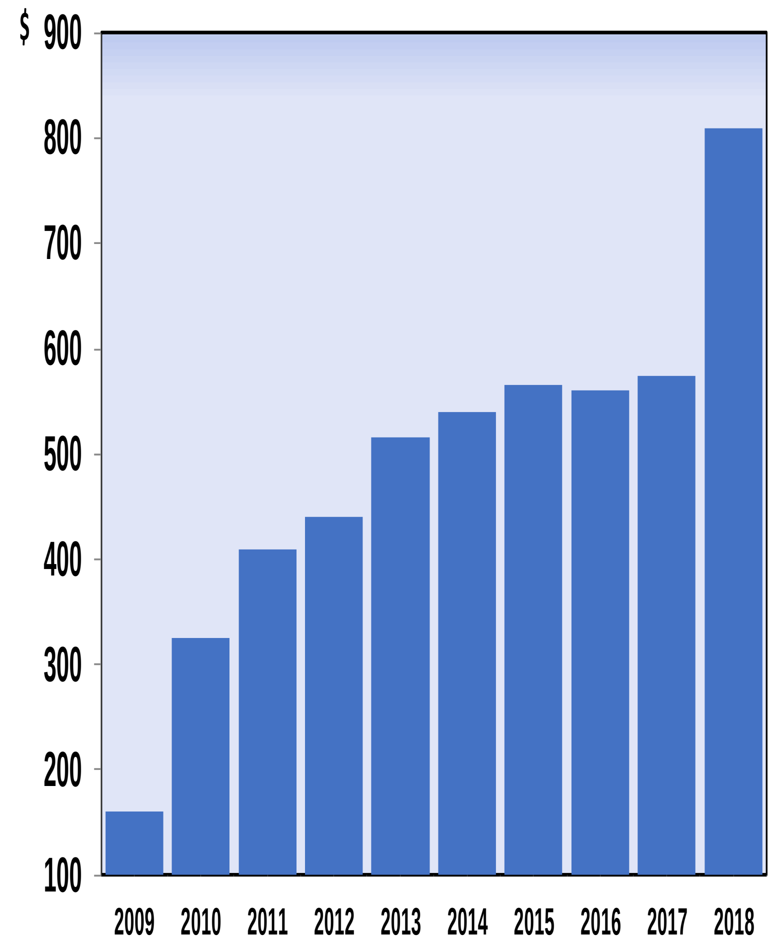


Chart 4: Explosive Growth in Corporate Share Buybacks
Annual Share Repurchases
S&P 500 Companies, $ Billions
Source: S&P Dow Jones



- **Ratio of Profits to GDP**: After-tax profits have increased from 4% of GDP in 1995 to 7% of GDP in 2018.

- **Labor/Capital Ratios**: Increased market power has favored employers over employees. Real wages have significantly lagged national income. The composition of aggregate income returns to capital have greatly exceeded the economic returns to labor.

- **Sales Per Employee**: For the companies in the S&P 500, sales per employee increased from $400,000 in 1995 to $950,000 in 2018, as company managements moved aggressively to take advantage of overlapping workers resulting from mergers (see slide 5).

<u>The bottom line is that the steady increase in industry concentration ratios has been accompanied by steadily rising levels of efficiency and profitability for the US corporate sector</u>.

Chart 5: Steady Rise in Business Sales Per Employee
Total Revenues Divided by Total Employees
S&P 500 Companies, $ Thousands
Source: Bloomberg

