



Economic Letter

Stock Market Provides Imperfect View of Real U.S. Economy

by Julieta Yung

ABSTRACT: Monitoring global economic and financial developments is important for assessing labor markets and inflation as well as risks to the economic outlook. The stock market—through measures such as the Standard & Poor’s 500—is often thought to be an economic bellwether. However, market volatility compromises the reliability of such indexes.

The decline of the Standard & Poor’s 500 Index at the beginning of 2016 raised concerns about the state of the U.S. economy. The index, viewed as a broad measure of U.S. equity values, dropped 10 percent amid slumping oil prices and a slowdown in China and other leading emerging economies.¹

While tracking developments in equity markets can provide clues to the health of the economy, extracting these signals through market turbulence is notoriously difficult. Nobel laureate Paul Samuelson notably opined on the perils of relating equity markets to overall economic activity: “The stock market has forecast nine of the last five recessions.”² As if to illustrate the difficulties, the S&P 500 bounced back by the end of the first quarter, retracing much of its earlier decline.

Although equity market volatility has abated, underlying risks remain broadly unresolved. What can the early-2016 S&P 500 fall tell us about the state of the U.S. economy, and why is it so difficult to interpret short-term fluctuations in the stock market?

A simple goods-versus-services decomposition reveals important differences between the aggregate U.S. economy and the stock market. These

differences help explain why changes in equity markets do not necessarily reflect changes in macroeconomic fundamentals or automatically signal economic downturns. Further exploring the makeup of S&P 500 companies suggests that the largest declines in equity value experienced at the beginning of 2016 were mostly concentrated in the energy sector.³

Stock Market Movements

The stock market is volatile and difficult to predict, particularly in the very short term—a well-documented fact in practice and in the academic literature pioneered by Nobel laureate Eugene Fama in the early 1970s.⁴ The stock market is, essentially, an information aggregator. It summarizes the beliefs of thousands of investors who decide whether and when to buy or sell a stock. Therefore, market moves contain information about the average variation in investors’ expected returns—positive or negative.

Equity prices, like other asset prices, are risk-adjusted expected values of future payoffs. Changes in the price of an individual stock reflect changes in investors’ assessment of the company’s anticipated earnings or changes in investors’ tolerance for risk. As a result, individual

▶ *Because prices rapidly adjust to reflect updates to information available to investors, stock price movements in the short run are essentially unpredictable.*

stocks constantly fluctuate in response to a variety of shocks, or unforeseen events, from news of product developments or lower sales attributable to, for example, natural disasters or economic developments abroad.

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Declines in equity prices do not directly translate into declines in real economic output for several reasons.

Unlike price adjustments in the S&P 500, the economy reacts to shocks with a significant lag. The behavior of households and businesses tends to remain unchanged in the very short term and adjusts to new developments slowly.

Also, the real economy and the S&P 500 exhibit sectoral dissimilarities. An analysis of the composition reveals key underlying differences in their direct exposure to declines in the price of oil, a primary reason behind recent financial market volatility.

Goods Versus Services

The output of private sector companies contributing to U.S. gross domestic product (GDP) can be broadly classified into goods-producing industries (including manufacturing, construction, natural resources and mining) and service-providing industries (such as insurance, health care and transportation).

The portion of economic output due to government activities (around 13 percent in 2015) is excluded when comparing the broader economy with publicly traded firms in the S&P 500.⁵

On average over the past 10 years, the nongovernment output of service-providing industries has accounted for more than three-quarters of total U.S. GDP (*Chart 1A*).⁶ This suggests that the service sector produces the majority of output in the economy, a consistent trend that is also evident in the sectoral composition of U.S. jobs. About 69 percent of full- and part-time employment is concentrated in the private service sector (85 percent when including government jobs).⁷

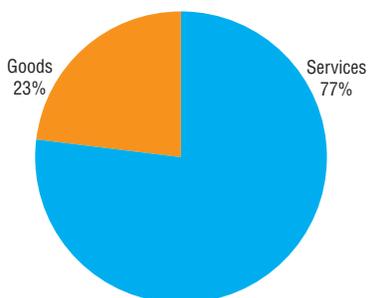
A key reason movements in the stock market may not reflect fundamental changes in the underlying economy is that more than half of publicly traded companies in the S&P 500 mainly produce goods instead of services. *Chart 1B* breaks down the 10-year-average S&P 500 market capitalization (price per share multiplied by the number of outstanding shares) into two sectors: goods and services.⁸

Moreover, the manufacturing sector increasingly incorporates services such as logistics or transportation into its production processes. It also often produces and sells services to complement its products. Thus, the classification depicted is not straightforward; S&P 500 companies are placed in either the goods or service sector based on the industry into which it falls.⁹ Many companies selling goods,

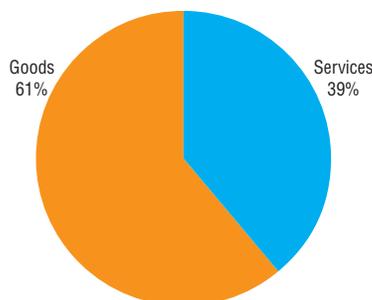
Chart 1

U.S. Economic Strengths Don't Mimic Standard & Poor's 500 Index Composition

A. Service Sector Accounts for Most of Value Added to U.S. GDP



B. Goods Sector Dominates S&P 500 Market Capitalization



SOURCES: Bureau of Economic Analysis; Standard & Poor's; Haver Analytics; author's calculations.

such as laptops or cellphones, offer related after-sale services, such as technical support or financing.

