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GLOBAL STRATEGY

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Hidden Productivity

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Some clients have written to us, asking for us to elaborate further on the issue of hidden productivity growth, which we raised in our 2018 outlook last week. We dedicate this week's research note specifically to this issue, as it is central to many important macro trends such as economic growth, inflation and corporate profitability.

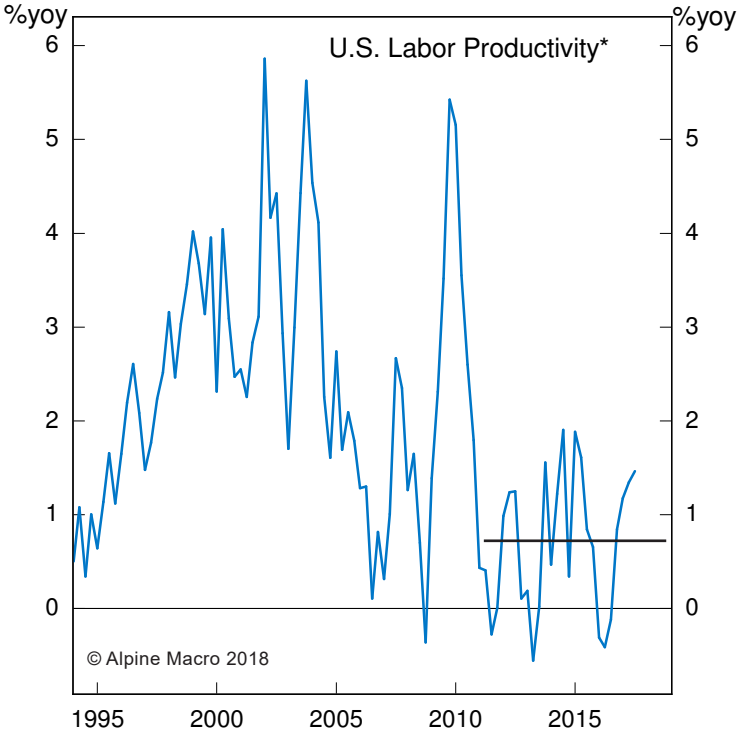
Defining The Issue

For some time, I have had a suspicion that labor productivity is being seriously understated. Based on numbers from the Bureau of Labor Statistics (BLS), U.S. labor productivity growth has averaged only 0.7% since 2010, which, if true, would represent a significant reduction from the levels seen in the 2000s and the 1990s (**Chart 1**).

At times, these poor numbers on labor productivity growth lent some credence to the "secular stagnation" thesis, which was originated by Alvin Hansen in the 1930s, but has more recently been promoted by Professor Robert Gordon of Northwestern University and former Treasury Secretary Lawrence Summers.

Although both Gordon and Summers believe that the steady-state growth rate in most advanced economies has dropped precipitously in recent decades, they have arrived at the same conclusion from very different vantage points.

Chart 1 BLS Labor Productivity Statistics



*Non-farm business output per hour
Source: U.S. Bureau of Labor Statistics

Summers believes that over-saving has become a chronic problem for the world economy since the late 1990s due to a variety of issues, including technological changes and globalization, and therefore it is inadequate aggregate demand that causes economic growth to stall.

Gordon, however, attributes slower economic growth to a lack of innovation, which in his view has caused labor productivity growth to stall. For Gordon, economic stagnation is a supply-side problem. Gordon's rationale is best explained by his TED talk, titled "The Death of Innovation, the End of Growth."

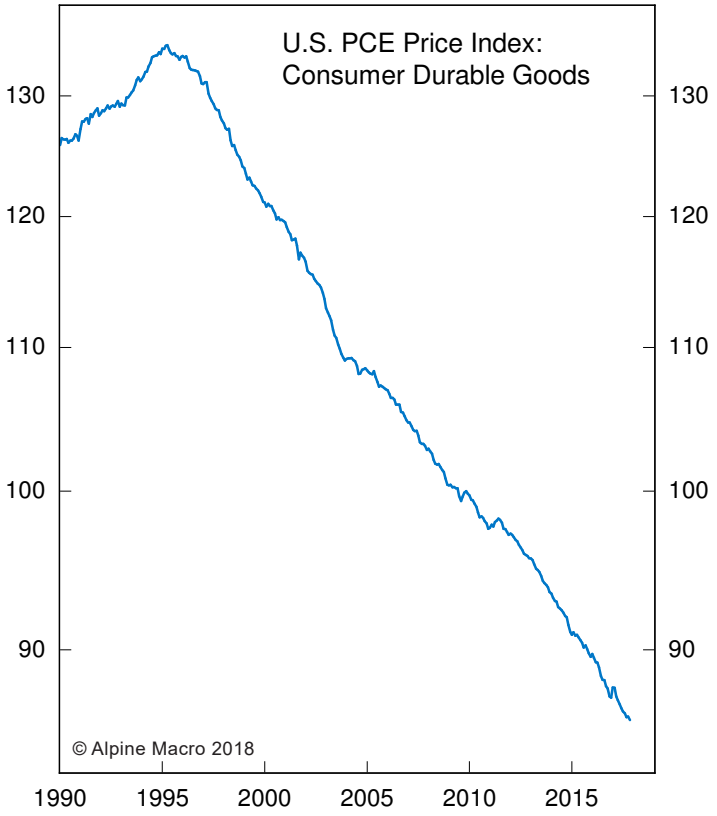
I have sympathy for Summers' approach, but disagree with Gordon's. For Summers' thesis to hold, the supply side does not have to wither: aggregate demand can be chronically inadequate if the supply side becomes "too efficient", causing supply to exceed aggregate demand. The policy remedy for Summers' version of secular stagnation is obvious: fiscal expansion, which will lift aggregate demand, eliminate excess savings and allow the economy to regain balance.