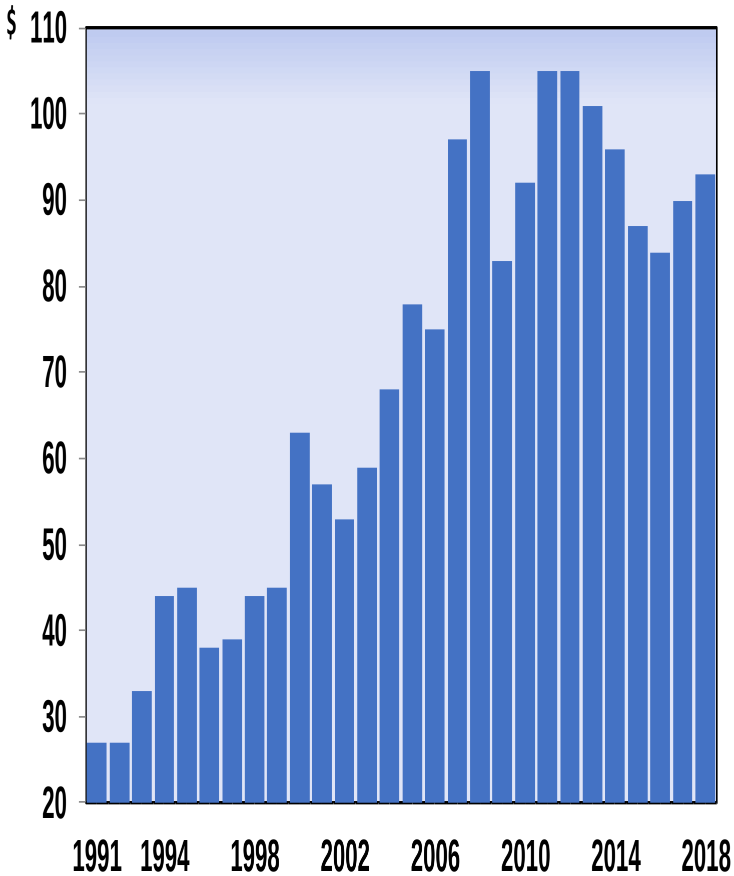
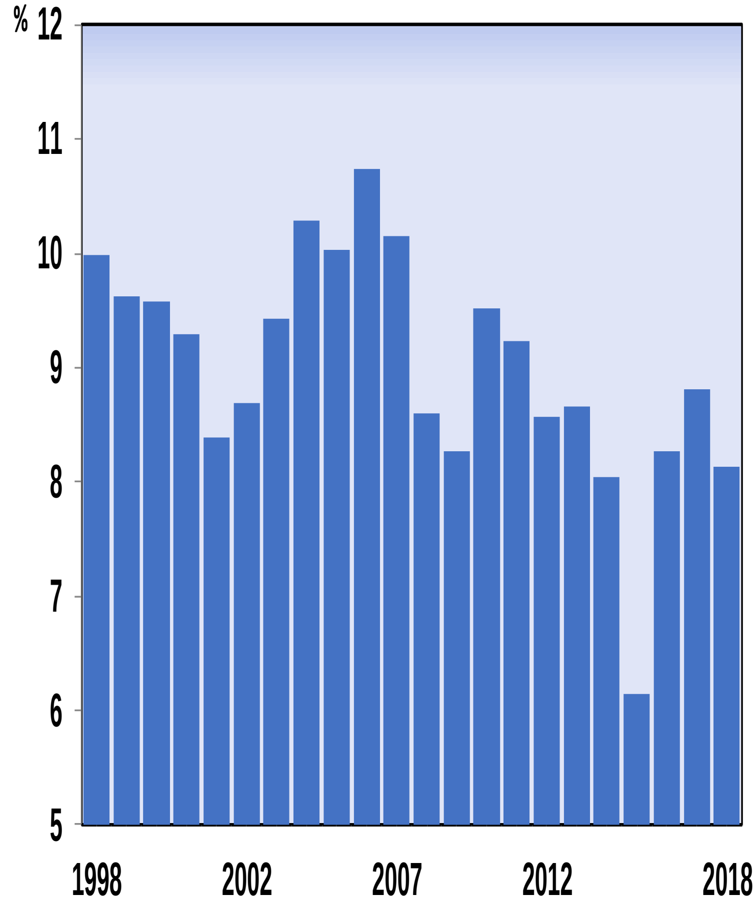


Chart 6: Flat Trend in Profit Margins for Medium-Sized Companies
Pretax Operating Profit, Index of S&P Mid-Cap Companies
Source: Bloomberg



Large Versus Small Firms: It is important to differentiate between profitability trends governing large versus small firms. _All available historical data reveal that the steadily rising trend in profit ratios at large firms has **not** been duplicated at smaller companies_.