This sector overlap helps explain why a falling stock market valuation does not necessarily translate into a decline in economic activity. In first quarter 2016, the year-over-year market capitalization of S&P 500 goods-producing companies declined more than 4 percent, driving most of the fall in stock market valuation. Companies classified as service producers experienced an increase of 1 percent, suggesting that the overall decline in the S&P 500 was not generalized but was mostly concentrated within the goods sector.¹⁰

The Energy Sector

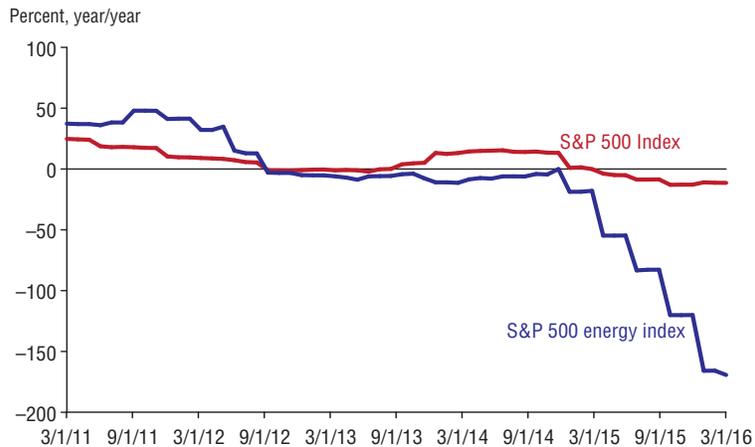
Energy accounts for 18 percent of the 10-year-average market capitalization of goods-producing firms in the S&P 500. The profitability of these companies has been particularly affected by the lower price of oil, which declined from more than \$100 per barrel in the second quarter of 2014 to less than \$40 in the first quarter of 2016.¹¹

Following this fall in oil prices, energy-related earnings also dropped sharply, in contrast to the year-over-year changes in earnings for the overall S&P 500 (*Chart 2*). In general, low oil prices directly translate into reduced energy company profitability and stock market performance, while firms in other sectors might be less affected or even benefit, for example, through lower energy costs.

Conventional economic theory suggests that low oil prices are good for oil-importing economies as consumers' disposable income rises, firms' energy costs decrease, and redistribution occurs between oil-importing and oil-exporting states.¹² However, the positive effects of low oil prices have been slow to materialize, not only in the U.S., but also in other oil-importing countries.

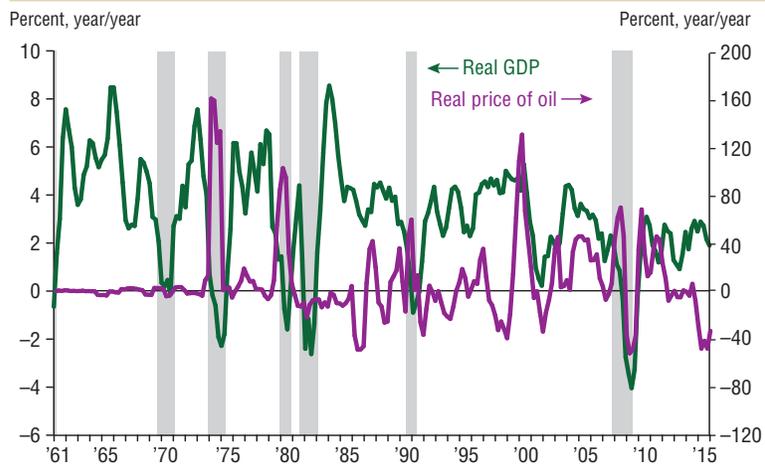
Factors affecting the world price of oil can be demand driven, supply driven or a combination. As supply-demand imbalances persist, prices adjust to compensate for these deviations, impacting future production and consumption patterns. The complex relationship between oil prices and the business cycle, therefore, varies according to the underlying reason driving oil price changes.

Chart 2 Energy Sector Earnings on Decline Since End of 2014



SOURCE: Bloomberg.

Chart 3 Relationship Between Oil Prices, Economic Growth Depends on Supply/Demand



NOTE: Gray bars indicate U.S. recessions.