Gordon's hypothesis entertains the idea of an absolute decline in labor productivity growth, which, if true, would suggest a prolonged period of stagnation or even a decline in the standard of living for society at large. Gordon does not say what policy remedy would be in his version of economic stagnation, but the correct policy stance seems to be: stimulate private investment that would help spur innovation. However, with economic stagnation, who would want to invest?

Some Observations

Several major problems have arisen from Gordon's thesis.

Chart 2 **Signs of Continued Labor Productivity Growth**



At the outset, "The Death of Innovation" does not pass the smell test. We can all point to some major and rapid innovations and technological changes that have taken place in recent years. I am no expert in technology, but casual observations suggest that there is a widespread and rapid application of robotic technology in global manufacturing and service sectors. Artificial intelligence (AI) is another area that has brought many profound changes in the way that businesses and economies are organized, and products are produced and delivered. Common sense tells us that technological advances are still moving ahead rapidly.

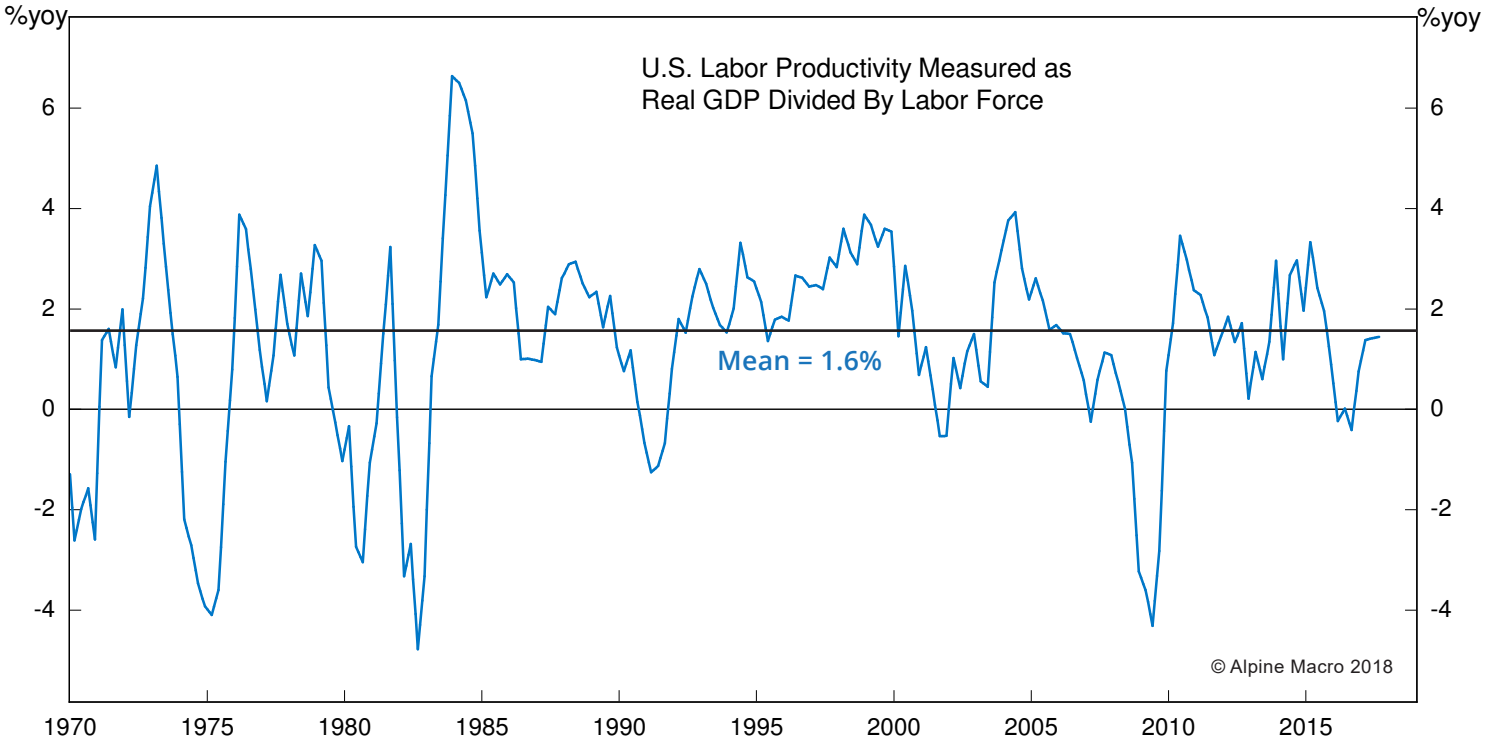
Of course, to gauge or quantify technological change is never easy – if possible at all, but a few interesting statistics may help shed some light on the issue. **Chart 2** shows that consumer

durable goods prices have been in secular decline since 1995, and the rate has not slowed in recent years. This is the segment of any economy where productivity growth is most rapid. The fact that price declines in the durable goods sector have continued at a rather rapid pace suggests that productivity growth has not yet slowed, and that the benefits of innovation are still being enjoyed by most consumers.