- **Mediocre Profit Trends**: As measured by the S&P Small-Cap Index, after-tax profit margins are currently 2.5%, identical to the mid-1990s and actually slightly less than the 3.5% average of the 2010 to 2015 period. Return on capital has been on a plateau of 5% since 1995.

- **Mid-Sized Firms**: For the S&P Mid-Cap Index, profit margins have averaged a slightly higher 5% since 1995, but the trend has been sideways. Return on capital among mid-sized companies has also been stable at 7% (see chart 6).

The obvious implication is that the largest companies have benefitted financially from the trend in industry concentration, at the expense of small and mid-sized companies.

Oracles of Consolidation: *The Economist* identified two prominent business leaders as prophets of the corporate strategy of consolidation of the past two decades:

1. **Jack Welch**: As CEO of General Electric for the two decades ending in 2000, Jack Welch adopted a *strategy of focusing on those businesses and markets in which the company held a dominant position*, defined as the top one or two positions in an industry. Between 1981 and 1990, GE eliminated 200 businesses — accounting for 25% of total sales — and acquired 370 businesses. *The restructuring resulted in a net reduction of 120,000 jobs but left the company far more valuable to shareholders*.

2. **Warren Buffett**: The long-time CEO of Berkshire Hathaway has consistently advised investors to search for and invest in companies that enjoy a "moat" in the markets in which they compete — referring to certain industry characteristics that increase barriers to entry into a product market.

   - **Economic Moats**: Mr. Buffett's definition of an economic moat is as follows: *A distinct competitive advantage for a business firm versus its competitors, allowing it to protect market share and profit margins*. This advantage is often difficult to duplicate, thereby creating an effective ***barrier to entry*** against competition. With the benefit of ***pricing power***, these dominant firms are able to earn above-average profits over a sustained period.

FORCES ABBETTING CONSOLIDATION

The explanation for increased concentration and rising profit ratios for firms in consolidating industries is relatively straightforward, and includes the following forces:

1. **Mergers and Acquisitions**: The past decade has witnessed a record number of mergers and acquisitions, with a total value of $10 trillion. Merged companies enjoy the advantages of critical mass and ***economies-of-scale*** in running their businesses more efficiently and with lower cost ratios.

2. **Technological Barriers**: Many large firms are able to increase both profit margins and market shares by capturing a disproportionate share of technological advances designed to achieve operating efficiencies. Research shows that firms in concentrated industries have been capturing an increasing share of ***patents*** issued since 2000.

3. **Anti-Trust Policy**: Lax enforcement of anti-trust laws by the Department of Justice and the Federal Trade Commission has allowed firms to significantly increase their market shares over time.

4. **Large Capital Requirements**: To a far greater extent than small and mid-sized companies, larger companies enjoy superior access to long-term capital — and through multiple channels — necessary to fund future growth. A lower ***cost of capital*** can be a significant competitive advantage for growth companies.

INDUSTRY CONCENTRATION: ECONOMIC IMPLICATIONS

The ongoing trend of industry consolidation in the US is a powerful structural shift that shows no signs of abating. There are numerous significant long-term economic implications that investors should consider:

- **Company Profitability**: I have already discussed the steadily rising trend in measures of company profitability, which is the most significant ramification of industry concentration.

- **Wage Compression**: The other side of the income coin — increased market power for businesses — is reduced negotiating power for workers. *Real wages have failed to keep pace with total national income*, meaning that the return to capital has steadily increased over the past decade, while the return to labor has declined.

- **Innovation and Business Formation**: The emergence of oligopoly power in many industries has suppressed innovation and new business start-ups. Industry concentration acts as an impediment to new entrants, and therefore, innovation in products and services.

- **Capital Investment**: In a similar manner, economic theory postulates that both production and capital investment would be lower in industries characterized by increased market power, as dominant firms deliberately hold back on production and investment.

- **Corporate Savings Rate**: A combination of increased company earnings and reduced capital expenditures implies higher levels of ***free cash flow*** and a rising corporate savings rate, which has increased from only 1% of GDP in 1995 to 5%.

- **Slower Growth in Productivity**: A combination of reduced levels of innovation, less capital investment, and slower growth in real wages is consistent with slower trendline growth in labor productivity.