SOURCES: Bureau of Economic Analysis; Organization for Economic Cooperation and Development; Haver Analytics.

During the 1974 recession, for example, real (inflation-adjusted) GDP growth and oil prices moved in opposite directions (*Chart 3*).¹³ While the U.S. economy contracted, oil prices rose, reflecting diminished supplies following the Organization of Arab Petroleum Exporting Countries' 1973-74 oil embargo.

During the Great Recession of 2007-09, however, oil prices and economic activity fell and rose in tandem as the financial crisis lowered global growth and, thus, global demand.

When different markets co-move strongly, the nature of the factors driving market dynamics can be informative. There is some evidence of a relatively recent increase in the correlation between oil price changes and the stock market, although the correlation is not significantly greater than historical averages.

Noise and News

Although market volatility has subsided, perceived risks remain and involve more than unexpected oil price fluctuations. Lower-than-anticipated global

growth, volatility in foreign exchange markets, and geopolitical developments around the world are among other factors.

Disentangling the signals in volatile equity markets is difficult. Moreover, the substantial differences between the composition of the U.S. economy and the stock market complicate such analysis.

Underlying differences in sectoral composition suggest that the declines in the S&P 500 in early 2016 were concentrated in the goods-producing sector, a relatively smaller fraction of the U.S. economy and overall employment. Further breaking down the sectors in the stock market indicates pronounced differences in the earnings profile of energy-related firms directly exposed to oil price fluctuations.

Analyzing how different sectors are affected can shed light on the implications of equity market fluctuations for the underlying economy.

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Notes

¹ This was a generalized decline in equity markets that can also be observed with other stock market measures—from the broad-based Wilshire 5000 Index (–12 percent) to the Dow Jones industrial average (–9 percent) or the NASDAQ composite index (–15 percent).

² “Science and Stocks,” by Paul Samuelson, *Newsweek*, Sept. 19, 1955, p. 92.

³ Following mid-2015 episodes of financial market volatility, China’s stock market continued to decline in the first quarter of 2016 in response to additional news

about weak Chinese economic fundamentals. During the period, the Shanghai Shenzhen Index that consists of 300 A-share stocks listed on the Shanghai and Shenzhen stock exchanges fell 20 percent.

⁴ For a summary of Fama’s work on return predictability, refer to “Understanding Asset Prices,” compiled by the Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, 2013.

⁵ Bureau of Economic Analysis and Haver Analytics (annual rate, first quarter through third quarter 2015).

⁶ See note 5 (average private sector GDP excluding government, first quarter 2001 to third quarter 2015, seasonally adjusted annual figures in billions of dollars). Sector groups are based on the North American Industry Classification System (NAICS). For more information on NAICS, see www.bls.gov/iag/tgs/iag_index_naics.htm.

⁷ See note 5 (2014 annual rate; latest available data).

⁸ See note 5 (market capitalization by sector from January 2005 to September 2015).

⁹ Services include telecommunication services, utilities and financials sectors; IT services, consumer services, media, retailing, transportation, and commercial services and supplies industry groups; and the health care providers and services industry. Goods include energy, materials and consumer staples sectors; capital goods, automobiles and components, consumer durables and apparel, technology hardware and equipment, semiconductors and semiconductor equipment, pharmaceuticals, and biotechnology and life sciences industry groups; internet software and services, software, health care equipment and supplies, and health care technology industries. For more information on the Global Industry Classification Standard (GICS), see www.msci.com/gics.

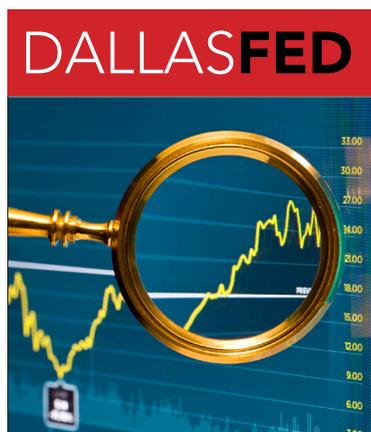
¹⁰ See note 5 (first quarter 2016/first quarter 2015 percentage change in total market capitalization per sector).

¹¹ Energy Information Administration/*Wall Street Journal* and Haver Analytics (end-of-month dollars/barrel, Europe Brent spot price).

¹² See “Plunging Oil Prices: A Boost for the U.S. Economy, a Jolt for Texas,” by Anthony Murphy, Michael Plante and

Mine Yücel, Federal Reserve Bank of Dallas *Economic Letter*, vol. 10, no. 5, 2015, for an analysis of the impact of low oil prices on the U.S. economy.

¹³ See note 5 (real GDP, seasonally adjusted annual figure in billions of 2009 dollars). Spot Brent crude oil price (U.S. dollars) from the Organization for Economic Cooperation and Development and Haver Analytics, deflated by the Consumer Price Index (fourth quarter 2015 dollars) from the Bureau of Labor Statistics and Haver Analytics.



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