Financial markets are always an astute discounting mechanism for secular changes. For instance, the NASDAQ's relative performance surged in the late 1990s, predicting a major wave of technological advances (**Chart 3**). Of course, there was a massive technology bubble in the 1990s when stock prices overshot dramatically.

Chart 3 NASDAQ Relative Performance Versus S&P 500

Chart 4 Real GDP Relative to Labor Force



Nevertheless, the secular rise in the NASDAQ Index, especially in relation to the S&P 500, has continued since the end of the bubble. If history is any guide, the NASDAQ may be signaling that the big wave of tech-led growth has never subsided as proposed by Gordon.

From a more theoretical standpoint, economic growth consists of labor force growth and labor productivity growth, and the latter is best approximated by per-capita GDP growth. **Chart 4** shows U.S. real GDP relative to the labor force, or GDP generated per worker.

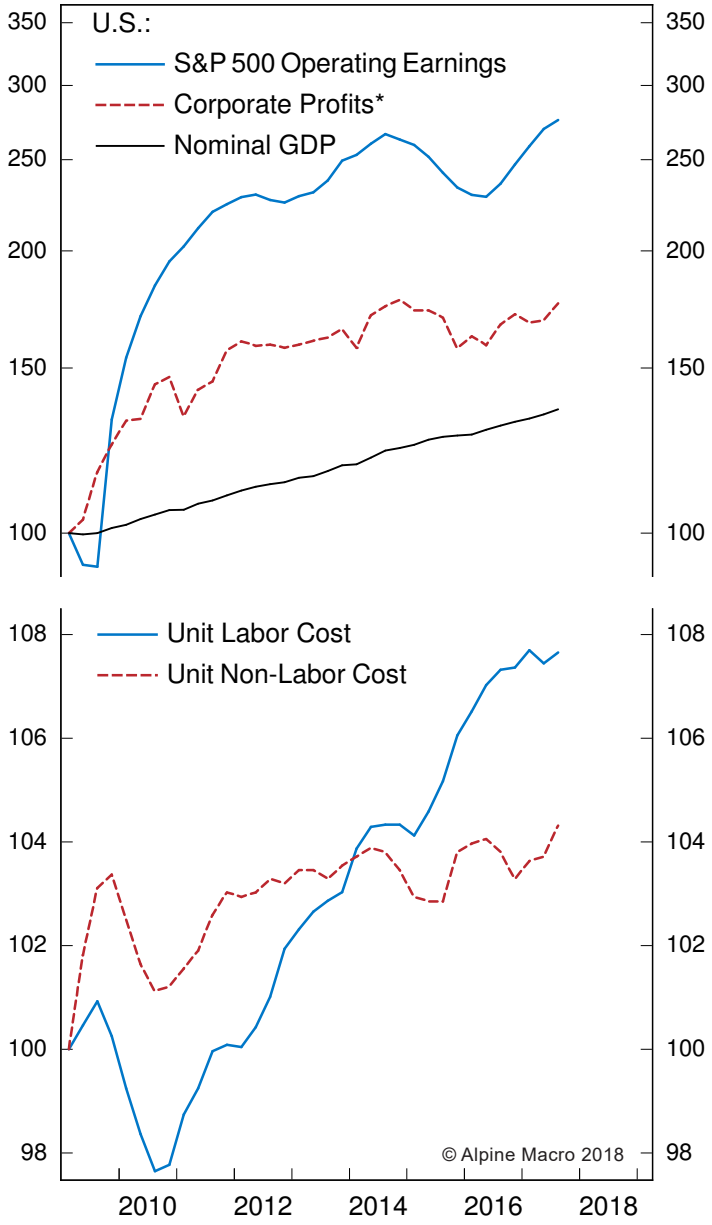
There are some periods where the growth rate is higher than others, but the chart does not suggest any significant downtrend in growth: the average growth rate in GDP per worker since 1985 is 1.6% p.a. It has been the same since 2010.

Finally, the corporate profit picture also casts doubt over the poor productivity statistics. Corporate profits have outgrown GDP for decades – something that has continued to this day. **Chart 5** shows that operating earnings[1] growth for the S&P 500 companies has averaged 15.1% p.a. since 2010, while annual nominal GDP has only grown 3.8% over the same period.

Equity buybacks have added about 1-1.5% p.a. to EPS growth, so "organic" earnings growth should be around 13-14%. The large discrepancy between GDP growth and corporate profit growth begs the question of where the excess corporate profit growth has likely been coming from.

Corporate pricing power has been rather weak during this period, rising by about 1% per year, and companies have not been able to cut costs. In fact, unit labor costs have risen by 11% for this period, and non-labor costs have essentially held flat. One plausible explanation for the outsized profit growth seems to be that labor productivity is much higher than what is being reported, and this hidden productivity "windfall" has been mainly captured by capital owners.

Chart 5 Corporate Profits and Nominal GDP



*Corporate profits before tax, with inventory valuation & capital consumption adjustments
Note: all series are rebased to 2009Q1=100

1 Operating earnings before interest and taxes.

Some may argue that S&P 500 companies are mostly large multinationals where profit growth is more reflective of global growth and the dollar's fluctuations rather than domestic labor productivity. This is a fair argument. However, switching to national accounts data yields essentially similar results, although the magnitude of divergence between GDP and corporate profit growth is lower.