- **Lower Interest Rates**: A combination of a higher corporate savings rate and less capital investment implies a reduced demand for credit in the corporate sector. This *shift in the supply of and demand for capital* implies a lower ***equilibrium level*** real interest rate.

- **Longer Business Expansions**: This confluence of economic forces should result in longer business expansion cycles: Lower interest rates, an absence of wage pressures, reduced levels of capital investment, and increased corporate savings are all consistent with a reduced tendency for traditional excesses and imbalances to emerge as an expansion cycle matures.

INDUSTRY CONCENTRATION: INVESTMENT IMPLICATIONS

<u>The key investment implications associated with the long-term trend in industry concentration pertain mainly to the equity market, in two respects</u>:

1. **Asset Allocatio**n: The various consequences associated with rising industry concentration have the effect of *<u>enhancing the relative attractiveness of corporate equities</u>* versus all other asset classes.

2. **Stock Selection**: Within the equity markets, these powerful structural trends have the effect of *<u>enhancing the relative attractiveness of select companies</u>* in industries that are characterized by significant levels of concentration.

How Stocks Benefit: In principle, rates of return on corporate equities are predicated upon two basic fundamental factors: (1) Future growth rates in earnings per share (EPS); and (2) Changes in equity valuations, as measured by price-to-earnings (P/E) ratio.

- **Company Earnings**: There is a clear positive correlation between industry concentration ratios and corporate profitability. A continued rising trend in concentration ratios should exert continued upward pressure on profit margins and returns on capital, culminating in faster growth in earnings per share (EPS).

- **Equity Valuations**: Equity market valuations should also benefit from the changing structure of US industry, in two key respects:

    1. **Lower Interest Rates**: There is a tight inverse correlation between P/E ratios and market interest rates. In theory, a permanently lower level of real interest rates would justify a permanently higher level of P/E ratios.

    2. **Rising Free Cash Flow**: While the growth rate in company earnings and cash flow is of prime relevance for investment returns, growth in free cash flow is also important. *<u>Rising free cash flow increases the capacity for companies to distribute cash to shareholders in the form of dividends and share repurchase</u>*. It is not a coincidence that the level of dividend pay-outs and share repurchases rose to all-time highs in 2018.

The key point is that corporate equities are uniquely positioned to benefit from the consistent rise in profitability ratios emanating from the steady increase in industry concentration within the US economy. Faster growth in company earnings, greater stability in earnings, an increasing trend in corporate free cash flow, increased stability in wage costs, a tendency toward longer economic expansion cycles, and a lower level of interest rates all enhance the attractiveness of common stocks for long-term investors.

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Bloomberg Barclays U.S. Treasury Inflation-Protected Securities (TIPS) Index: Measures the performance of rules based, market value-weighted inflation protected securities issued by the U.S. Treasury. It is a subset of the Global Inflation-Linked Index (Series-L).

CBOE Volatility Index: An index of implied equity market volatility, reflecting the market estimate of future volatility for the S&P 500 Stock Index over the next 30 days, using options.

MSCI Emerging Market Index: An index of equity market performance for developing markets, primarily in Asia, Latin America, and Eastern Europe. The index tracks both large-cap and small-cap stocks and is weighted by market capitalization.

MSCI World Ex US Index: Measures the performance of the large and mid cap segments of world, excluding US equity securities. It is free float-adjusted market-capitalization weighted.

Russell 2000 Small-Cap Index: Is an index measuring the performance of approximately 2,000 small-cap companies within the United States.

S&P 500® Index: Measures the performance of 500 widely held stocks in US equity market. Standard and Poor's chooses member companies for the index based on market size, liquidity and industry group representation. Included are the stocks of industrial, financial, utility, and transportation companies. Since mid 1989, this composition has been more flexible and the number of issues in each sector has varied. It is market capitalization-weighted.

State Street Investor Confidence Index: measures investor confidence or risk appetite quantitively by compiling actual buying and selling patterns of institutional investors.

US Trade-Weighted Dollar Index: An index that measures the value of the US dollar in relationship with other currencies, statistically weighted on the basis of importance to the US as trading partners.

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