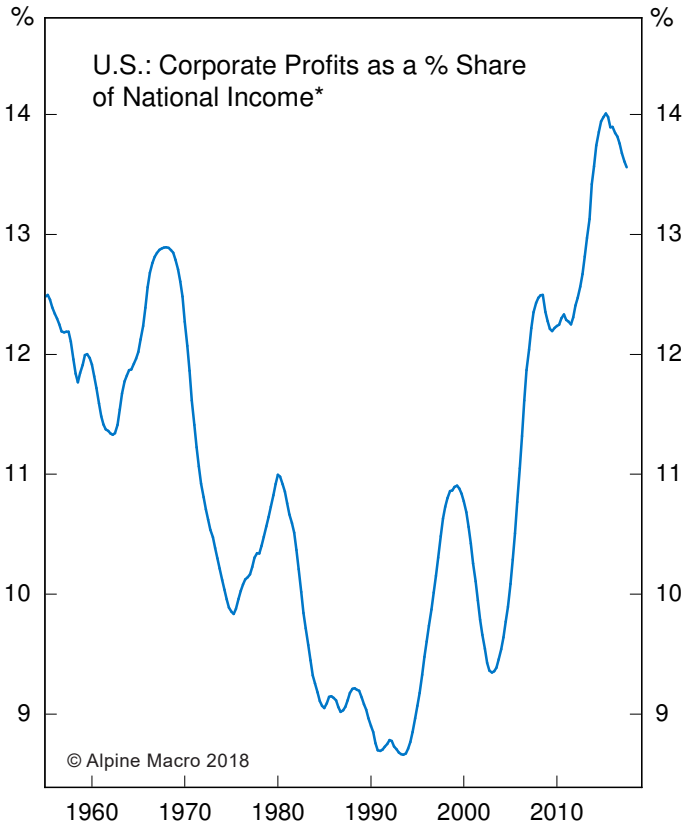
Average corporate profit growth since the end of the Great Recession is 6.2% p.a. During this period, wage growth has averaged about 2.2%, so firms have not been able to cut costs. The conclusion is the same: there is a large discrepancy between corporate profits and nominal GDP growth and the excess profit likely came from productivity growth.

Asymmetric Treatment and Possible Distortion

For years, the rise in corporate profits as a share of GDP in the U.S. has often been viewed as a sign that workers have been "exploited" by capital owners (**Chart 6**). On the surface, this sounds like a fair assessment: income distribution has indeed skewed toward capital owners, while employee wages have received an increasingly smaller share.

There is a plethora of research out there on how globalization and outsourcing have benefited capital owners at the expense of workers. Nevertheless, the way GDP is calculated might have also produced a peculiar result: the higher the labor productivity growth, the higher the corporate profit as a share of GDP. This peculiar result has something to do with the asymmetric treatment of producer versus consumer surpluses.

Chart 6 **Secular Rise in Corporate Profits as a Share of GDP**



*Shown as a 5-year moving average

Think of a supply and demand curve crossing at the equilibrium price (see the **Appendix** on page 10 for illustration). The area above the supply curve but below the equilibrium price is called "producer surplus," which captures the idea that there are always suppliers who are more efficient than others and, therefore, able and willing to provide goods and services at prices below the equilibrium price. To them, anything that is sold at the equilibrium price is a "bargain", or a profit. The sum of all producers' surpluses is, in fact, corporate profits.

Correspondingly, there is a consumer surplus which is defined as the area below the demand

curve but above the equilibrium price. This concept captures the idea that there are always consumers who are willing and able to buy goods and services at prices above the equilibrium price. To them, anything that is bought at the equilibrium price is considered a "bargain". The sum of all consumers' bargains is called "consumer surpluses".

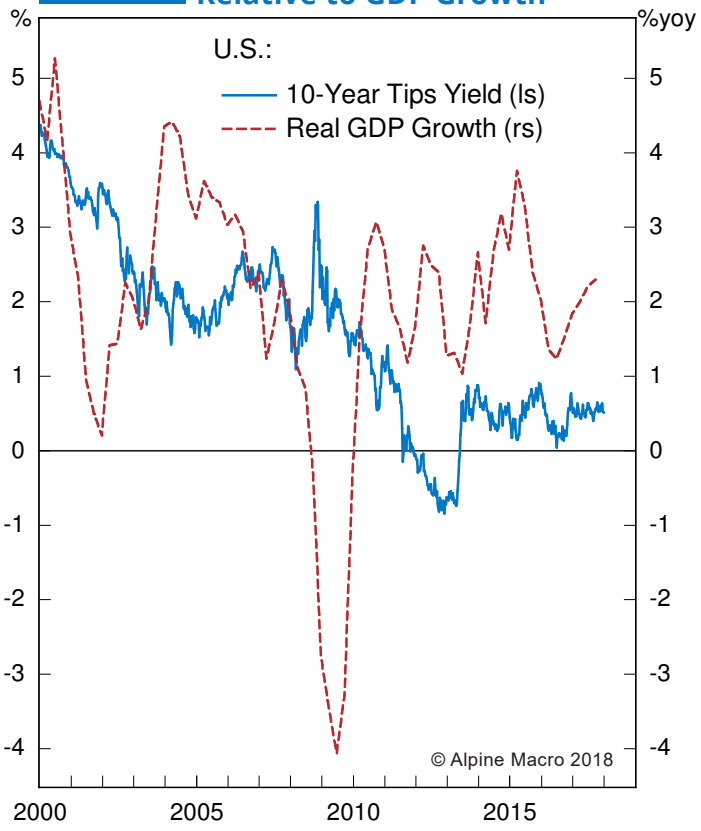
In the event of a permanent or recurring positive productivity shock, the supply curve continuously moves outward. In this case, both producer and consumer surpluses necessarily rise. The problem, however, is that while the net increase in producer surplus is tallied, accounted for and reported as corporate profit growth, consumer surpluses are completely missing in GDP statistics.

Clearly, if productivity growth is sustained over time, the asymmetric treatment of corporate profits and consumer surpluses will inevitably lead to an outsized corporate profit-to-GDP ratio, because consumer benefits, or well-being, are under-represented by GDP.

In practical terms, the distortion here is largely about both quality improvement and quantity adjustment. Innovation causes both prices to fall and quality to improve, but higher real wages only account for quantity as consumers can buy more of the same items. Quality improvement is not accounted for by GDP.

For example, faster internet speed is not reflected if the price of internet stays the same. Another typical example is that 20 years ago, it would cost US$ 3.00 per minute to make a long-distance call from New York to Tokyo. Today, one can easily make a video call for an unlimited time at almost no cost. The "consumer surplus" in these examples is obviously enormous.

Chart 7 Real Bond Yields Are Too Low Relative to GDP Growth



So What?

The significance of hidden productivity growth is threefold:

First, the steady-state growth rate for the U.S. economy is much higher than most economists expect, especially in the context of the "secular stagnation" thesis. It is important to note that productivity growth tends to fluctuate wildly and it appears that we have had two major slumps in the post-2008 period.

Assuming the average growth rate of 1.6% p.a. as the central tendency, the actual labor productivity growth rate in the U.S. could shoot up to well over 3% in the coming months or so, giving a significant positive push to overall economic growth without generating much inflationary pressure.

Second, productivity growth is a non-inflationary windfall that will continue to boost corporate income growth. For consumers and workers, this "windfall" may manifest itself in the form of improving welfare, such as lower prices and better quality of products and services. Real wages and salaries should also rise, but unfortunately at a much slower pace than corporate profits.

Finally, hidden productivity growth is unambiguously bullish for stocks, because equity prices will benefit from expanding corporate earnings and lower inflation.

As for bonds, it is somewhat ambiguous: lower inflation should be a positive for bonds, but hidden productivity growth should also imply that the equilibrium real rate of interest is higher than what most believe.

With real bond yields today well below real GDP growth (**Chart 7**), the bond market could be pressured downward by rising real economic growth.

A Comment on Markets and Our Open Positions

The "melt-up" in stock prices continues to impress. This phase may carry farther and last longer than many think possible. While the recent price gains in the S&P 500 appear relentless, the S&P 500 stayed virtually flat between February 2015 and November 2016, with two double-digit declines and enormous price volatility.

Therefore, a large portion of the recent price increases should be regarded as "catch up." **Chart 8** shows the price trend channel for the S&P 500 since 2010. I'm no technician, but must admit that when viewed in this perspective, the recent advance in the key average still looks excessive, but less so.

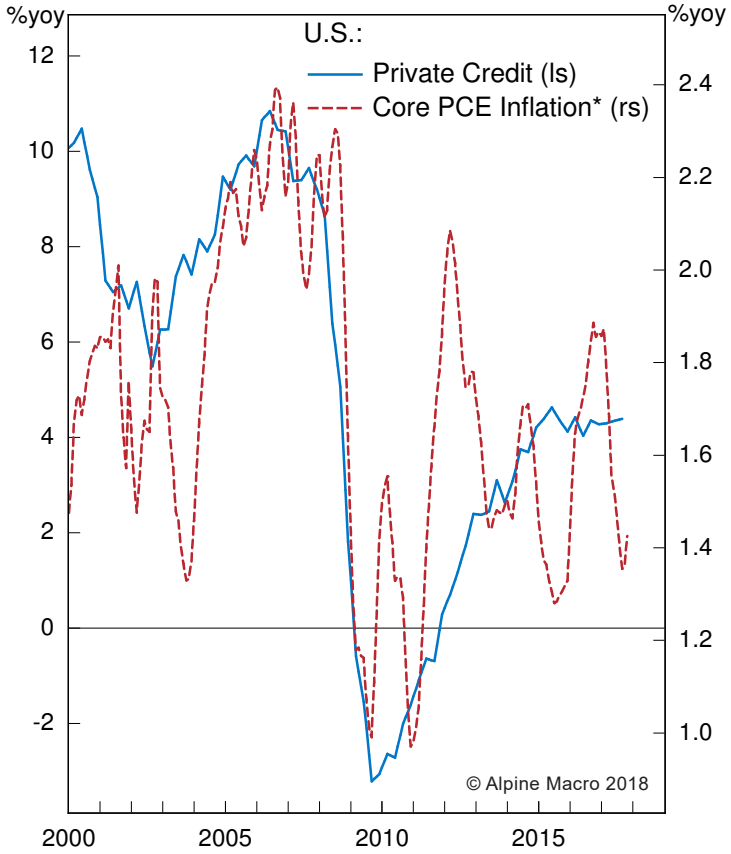
Chart 8 **S&P 500: Part of the Recent Ascent Is Recovery in Nature**

Regardless, no bull market can go straight up. Periodic price corrections are inherent for any bull market, and this one is no exception. After a sustained gain in prices, the news does not have to be bad for the stock market to correct. It just has to be less good than what has been discounted.

Since 2017, conditions have been near-perfect for the U.S. stock market: accelerating growth, low inflation, a dovish Federal Reserve, a weakening dollar, a stable bond market, depressed but recovering corporate earnings and cheapened equity valuations – all of which have been powerful reasons driving up the stock market.

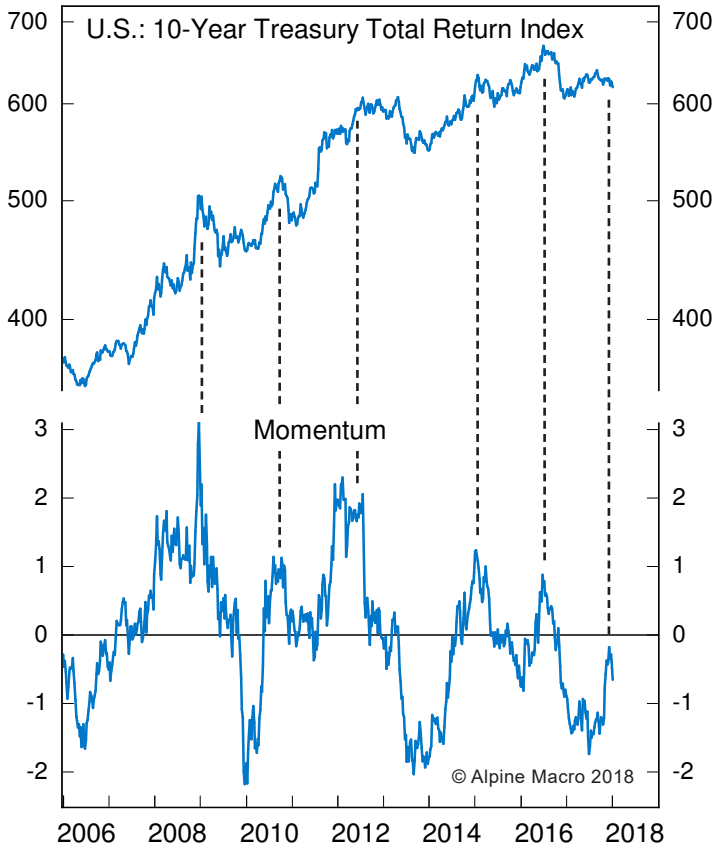
In this vein, any reversal or even a temporary interruption in any of these factors may be enough to cause a correction.

Chart 9 Private Credit and Core PCE Inflation



*Shown as a 3-month moving average

Chart 10 Increasing Bond Market Vulnerability



Some are concerned that a return of inflation could cause a rapid change in interest rate expectations, bringing about a sizable drop in stock and bond prices.

An "inflation scare" is possible, but it is premature to call for a sustained rise in inflation. **Chart 9** shows that private credit growth remains weak in the U.S., and it is very unlikely that inflation will rise much when private credit creation remains soft.

I suspect the key sources that will cause a meaningful correction in stock prices are likely to come from financial markets. The Treasury bond market seems to be on the precipice of a shakeout, while the dollar is ready for a countertrend rally.

Some have blamed Beijing for the weakness in bond prices, as there are reports that China may reduce or even stop purchasing U.S. bonds. I don't think this is the reason behind the weakness in bond prices. With German bunds and JGBs yielding almost zero, there are not many choices for Beijing to deploy its vast reserves, so the threat is not credible.

The bond market may be sniffing out an impending mini economic boom around the world. The recent selloff in bonds has taken place against the backdrop of real bond yields being too low relative to an expected rise in economic growth. In addition, bond market momentum has turned negative (**Chart 10**).

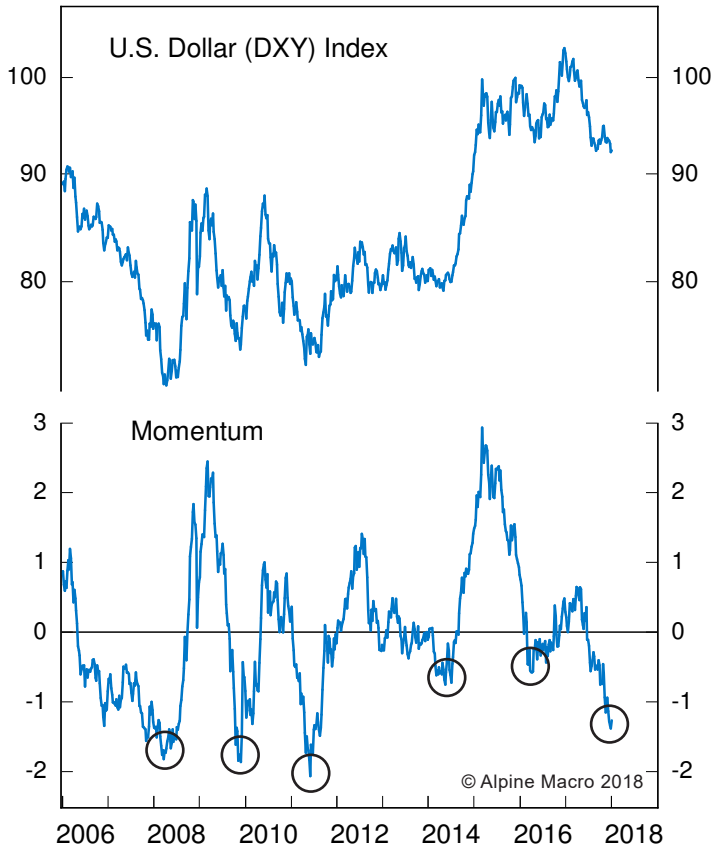
In the meantime, the sustained drop in the U.S. dollar since 2017 has driven the market to oversold conditions, setting the stage for a major countertrend move (**Chart 11**).

The combination of higher Treasury bond yields and a stronger dollar would represent significant monetary tightening, which could dampen investor optimism over corporate profits. This could be the reason for stocks to correct, possibly significantly.

Finally, we have warned for months that the ECB's quantitative easing is grossly inappropriate against a surging eurozone economy, and the central bank would change its policy stance on a dime.[2]

This week, the publication of the ECB minutes of its recent policy meeting suggest that the central bank will likely end its QE program much earlier than most expect. Bunds have sold off, while the euro has strengthened further. Although bund yields have backed up sharply and our short position has netted a good profit, there is still significant downside risk for bund prices.

Chart 11 **U.S. Dollar Is Oversold**



Chen Zhao,
Chief Global Strategist

2 Please see the Alpine Macro Global Strategy reports, "It's Not Too Late To Go International", November 3, 2017 and "Sell German Bunds", December 15, 2017

APPENDIX
Explaining Consumer Versus Supplier Surplus

Think of a simple strawberry supply and demand curve, depicted below, where 100 pounds is equilibrium output and the equilibrium price is $10/pound.

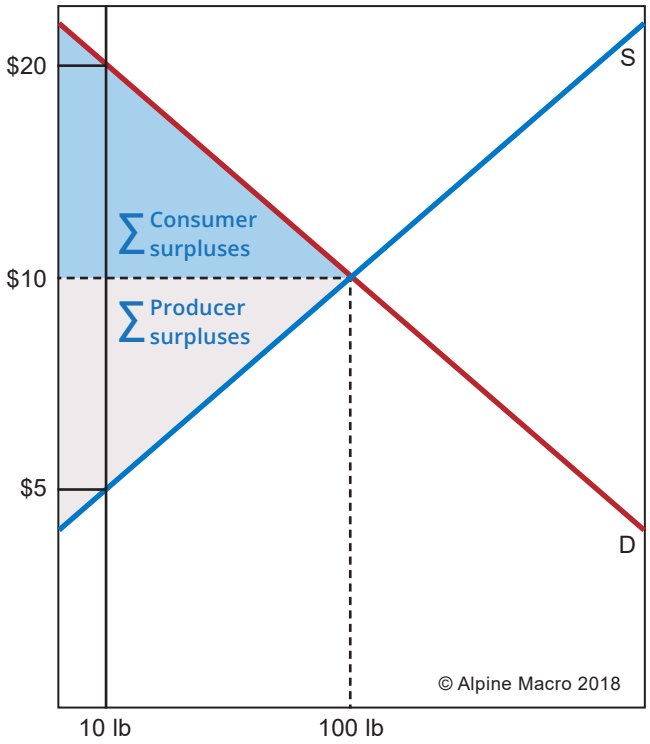
Along the supply curve, there is a supplier who is much more efficient than other suppliers and willing and able to supply the first 10 pounds of strawberries at $5/pound.

In practice, however, he sold his 5 pounds of output at the market equilibrium price of $10/pound so his "producer surplus", or profit is ($10-$5) X 10 pounds = $50. The sum of all producer surpluses is equal to corporate profits.

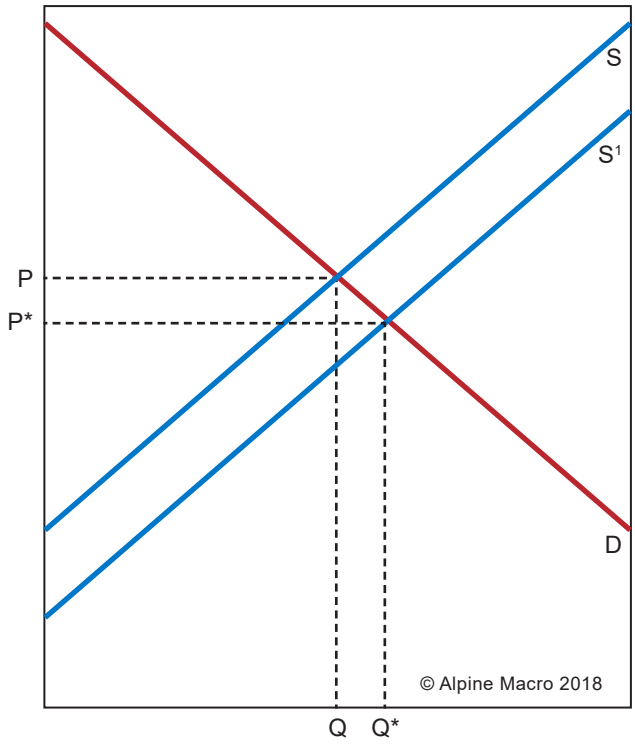
Correspondingly, there is a consumer who is willing and able to buy the first 10 pounds of strawberries at $20/pound. In reality, he actually paid $10/pound for the first 10 pounds, so his consumer surplus is ($20-$10) X 10 pounds = $100. For the economy, consumer surplus is the sum of all individual surpluses.

A positive productivity shock will push S to S^1. This would usually lower equilibrium price from P to P* and increase output from Q to Q*. In this case, both consumer and producer surplus will increase, provided that the demand curve is price elastic, or $\delta Q/\delta P > 1$.

Strawberry Market



Strawberry Market with a Positive Productivity Shock



Investment Recommendations

Strategic Positions (6 - 12 months)

Recommendations	Open Date	Open Levels	Closing Date	Closing Levels	P&L Since Inception
Long EM / S&P 500	11/3/2017	0.435	–	–	0.2%
Long EAFE / S&P 500	11/3/2017	0.778	–	–	-0.5%
Long Oil / S&P 500	11/3/2017	0.0212	–	–	6.8%
Underweight / Short 10-Year Bunds	11/3/2017	0.37%	–	–	21 bps
Long Nikkei 225	12/15/2017	22,694	–	–	5.3%

Tactical Investment Positions (3 - 6 months)

Recommendations	Open Date	Open Levels	Stop	Closing Date	Closing Levels	P&L Since Inception
Long Gold	11/3/2017	1277	1213	–	–	3.4%
Long GBP	11/3/2017	1.311	1.245	–	–	3.0%
Long MXN	11/3/2017	18.98	19.929	–	–	0.1%
Long 10 year Brazilian Sovereign Bonds Unhedged	11/3/2017	10.36%	–	–	–	1.7%
Long 10 year Russian Sovereign Bonds Unhedged	11/23/2017	7.59%	–	–	–	5.2%
Long Copper	12/15/2017	3.0725	2.919	–	–	5.0%

Note: Our currency trades include carry. P&L is calculated using futures contracts.

Alpine Macro, founded in 2017, is an independent global investment research firm based in Montreal, Canada. We focus on the analysis of major macro economic forces and specialize in forecasting the direction of global financial markets, while providing actionable recommendations on investment strategy and asset allocation.

Our Mission We provide clients with unique market insights, contrarian views, and profitable investment strategy recommendations. We help investors manage risk and make better informed decisions. We strive to be clear and concise with well articulated rationale for all of our investment strategy recommendations.

Our Framework Our research framework relies on the concept that the expansion or contraction of money and credit is the key driver of the economic cycle. Our framework combines proprietary models and indicators, with qualitative analysis to understand global capital flows and liquidity trends.

Our Philosophy We believe that the inherent tendency for a free market system is self-correcting. Dramatic moves in asset markets act as a response to shifting monetary conditions. These shifts also generate counter moves as forces of "mean reversion" are set in motion. Investment success rests with identifying these forces and designing strategy to capture inflection points in markets.

Our Leadership

Chen Zhao, Chief Strategist Chen is Founding Partner and Chief Strategist of Alpine Macro. From 2015 to 2016, he was Co-Director of Macro Research at Brandywine Global Investment Management. Prior to Brandywine Global, Chen spent 23 years at BCA Research. As a Partner, Managing Editor and Chief Global Strategist, Chen developed and wrote BCA's China and Emerging Markets publications in the 1990s. Chen became the firm's Chief Global Strategist in the 2000s and was the author of BCA's flagship publication, Global Investment Strategy from 2005 to 2015. He holds an MA in economics from the Central University of Finance and Economics, was a visiting scholar at the University of Illinois at Urbana-Champaign and pursued post graduate studies with a PhD candidacy at McGill University.

J. Anthony Boeckh, PhD, CEO & Editor-In-Chief Tony is Founding Partner, CEO and Editor-In-Chief of Alpine Macro. He was previously Founder, Chairman, Chief Executive and Editor-In-Chief of Montreal-based BCA Research for 34 years. He authored The Great Reflation (Wiley) in 2010 and was publisher of, among others, the Bank Credit Analyst, a monthly big-picture analysis of the U.S. and global economies and financial markets. He is a founding trustee of the Fraser Institute in Vancouver, British Columbia — an economic "think tank" dedicated to free market principles. Tony has a PhD in Finance and Economics from the Wharton School, University of Pennsylvania, and a B.Com. from the University of Toronto.

David Abramson, Senior Strategist David is a Partner and Senior Strategist with Alpine Macro. For 28 years, David was a Macro Strategist holding a variety of senior roles at BCA Research. Most recently, he was Chief U.S. Strategist and also Director of Research for the firm. During his tenure at BCA Research, David launched and managed the European Strategy and Commodity & Energy Strategy services. In addition, he was the Managing Editor for the Foreign Exchange Strategy and the China Investment Strategy services. He has taught international finance to MBAs at McGill University for 20 years, and is on the Client Committee of the Kenneth Woods Portfolio Management Program at Concordia University.